



EUROPEAN
COMMISSION

Brussels, 29.11.2012
SWD(2012) 398 final

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Proposal for a Decision of the European Parliament and of the Council

**on a General Union Environment Action Programme to 2020
"Living well, within the limits of our planet"**

This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission.

{ COM(2012) 710 final }

{ SWD(2012) 397 final }

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

**Proposal for a Decision of the European Parliament and of the Council
on a General Union Environment Action Programme to 2020
"Living well, within the limits of our planet"**

This report commits only the Commission's services involved in its preparation and does not prejudge the final form of any decision to be taken by the Commission.

Table of Contents

1.	Procedural Issues and Consultation of Interested Parties	6
1.1.	Procedural issues	6
1.2.	External expertise and consultation of interested parties	6
1.3.	Consultation of other EU institutions	7
1.4.	Consultation of the Impact Assessment Board	8
2.	Problem Definition, Policy Context and Subsidiarity	9
2.1.	Context: lessons learned from the 6 th EAP and its evaluation	9
2.2.	What is the environment problem today?	10
2.2.1.	The state of the global environment	10
2.2.2.	The state of the European environment and challenges ahead	11
2.3.	Drivers of environmental problems	15
2.3.1.	What drives global environmental problems?	15
2.3.2.	Why do environmental problems persist at the EU level and what prevents them from being addressed effectively?	15
2.4.	How will the problem evolve?	19
2.5.	Who is affected and how?	21
2.6.	The EU's right to act and justification	22
2.7.	EU Value Added: Can objectives be better achieved by Community action?	22
3.	Objectives	23
3.1.	General objective	23
3.2.	Specific objectives	23
4.	Options on the Policy Content – STEP 1	25
4.1.	Option 1 – Business as usual	26
4.2.	Option 2 – smarter implementation	27
4.3.	Option 3 – smarter implementation and responding to new knowledge	29
5.	Analysis of Impacts of policy options for the efforts needed to achieve the specific objectives	30
5.1.	Analysis of Option 1 – Business as Usual	30
5.2.	Analysis of Option 2 – smarter implementation option	34

<i>Example overview of analysis underpinning the different priorities</i>	1
5.3. Analysis of Option 3 - smarter implementation and responding to new knowledge.	39
6. Options for the Delivery Mechanism - STEP 2:	42
6.1. Options for an environment policy framework	42
6.1.1. Option A) Discontinuation of the EAP policy approach	42
6.1.2. Option B) Business as usual.....	42
6.1.3. Option C) An EAP limited to a set of priority objectives	42
6.2. Analysis of options for an environment policy framework	42
6.2.1. Option A) Discontinuation of the EAP policy approach	42
6.2.2. Option B) Business as usual.....	43
6.2.3. Option C) An EAP focused on a set of priority objectives	44
7. Overall analysis of the proposed 7th EAP	45
7.1. Chosen option for the policy content	45
7.2. Chosen option for the delivery mechanism.....	46
7.3. Efficiency	48
7.4. Coherency	49
7.4.1. International coherency	50
7.5. Overall impacts	50
8. Monitoring and Evaluation	52
ANNEXES	54

INTRODUCTION

This impact assessment accompanies the Commission proposal for a Decision of the European Parliament and of the Council establishing an EU Environment Action Programme to 2020. In preparing the Decision, the Commission engaged in a broad public consultation and took into consideration the views of the other European Union (EU) institutions.

Environment Action Programmes have guided the development of EU environment policy since the early seventies. The Treaty on the Functioning of the EU (TFEU) introduced the requirement that "General action programmes setting out priority objectives to be attained shall be adopted by the European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions".¹ The 6th Environment Action Programme (6th EAP), which expired in July 2012, was the first to be adopted under this procedure. The European Commission has committed to delivering a new EAP responding to the demand from stakeholders, including the Council and the European Parliament, for a successor programme. The new programme intends to build on the value-added of the 6th EAP while addressing its weaknesses.

The context in which this programme is being developed differs from that which prevailed at the time the 6th EAP. In particular, the EU has adopted the Europe 2020 strategy -- an overarching strategy for all EU policies to create 'smart, sustainable and inclusive growth'. And while today many EU countries are struggling to cope with economic crisis, the attendant need for structural reforms offers new opportunities for all countries to move rapidly onto a more sustainable, green growth path. The new EAP should provide further impetus to put the EU on the right track towards meeting these objectives – and keep it there.

EU Environment policy has three key, mutually supporting contributions to make in this respect:

- (1) ensuring that Europe's **natural capital** is sufficiently **resilient** to pressure and change
- (2) ensuring that its economy is highly **resource efficient and low-carbon emitting**
- (3) ensuring that the **health and wellbeing** of EU citizens continue to benefit from high degrees of environmental protection.

The new environment action programme focuses on reinforcing efforts to reach these core objectives over the period up to 2020, guided by a long-term vision for the environment in 2050. This Impact Assessment examines the main challenges to and options for ensuring that these objectives are attained as effectively, efficiently and coherently as possible.

Although various scientific assessments show a number of positive trends over the past decade, four underlying problems are hindering the achievement of these key environmental objectives: 1) inadequate **implementation** of and gaps in the existing environment policy *acquis*; 2) lack of **coherence** in addressing increasingly interlinked challenges, which also requires efforts from other policy fields; 3) problems related to incentives for **investment** in

¹ Article 192 (3) Treaty on the Functioning of the European Union

environment-related measures; and 4) insufficiently coordinated data and information on the environment and gaps in the **knowledge base**, including emerging issues and trends.

The new EAP will also aim at further strengthening both the urban and global dimensions of EU environment policy, as these spatial scales feature specific problems and challenges related to the environment and climate change which require specially targeted approaches. The substantive commitments arising from the UNCSD 2012 (Rio + 20) are also reflected in the programme.

Reflecting these considerations, the **policy options** are examined in a two-step approach. In the **first step**, three options on policy content are considered and then a **second step** addresses the question of what kind of Environment Action Programme, if any, would provide the most effective strategic framework to enable the first three specific objectives to be met.

The assessment finds that the option of **smarter implementation and responding to new knowledge** combined with a **new EAP focused on a limited set of priority objectives** offers most value-added as a strategic framework to support action. Overall, the package is expected to deliver environmental objectives effectively and efficiently.

1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

1.1. Procedural issues

An Interservice Steering Group (ISG) was convened in February 2012 and met three times to discuss and advise on the process for drafting the IA. The group was chaired by DG Environment (ENV). Eighteen Directorates-General and services of the European Commission were invited to take part, and the following were actively involved in discussions: the Secretariat-General (SG), Agriculture & Rural Development (AGRI), Climate Action (CLIMA), Communications Networks, Content and Technology (CONNECT), Economic and Financial Affairs (ECFIN), Energy (ENER), Enterprise and Industry (ENTR), EuropeAid Development & Cooperation (DEVCO), Health and Consumers (SANCO), Internal Market and Services (MARKT), Joint Research Centre (JRC), Maritime Affairs and Fisheries (MARE), Research and Innovation (RTD), Mobility and Transport (MOVE), as well as the European External Action Service (EEAS).

1.2. External expertise and consultation of interested parties

The views and opinions expressed by a broad range of stakeholders in various meetings and events as well as through a specific online public consultation were carefully assessed and taken into account in the preparation of this IA.

Stakeholders were invited to express their views – including written inputs - on the final assessment of the 6th Environment Action Programme and the next steps in a stakeholder consultation meeting on 29 March 2011.² On that occasion, there was broad consensus on the need for rapid adoption by the Commission of a 7th EAP.

Member States and key stakeholder groups were consulted on their priorities for a new EAP at various events held between 2010 and 2012, including a 2-day conference ‘Europe Environment Policy: what’s next?’...Towards a 7th environment action programme’, organised by the Belgian Presidency in November 2010,³ a workshop on ‘Priorities for the 7th Environment Action Programme’ organised by the European Parliament in January 2012,⁴ and an expert workshop organised by the Danish Presidency in February 2012⁵ attended by some 150 participants.

The Commission conducted a 12-week long public consultation via the EUROPA website, consisting of a consultation paper setting out the Commission's preliminary views on priorities that should guide environment policy up to 2020 and a questionnaire reflecting the contents of the paper. The consultation received 300 responses, of which 136 (45%) came from individuals and 164 (55%) from organisations. Out of the total 164 responses on behalf of organisations, the majority came from companies/business associations (57), followed by NGOs (47), regional/local public authorities (21), national authorities (10), and "others" (28).

Overall, 232 of the 300 respondents agreed that a new EAP would add value (63% of whom strongly agreed) whereas only 1.3 % of the respondents thought that a new EAP would have no added value. In terms of how it could bring added value to EU environment policy,

² http://ec.europa.eu/environment/newprg/consult_2011.htm

³ <http://www.eapdebate.org/en/latest-events/>

⁴ <http://www.europarl.europa.eu/document/activities/cont/201203/20120306ATT40113/20120306ATT40113EN.pdf>

⁵ http://www.mim.dk/eng/EU2012/miljohandlingsprogram/expert_workshop/

respondents attributed the highest value to 1) developing a strategic agenda for the environment, 2) ensuring full implementation of agreed policies and legislation and 3) providing a coherent framework and furthering the integration of environmental considerations into other policies.

A further 40 written contributions were received from businesses, NGOs, national authorities and other organisations/individuals during the public consultation period. Almost all of them agreed that ensuring proper implementation and enforcement of environmental policies and legislation is a priority. NGOs highlighted also the need to set ambitious targets to stimulate and guide action by different stakeholders. Businesses stressed the need for innovation and resource efficiency while taking into account competitiveness concerns, and to prioritise the implementation and streamlining of existing legislation over the development of new legislation. A detailed description of the main results, different positions expressed, and an analysis of the inputs is included in Annex 1.

Various specific stakeholder groups, including SMEs, NGOs and national, regional and local authorities also conveyed their priorities and concerns in bilateral meetings with the Commission during the preparation of this IA.

Stakeholders were also consulted on a number of key themes addressed in the proposed new EAP in specific stakeholder consultations organised by the European Commission within the last two years, including resource efficiency, the low-carbon economy, biodiversity, water and sustainable consumption and production.⁶ These consultations went into considerable detail on each of these subjects. The IA also draws on numerous studies commissioned from external consultants to support these initiatives.

Finally, this Impact Assessment draws on the final evaluation of the 6th EAP outlined in section 2.1 and in more detail in Annex 7, as well as on an independent assessment of the Programme, the results of the public consultation as well as various recent reports and studies, notably the European Environment Agency's 'European Environment – State and Outlook 2010' report (SOER 2010).⁷

1.3. Consultation of other EU institutions

On 30 April 2007, the Commission adopted a Communication to the Council, the European Parliament (EP), the Committee of the Regions (COR) and the European Economic and Social Committee (EESC) on the Mid-term review of the Sixth Community Environment Action Programme.⁸ The Council adopted conclusions on 28 June 2007⁹ and the European Parliament adopted a resolution on 10 April 2008.¹⁰

As requested by the 6th EAP itself, the Commission adopted during the last year of the Programme a Communication to the Council, the EP, the CoR and the EESC on the Final Assessment of the 6th Community Environment Action Programme.¹¹ On 10 October 2011, the Council adopted conclusions¹² in which it invites the Commission to present a successor

⁶ http://ec.europa.eu/environment/consultations_en.htm

⁷ <http://www.eea.europa.eu/soer>

⁸ COM(2007) 225 final

⁹ "New Impetus for EU Environmental Policy: Mid-term review of the 6th Community Environment Action Programme" - 2812th ENVIRONMENT Council meeting

¹⁰ 2007/2204(INI)

¹¹ COM(2011)531

¹² "Assessment of the sixth community environment action programme and the way forward: Towards a 7th EU environment action programme"

to 6th EAP in early 2012 and specifies a number of challenges and objectives that it should address. The European Parliament adopted a resolution on 20 April 2012,¹³ in which it urges the Commission to present a proposal for a 7th EAP without delay. The European Economic and Social Committee adopted an opinion on the Final Assessment of the 6th EAP on 18 January 2011.¹⁴

In order to provide the Commission with an indication of their views on a new programme, the Council adopted on 20 December 2010 conclusions on 'Improving environmental policy instruments'¹⁵; the Committee of the Regions voted an outlook opinion on 5 October 2010 'The role of local and regional authorities in future environmental policy'¹⁶ and the European Economic and Social Committee adopted on 25 April 2012 an exploratory opinion on 'the Seventh Environment Action Programme and follow-up to the sixth EAP'.¹⁷ The Committee of the Regions is expected to adopt an Opinion "Towards a 7th EAP: Better implementation of EU environmental law" in November 2012.

Finally, on 11 June 2012, the Council adopted conclusions on 'Setting the framework for a Seventh EU Environment Action Programme',¹⁸ which underline that the 7th EAP should set out the key elements of the future environment policy and be linked to the Europe 2020 Strategy and other relevant strategies. They also call for an ambitious and compelling 2050 vision and underscore the importance of better implementation and strengthening of existing environment policy and legislation and supporting the transition to a green economy. The Council also highlighted priorities it would like to see addressed in the Commission's proposal, in particular related to health and environment.

1.4. Consultation of the Impact Assessment Board

The draft Impact Assessment report was submitted to the Impact Assessment Board (IAB) in June 2012. In its opinion, the IAB recommended that the report should be improved in a number of respects:

- better explain the purpose of the initiative and describe the value-added of the 7th EAP in relation to existing strategies in addressing the major environmental problems the EU is facing;
- strengthen the baseline discussion including the evolution of the current situation with no new EAP;
- improve the definition of the specific objectives and better explain their correspondence to the identified problem drivers;
- clarify the monitoring and evaluation arrangements;
- better define the policy options and how the options differ from the status quo by comparing the options against a set of criteria that measure effectiveness, efficiency and coherence.

¹³ EP Resolution on the review of the 6th Environment Action Programme and the setting of priorities for the 7th Environment Action Programme – A better environment for a better life (2011/2194(INI))

¹⁴ CESE 1903/11 fin

¹⁵ Council Conclusions on "Improving environmental policy instruments" (5302/11), 20 December 2010.

¹⁶ 2011/C 15/02

¹⁷ CESE 114/2012 fin

¹⁸ 11186/12

The IA was revised accordingly. To address the IAB's recommendation to improve the accessibility of the report, a list of studies and a glossary have been added as Annex 8 and 9.

2. PROBLEM DEFINITION, POLICY CONTEXT AND SUBSIDIARITY

2.1. Context: lessons learned from the 6th EAP and its evaluation

The 6th Environment Action Programme (6th EAP), which set out the framework for environmental policy-making in the EU for 2002-2012, expired in July 2012. The 6th EAP identified four priority areas for action: climate change, nature and biodiversity, environment and health and natural resources and waste and led to the development of Thematic Strategies in the fields of soil, the marine environment, air, pesticides, the urban environment and natural resources and waste recycling.

In 2011, the Commission carried out a final assessment of the 6th EAP,¹⁹ based on the SOER 2010 and on an independent evaluation.²⁰ It concluded that the Programme helped to provide environment policy with an overarching framework for a given period (2002-2012), during which environmental legislation was largely consolidated and completed to cover almost all areas of environment, with the exception of soil. However, the assessment was unable to establish whether the Programme was the leading factor behind these developments.

Meanwhile, the past few years have witnessed a number of significant policy developments, such as the adoption of the EU Climate and Energy Package in response to heightened concerns about climate change, and EU strategies to improve resource efficiency and tackle biodiversity loss. The pace and extent of these developments have led to calls for an overarching framework that pulls them together into a coherent narrative and serves as a guide for environment policy developments in the near to medium-term.

Stakeholders also see added value in a strategic document that demonstrates how environment policy contributes to the wider Europe 2020 agenda. Indeed, the final assessment of the 6th EAP noted that the programme complemented the Lisbon Strategy and the Sustainable Development Strategy and helped strengthen integration of environmental concerns in all policy areas.

The 6th EAP also served as a reference for Member States and local authorities in defending environment policy against competing policy demands, securing appropriate funding and providing predictability for business. The programme also helped to build political will for the adoption of effective targets and timetables and their subsequent implementation. However, the assessment pointed to some important shortcomings: in particular, the inclusion of an issue or action in the EAP was no guarantee that Member States would sign up to specific related policy proposals, and the actual design of the programme lent itself towards accommodating a large number of specific actions varying both in scope and effect, which hindered its overall effectiveness.

The new EAP should retain the successful elements of the 6th EAP and draw on lessons learned. The proposed approach is therefore to establish the overarching environment policy objectives that should drive environment policy development in the current context so as to contribute to further environmental improvements as well as to the EU's broader objectives of

¹⁹ Communication on the Final Assessment of the 6th Community Environment Action Programme COM(2011)531

²⁰ http://ec.europa.eu/environment/newprg/pdf/Ecologic_6EAP_Report.pdf

smart, sustainable and inclusive growth. The four priority areas for action identified in the 6th EAP are re-clustered into three thematic policy objectives, reflecting the recent policy developments described above:

- (1) To protect, conserve and enhance the EU's natural capital
- (2) To turn the EU into a resource efficient and more competitive low-carbon economy
- (3) To safeguard EU citizens from environment-related pressure and risks to health and wellbeing.

Conserving and restoring our natural capital is an important part of transforming Europe into a competitive and sustainable economy, and is fundamental to the overall resilience of our society. Measures to improve resource efficiency and reduce greenhouse gases can deliver growth and jobs whilst tackling environmental problems and reducing the risks associated with excessive use of natural resources. In particular, awareness of the need for and benefits that resource efficiency can bring has increased since the 6th EAP. Finally, tackling environment-related health problems resulting from human activities, and working with nature to improve the living conditions of EU citizens and safeguard them from changes brought about by climate change and other pressures will benefit health and wellbeing and secure long-term prosperity. These three thematic policy objectives are a coherent way to group the main actions to be carried out over the period of the new EAP.

The EU is a highly urbanised society, with approximately 70% of EU citizens residing in urban areas – a figure set to increase to 80% by 2050. Cities have to cope with a large number of environmental problems that come with high population density and rapid development, and are responsible for implementing a broad range of legislation. The new EAP should serve to further support these efforts and promote urban sustainability.

As the EU is also affected by the state of the global environment and the environment of other countries, particularly those in its neighbourhood, the new EAP should serve to enhance the external dimension of its environment policy and secure commitment to a number of priorities to guide its international action in this area in keeping with Rio+20.

2.2. What is the environment problem today?

2.2.1. The state of the global environment

The Fifth edition of the Global Environmental Outlook (GEO-5)²¹ surveys the state of the global environment today. It identifies many concerns, and concludes that systemic challenges and trends related to unprecedented rates of social, economic, technological and environmental change are at the root of these problems. Global population increases and rising living standards are driving increases in consumption. Increased consumption is in turn driving land conversion and deforestation, adding to the pressure on natural resources and ecosystems all over the world, increasing the cost of and competition for essential raw materials, minerals and energy, and generating more pollution.

The erosion of our natural capital poses the risks of irreversible changes that could endanger two centuries of rising living standards²² and cause major adverse health impacts.²³ As

²¹ UNEP, GEO5, June 2012.

²² "Environmental Outlook to 2050", OECD, 2012

pointed out in the recent report of the UN High-Level Panel on Sustainability, "We can no longer assume that our collective actions will not trigger tipping points as environmental thresholds are breached, risking irreversible damage to both ecosystems and human communities."²⁴

2.2.2. *The state of the European environment and challenges ahead*

The European Environment Agency's State of the Environment Report 2010 provides information about the challenges facing Europe's environment. It shows that despite progress in some areas, in others the EU is not on track to meet many of its environment-related targets and objectives. The report concludes that while the prospects for Europe's environment are mixed, there are opportunities to make the environment more resilient to future risks and changes. The following section briefly summarises the challenges relating to the three policy objectives identified above²⁵:

The state of the EU's natural capital²⁶

Natural capital plays an essential role in ensuring that our environment is resilient in the face of pressure, for instance from climate change, and that our economy remains competitive. Yet Europe's natural capital, biodiversity and ecosystems services continue to be degraded and depleted, and the EU failed to reach its target of halting biodiversity loss by 2010.

While there has been an improvement in the conservation status of some European protected species and habitats, a majority remains in unfavourable conservation status and key pressures and drivers of degradation and loss continue to put significant pressure on ecosystems. For instance, soil degradation is accelerating due to erosion, loss of organic matter, sealing, contamination, etc, with negative effects on human health, ecosystems and the climate, as well as on our economy.

Water quality has improved, but progress has been mixed, and challenges remain in meeting the targets of good water status, including in relation to ecological and chemical parameters as well as the minimum water flow necessary for the environment (e-flow).

Table 1. Indicative summary table of progress towards meeting environmental targets or objectives, and highlights of related trends over the past 10 years (based on SOER 2010)

<i>Environmental Issue</i>	<i>EU27 target / objective</i>	<i>EU27 on track?</i>
The contribution of natural capital to ensuring the EU's ecological and climate resilience		
<i>Pressure on ecosystems (from air pollution, eutrophication)</i>	<i>Not to exceed critical loads of eutrophying substances</i>	<i>EU not on track; improving trend [but more than 40% of sensitive terrestrial and freshwater ecosystem areas still subject to</i>

²³ WHO, "Ecosystems and Human Well-being", Millennium Ecosystem Assessment Health synthesis. <http://www.who.int/globalchange/ecosystems/ecosys.pdf>

²⁴ Resilient People, Resilient Planet: A future worth choosing. At: <http://www.un.org/gsp/report>

²⁵ The SOER 2010 provides a detailed overview of the state of the environment.

²⁶ Natural capital consists of natural assets in their role of providing natural resource inputs and environmental services for economic production. It is generally considered to comprise three principal categories: natural resource stocks, land and ecosystems. All are considered essential to the long-term sustainability of development for their provision of "functions" to the economy, as well as to mankind outside the economy and other living beings. (OECD).

		<i>atmospheric nitrogen deposition beyond critical loads; agricultural nitrogen loads are expected to remain high; the increase of atmospheric deposition of nitrogen affects marine environment]</i>
<i>Conservation Status (safeguard the EU's most important habitats and species)</i>	<i>To achieve favourable conservation status, set up Natura 2000 network</i>	<i>Mixed progress in the EU [in 2008, only 17% of the target species under the Habitats Directive were considered to have a favourable conservation status]</i>
<i>Biodiversity (terrestrial and marine species and habitats)</i>	<i>To halt the loss of biodiversity</i>	<i>EU not on track; worsening trend [biodiversity is still in decline; increase of invasive marine and estuarine alien species; loss of old-growth forest...]</i>
<i>Soil degradation (soil erosion)</i>	<i>To prevent further soil degradation and preserve its functions</i>	<i>EU not on track; worsening trend [decline of natural and semi-natural habitats]</i>
<i>Water quality (ecological and chemical status including environmental flow - 'e flow')</i>	<i>To achieve good ecological and chemical status of water bodies</i>	<i>Mixed progress in the EU [significant number of water bodies at high risk of not achieving good status by 2015]</i>
<i>Water pollution (from point sources)</i>	<i>To comply with urban wastewater treatment and industrial installations requirements</i>	<i>EU on track with an improving trend but gaps remain [implementation of Urban Wastewater Treatment Directive incomplete in many countries; point sources are still significant in parts of Europe]</i>

Resource efficient, low-carbon growth

Over the past decade, the EU has reduced its greenhouse gas (GHG) emissions and is on track to meet its Kyoto Protocol commitments. Significant progress has also been made towards meeting targets on energy efficiency and on promoting energy use from renewable sources. However, global and European cuts in GHG emissions are far from sufficient to keep average world temperature increases below 2°C. Linked to this, the issue of water stress is of increasing concern.

At the same time, environmental regulation and rising costs associated with increasingly scarce natural resources have driven eco-innovation and led to increased resource efficiency through a relative decoupling of resource use, emissions and waste generation from economic growth in some areas. However, absolute decoupling remains a challenge, especially for households and SMEs, and overall, current patterns of resource use are still far from sustainable.

There has also been some progress in the EU to tackle challenges related to waste and unsustainable use of natural resources. Member States have increased waste management and recycling efforts and some are global leaders in waste recycling technology. However, these achievements are not equally spread amongst sectors and countries, and several waste streams

continue to grow. On average only 40% of solid waste in the EU is re-used or recycled, with the rest going to landfill or incineration.

Table 2. Indicative summary table of progress towards meeting environmental targets or objectives, and highlights of related trends over the past 10 years (based on SOER 2010)

Sustainable, low-carbon growth		
<i>Global mean temperature change</i>	<i>To limit increases to below 2°C globally</i>	<i>EU not on track; worsening trend</i>
<i>GHG emissions</i>	<i>To reduce GHG emissions by 20% by 2020</i>	<i>EU on track; mixed trends [emissions from large point sources are decreasing while emission from mobile and diffuse sources have increased; transport still a problematic emitting sector with an increasing emissions trend]</i>
<i>Energy Efficiency</i>	<i>To reduce primary energy use by 20% by 2020 vs. business as usual</i>	<i>Mixed progress in the EU; overall, insufficient to reach the objective of 20% energy efficiency improvement by 2020 ;</i>
<i>Renewable Energy Sources</i>	<i>To increase energy consumption from renewables by 20% by 2020</i>	<i>Mixed progress in the EU; overall improving trend [share of renewable sources in energy production has been increasing]</i>
<i>Decoupling (resource use from economic growth)</i>	<i>To decouple resource use from economic growth</i>	<i>Mixed progress in the EU; overall improving trend [growth of municipal waste generation slower than that of GDP; overall decoupling of emissions from GDP]</i>
<i>Waste generation</i>	<i>To substantially reduce waste generation</i>	<i>EU not on track; worsening trend [increase of waste generation from construction and demolition, from waste electric and electronic equipment (fastest-growing waste streams), and of the volume of hazardous waste and sewage sludge generation]</i>
<i>Waste management (recycling)</i>	<i>Several recycling targets for different specific waste streams</i>	<i>EU on track; improving trend [but hazardous and problematic wastes are increasingly being shipped across borders]</i>
<i>Water stress (water exploitation beyond natural limits)</i>	<i>Contribute to achieving good water status by ensuring minimum environmental flow (e-flow)</i>	<i>Mixed progress in the EU [resources and demand for water unevenly distributed across Europe; water stress expanding and projected to further increase]</i>

Environment-related health and well-being

In the EU, air pollution has declined, but not enough to achieve good air quality in all urban areas. There have been reductions in the levels of sulphur dioxide (SO₂), carbon monoxide (CO), NO_x and lead concentrations. However, exposure to particulate matter (PM) and ozone (O₃) remain of concern, linked to a loss of life expectancy, acute and chronic respiratory and cardiovascular effects, impaired lung development in children, and reduced birth weight. Between 20-50% of the European population lives in areas where the air quality breaches European limit values. Air pollution continues to cause more than 350,000 premature deaths in Europe each year and the estimated annual costs in terms of health expenditure or days of work lost through illness run to billions of Euros.

In addition to pollution from ambient air from outside, indoor air quality is also affected by biological, chemical and physical agents emitted from a wide range of products, such as building materials, furniture, carpets and cleaning products, and from the use of solid heating material in inadequately ventilated premises.

EU citizens are still exposed to multiple pollutants and chemicals, which can lead to long-term damage to human health.²⁷ Of particular concern are persistent and bio-accumulative compounds, endocrine-disrupting chemicals and heavy metals.

The impacts of climate change are already being felt across Europe, including more frequent and severe flooding, heat waves and other extreme events, which have implications for human health and wellbeing but also for the health of species and ecosystems and the functioning of ecosystem services. The risk of new infectious diseases or diseases previously eradicated in Europe is also expected to rise. Although some regions are more seriously affected than others, all will face consequences of some kind. The effects will be unevenly distributed, with young and old, poor and ill being at greatest risk, and unless they are proactively addressed they will result in high economic costs.²⁸

Table 3. Indicative summary table of progress towards meeting environmental targets or objectives, and highlights of related trends over the past 10 years (based on SOER 2010)

Human health and well being		
<i>Transboundary air pollution (NO_x, NMVOC, SO₂, NH₃, primary particles)</i>	<i>To limit emissions of acidifying, eutrophying and ozone precursor pollutants</i>	<i>Mixed progress in the EU; overall improving trend [successful reductions in levels of SO₂, CO, NO_x and lead concentrations]</i>
<i>Air quality in urban areas (particulate matter and ozone)</i>	<i>To attain levels of air quality that do not give rise to negative health impacts</i>	<i>EU not on track; stable trend [ozone concentrations exceed health and ecosystem-related target values, most of Europe's urban population exposed to ambient air concentrations of particulate matter in excess of EU limit value set for the protection of human health]</i>

²⁷ Worldwide, an estimated 4.9 million deaths were attributable to environmental exposure to chemicals in 2004. WHO, Prüss-Ustün et al, 2011.

²⁸ WHO, "Protecting Health in Europe from Climate Change" (http://www.euro.who.int/_data/assets/pdf_file/0016/74401/E91865.pdf).

Chemicals	<i>To improve the protection of human health and the environment from the risks of chemicals, to reduce the emission of pollutants to water and air, including indoor air, and improve the collection of information</i>	<i>Mixed progress in the EU; [Decline in discharges of hazardous chemicals to receiving waters; reported levels on pesticides in surface and groundwaters exceed environmental quality standards; data remain scarce, and although obligations under EU chemicals legislation has brought about some improvements, there is still no system for collecting information on concentrations of chemicals and combined effects of chemicals in various environmental media]</i>
-----------	--	---

2.3. Drivers of environmental problems

2.3.1. What drives global environmental problems?

The 5th Edition of the Global Environment Outlook report shows that the environment remains under pressure from key drivers of environmental change. For instance, population growth, urbanisation, unsustainable consumption patterns, fossil-fuel based transport and energy consumption are driving land and habitat fragmentation, over-exploitation and extraction of natural resources, increased pollution and waste generation, and use of fertilisers and chemicals in unsafe quantities.

These trends are complex and inter-related, for example: global energy demand is expected to rise by 40% over the next 20 years, but at the same time it is forecast that in 2030 some 2.7 billion people will be without basic modern energy services²⁹, with many relying on wood fuel or charcoal to the detriment of forest ecosystems. There is likely to be a shortfall of 40% in water available for human use by 2050, with major consequences for many economic sectors, notably agriculture.

2.3.2. Why do environmental problems persist at the EU level and what prevents them from being addressed effectively?

The globalisation of the world economy further intensifies the drivers highlighted in the previous section. As a result, many problems outside of Europe will ultimately affect Europe as well.

In the EU, four underlying **problems** are preventing the environmental issues set out in Section 2.1 from being addressed effectively. These relate to and build on the cross-cutting issues identified in the 6th EAP, and stakeholders broadly agreed that they are the key underlying problems. They are:

- the inadequate implementation of the environment policy *acquis*
- inadequate incentives for investment in environment and climate action
- problems of policy coherency and inadequate integration

²⁹ International Energy Agency, “Energy for All – financing access for the poor”, 2011.

- gaps in the knowledge base for policy making and challenges associated with new and emerging issues

1) Implementation of the *acquis*

The Council and European Parliament have both cited poor implementation of existing EU environmental law as an impediment to achieving desired objectives³⁰ and 80% of respondents to the public consultation on the 7th EAP agreed that it could provide clear added value by ensuring full implementation of agreed policies and legislation.

The situation with regards to the implementation of environmental law and on compliance with the *acquis* differs across Member States.³¹ This is problematic not only for the environment, but also for the EU economy, as variable implementation across Member States can distort competition in the Single Market. Moreover, the costs of not fully implementing the environmental *acquis* are estimated, broadly, at around 50 billion Euros per annum and outweigh the costs of implementation.³²

This has led to calls for action to improve implementation and ensure that agreed legislation delivers its intended benefits. Responses to the public consultation reveal strong support for action to strengthen the correct implementation of EU environment law and thereby contribute to ensuring a level playing field.

2) Investment in environment and climate change action

Significant amounts of money are available to Member States for environment and climate-related action under various EU funds in the 2007-13 period. In some Member States a number of barriers such as an inadequate and/or incomplete regulatory framework, weak capacities or an insufficient project pipeline have hampered a timely and efficient use of the available funding in the area of environment with the exception of funds which have resources earmarked for the environment, such as the EU research framework programme (FP7), Competitiveness and Innovation framework programme (CIP) and the LIFE+ programme.³³ For instance, available data for the EAFRD³⁴ suggest a very slow uptake of funds.³⁵ Based on the data available, if the current execution trend continues, only 50% of the funds available for environment and climate change will have actually been used by the end of the current financial period.³⁶ Given the time lag between the funding and the implementation of actions beneficial for the environment and the concrete environmental outcomes, the late or inadequate uptake of EU funds is cause for concern.

³⁰ Council Conclusions on "Improving environmental policy instruments" (5302/11), 20 December 2010; European Parliament resolution on the review of the 6th Environment Action Programme and the setting of priorities for the 7th Environment Action Programme – A better environment for a better life (2011/2194(INI)).

³¹ See the 2009 Environment Policy Review at: <http://ec.europa.eu/environment/policyreview.htm>

³² Commission Communication on Improving the delivery of benefits from EU environment measures: building confidence through better knowledge and responsiveness (COM/2012/095)

³³ Commission Staff Working Document of Regional Policy contributing to sustainable growth in Europe 2020, SEC(2011) 92 final, p.6 and Annex III for details and Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "Cohesion Policy: Strategic Report 2010 on the implementation of the programmes 2007-2013, COM(2010)110 final, p.6.

³⁴ http://ec.europa.eu/environment/enveco/biodiversity/pdf/assessment_natura2000.pdf.

³⁵ See as well SEC(2011) 540 final, Impact Assessment accompanying the Commission Communication "Our life insurance, our natural capital: an EU biodiversity strategy to 2020" COM (2011)244 final. http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/2020/1_EN_impact_assesment_part1_v4.pdf

³⁶ Final data will only be available during the final evaluation of the various programmes in 2013.

Market failures are another factor preventing investments from being made at the necessary scale. The value of natural capital is not adequately reflected in decision-making processes and accounting systems. Markets and prices, taxes and subsidies do not reflect the real costs of resource use and lock the economy into an unsustainable path.

Only one in sixteen Euros in revenue is raised from environmental taxes in the EU. Environmentally harmful subsidies (EHS) continue to stimulate excessive and wasteful use of natural resources and distort their prices, as well as lead to increased public deficits. Some Member States have taken steps to remove EHS, a limited number have foreseen EHS reform in their National Reform Plans under the European Semester process, whereas others have yet to act on this issue. Although economic tools such as market-based instruments have been exploited in some sectors (notably through the GHG emission trading system), their full potential remains untapped.

3) Improving integration and coherency

Although some progress was made through the 6th EAP to integrate environment considerations into other policies, the 'global megatrends' identified in the SOER 2010³⁷ are magnifying inter-linkages between policies and adding to the complexity of achieving policy coherence and reconciling competing needs and interests. Modelling and scenario analysis routinely identify these inter-linkages as crucial for solving environmental problems (see OECD analysis set out in Annex 4).

For example, intensifying global competition for increasingly scarce resources and rising demand from different policy sectors for these same resources, but for different uses is complicating efforts to achieve sustainable use and reconcile these demands and pressures with environmental objectives. Land use is a case in point. Growing demand for renewable energy or food can lead to direct or indirect impacts on biodiversity and the environment. Another example is the potential of fuel switching in response to climate or energy security considerations to increase air pollution emissions (See Annex 2).

Effective responses require joined-up policy approaches that take into account multiple objectives and try to reconcile them in a way that delivers multiple or co-benefits (not only environmental, but also economic and social) and reduces trade-offs between different policy objectives. Cities in particular are faced with multiple and inter-related challenges, from pressures such as overcrowding and social inequity to pollution and traffic congestion. Due to high population density and intense activity, environmental problems tend to converge in urban areas. Policy coherence and integrated approaches that take into account and attempt to reconcile environmental, social and economic objectives are essential to respond effectively to complex challenges and minimise trade-offs.

Due to the global nature of many environmental challenges and the increasingly interlinked economic systems at international level, the thematic objectives identified above can only be fully achieved as part of a global approach or in cooperation with partner countries. A coherent approach to addressing environmental issues in the EU's external relations is therefore needed, including the systematic integration of environmental concerns into external policies.

³⁷ "Assessment of Global Megatrends", EEA, 2010.

Current trends in the state of the environment suggest that existing frameworks for ensuring environmental integration and policy coherence and corresponding efforts may not be appropriate or sufficient for addressing these concerns.

4) The environment policy knowledge base and emerging risks

EU environment policy benefits from an extensive knowledge base and in turn, EU policy and legislation has stimulated research and development in the environmental sciences, including through the research framework programmes. However, this data and information is often not collected, exchanged and used in a way that can be easily accessed and used, whether by scientists for research purposes, public authorities in the formulation of policy, or citizens wishing to know whether environmental laws are being respected. Moreover, state of the environment monitoring is often carried out over a short period of time or in an ad hoc fashion, whereas regular, long-term data series are indispensable to adequately track changes and inform policy responses.

At the same time, while scientific and technical knowledge about the environment is constantly evolving, new knowledge is not always finding its way into policy, either because policy frameworks do not allow for the flexibility needed to adapt quickly to this knowledge or because of policy inertia. For example, available data on air pollution impacts has for some time already pointed to a gap between current efforts and the EU's air quality targets, and the targets themselves are no longer aligned to the latest science.

The emergence of new technologies or challenges (e.g. nanotechnologies, hydraulic fracturing, etc.) may present risks to the environment and merit an assessment of whether they are adequately addressed by existing policy and legislative frameworks, and if not, whether they need to be updated or whether new rules or policies are needed.

As the knowledge base develops, it helps not only to show new ways of dealing with existing problems, but also sheds light on new and emerging issues. Innovation and technological development can be forceful catalysts for, and enablers of growth. However, new technologies rely on public acceptance for their future development. In some cases, technological changes outpace developments in policy and can give rise to conflicting interests, needs and expectations. In addition, they harbour the potential to push environment and ecosystems beyond thresholds and tipping points, and bring new risks at times of unknown scale and potentially over long time-spans. A lack of capacity to address these risks can lead to increasing public concern and eventual hostility towards new technologies.

At present there is no systematic framework in the EU to anticipate, assess, manage and eventually communicate emerging environmental risks. This is hindering public acceptance of new technologies, as well as the EU's capacity to identify and act upon technological developments in a timely manner. The production of energy from unconventional sources from shale gas is a case in point.

Other challenges, like marine litter and soil degradation are not new, but are an increasing cause for concern in the EU as associated trends are worsening. Similarly, it is increasingly apparent that the trends for 'old' issues like land filling are worrying, and that a new approach is needed to reverse them.

2.4. How will the problem evolve?

A number of strategic documents which contribute towards delivering the **Europe 2020 Strategy** for smart, inclusive and sustainable growth set out visions and milestones and/or targets for the future (see Annex 3 for a complete overview of existing environment and climate related targets):

- The **Roadmap for a Resource-Efficient Europe**, adopted by the Commission on 20 September 2011, is a cornerstone of efforts to turn the EU into a resource-efficient, low-carbon economy.
- The **EU Biodiversity Strategy to 2020** aims to safeguard Europe's natural capital and enable the EU to achieve its target of halting biodiversity loss in the EU by 2020, restoring ecosystems where possible and stepping up efforts to avert global biodiversity loss, in line with high level commitments made at EU and global level.
- The EU domestic contribution to the global objective of avoiding dangerous climate change and therefore limiting average temperature increase to less than 2°C above pre-industrial levels is laid down in the **EU Climate and Energy package**. It includes the 20-20-20 targets for 2020: 20% GHG emissions reductions, and a more ambitious target of 30% if the conditions are right; 20% renewables in our energy consumption; and a 20% improvement of energy efficiency. For the long-term, the **Roadmap for moving to a competitive low carbon economy in 2050** sets out a plan to ensure the EU meets the objective of reducing domestic emissions by 80 to 95% by mid-century.
- In the coming months, the Commission plans to adopt a **Blueprint to Safeguard Europe's Water Resources**, undertake a comprehensive **review of air quality legislation** and develop an **EU Adaptation strategy** to respond to the increasing impacts of climate change on the environment and on human health.
- The Commission proposal for a **Budget for Europe 2020**³⁸ has mainstreamed environmental and climate-related objectives in all funding programmes and increased the funds available for environment and climate-related actions. It also sets the objective that 20% of the budget should be related to climate action. The estimated amounts available for the environment represent about 16% of the EU budget (excluding Cohesion Policy).³⁹ This would imply a very significant increase in environment and climate-related expenditure (understood in broad terms) compared to the amounts available under the current programming period.⁴⁰

However, despite these initiatives, Europe is not on track to reach the strategic objectives set out in section 2.1 above. In understanding why, with current commitments, problems will persist, it is important to understand firstly that the underlying problems and global challenges identified in Section 2.3 will continue and may worsen, and thus they will require additional concerted, joined-up action to neuter them.

³⁸ COM(2011) 500 final, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "A Budget for Europe 2020".

³⁹ However, a final estimation would only be possible once the MFF and various implementing programmes (e.g., Partnership Contracts, Operational Programmes) adopted.

⁴⁰ According to some estimates the increase would be between double and triple the current amount, depending on the uptake of cohesion funds.

This is the basic story told in the strategic modelling of environmental futures discussed in Annex 4, such as the OECD Environmental Outlook to 2050⁴¹. The OECD concludes that the prospects are more alarming than the situation described in the previous outlooks, and that urgent action is needed now to avoid the significant costs and consequences of inaction. The OECD forecasts that without new green growth policies, continued degradation and erosion of natural capital are expected to 2050, with the risk of irreversible changes that could endanger two centuries of rising living standards. The OECD also highlights the risk of passing irreversible “tipping points” (e.g. species loss, climate change, groundwater depletion, land and soil degradation).

Furthermore, the strategies set out above provide a strong series of frameworks in individual areas, but they are no guarantee of action and follow-up in themselves.

Whilst gap-to-target analysis should be treated with caution (especially where it is applied to wide policy scopes), Annex 3 summarises some of the analysis undertaken by the European Environment Agency (EEA) in this context. The EEA⁴² assessed the gaps to targets according to projected trends (which are uncertain, of course) for the most critical targets by 2020 in 4 sectors: energy use, GHG emissions, air pollutants and waste. It shows a lack of structural break, which is needed for this economic transition, in the past and forecast trends, thus allowing to calculate a gap to target. The implication is that the baseline will include a failure to meet environmental objectives at EU and global level.

The overall impression is that - despite the frameworks in place - the current levels of effort and the continuing strength of underlying drivers of the problem mean that the problem will evolve in only a partially satisfactory way. The OECD has shown that progress on an incremental, piecemeal, business-as-usual basis in the coming decades will not be enough. Problems will continue in many specific areas: there is a broad discussion of these specific issues in Section 5.1 and in more detail in Annex 6 which discusses baselines for individual areas.

The United Nations Environment Programme (UNEP) has also confirmed these trends at global level, observing a decline in the economy in parallel with environmental degradation. Through its work on the green economy, UNEP has demonstrated evidence of an underinvestment at a global level in a more resource efficient, low-carbon economy and argues that the greening of economies has the potential to become a new engine of growth, a net generator of decent jobs and a vital strategy to eliminate persistent poverty.⁴³

Although the strategic EU initiatives mentioned above go some way towards making the case for better coherence between the objectives sought and those of specific related sectoral policies, by pulling these strategies together as part of a single narrative, a 7th EAP could better demonstrate inter-linkages and the potential for developing more joined-up policy approaches to deliver multiple benefits across the environment policy spectrum, as well as for different policies. Securing the explicit endorsement of stakeholders and of the co-legislators to the overall narrative set out in the 7th EAP will also help to strengthen arguments in favour of smarter implementation of related policy and legislation, and for better coherence between environment and other policies. This is discussed in more detail in section 6.

⁴¹ OECD, (2012) "Environmental Outlook to 2050. The consequences of Inaction".

⁴² Towards a Green Economy in the EU, Gaps and macroprocesses, EEA, April 2012

⁴³ UNEP (2011) "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication."

2.5. Who is affected and how?

The health and well-being of EU citizens are affected by the quality of Europe's environment. Pollution can gravely affect health whereas measures taken to enhance ecological resilience and create green spaces can bring health benefits and contribute positively to human well-being. The World Health Organization (WHO) estimates the environmental burden of disease in the pan-European region at between 15 and 20 % of total deaths.⁴⁴

Urban areas are confronted with a common core set of environmental problems such as poor air quality, high levels of noise, GHG emissions and waste. At the same time, cities often pioneer innovative solutions to these challenges, and urban citizens are at the forefront of behavioural changes. Sustainable urban planning, aimed at tackling climate change and resource efficiency could have numerous co-benefits from improved air quality, supporting biodiversity and quality of life.

Business competitiveness is affected by challenges related to unsustainable resource use and resource scarcity (and attendant price rises), given Europe's dependence on imports of many key resources. This is particularly an issue for SMEs, which cannot usually negotiate the price of their inputs in the way that larger companies can, especially for energy and raw materials. Some sectors, such as agriculture and fisheries, which depend heavily on ecosystem services, are negatively impacted by the degradation of natural capital. Environment-related health problems are problematic for businesses due to absenteeism, decreased productivity and associated costs.

Environment policy and legislation has traditionally been one of the most important drivers of eco-innovation and the development of strong European industries in areas such as water, air pollution, waste management, recycling and renewable energy. It has also stimulated research and development, such as in the search for safe alternatives to hazardous substances. The eco-innovation market alone is expected to grow to a trillion Euro after 2015, bringing major opportunities for growth and jobs.⁴⁵

Conversely, resource efficiency gains can support increases in productivity in the many sectors that depend on environmental inputs, and environmental protection supports innovation, growth and jobs (see Annex 5). This is expected to bring about positive effects on EU business competitiveness.⁴⁶ Europe could realistically reduce the total material requirements of the EU economy by around a sixth, and in so doing boost GDP by up to 3.3% and create between 1.4 and 2.8 million jobs.⁴⁷

2.6. The EU's right to act and justification

Article 192 (3) TFEU states: "General action programmes setting out priority objectives to be attained shall be adopted by the European Parliament and the Council, acting in accordance with the ordinary legislative procedure and after consulting the Economic and Social Committee and the Committee of the Regions".

⁴⁴ Note though that some issues not related to environmental policy are included in this estimate, such as environmental tobacco smoke so this figure needs to be treated with some caution.

⁴⁵ http://ec.europa.eu/research/horizon2020/index_en.cfm.

⁴⁶ IEFE – Università Bocconi, Wuppertal Institute, Adelphi Consult, FFU Berlin and IEEP (2009) "The links between the environment and Competitiveness". Available at: http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/exec_summary_comp.pdf

⁴⁷ "Macroeconomic modelling of sustainable development and the links between the economy and the environment", GWS, 2011

The TFEU also sets out a number of principles relating to precaution, prevention, rectification of damage at source, and polluter pays, which are essential in EU environment policy-making and need to be more consistently applied.

2.7. EU Value Added: Can objectives be better achieved by Community action?

Providing a strategic framework for environment policy in the EU

A general action programme which sets out the key principles, approaches and objectives to be achieved in a given timeframe would serve as an **overarching, strategic agenda for environmental policy making**, helping to maintain focus on agreed priorities and establish a common understanding of the future direction to be taken in EU environmental policy. A majority of stakeholders consulted agreed that this would be a key added value of a 7th EAP. The fact that the Programme requires the approval of Council and the European Parliament confers on it legitimacy and creates a wider sense of ownership for subsequent policy proposals.

Ensuring complementarity and coherence

By providing an overarching framework for recent environment policy developments and demonstrating linkages with other relevant policy areas, a general action programme would help ensure **complementarity and coherence** with the EU 2020 Strategy and other key strategic initiatives, and demonstrate how environment policy as a whole contributes to the achievement of smart, sustainable and inclusive growth agenda.

Ensuring predictability and a level playing field

Given that on average 80% of national environmental legislation in EU Member States originates at the EU level, and EU environmental rules and standards therefore have significant impacts on the competitiveness of businesses operating in the internal market, an EU-wide, coordinated approach would help **ensure a level playing field** and avoid that national rules and standards act as obstacles to the free movement of goods and services in the internal market. Achieving consensus on a long-term vision for the environment in 2050 would also offer a greater degree of predictability for private sector actors.

Coordinating the EU response to global challenges

As the EU is affected by the state of the global environment and that of other countries, especially in its neighbourhood, an EAP could ensure a better coordinated EU approach to **addressing global and regional environmental challenges** by securing agreement on a number of priorities to guide its international efforts.

Stimulating action at all levels of governance

Meeting the thematic policy objectives and addressing the underlying problems set out above requires action at all levels of governance. Some actions require additional policy or legislative measures at EU level, while others are best addressed at national or local level, in line with the principle of subsidiarity. In most cases, however, a coherent EU approach to addressing challenges is desirable, not least due to competitiveness concerns. An EAP could play a role in jointly identifying the key challenges that need to be addressed and thereby stimulate the action needed, regardless of the level at which it needs to be taken.

3. OBJECTIVES

3.1. General objective

The overarching objective of a new EU Environment Action Programme is to provide a strategic framework for environment policy to 2020 which, guided by a 2050 vision, identifies priority objectives to be attained, and secures the commitment of Member States and stakeholders to efforts needed to attain them.

The Programme should be guided by the general objectives of the EU environmental policy as set out in the EU treaty (Article 191):

- preserve, protecting and improving the quality of the environment,
- protect human health,
- promote the prudent and rational utilisation of natural resources,
- promote measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.

3.2. Specific objectives

Three specific objectives have been developed to address the environmental policy problems identified above in Section 2.2.2 and contribute to the achievement of the EU's overarching objective of smart, sustainable and inclusive growth:

- (1) To safeguard and improve the status of natural capital
- (2) To create the conditions for sustainable, low-carbon growth in the Single Market
- (3) To ensure an environment that is conducive to better human health and well-being.

Clearly, tackling the underlying problems preventing the attainment of environmental objectives identified in section 2.3.2 will contribute significantly to the attainment of specific objectives 1 to 3. This logic is demonstrated in Table 4, which provides an assessment of the link between the underlying problems and the different specific objectives. This intervention logic is then reflected in the options developed and analysed later in this impact assessment. For example, actions to reduce the pressure on ecosystems respond, in particular, to the implementation and coherence issues: the different actions relate to the underlying drivers.

Table 4. Indicative table of strength of the underlying problems for environmental policy areas⁴⁸

<i>Environmental Issue (see Section 2.2.2)</i>		<i>Underlying problems (see Section 2.3.2)</i>			
		<i>Implementation</i>	<i>Knowledge</i>	<i>Investment</i>	<i>Coherence</i>
<i>Ecological and climate resilience</i>	<i>Pressure on ecosystems (from air pollution, eutrophication)</i>	++	+	+	+++
	<i>Conservation Status (safeguard the EU's most important habitats and species)</i>	++	+	+++	++
	<i>Biodiversity (terrestrial and marine species and habitats)</i>	+++	++	++	+++
	<i>Soil degradation (soil erosion)</i>	+	+++	++	++
	<i>Water quality (ecological and chemical status)</i>	++	+	+	++
	<i>Water pollution (from point sources and bathing water quality)</i>	+++	+	++	+
<i>Sustainable, Low-carbon growth</i>	<i>Global mean temperature change</i>	++	++	+++	+++
	<i>GHG emissions</i>	++	+	++	+++
	<i>Energy Efficiency</i>	++	++	+	++
	<i>Renewable Energy Sources</i>	+	++	+++	+
	<i>Decoupling (resource use from economic growth)</i>	+	+++	+	+++
	<i>Waste generation</i>	++	++	+	+++
	<i>Waste management (recycling)</i>	+++	++	+	++
	<i>Water stress (water exploitation)</i>	++	+	+	++
<i>Human health and well being</i>	<i>Transboundary air pollution (NOx, NMVOC, SO2, NH3, primary particles)</i>	+	++	+	++
	<i>Air quality in urban areas (particulate matter and ozone)</i>	+++	+	+	++
	<i>Chemicals</i>	++	+++	+	++

⁴⁸ 'Implementation' refers to implementation of the existing acquis, 'knowledge' to the availability of knowledge needed to underpin action and to the strength of new and emerging issues, 'investment' to the adequacy of incentives for investment, 'coherency' to the need for action in other policy areas; +++ is the strongest link, + shows there is still a link but it is relatively weak. Comments elaborating how the different drivers contribute to problems with each environmental issues can be found in Annex 6.

4. OPTIONS ON THE POLICY CONTENT – STEP 1

The policy options are developed in two steps. The first step involves asking what needs to be done in order to meet specific objectives 1, 2 and 3 above. Three options are explored:

- **Option 1** is the **business-as-usual (BAU)** option. This involves continuing with existing legislation as it is currently being implemented, so with the current level of effort even if this would not be sufficient to lead to full implementation.
- **Option 2** is the **smarter implementation** option, which involves additional efforts to tackle three of the underlying problems hindering the chances of reaching the aims and objectives set out in existing policy and legislation. This involves efforts to improve a) implementation but also to make implementation smarter by addressing b) coherence issues and c) investment shortfalls.
- **Option 3** is the **smarter implementation and responding to new knowledge** option, which contains the efforts in option 2, plus additional efforts necessary to tackle the fourth underlying problem of d) new knowledge and emerging risks.

The options are not mutually exclusive but cumulative, as Option 3 includes the efforts set out in Option 2. This is done because it would not make sense, and may not even be possible, to undertake the efforts set out in Option 3 without first addressing the implementation issues targeted by Option 2. Because of this, the options are not real alternatives to meet a specific goal. However, they represent alternatives in the form of different levels or gradations of effort towards reaching the specific objectives. So, first of all we consider smarter implementation and whether that is 'enough' or whether additional efforts beyond that are needed.⁴⁹

A more detailed analysis of alternative options for individual follow-up initiatives will be addressed in corresponding Impact Assessments. Annex 6 sets out more details on each of the efforts to be made under options 2 and 3, elaborating on the text below. It identifies in more detail the alternative options, where relevant, for the identified priority objectives and describes the justification for action, also in relation to problems relating to knowledge, implementation and financing and the links with other existing and planned policy initiatives.

In the second step, policy options for the kind of policy framework that would best serve to deliver on the specific objectives are explored (under section 6 below). The relationship between the options on policy content and those on delivery are independent, in the sense that the choice of Action Programme in the second step does not affect choices on content in the first step.

As a final methodological note, the priority objectives identified and analysed in options 2 and 3 were chosen because of their relationship to the problems set out in Tables 1, 2 and 3. Taken together, they offer the potential to address the full range of environmental issues. In developing their precise wording, consideration was given to the views of stakeholders and experts, and the justification is set out for each in Annex 6, and will be developed as appropriate in subsequent Impact Assessments accompanying any corresponding future policy proposals.

⁴⁹ In developing this impact assessment other possibilities were considered, such as setting new targets for 2020 in all policy areas where they do not currently exist, but these were not considered realistic and so were discarded at an early stage. Construction of other alternatives was also hampered by the lack of quantified modelling across the environment policy spectrum.

4.1. Option 1 – Business as usual

Option 1 involves continuing with the existing legislation as it is currently being implemented. This means that existing policy and legislation is maintained and the existing level of effort continues without further significant efforts to improve its effectiveness or efficiency.

In terms of the methodology, smarter implementation and better coherence will of course be achieved to a certain extent as part of the baseline scenario. It is not possible, however, to measure ex-ante exactly how much can be achieved under the business-as-usual scenario for a programme of such a strategic nature. For example, whereas the EU Biodiversity Strategy to 2020 was adopted in 2011, and in that sense qualifies as ‘business as usual’, most of its actions still need to be developed and implemented. Moreover, success in reaching the 6 targets set out in the Strategy depends partly on what happens in other policy areas (e.g. agriculture and fisheries), and actions need to be supported by adequate investment. This is why option 2 will then go on to set out the additional actions needed in this area.

The story is similar when it comes to the other key environment and climate-related strategies adopted recently. This is why we say that we are not on track, under the baseline scenario, to reach the strategic objectives set out in Section 2.1. Annex 6 includes a discussion of the individual elements of the baseline scenario for the different policy actions.

It includes:

Key policy and legislation aimed at safeguarding or improving the status of natural capital:

- The EU Biodiversity Strategy to 2020, which aims at halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.
- The Habitats and Birds Directives. These Directives aim at providing high levels of protection for species and their habitats including through the establishment of the Natura 2000 network of protected areas.
- The Water Framework Directive (WFD) aims at meeting ‘good status’ for surface waters (ecological and chemical) and for groundwater (quantitative and chemical).
- The Marine Strategy Framework Directive (MSFD) aims at achieving ‘good status’ for EU waters and seas.

Key policy and legislation aimed at creating the conditions for sustainable, low-carbon growth in the Single Market:

- The Climate and Energy Package includes the ‘20-20-20’ targets for 2020: a reduction of EU GHG emissions of at least 20% by 2020 (conditional target to move to 30% reduction), 20% of energy consumption to come from renewable energy by 2020 and 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency.
- The Roadmap to a Resource Efficient Europe has the overall objective to decouple environmental impacts from economic growth. More specifically:

- A wide range of policies exist to promote sustainable consumption and production. On the demand side, these include the Ecolabel⁵⁰ and Energy Labelling⁵¹ schemes; the EU Energy Star programme, and guidance on Green Public Procurement. On the products side, they include the Ecodesign⁵² and Internal Market directives and the Clean Vehicles Directive.⁵³ On the producers' side, it includes the EU Eco-Management and Audit Scheme (EMAS) Regulation⁵⁴ and EU policy to promote Corporate Social Responsibility⁵⁵.
- EU waste legislation aims at the systematic application of the waste management hierarchy: 1) prevention, 2) re-use, 3) recycling (including composting), 4) recovery (including energy recovery), and 5) disposal (landfilling or incineration without energy recovery).

Key policy and legislation aimed at safeguarding EU citizens from environment-related pressure and risks to health and wellbeing:

- The EU has the long-term objective to achieve levels of air quality that pose no significant risk for human health and the environment.⁵⁶
- Horizontal chemicals legislation (REACH and the Classification, Labelling and Packaging Regulations) provide a baseline protection for human health and the environment, and promoting the uptake of evolving non-animal testing methods. Other pieces of legislation aiming to protect human health and the environment include: biocides, cosmetics, pharmaceuticals, pesticides, toys, occupational health and safety, and waste (e.g. WEEE).
- The Drinking Water Directive and the Bathing Water Directive aim at protecting human health from water-related sources of disease.
- The White Paper "Adapting to climate change: Towards a European framework for action" aims at developing a framework to ensure adaptation.⁵⁷

4.2. Option 2 – smarter implementation

Under this option, additional efforts are made to tackle the first three underlying problems set out in 2.3.2, which are currently hindering the chances of reaching the aims and objectives set out in existing policy and legislation by focusing efforts on:

- (1) improving the implementation of the *acquis*.
- (2) ensuring adequate incentives for investment.

⁵⁰ Regulation (EC) No 66/2010.

⁵¹ EU Directive 92/75/EC.

⁵² Directive 2009/125/EC.

⁵³ Directive 2009/33/EC.

⁵⁴ Regulation (EC) No 1221/2009.

⁵⁵ COM(2011) 681 final.

⁵⁶ As an example of policy coherence, air quality is also crucial for safeguarding natural capital given the impacts on the environment itself.

⁵⁷ (COM(2009) 147

- (3) improving policy coherence and integration.

Of these additional efforts, many have already been discussed or are even to some extent planned. However, they are included in this option and not under option 1 (the Business as Usual) because whilst they may have been envisaged, there is not necessarily clarity as to their content or yet a full commitment to their delivery. For example, the Water Blueprint is planned for adoption at around the same time as the new EAP proposal, but it will still be new and will need to be implemented. More specifically, this option is undertaken through the efforts set out below.

To safeguard or improve the status of natural capital:

- In order to fully implement the Biodiversity Strategy:
 - take further steps to ensure that the necessary investments are made, biodiversity issues are further mainstreamed in other policy areas and existing commitments are implemented.
- In order to fully implement the WFD:
 - take further steps to reduce impacts on freshwater, including nitrogen and phosphorus.
- In order to fully implement the MSFD and WFD:
 - take further steps to eliminate emissions from urban and industrial wastewater, fertilizer use and air emissions responsible for eutrophication.

To create the conditions for sustainable, low-carbon growth in the Single Market:

- In order to fully implement the EU Climate and Energy Package by 2020:
 - ensure that Member States use at least 50% of auctioning revenues (100% for the redistributed amount and aviation) for climate and energy related purposes.
 - increase the share of EU spending for climate related purposes to at least 20% of the whole budget under the 2014-2020 Multiannual Financial Framework.
- In order to fully implement EU waste legislation and use waste as a resource, in particular by ensuring application of the waste hierarchy and the effective use of economic instruments with the aim to:
 - increase recycling, including of materials having significant environmental impacts over their life cycle and of critical raw materials
 - step up action to eradicate illegal shipments of waste
- Take further action to address water stress

To safeguard EU citizens from environment-related pressure and risks to health and wellbeing:

- Step up implementation efforts for the Drinking Water Directive (in particular for small drinking water suppliers) and the Bathing Water Directive with the aim to achieve compliance levels above 95% by 2020.

4.3. Option 3 – smarter implementation and responding to new knowledge

As well as the efforts set out in option 2 on smarter implementation, this option includes efforts to tackle the fourth underlying problem:

- (4) improving the scientific and knowledge base for environment policy and responding to emerging issues.

This option corresponds to a higher level of commitment and implies the search for new instruments and/or approaches to tackle the identified challenges.

More specifically, these efforts are:

To safeguard or improve the status of natural capital:

- To extend existing strategic air quality targets and actions beyond 2020 and strengthen efforts to reach full compliance with EU air quality legislation.
- To establish a quantitative reduction target for marine litter by 2020.
- To strengthen the integration of land use aspects into decision making at all relevant levels and set targets on soil and land as a resource.
- To develop a more strategic approach to protecting and enhancing forests and the services they provide, including through improving resilience to climate change and the threat of fires; this may include the setting of targets or political objectives in the upcoming Forest Strategy.

To create the conditions for sustainable, low-carbon growth in the Single Market:

- To reduce the overall environmental impact of production and consumption across the life cycle of specific products or product categories, focusing in particular on food, housing and mobility sectors, by:
 - setting targets for sustainable production and consumption.
 - creating a comprehensive legal framework for sustainable consumption and production.
- To virtually eliminate land filling and limiting energy recovery to non-recyclable materials.
- To address internal market barriers facing environmentally sound recycling activities in the EU.

To safeguard EU citizens from environment-related pressure and risks to health and wellbeing:

- To update existing EU policy on air quality and align it with the latest scientific knowledge, and identify cost-effective measures to combat air pollution at source.
- To update EU noise policy and align it with the latest scientific knowledge, and identify cost-effective measures to reduce noise at source.
- To develop a strategy for a non-toxic environment which:
 - addresses combination effects of chemicals and safety concerns related to endocrine disruptors;
 - develops a comprehensive approach for minimizing exposure to hazardous substances, including chemicals in products.
 - Addresses transparency and safety concerns related to nanomaterials, as part of a coherent approach across different legislation.
- To agree and implement an EU climate adaptation strategy, including integrating climate change adaptation considerations into key EU policy initiatives and sectors.

5. ANALYSIS OF IMPACTS OF POLICY OPTIONS FOR THE EFFORTS NEEDED TO ACHIEVE THE SPECIFIC OBJECTIVES

5.1. Analysis of Option 1 – Business as Usual

To safeguard or improve the status of natural capital

The EU Biodiversity Strategy responds to the ongoing decline in Europe's biodiversity and the degradation of ecosystem services, and the growing recognition that this has important economic and social costs.⁵⁸ The Strategy contains ambitious targets and actions that tackle the key pressures on biodiversity and drivers of loss and aim to ensure that the value of natural capital is reflected in decision-making. This includes a specific target and corresponding measures to ensure the full implementation of the Birds and Habitats Directives. The Strategy provides a framework and a pathway to meet the political commitment made in 2011 to halt the loss of biodiversity and the further degradation of ecosystem services, and restore them in so far as possible. These commitments need to be followed up on for the objectives of the Strategy to be fully met. In the EU, about 25% of animal species are at risk of extinction and 88% of fish stocks are over-exploited or significantly depleted. Some targets and measures depend on developments beyond environment policy, such as the reform of the EU's Common Agricultural Policy (CAP) and Common Fisheries Policy (CFP). The pathway to the attainment of the Strategy's objectives is therefore by no means assured, and depends on adequate integration of natural capital-related objectives and targets into relevant sectoral policies, and further efforts by Member States and stakeholders.

The WFD has already been relatively successful in reducing the discharge of pollutants into Europe's waters, leading to water quality improvements. However, the first WFD River Basin

⁵⁸ Study on The Economics of Ecosystems and Biodiversity (TEEB), <http://www.teebweb.org>.

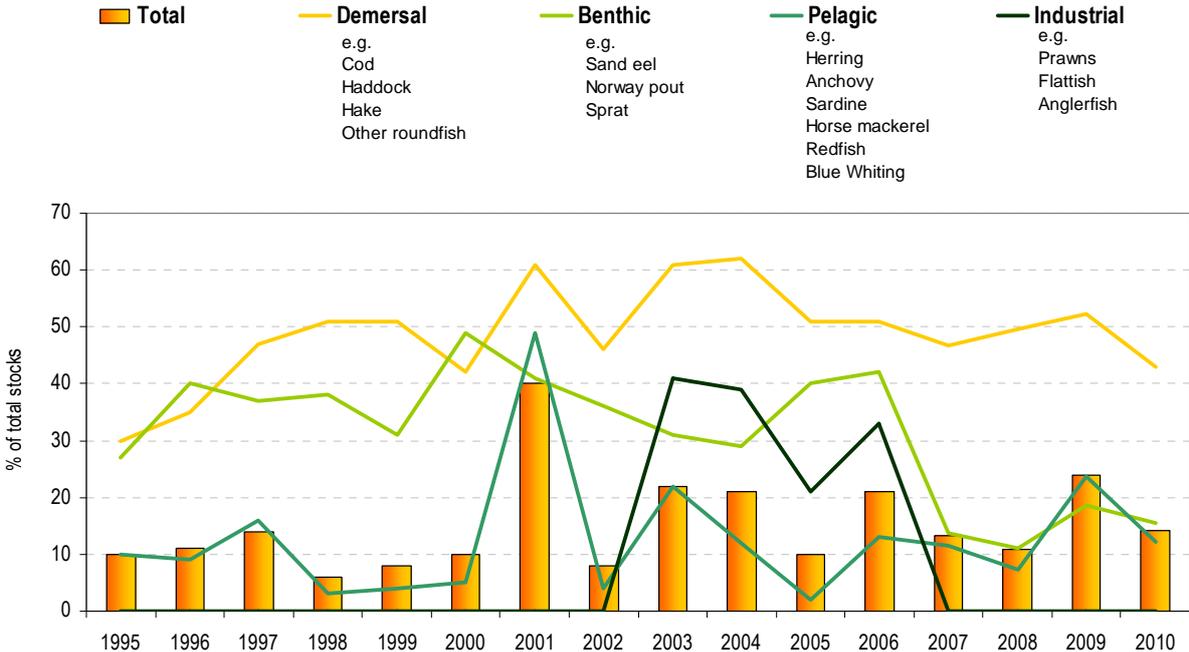
Management Plans indicate that more than half of the surface water bodies in Europe are in less than good ecological status. The EU is not on track to meet the WFD objective.

Europe's marine waters are subject to multiple pressures from various different sources. While the EU is on track under the MSFD to address many of these, three are of particular cause for concern and on current trends are likely to prevent the achievement of Good Environmental Status: marine litter, the status of fish stocks, and eutrophication.

Ten million tons of litter a year, mostly plastic, end up in the oceans and seas worldwide, turning them into the world's biggest plastic dump. The quantity of litter, especially plastic, is increasing in all EU marine waters leading to significant economic costs e.g. loss of income in tourism, cost for regular cleaning of beaches for the purposes of tourism, the cost of damage to ships and installations, the cost for the fishing industry due to “ghost fishing” (entanglement of marine life in discharged gear) and the cost of coastal clean-ups.⁵⁹

In 2010, 14% of total fish catches were outside safe biological limits, broadly indicating no improvement since 1995 (see Figure 1 below). Many European fish stocks are delivering much less than they could if they were managed at sustainable levels. The worst affected fish are cod, haddock, hake and other roundfish. Overfishing leads in turn to uncertain catches which itself leads to more fishing, creating a harmful cycle of depletion which affects both the viability and the sustainability of fishing in the EU.

Figure 1: Fish catches from stock outside the safe biological limits⁶⁰



To create the conditions for sustainable, low-carbon growth in the Single Market

Europe has in place a number of policies to encourage the transition to a low-carbon and resource efficient economy that promotes sustainable growth and job creation. However, modelling suggests that with existing efforts Member States will not meet the targets in the

⁵⁹ JRC, Marine Litter Technical Recommendations for the Implementation of the MSFD Requirements, 2011.

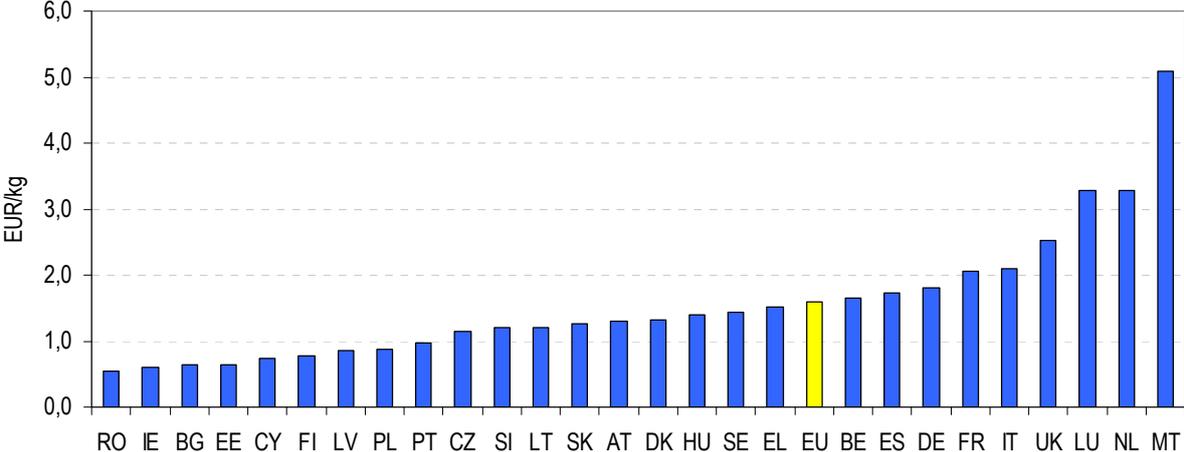
⁶⁰ Source: ICES, 2012. The data covers the North East Atlantic (North Sea and Baltic Sea, Bay of Biscay and the Iberian Peninsula), and excludes the Mediterranean Sea.

Climate and Energy Package. For example, in the sectors not covered by the EU Emissions Trading Scheme (ETS), GHG emissions are likely to increase once the economy picks up, and it is possible that only 11 Member States will reach their 2020 targets with existing measures.⁶¹

Enabling greener products within the Single Market and promoting innovation and investments in resource efficient and low-carbon technologies can make an important contribution to the EU's recovery from the financial and economic crisis. Currently, however, these objectives are not embedded firmly enough in economic and fiscal policy at Member State and EU level. Despite current eco-innovation support and the stimulus from rising resource prices, a combination of economic risk, information asymmetries and unaccounted environmental costs are preventing more progress from being made.⁶²

In terms of resource efficiency, overall, consumption is increasing over time and generally faster than improvements in resource efficiency. There are also significant differences between Member States (see Figure 2), and the EU as a whole is roughly half as productive in its use of resources as Japan.

Figure 2: Resource productivity (GDP/DMC), 2009, Source: Eurostat, 2012



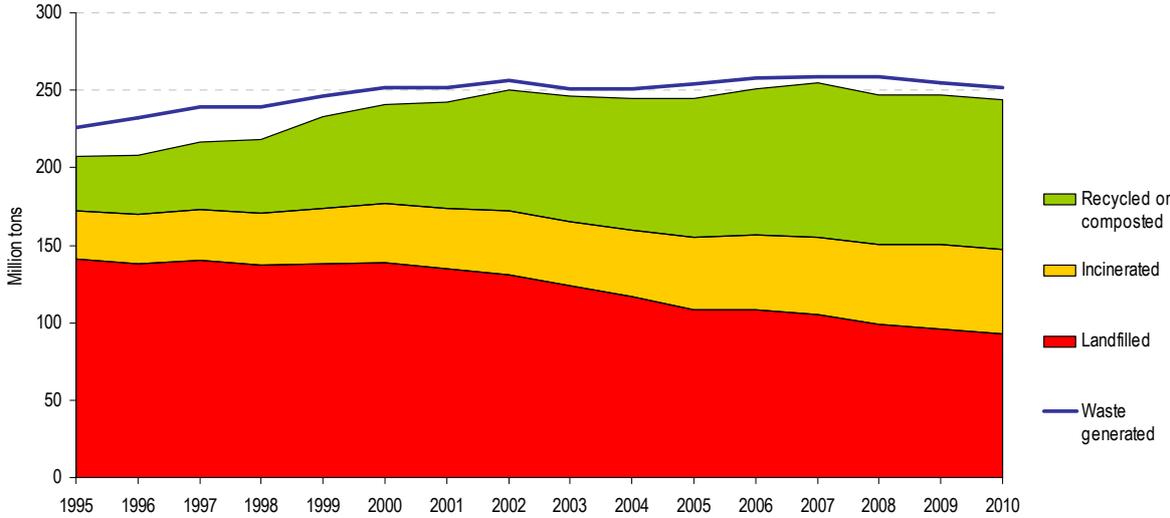
Firms are taking action to improve their resource efficiency, encouraged by markets and the policy framework. However, opportunities are still systematically being missed, especially in non-core business areas, for example where energy or material efficiency is not central to a firm's activity. As an indication of how much more could be done to realise the potential for resource efficiency, in the UK alone business could save around £23bn per year from resource efficiency measures that are either no or low cost.⁶³ The sectors with the greatest potential identified were chemicals / minerals (c. £4 billion), metal manufacturing (c. £4 billion), power and utilities (c. £3 billion), construction (c. £3 billion) and road freight (c. £2 billion).

Municipal waste is the only waste related indicator for which a long time series exists for the EU. In 2010 the EU generated 252 million tons of municipal waste, which represents an increase of 11% compared to 1995 (see Figure 3). The EU is however moving gradually

⁶¹ "Greenhouse gas emission trends and projections in Europe 2011", European Environment Agency
⁶² Eco-innovation Observatory, "Closing the innovation gap – An economic opportunity for business", 2012; Flash Eurobarometer 315, March 2011.
⁶³ Oakdene Hollins "Further Benefits of Business Resource Efficiency", 2011

towards a more sustainable waste management, as recycling (including composting) increased from 17% in 1995 to 40% in 2010 while landfilling decreased from 68% to 38%. There are still significant challenges, however: each year in the EU we throw away 2.7 billion tonnes of waste, 98 million tonnes of which is hazardous. On average only 40% of our solid waste is re-used or recycled, the rest going to landfill or incineration. There is significant variance across the EU. In some Member States more than 80% of waste is recycled, indicating the possibilities of using waste as one of the EU’s key resources. At the same time, current municipal waste practices lead to significant GHG emissions and could be reduced considerably by a shift to recycling and incineration with energy recovery.⁶⁴

Figure 3: Municipal waste generation and treatment in EU Source: Eurostat, 2012



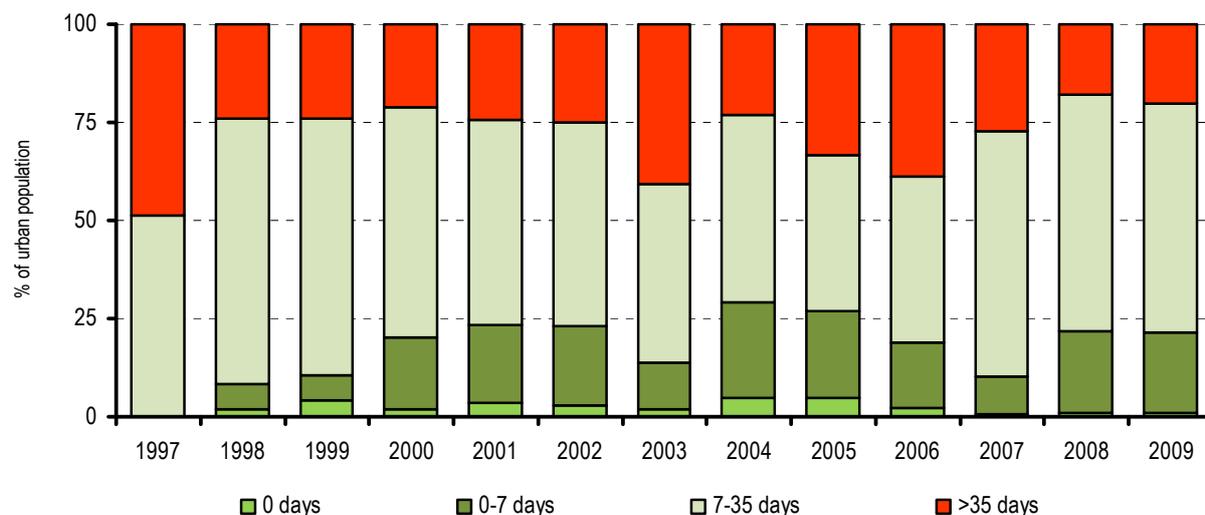
In terms of water stress, by 2007 at least 11% of Europe's population and 17% of its territory had been affected by water scarcity and the cost associated with droughts in Europe over the past thirty years amounts to some €100 billion. The Commission expects further deterioration of the water situation in Europe if temperatures keep rising as a result of climate change.

To safeguard EU citizens from environment-related pressure and risks to health and wellbeing

Overall, there has been a substantial reduction in emissions of the key pollutants over the last couple of decades. However, about 80-90% of the urban population in the EU is still exposed to concentrations of particulate matter and ozone in excess of the WHO guidelines, and trends are not improving (see Figure 4). These exposures translate into health impacts of around 500,000 premature deaths a year in Europe. In terms of ecosystems, there has been a reduction of 80% in the ecosystem area where critical loads for acidification are exceeded, although large parts of northern Europe are still affected. For eutrophication, most of continental Europe still exceeds critical loads and impacts have reduced only slightly over the last decade.

⁶⁴ EEA, "Better management of municipal waste will reduce greenhouse gas emissions", Briefing 2008/01.

Figure 4: EU population with PM concentrations exceeding daily limit values, EEA, 2011



Modelling indicates that targets for emission reductions may be met, with the exception of the ammonia target. However, this is based on optimistic assumptions. The real (rather than expected) emission reductions achieved in the transport sector are a particular issue of concern.

There are indications that the reform of the EU's chemicals policy framework has led to initial reductions in the impacts of chemicals on the environment and human health. However, implementing the current chemicals legislation would not be enough for the EU to attain the goal agreed at the World Summit on Sustainable Development in 2002 to have ensured "the minimisation of significant adverse effects" of chemicals on human health and the environment by 2020, as challenges such as combination effects of chemicals or potential risks from nanomaterials are only partially addressed.

Overall, compliance rates for drinking water and bathing water are good. However, some areas of implementation have not yet received sufficient attention. 68,000 small water supplies provide water to more than 48 million people, but with a level of non-compliance estimated at 36%, affecting 17.5 million consumers in the EU.⁶⁵ There is anecdotal but consistent evidence that this results in a comparatively higher disease burden associated with small scale systems. Similarly, almost 8% of bathing waters do not meet minimum water quality standards.

5.2. Analysis of Option 2 – smarter implementation option

To safeguard or improve the status of natural capital

Further efforts will need to be made through the Common Implementation Framework established under the Strategy, involving the Commission, Member States and stakeholders, to ensure that the Biodiversity Strategy is efficiently implemented through a co-ordinated and streamlined approach. The smart implementation of the strategy will involve following up on commitments to progress on green infrastructure, combat Invasive Alien Species and ensure

⁶⁵ COWI, ECORYS and Cambridge Econometrics (September 2011) "The costs of not implementing the environmental acquis". Available at: http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/report_sept2011.pdf

there is no net loss of ecosystems and their services. This offers opportunities to ensure biodiversity's contribution to the economy is strengthened, whilst at the same time finding the most efficient ways to halt biodiversity loss. Subsequent actions and measures developed under the Strategy will be designed in the most cost-effective way, including on the basis of Impact Assessments where appropriate.

In terms of the WFD, the Water Blueprint (whose actions and measures will be developed on the basis of an Impact Assessment) will aim at fostering integration of water into sectoral policies by ensuring that impacts of socio-economic activities and regulations on the state of water resources are fully taken into account. By increasing the use of economic instruments for a better allocation of resources and internalisation of external costs, the Blueprint will improve the efficiency of water policy in the EU. Similarly, the effectiveness and efficiency of policy should be boosted by achieving a more efficient water governance and effective working relationships between institutions; by fully integrating water quality, quantity and hydromorphology aspects in management actions; and also by improving knowledge and tools available to water managers, enabling effective decision making and reducing administrative burden. However, scenario analyses show that even with strong improvements in water efficiency in all sectors, water stress is expected to remain a problem in numerous EU catchments due to climate change impacts and rising demand.⁶⁶

Ensuring the implementation of legislation affecting water bodies, such as the Urban Waste Water Treatment Directive and the Nitrates Directive, will bring benefits in terms of tackling emissions at source or where it is most efficient to do so, as will better management of air emissions responsible for eutrophication.

Implementing the commitment to ensure sustainable management of fish stocks (some of which, in the absence of further action, are at risk of collapse) will allow the development of larger fish stocks, leading to more fishing possibilities at lower cost and with a higher unit value. There would however be negative economic impacts in the short run, linked to lower initial catches, and reduction of the size of the fleet. In the long run, however, the implementation of Maximum Sustainable Yield (MSY)-based management practices would improve revenues for fishermen and reduce the need for government subsidies.

To create the conditions for sustainable, low-carbon growth in the Single Market

The full implementation of the Climate and Energy Package does not imply setting new targets and actions, but rather strengthening the Member States' efforts to deliver on the 20-20-20 targets by 2020 and to implement the Emissions Trading Directive⁶⁷ and the Effort Sharing Decision (ESD).⁶⁸ Current investment levels are not sufficient to ensure a smooth transition to a low carbon economy or that the most cost-efficient measures are taken. Increased investments both from the private and public sectors, and from the national and European levels, will play an important role in delivering both.

Additional efforts to integrate climate objectives into other EU policies will bring about further reductions in GHG emissions, thereby contributing towards achieving the EU's climate change objectives. Where relevant, actions and measures will be designed on the basis of Impact Assessments.

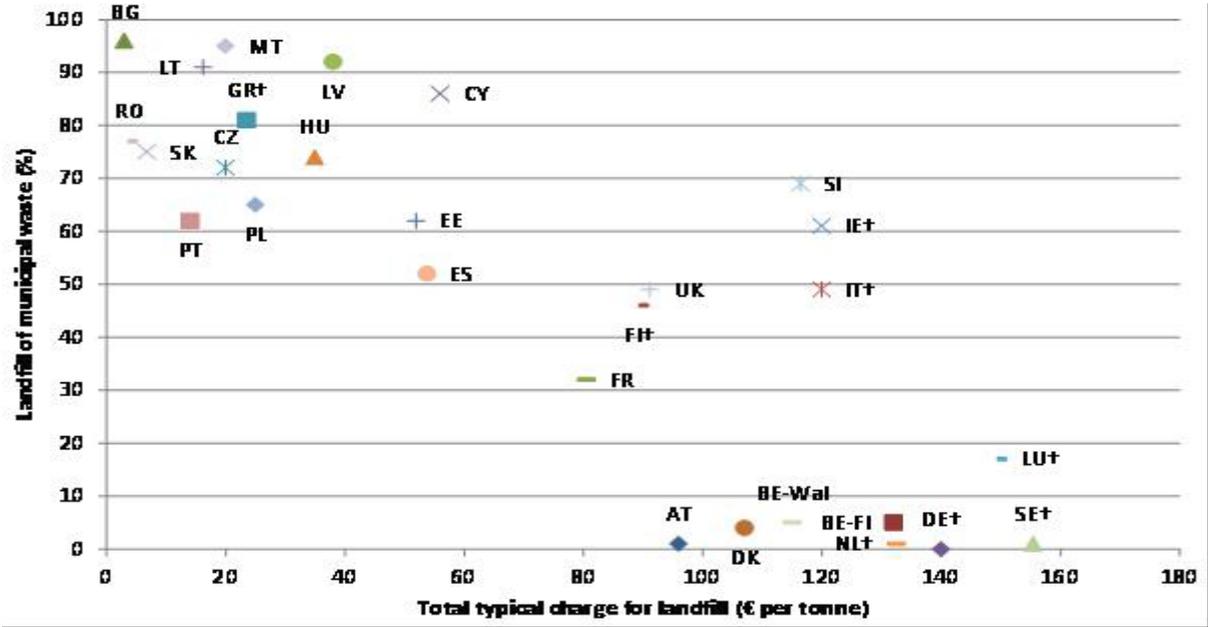
⁶⁶ ClimWatAdapt study "Climate Adaptation – modelling water scenarios and sectoral impacts", see <http://www.climwatadapt.eu/>

⁶⁷ Directive 2009/29/EC.

⁶⁸ Decision 406/2009/EC.

In terms of waste, it is estimated⁶⁹ that full implementation of EU waste legislation would save €2 billion a year, increase the annual turnover of the EU waste management and recycling sector by €42 billion and create over 400,000 jobs by 2020. This can be done efficiently and to the benefit of the economy through the further use of economic instruments. For instance, putting in place proper charges leads to lower rates of landfilling and higher rates of recycling both overall and within individual EU Member States (see Figure 5). The planned review of EU waste legislation may lead to new actions and measures being proposed, which are likely to require an Impact Assessment.

Figure 5: Relationship between landfill charges and landfill rates



Furthermore, among the barriers to an efficient waste policy are the barriers and distortions to the movement of recyclable materials in the internal market which inter alia prevent economies of scale and lead to inefficient decisions. For instance, the Services Directive performance check noted problems with a lack of mutual recognition of registered waste transporters and of accreditation of energy experts certifying the energy efficiency of buildings. Enhancing the functioning of the internal market in waste recycling and recovery is not a problem of existing EU legislation which already guarantees an internal market of waste for recovery, but of national obstacles and poor implementation in certain Member States. Further enabling eco-innovation and investments in resource efficiency will provide new solutions. This will be beneficial for businesses, and in particular SMEs, which currently face barriers that prevent them from developing and adopting potentially efficient technologies.

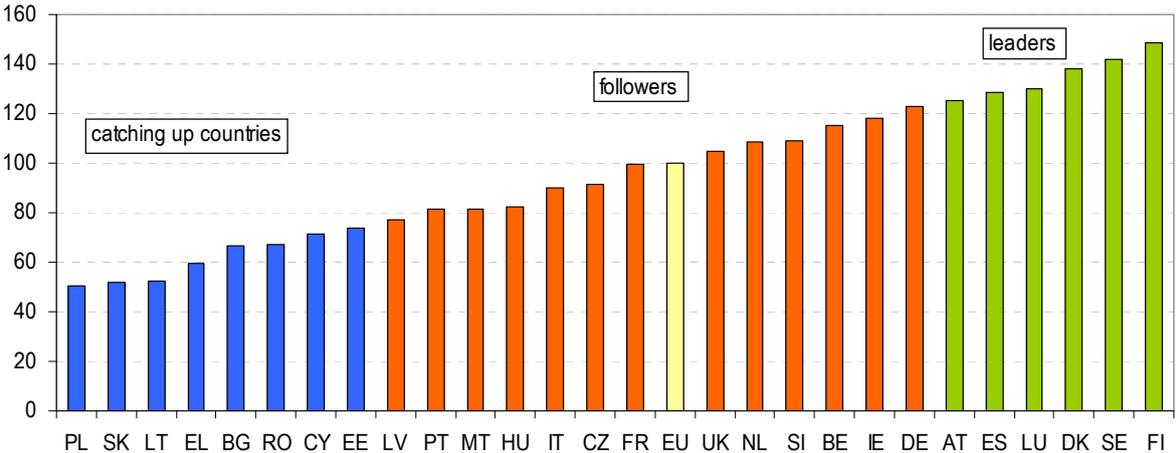
93% of EU SMEs are taking action to be more resource efficient and 26% of them are already offering green products and services to prevent or limit environmental degradation as well as products and services with environmental features.⁷⁰ Nonetheless, there is untapped potential in terms of boosting productivity through resource efficiency as well as making full use of business opportunities in emerging markets with environmental problems (see Figure 6).

⁶⁹ "Implementing EU legislation for Green Growth", Final Report, 29 November 2011.
⁷⁰ Flash Eurobarometer 342, March 2012.

Implementation of the Environmental Technology Verification (ETV) programme can bring further benefits in terms of bringing new products to market.

The EU Waste Shipment Regulation (WSR) and the Basel Convention provide the overall basis for action to combat illegal shipments of waste. However, current efforts have proven insufficient to tackle this problem. In 2009 alone, Member States reported around 400 cases of illegal shipments, but the total number is thought to be considerably higher than those officially reported. Actions and measures in this area will probably be designed on the basis of an Impact Assessment.

Figure 6: Eco-innovation index (EU=100), Eco-Innovation Observatory, 2011⁷¹



To safeguard EU citizens from environment-related pressure and risks to health and wellbeing

Improving the implementation of and compliance with the Drinking Water Directive will reduce the risks linked to small water supplies.⁷² This can be supported through means of guidance and increased coherence with related policies (e.g. WFD, REACH).

With regard to the Bathing Water Directive, the overall trend is positive as a result of further reduction of the sources of pollution mainly from urban wastewater and agriculture. However, investment is needed to improve environmental performance and better deliver the objectives of the Directive.

⁷¹ The Eco-Innovation Scoreboard compares eco-innovation performance across the EU-27 Member States. It is an index based on indicators in five areas: eco-innovation inputs, eco-innovation activities, eco-innovation outputs, environmental outcomes and socio-economic outcomes.

⁷² Small water supplies: < 1000 m³ or serving < 5000 people.

EXAMPLE OVERVIEW OF ANALYSIS UNDERPINNING THE DIFFERENT PRIORITIES

Annex 6 sets out a discussion for each of the policy actions*, elaborating on the text in the main report. For example, for air quality, it sets out (in more detail than in this box):

The current situation - about 80-90% of the urban population in the EU is exposed to concentrations of particulate matter in excess of the WHO guidelines, and similarly for ozone. These exposures translate into health impacts of around 500 000 premature deaths in Europe mainly due to high PM concentrations etc.

Future outlook - there exists a well-developed integrated modelling suite centered around IIASA's 'GAINS' model. This provides forecasts of how air quality will change under certain assumptions and can be linked to forecasts of changes in health and ecosystem and biodiversity impacts.

Key challenges – what are the main challenges related to the issues of: the knowledge base (eg what is the reduction potential from various sources and associated costs?); implementation (eg slow implementation on the part of Member States and how it is being addressed); financing (the substantial challenges on the monitoring and assessment side).

Justification for the action (including new policy initiatives and interlinkages) – related to the challenge of the implementation of the existing legal framework and the fact that even full implementation of the existing framework would result in large health and environmental problems driven by air pollution.

There are substantial interlinkages with policies in other non-environmental areas such as transport, small-scale combustion and agriculture. To be credible, tightening of ambient air quality objectives or emission ceilings will in most cases need to be accompanied by appropriate source controls at EU level to give MSs confidence that their own efforts to achieve targets at national level will not be countered by the lack of appropriate EU action. The possible synergies are discussed.

Policy proposals are expected in this context during the remainder of this Commission and some possible accompanying non-legislative initiatives.

** All relevant options for improving air quality and its management in the EU will be considered in the **Impact Assessment** accompanying the review. As such, the analysis in this Impact Assessment accompanying the 7th EAP is an initial assessment to facilitate the definition of priorities and will be deepened considerably.*

5.3. Analysis of Option 3 - smarter implementation and responding to new knowledge

To safeguard or improve the status of natural capital

Through a comprehensive review of EU air legislation, it will be possible to identify the optimal combination of measures needed to address problems that currently hinder progress towards reaching air quality goals and targets and those related to implementation of legislation in this field. In particular, it can help as part of the Impact Assessment process to identify cost-effective efforts to reduce emissions from specific sources regulated at EU level.

There are serious economic impacts of marine litter, and these costs are increasing in line with the problem: Around 80% of marine litter comes from land based activities, and is often the result of shortcomings in the implementation of waste legislation. Member States do take measures, especially targeting plastic bags. However, they cannot prohibit the use of a packaging product or material if it is in line with the essential requirements of the Waste Directive and therefore, cannot ban the use of plastic bags that comply with the provisions of the Directive. European legislation needs to enable Member States to take the most effective and efficient action possible, and it may be that action is best steered through agreed targets that provide clarity on what needs to be achieved (any targets will be set on the basis of an Impact Assessment).

The EU is one of the most fragmented regions in the world, with 30% of the EU's territory considered to be 'moderately high' to 'very highly' fragmented, mainly as a result of urban sprawl and infrastructure development related to transport and energy. Land use change affects the connectivity and health of ecosystems and their ability to provide services and is one of the main drivers of biodiversity loss in Europe and, indeed, worldwide. Although the EU's Territorial Agenda 2020 recognises that developments affecting land use can cause severe environmental problems and should ideally take place in a territorially coordinated manner, there is still no agreement on how this should be done.

With specific regard to soil, the Soil Thematic Strategy set the overall objective of protecting and using soils sustainably by preventing further soil degradation and preserving soil functions, and by restoring degraded soils. However, action to date has not enabled this objective to be met. Long-term targets may help to provide the impetus needed to ensure soil is used sustainably, and could be considered on the basis of an Impact Assessment.

Forest fires continue to alter significantly forest ecosystems in many parts of Europe. Fires not only damage ecosystems and the services they provide -- sometimes irreversibly -- but also cause human casualties and destruction of property. At present, there is no strategic approach in the EU to protecting and enhancing forests and the services they provide, which would allow fires to be tackled more efficiently and effectively. Depending on their nature, actions and measures may need to be designed on the basis of an Impact Assessment.

To create the conditions for sustainable, low-carbon growth in the Single Market

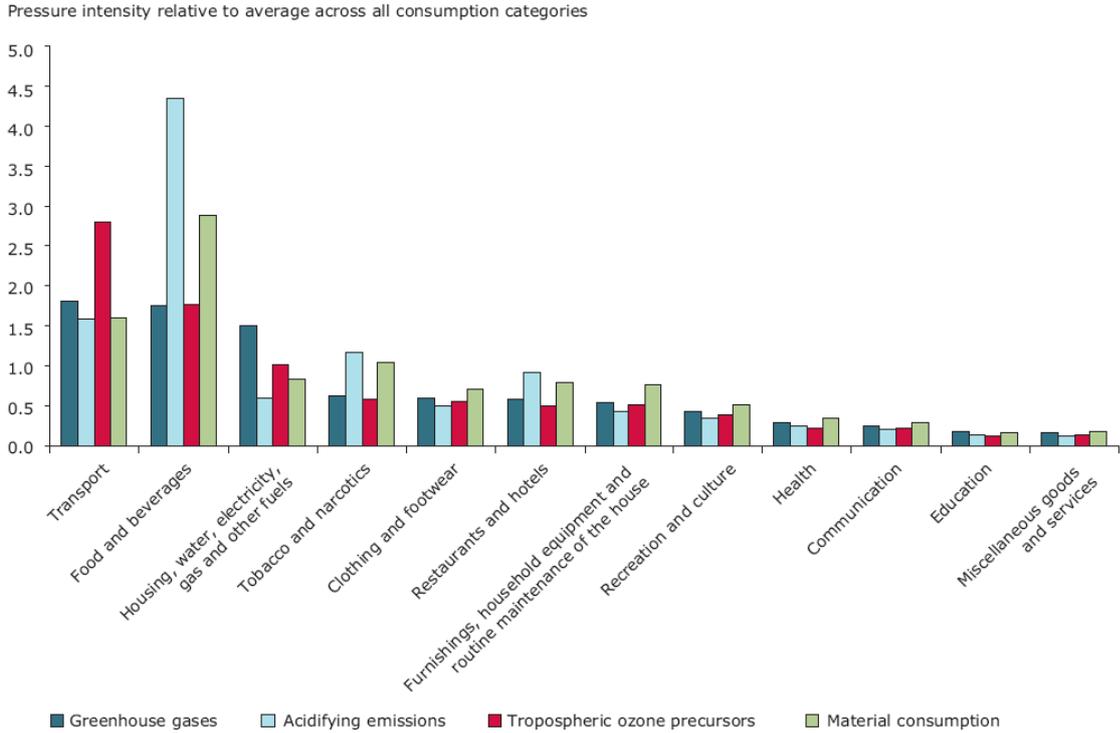
In terms of ensuring the sustainability of production and consumption, policy has focused on improving the environmental performance of products (more than 80% of all product-related environmental impacts are determined by product design), promoting cleaner production and enabling consumers to make better choices in consuming, owning, and using products and services. Action has involved a mix of policies, from standardisation to market based instruments.

Whilst this policy has had some successes, there needs to be a step change if markets are truly to deliver sustainable production and consumption. This will need to include a wide range of actions at both European and national levels that stimulates and encourages behaviour by businesses and consumers. In part, these actions will be about enablement: the market failures are significant because for example information is lacking on the environmental performance of products.

In terms of the delivery of the improvements, the most efficient way forward will be the application of new methods, consolidation of the legislative instruments and effective alignment and coordination of market based instruments and incentives at EU and MS level. This could be achieved in particular through a process of setting targets that provide clarity over the direction of action needed, and this will be subject to further consideration including through an Impact Assessment.

In addition, sector specific measures will be taken forward targeting the sectors of Food and Buildings. An effective and efficient policy will need to target these sectors not least because they are responsible for such a significant percentage of European emissions (see Figure 7). Again, such actions would need to be subject to further consideration including possibly through an Impact Assessment.

Figure 7. Relative environmental pressures intensities of consumption categories, 2005



Note: * Austria, Czech Republic, Denmark, Germany, France, Italy, the Netherlands, Portugal and Sweden.
Source: EEA and ETC/SCP, 2010.

In terms of water stress, this is an issue that will become increasingly severe as climate change impacts combine with rising demand, especially in Mediterranean countries. Additional action will be needed to ensure that this resource is allocated and used efficiently, without cross-subsidisation and with users facing the true resource costs.⁷³

⁷³ See the Impact Assessment supporting the Water Blueprint.

To safeguard EU citizens from environment-related pressure and risks to health and wellbeing

There is a consensus among stakeholders that one of the added values of a new EAP would be to address emerging threats to human health and the environment, which is an issue that has not been covered by the recently adopted environment-related strategies or roadmaps. Responses to the online questionnaire reveal that many stakeholders attribute high priority to filling policy gaps related to pollutants through new legislation. The Council and the European Parliament also consider that the new EAP should set specific goals to ensure that by 2020 the health of European citizens is no longer undermined by pollution and hazardous substances.

A revision of the National Emission Ceilings Directive, based in part on an Impact Assessment, will be required to reflect the recently agreed revision of the Gothenburg Protocol, including ceilings for 2020 and possibly beyond. This will also provide certainty to those involved in implementation.

According to the World Health Organisation, large-scale epidemiological studies provide sufficient evidence of links between exposure to environmental noise and adverse effects on human health. Aligning EU noise policy to latest scientific knowledge would help to address and attenuate these effects, and may require an Impact Assessment.

Continuing to ensure that REACH is working effectively, a number of other areas need to be considered for there to be a strategy that considers toxicity from all sources and promotes cost-efficient measures to minimise impacts on human health. In particular, such a strategy needs to take into account the combination effects of chemicals and address risks related to nanomaterials and endocrine disruptors, and depending on its structure may require an Impact Assessment. The new knowledge base on the toxicity of chemicals would facilitate the development of non-animal test methods, better target areas of concern and stimulate the development of less hazardous chemicals. In terms of the stakeholder consultation, this action aroused considerable interest, and diverging views.

Emerging technologies such as shale gas offer opportunities, but these opportunities also bring risks. Better understanding and managing these risks is a sensible way forward, that will allow the economic benefits to be enjoyed, but not at the expense of unnecessary environmental impacts. This will be subject to further consideration including possibly on the basis of an Impact Assessment.

The main physical and climatologic conditions associated with climate change are temperature rise, precipitation changes, extreme weather events, sea level rise and temperature variability. Such drivers will result in climate change related hazards such as flooding, droughts, heat waves or glacial retreat. Most recent estimates suggest that the yearly mean damage costs of climate change in the EU would be around €20bn in the 2020s, between €90bn and €150bn in the 2050s, and between €600bn and €2500bn in the 2080s, depending on the climate scenario. All models show that adaptation action can significantly reduce the damage costs.

An EU Adaptation Strategy will provide a more comprehensive approach and a more resilient Europe at national, regional and local level, in particular by facilitating the exchange of good practices and co-ordination. It will respond to the issues that a number of EU policies still need to take into consideration the adverse effects of climate change. In addition, Member States, regions, cities are at different stages in responding. Finally, the private sector,

including insurance and finance markets, is not yet fully delivering the right products and services to help private agents.

6. OPTIONS FOR THE DELIVERY MECHANISM - STEP 2:

Whatever the chosen option is in terms of policy content, the question arises how this can best be delivered. This section considers the kind of policy framework, if any, that would be most effective in enabling the specific objectives to be met.

6.1. Options for an environment policy framework

6.1.1. Option A) Discontinuation of the EAP policy approach

Under this option, no new EAP would be proposed. It would consider that the recently adopted strategies and roadmaps provide a sufficient policy framework for the medium-term and that objectives and priority actions have already been identified for most areas of environment policy up to 2020.

6.1.2. Option B) Business as usual

Under this option, the new EAP would be structured in the same way as the 6th EAP. It would identify thematic priorities and include a detailed list of actions to be carried out in the period up to 2020. As with the 6th EAP, it would be proposed in the form of a Decision to be adopted through the ordinary legislative procedure.

6.1.3. Option C) An EAP limited to a set of priority objectives

Under this option, the Commission would propose a 7th EAP in the form of a Decision to be adopted through the ordinary legislative procedure, which would set out a common narrative for future EU environment policy and a limited number of priority objectives to be attained by the EU and identify key actions needed to attain those objectives.

6.2. Analysis of options for an environment policy framework

6.2.1. Option A) Discontinuation of the EAP policy approach

This is the approach the Commission followed for the mid-term review of the 6th EAP in 2007, when a Communication⁷⁴ was adopted without a proposal for a revision of the 6th EAP in co-decision. The mid-term review concluded indeed that climate change, biodiversity, health and resource use remained the most pressing environmental challenges and the 6th EAP was still the correct framework for future action at Community level. It pointed to the need to strengthen efforts in implementing its measures, with a particular attention to: enhanced international co-operation, better regulation in environmental policy-making, promotion of policy integration, and improved implementation and enforcement.

However, a majority of Member States and the European Parliament have since highlighted the important political dimension of EAPs – notably the fact that they are now adopted under the ordinary legislative procedure. These Member States (and various other stakeholders, notably NGOs) consider that abandoning the EAP approach would send a misleading signal

⁷⁴ COM(2007) 225 final.

to the public that environmental policy is no longer at the heart of the EU project and no longer contributes to innovation, resource efficiency, sustainability and a better quality of life.

In particular, the final evaluation of the 6th EAP showed that it was perceived by stakeholders as a useful document in the broader European policy dialogue, helping to underpin and legitimise the environmental agenda at a time when concerns about the economic costs and benefits of new EU environmental policy proposals were raised. More specifically, the failure to put in place a well-designed Programme means that a number of opportunities would be missed:

- By not securing the common agreement of the co-legislators on the key challenges facing environment policy there may be a low level of commitment to existing objectives. This may be especially the case for recently adopted EU strategies (e.g. Biodiversity, Resource Efficiency, Low-carbon Economy). By pulling them together under the 7th EAP, which is subject to the ordinary legislative procedure, it would confer added legitimacy on these strategies and secure political commitment to their implementation.
- Given that EU environment policy encompasses a large amount of legislation, Environment Action Programmes serve as important reference documents for other institutions and actors, thus supporting environment integration and policy coherence. For instance, the EIB still uses the 6th EAP priorities as criteria to finance initiatives in the environment field. The same priorities have also guided research funding for environment under FP7. Clear goals will provide policy makers and other stakeholders, including business, with a clear sense of direction and a predictable and coherent framework for future action.

Given the "megatrends" set out in Section 2, this option would also not adequately address the systemic nature of the major environmental problems or allow for a coherent and holistic approach to the underlying problems. This aspect has been highlighted by the Council conclusions in 2011 and 2012 and by the European Parliament's resolution of April 2012, which highlighted the need for a strategic framework for EU environment policy encompassing the recently adopted roadmaps and strategies, identifying synergies and potential trade-offs and providing direction and guidance for their coherent implementation. It would have also left unaddressed health and environment issues, which are considered by many stakeholders, including the Council and Parliament, to be an important policy area for future environment policy development. This was confirmed by the results of the public consultation.

6.2.2. *Option B) Business as usual*

This option would respond to the request by the vast majority of stakeholders and other EU institutions for EU environment policy to continue to be framed by EAPs. Indeed, the Final Assessment of the 6th EAP confirmed that providing a framework was one of the main added values of the programme. Its adoption by co-decision was also seen by stakeholders as giving it more legitimacy and helping to create a wider sense of ownership for subsequent policy proposals – something that would be retained under this option.

Whilst this option would build on the positive lessons learned from the evaluation of the 6th EAP, it would not enable the shortcomings of the 6th EAP to be fully addressed. For instance, while this option would allow the thematic challenges highlighted in the SOER 2010 to be addressed, the thematic approach would not be effective in responding to the systemic risks,

or the increasing complexity and inter-linkages between environmental challenges and between environment policy objectives and those of other policies, as described in the SOER.

Another shortcoming identified in the evaluation of the 6th EAP relates to its structure, which lent itself to a large number of actions which varied both in scope and effect – many of which were added during the co-decision process. While the list of actions and priorities could help provide predictability with regard to forthcoming initiatives, thereby enabling Member States and other affected stakeholders to be better prepared, the 6th EAP evaluation noted that inclusion in the EAP was in practice no guarantee of better or smooth implementation of detailed policies and legislation.

The 6th EAP assessment also concluded that the ten-year timeframe was not always appropriate. In some cases it proved too long for certain policy areas in which scientific evidence was developing quickly (e.g. climate change or biodiversity), but in others (e.g. waste or resources) it proved to be too short to be able to assess improvements on the ground as a result of measures included in the Programme, due the long timeframe for their adoption and implementation..

Finally, the absence of a longer-term vision was highlighted in the final assessment as having compromised the 6th EAP's ability to deliver a clear message, which would have helped to ensure it maintained a high profile for the duration of its lifespan. As it happened, the 6th EAP gradually fell out of the limelight as priority shifted towards policy developments not foreseen by the programme.

6.2.3. Option C) An EAP focused on a set of priority objectives

As with Option B, this option would respond to the demand from stakeholders that environment policy continue to be framed by EAPs, while also ensuring the involvement of the co-legislators in defining priority objectives to be attained by the EU up to 2020, leading to stronger policy consensus and ownership of agreed actions and measures than Option A.

This option would build on lessons learned from the final assessment of the 6th EAP, for instance by focusing on securing commitment to a limited number of priority objectives and means to achieve them, supported by a robust justification for those selected. This in turn would increase the likelihood of their implementation at EU and national levels.

Also like in the case of Option B, it would provide a framework for a given period of time. However, under this option the timeframe would be aligned to the multi-annual financial framework 2014-2020 and other key policy documents such as the Europe 2020 Strategy, and have a shorter timeframe than the 6th EAP, resulting in actions being carried out more quickly. At the same time, the 2050 vision would serve as a reference point for longer-term action, beyond 2020.

By bringing together recent EU developments in environment policy and other related policy fields, and demonstrating how they contribute to reaching the broader strategic objectives of the Europe 2020 Strategy, the EAP could respond to the call from stakeholders, in particular the private sector, for a predictable future policy framework.

This option is also well suited to addressing other major cross-cutting priorities that are currently undermining the full delivery of the benefits of environmental policy and legislation. The analysis of stakeholder input suggests that a number of horizontal gaps existed within the 6th EAP related to the underlying drivers described earlier: integration, implementation,

knowledge base and adequate funding. One of the gaps filled by this option concerns the link between human health and the environment. Indeed, whereas 2011 saw the adoption by the Commission of strategies to address key challenges related to biodiversity and natural capital, resource efficiency and the low-carbon economy, with long-term visions, targets and/or milestones for 2020, there was no corresponding strategy addressing remaining challenges related to health and environment – an objective for environment policy set out in the Treaty. The new EAP will help address this gap and show how the elements of a sustainable and competitive economy, resilient ecosystems and a healthy environment for EU citizens are closely interrelated and mutually supportive.

However, this Option would still not provide any guarantee that commitments will necessarily lead to action on the ground. Achieving the priority objectives set out in such an EAP would still depend on the willingness of all actors -- EU institutions, national, regional and local administrations, as well in the business sector and civil society – to play their part. For this reason it may be important to agree targets in some policy areas where a clear policy orientation is needed. Targets could also help businesses by providing a clearer policy direction, which is important in terms of guiding investment decisions.⁷⁵

7. OVERALL ANALYSIS OF THE PROPOSED 7TH EAP

This section analyses the overall impact of the chosen options for the policy content and the delivery mechanism.

7.1. Chosen option for the policy content

In terms of meeting the first three specific objectives, the BAU would not be sufficient. It would involve continued environmental impacts, as set out in the 2010 State of the Environment Report and discussed in Section 2.2 to 2.4.

For all three specific objectives, major efforts are needed to have smarter implementation in terms of either effectiveness or efficiency or coherency. Policy option 2 set out some commitments aimed at improving implementation, ensuring the right incentives for investment and improving the integration of environmental into other policy areas.

In some cases, policy option 2 would largely deal with the problem, because there is already a broadly adequate *acquis* in place, and the challenge is one of smarter implementation. In other cases, even with smarter implementation of the existing policies, there would still be gaps that have become more apparent with new knowledge or are simply emerging issues. In these cases, additional action is needed and policy option 3 would more fully deal with the identified environmental problems.

⁷⁵ Changing Pace, WBCSD, May 2012.

Table 5: Contribution of options 2 and 3 to addressing underlying problems

	<i>Implementation</i>	<i>Coherence</i>	<i>Investment</i>	<i>Knowledge</i>
Policy option 2 – smarter implementation	√	√	√	
Policy option 3 – smarter implementation and responding to new knowledge	√	√	√	√

7.2. Chosen option for the delivery mechanism

Option C provides the most suitable framework to support the delivery of the priority objectives and actions needed to achieve them, while responding most adequately to preferences expressed by the majority of stakeholders – including the other EU institutions. Table 6 lists the different actions, relating them to the different specific objectives. In addition, there are a number of complementary measures focusing on a specific underlying driver. There are not options in relation to these complementary measures, but their impacts are discussed in Annex 6.

Table 6: Actions under the 7th EAP and relationship to specific objectives

Specific Objectives	Actions related primarily to a single Specific Objective	Complementary measures addressing all three Specific Objectives (the enabling framework)
A fiche exists for each of these actions and measures		
Ensuring that Europe's natural capital is sufficiently resilient to pressure and change	To fully implement the EU Biodiversity Strategy to 2020	Improving implementation <ul style="list-style-type: none"> - Enabling more effective environmental inspections and surveillance - Ensuring Access to Justice - Supporting enhanced Complaint-handling and mediation mechanisms at national level - To establish information systems at national level that actively disseminate information sufficient to show that EU environment law is effectively implemented - To explore the practical role that partnership agreements might play in improving the implementation of specific environmental legislation Improving the scientific and knowledge base for environment policy <ul style="list-style-type: none"> - To improve the scientific evidence base for environment policy, including its accessibility, by simplifying, streamlining and modernising the collection, management and sharing of environmental data and information - To develop a systematic approach to anticipate, evaluate and manage emerging environmental risk - To fill existing knowledge gaps Ensuring the right incentives exist for investment <ul style="list-style-type: none"> - To ensure that environment and climate objectives are supported by adequate finance by: adequately reflecting environmental and climate priorities in the Partnership contracts; ensuring that at least 20% of the EU budget 2014-2020 is climate related and increasing the uptake of available EU funding for environmental action by at least 25% over current levels/2010 levels; and developing and applying a system for reporting and tracking environment-related expenditure - To progressively phase out environmentally-harmful subsidies, increasingly use market-based instruments, including taxation - To promote and increase private sector funding for environment and climate-related expenditure, in particular by facilitating access to innovative financial instruments - To step up efforts to establish comprehensive measurements of how sustainable our progress is (Beyond GDP), including natural capital accounting - Integration of environmental and resource-efficiency considerations into the European Semester Improving integration and coherency <ul style="list-style-type: none"> - To integrate environmental and climate-related conditionalities and incentives in policy initiatives, at EU and Member State level and to carry out systematic ex-ante assessments of the environmental (social and economic) impacts of policy initiatives at EU and Member State level. Improving the sustainability of urban areas <ul style="list-style-type: none"> - To support the achievement of minimum sustainability criteria by a majority of cities in the EU. Ensuring effective international action <ul style="list-style-type: none"> - To focus cooperation with the EU's Strategic Partners on the promotion of best practice in domestic environment policy and legislation, as well as convergence in multilateral environmental negotiations - To ratify key remaining or new MEAs well before 2020 and ensuring effective EU participation in other international processes - To initiate and implement actions to protect global forests - To focus cooperation with the countries covered by the European
	To develop a more strategic approach to protecting and enhancing forests and the services they provide	
	To strengthen the integration of land use aspects into decision making potentially including the setting of targets on soil and land	
	Taking further steps and measures to eliminate emissions from urban and industrial wastewater, fertilizer use and air emissions responsible for eutrophication	
	To fully implement the Water Framework Directive including taking further steps to reduce impacts on freshwater	
	To fully implement the Marine Strategy Framework Directive including reducing marine litter, potentially including the setting of targets	
Ensuring that its economy is highly resource efficient and low-carbon emitting	To fully implement the EU Climate and Energy Package by 2020	
	To fully implement EU waste legislation and use waste as a resource in particular by ensuring application of the waste hierarchy and the effective use of economic instruments including virtually eliminating landfilling	
	To address internal market barriers facing environmentally sound recycling activities in the EU	
	To reduce the overall environmental impact of production and consumption focusing in particular on food, housing and mobility sectors, potentially including the setting of targets	
Ensuring that the health and wellbeing of EU citizens continue to benefit from high degrees of environmental protection	To update EU policy on air quality and align it with latest scientific knowledge, identifying cost-effective measures to combat air pollution at source and strengthening efforts to reach full compliance with EU air quality legislation	
	To update EU noise policy and align it with latest scientific knowledge, identifying cost-effective measures to reduce noise at source	
	To step up implementation efforts for the Drinking Water Directive, in particular for small suppliers, and the new bathing water directive	
	To develop a strategy for a non-toxic environment addressing the combination effects of chemicals and safety concerns related to endocrine disruptors and developing a comprehensive approach for minimising exposure to hazardous	

Specific Objectives	Actions related primarily to a single Specific Objective	Complementary measures addressing all three Specific Objectives (the enabling framework)
A fiche exists for each of these actions and measures		
	<p>substances. To address effectively transparency and safety concerns related to nanomaterials in a coherent approach across different legislation</p> <p>To agree and implement a EU climate adaptation strategy, including integrating climate change adaptation considerations into key EU policy initiatives and sectors</p> <p>To further reduce water stress in the EU</p>	<p>Neighbourhood Policy on gradual approximation with key EU environment policies</p> <p>- To engage proactively in an international work plan on enhancing climate change mitigation ambition identifying and supporting the concrete implementation of cost effective options for a range of mitigation actions that can close the ambition gap by 2020</p> <p>- To fully integrate the substantive outcome of UNCSD 2012 into our action at European, regional, international and global level</p>

7.3. Efficiency

Clearly, environmental objectives can be met in different ways. Reflecting the principle of subsidiarity, environmental policy leaves many choices to the national or local level. However, the 7th EAP should improve the overall efficiency of policy (in terms of reducing the costs of achieving environmental objectives) in several ways:

- Firstly, by securing agreement on the strategic priorities that should guide environment policy and action up to 2020, and broadly on what needs to be done to attain them, the 7th EAP is more likely to result in action being taken on the ground, regardless of the level at which such action is needed (EU, national, regional, local).
- Secondly, having agreed on strategic priorities, it will be possible to identify the most cost-efficient actions for attaining them, in line with the principles of smarter regulation at the European and national level through evaluation of existing policies and impact assessment of new policy proposals.

In addition, a number of cross-cutting complementary measures will improve the cost-efficiency of action (see Annex 6 for additional details) by further addressing the underlying problems hindering the chances of reaching the aims and objectives set out in existing policy and legislation. These measures will contribute to all 3 of the specific objectives' attainment, and are set out in Table 6 and discussed briefly below as well as in section 7.4.

a) Better implementation

The high number of infringements, complaints and petitions attests to the need for a workable system to identify and resolve implementation problems, along with measures to prevent them from arising in the first place. Improvements in this respect will come from measures in the following areas:

- the effectiveness of environmental inspections and surveillance.
- access to justice in environmental matters
- complaint-handling and mediation mechanisms at national level
- the dissemination of information on how EU environment law is being implemented.

- the implementation of specific environmental legislation.

b) Better knowledge base

The quality of environmental policy will be improved by developing a more coherent system of environmental information management in Europe, more systematic approaches to assessing environmental risk, and filling research and information gaps. In the period up to 2020, improvements in the knowledge base will come from:

- simplifying, streamlining and modernising the collection, management and sharing of environmental data and information.
- improving approaches to anticipate, evaluate and manage emerging environmental risks in the EU.
- filling key knowledge gaps.

c) Providing the right incentives for investment

The mobilisation and uptake of adequate resources from a range of public and private sources will support the achievement of the set objectives. Securing investment depends on proper valuation on environmental goods, so the new EAP will include initiatives to measure the value of our ecosystems and the cost of their depletion, together with corresponding incentives. In particular improvements in this respect will come from ensuring that:

Improvements in this respect will come from ensuring that:

- environment and climate policy objectives are supported by increased finance from public and private sources, including EU funding; the uptake of this funding improves significantly and can be tracked
- the right market signals are sent to stimulate investment in environment and climate protection, encourage sustainable use and disincentivise practices that are harmful to the environment (e.g. phase-out of environmentally harmful subsidies, taxation of pollution, establishment of markets for environmental goods and services, natural capital accounting, etc.)
- environmental considerations are integrated into the European Semester process
- comprehensive measurements are established to measure how sustainable our progress is ('Beyond GDP')

7.4. Coherency

The actions taken in the context of policy options 1 to 3 will need to be mutually reinforcing. In many cases this will naturally be the case, for example actions to reduce the overall environmental impact of production and consumption will have across the board co-benefits. In other areas, there are synergies that need to be sought, but where found will ensure that the lowest-cost means of achieving objectives are utilised: this will often be the case where integration between policy areas is part of the solution; it can also be the case within environmental policy areas (such as water and climate change adaptation etc.).

The more troubling cases, which are not so frequent, involve possible conflict between attaining different environmental objectives. In these cases (such as the energy needed to clean water), special care will be needed to find innovative solutions and minimize any negative side-effects. Some trade-offs between environmental, social and economic impacts have also been identified already in the report and some more specific ones are set out in Annex 6 for the various policy areas. Where significant trade-offs are present, those will be clearly identified and addressed during the Impact Assessment of any individual follow-up proposals.

One important area for ensuring coherency is for cities, which are where issues and solutions often come together in a concentrated manner. Urban policy is primarily an integration issue, where there is potential to focus efforts, share successes and develop new ways to tackle problems: for example, through ensuring cities meet minimum sustainability criteria.

At the general strategic level the EAP is in line with the growth and jobs objectives set out in the Europe 2020 Strategy. The alignment of the duration of the 7th EAP to the MFF and Europe 2020, will ensure that this programme is fully enshrined and supportive of the broad EU sustainable development objectives. A long-term vision that builds on those already established for the Resource Efficiency and Low-Carbon Roadmaps, as well as the 2020 Biodiversity Strategy, would help provide a focus for policies and actions within and beyond the environment domain, even beyond the duration of a new EAP. This would help economic actors to plan investments accordingly. Almost all stakeholders consulted (including the Council and the European Parliament) saw this as an added value of a new EAP.

Furthermore, it should be recognised that considerable efforts at mainstreaming are already taking place across fields such as transport, industrial policy etc. This is though not always happening at all level of governance. Where this is the case, the 7th EAP will ensure that efforts to improve coherence and integration are systematic and effective and that policy actions deliver, as far as possible, multiple benefits for the environment and for other policies.

Finally, whilst existing environment and climate related strategies go some way towards making the case for better coherence between the objectives sought and those of specific related policy areas, the 7th EAP will pull these strategies together as part of a single narrative. This can better demonstrate the inter-linkages between them and underscore the potential for developing more joined-up policy approaches to deliver multiple benefits across the environment policy spectrum, as well as for different policies. Securing the explicit endorsement of stakeholders and of the co-legislators to the overall narrative set out in the 7th EAP will also help to strengthen arguments in favour of better coherence between environment and other policies.

7.4.1. International coherency

Many environmental challenges, like climate change, ozone layer depletion and natural resource degradation, have a truly planetary dimension and can only be fully solved through a global approach. Others, such as air quality, water resources and nature conservation have a strong international or regional dimension. Therefore, strong, focused, united and coherent actions by the EU Institutions and the Member States internationally are an element of many of the actions set out in policy options 1 to 3.

In order to achieve positive impacts, these actions need to be underpinned by a strong rule-based framework for global environment policy and fostering financial resource mobilisation including foreign direct investment and Official Development Assistance (ODA) as an

important financial catalyst for development, leveraging finance from other sources including the private sector and international financial institutions.

Strengthening the EU's bilateral cooperation with neighbourhood countries and major economies (Strategic Partners) also has the potential to bring about improvements, both within and beyond the borders of the EU.

Trade and sustainable development can be mutually supportive. This requires, among other things, upholding an open and non-discriminatory multilateral trading system while ensuring no country is prevented from taking measures to promote sustainable development, provided that such measures are not discriminatory or constitute a disguised restriction on international trade. Mutual supportiveness between trade and sustainable development can also be promoted by reducing trade barriers for environmentally-friendly goods, technologies and services – thus creating new export markets, including for developing countries. A good example of cooperation between the EU and developing countries are the so-called FLEGT Voluntary Partnership Agreements that help improve forest law enforcement and combat illegal timber trade.

7.5. Overall impacts

The overall assessment of the different options against the criteria of effectiveness, efficiency and coherency is set out in Table 7. It reflects the preferred option of a combination of option 3 delivered through option C, as the option that best delivers in terms of the three criteria.

Table 7: Overall assessment of options

	Effectiveness	Efficiency	Coherency
<i>Step 1: choice of actions</i>			
Option 1	0	0	0
Option 2	+	++	+
Option 3 (preferred option)	++	++	++
<i>Step 2: choice of actions (how best to deliver Option 3)</i>			
Option A	-	-	-
Option B	0	0	0
Option C (preferred option)	+	+	++

The strategic nature of the programme means that the scores will partially depend on the specific policy tools that will eventually be chosen to deliver the identified priority objectives (e.g. market-based instruments, new legislation, more stringent legislation, etc.), and this will only be determined following specific Impact Assessment exercises. This will affect the cost-effectiveness and the specific social and economic impacts, but also the role of national, regional and local authorities in implementing policies and legislation agreed at EU level (e.g. the introduction of additional reporting/permitting requirements, more stringent standards or complex governance modalities).

As well as delivering environmental improvements, a strategic 7th EAP that applies the principles of smarter regulation will boost competitiveness by improving resource efficiency. This is because resource efficiency involves promoting greener, more efficient technologies, and related employment opportunities and thus by improving productivity supports growth

and jobs. (See Annex 5 for details) Meanwhile, ensuring the resilience of our ecosystems that support growth and protecting the health of our citizens is essential to ensure the sustainability of economic advancement.

Macroeconomic modelling of the economic underpinning for resource policy suggests that that there is significant scope to improve resource efficiency in the EU. Every percentage point reduction in resource use is worth around 23 billion Euros to business and could lead to up to 100,000 to 200,000 new jobs. The average annual growth (2000 - 2008) in eco-industry jobs is approximately 2.7 %. Overall, the general trend is of a growing number of 'green jobs', with many more in jobs outside the eco-industry but dependent on the environment as an input.

The results of the modelling work developed by UNEP suggest that over time investing in a green economy enhances long-term economic performance, by enhancing stocks of renewable resources, reducing environmental risks, and rebuilding capacity to generate future prosperity.⁷⁶

At the same time, governments are facing severe pressures to reduce budget deficits, and there are opportunities for environment related policies to contribute to fiscal consolidation (by removing environmentally harmful subsidies and shifting the tax burden from capital and labour to environment).

There are many estimates of the costs and gains of policy actions in environment and health. For instance, the ban of leaded gasoline provided immediate and significant human health benefits. Considering the environment and health costs caused by air pollutants alone, €20 to 45 billion will be saved each year once the future targets of EU legislation are met⁷⁷. WHO estimated in 2011 that at least one million healthy life years are lost every year from traffic-related noise in the western part of Europe.⁷⁸ Any improvement of the health-related environmental problems would impact not only the quality of life of individuals and communities, but also reduce the costs on the public health budgets of national, regional and local authorities.

Efforts to motivate more private investment into environmental and climate change action will strengthen the effectiveness of the EU's budget by creating a significant leverage effect. Data suggest that investing in resource efficiency (saving water or energy, recycling materials) makes a lot of economic sense. Investing also into actions to enhance the resilience of ecosystems, in particular when these provide a whole array of food, raw materials and services is paramount for the health of our economy and for addressing risks associated with business continuity.

Improving the implementation of the environmental *acquis* can bring new benefits for the environment but also for the economy that otherwise remain non-realised. Insufficient and uneven implementation of the *acquis* brings additional uncertainties and risks for business, which, while difficult to quantify, can be significant. One effect is on the eco-industries. Studies suggest that uncertainty about environmental policy affects innovation in environmental technologies. Such innovations are very important as they can reduce the costs of compliance and they can create new markets and job opportunities. The global market for

⁷⁶ Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication (UNEP, 2011)

⁷⁷ COWI-Report 2011 http://ec.europa.eu/environment/enveco/economics_policy/pdf/report_sept2011.pdf

⁷⁸ http://www.euro.who.int/_data/assets/pdf_file/0008/136466/e94888.pdf

eco-industries is estimated at roughly €1.15 trillion in 2010. There is broad consensus that the global market could almost double, to around €2 trillion in 2020. The EU-27 has a strong export position vis-à-vis nearly all of the world's largest economies, and around a third of the current market. In this way, the 7th EAP will support efforts to deliver a green economy.

8. MONITORING AND EVALUATION

The 6th EAP promoted the use of indicators for the monitoring of the state of environment and progress in reaching the targets set out in the EAP. The decision establishing the programme stipulated that one of its objectives was to stimulate regular monitoring, via relevant indicators, elaborated where possible on the basis of a common methodology for each sector, and reporting on the process of sectoral integration.

In response to the 6th EAP and policies under its scope, monitoring procedures were put in place that still today often represent state of the art, such as the monitoring of the GHG emissions which forms the basis of the EU Emissions Trading System. This monitoring has proven to be relatively low-cost: the administrative burden of EU environmental regulation is only 1% of the administrative burden of all EU regulation.

The Commission will monitor the implementation of the new EAP in the context of the regular monitoring process of the Europe 2020 Strategy. A full evaluation of the Programme will be performed before 2020.

The indicators for progress towards meeting the specific objectives set for the new EAP will necessarily be a set of indicators measuring the progress for the different priority objectives of the new EAP. As most of the priority objectives identified in this Impact Assessment concern existing policy areas, the existing indicators developed by the EEA, the JRC or ESTAT are suitable for ensuring adequate monitoring of progress towards achieving the priority objectives. For the few new or emerging issues (e.g. the emerging threats to human health and the environment), indicators will be identified, as appropriate, through the specific Impact Assessments conducted as part of the process of determining the best policy response to address them.

The overall assessment of progress towards the general objective will rely on these more detailed indicators but also on the monitoring of the implementation of the Roadmap to a Resource Efficiency Europe. These indicators address the environment, but also its links with the economy and the society. Within this context there is a commitment to progress with robust and easily understandable indicators to measure progress in improving resource efficiency, including indicators on natural capital and environmental impacts of resource use. These indicators will be developed together with stakeholders by the end of 2013 and will be used for measuring overall progress towards a resource efficient European economy and society. Further improvements in monitoring may come, for example, also through common reporting systems for all environmental policies and the Shared Environmental Information System (SEIS).

The quality of the statistical and other monitoring data will be improved, drawing on existing assessment frameworks such as iGrowGreen, with a view to their inclusion in the mid-term review of the Europe 2020 strategy. In this context, work is under way also as part of the "GDP and beyond" process, in order to develop a more comprehensive composite index reflecting sustainability aspects.

The monitoring of improvements in the state of the environment will be performed through regular EEA reports and based on the EEA's Core Set of Indicators. We are currently in discussion with the European Environment Agency (EEA) on how to align the preparation and publication of the State and Outlook of the European Environment Report (SOER) with the review of the new EAP. The reports on progress with the implementation of the programme and with the state of the environment will benefit from input also from other key institutional actors, like the Environmental Outlook reports of the OECD, reports on Climate Change by the IPCC, and reports from UNEP on the global environment.

ANNEXES

Annex 1: Details of the responses to the public consultation

Annex 2: Linkages of environment policy issues

Annex 3: Targets set by EU environment policy

Annex 4: The outlook to 2020 and beyond to 2050

Annex 5: The link between the environment and competitiveness

Annex 6: The underlying analysis of priority objectives

Annex 7: Overview of the evaluation of the 6th EAP

Annex 8: Overview of the main studies used for the IA

Annex 9: Glossary

DETAILS OF THE RESPONSES TO THE PUBLIC CONSULTATION

The Commission has recently consulted stakeholders on several thematic issues such as biodiversity, water, resource efficiency or sustainable consumption and production. This *ad hoc* public consultation with a background document and an online questionnaire was broader and more strategic in nature. It aimed at collecting the views of all stakeholders, at EU and national level, and the public at large, on the environmental policy priorities up to 2020, the priority areas to be addressed and the most effective tools in addressing them.

The consultation was launched on 12 March and closed on 1 June 2012.

The final number of web respondents to the public consultation was 300: 136 (45%) responses came from individuals and 164 (55%) came from organisations. A further 39 written contributions were received by the same date from industry, NGOs, national authorities and other organisations/individuals.

Out of the total 164 responses on behalf of organisations, the majority came from companies/business associations (57), followed by NGOs (47), regional/local public authorities (21), national authorities (10), "others" (10), international organisations (7), academic organisations (3), law firms/consultancies (3), think-tanks (3), trade unions (2) and one response from a representative of religions (see Figure 1).

40% of the respondents answered on behalf of an EU-wide organisation, while the other organisations mainly originate from Germany (16), United Kingdom (10), Spain (9), France (8), Poland, Finland and Austria (7 each).

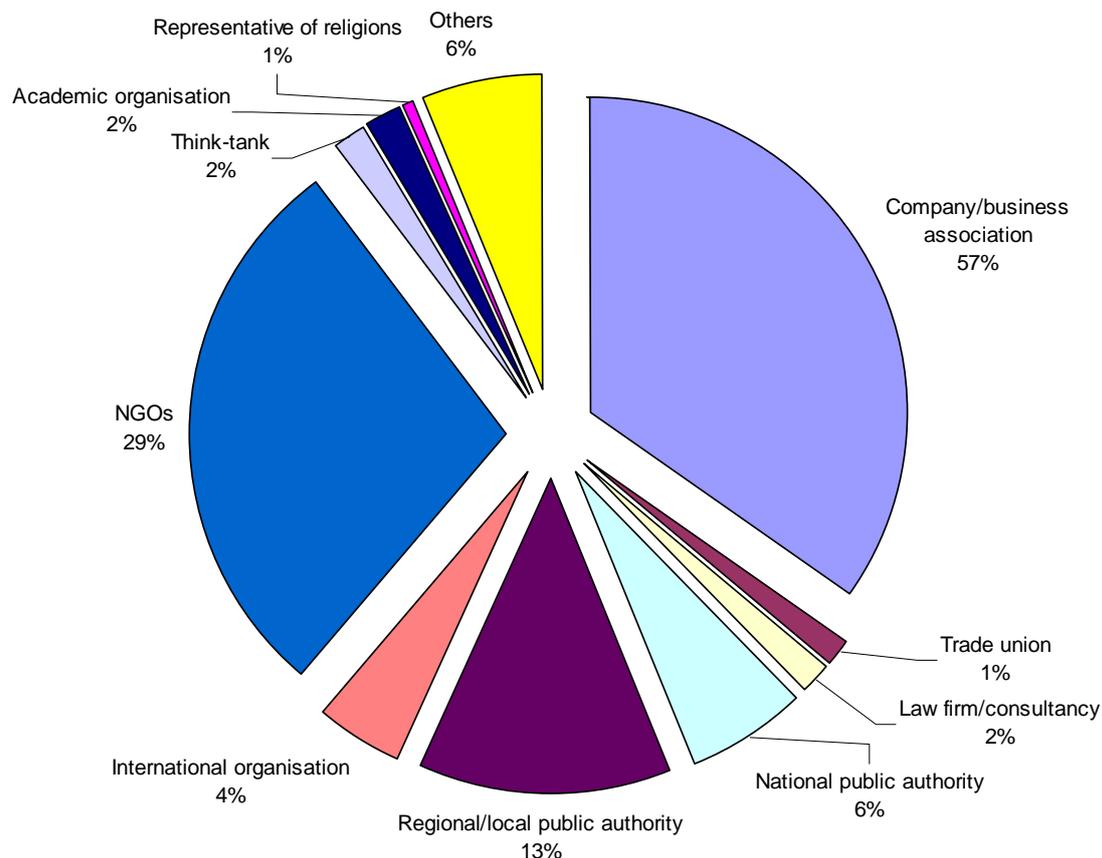


Figure 1: Breakdown of respondents according to their type of organisation

1. ADDED VALUE OF A NEW EAP AND MAJOR CHALLENGES

- ✓ *The final assessment of the 6th EAP has pointed to strengths and weaknesses of such a programme. In your view, how could a new EAP best add value to EU environment policy?*

232 of the 300 respondents agree on the added value of a new EAP (63% of whom strongly agree) whereas only 1.3 % of the respondents think a new EAP would have no added value. A larger number of organisation compared to individuals 'strongly agree' on the added value of a 7th EAP (67% versus 58%).

The best added value to EU environment policy by the 7th EAP is seen in:

- 1) developing a strategic agenda for the environment,
- 2) ensuring full implementation of agreed policies and legislation, and
- 3) providing a coherent framework and furthering the integration of environmental considerations into other policies. 55% of the respondents very much agree on these options.

A more moderate agreement was expressed for the following:

- Ensuring a joint commitment from EU institutions and Member States to a common agenda;

- Stimulating public debate on environmental priorities and active participation of citizens, local authorities and businesses;
- Providing the long term certainty and a conducive framework for the private sector to invest in resource efficiency, low carbon technology and eco-innovation;
- Defining a detailed list of actions to be implemented by 2020;
- Establishing environmental priority objectives for inclusion in the monitoring process of the EU semester.

The results however show a divergence when looking at the choices of the different types of organisations: businesses rank as best added value the provision of a long-term certainty and a conducive framework for the private sector to invest in resource efficiency, low-carbon technology and eco-innovation; whereas governmental organisations (regional, national & international) and NGOs rank as best added value the provision of a coherent framework and a further integration of environmental considerations into other policies.

- ✓ ***The final assessment of the 6th EAP has shown that a long term vision for Europe's environment would help in guiding the definition of priority objectives to be achieved by 2020. Bearing in mind the long term visions already set out in the Resource Efficiency Roadmap¹, the 2050 Low-Carbon Roadmap² and the EU Biodiversity Strategy to 2020³, are there any elements you feel are missing?***

Free responses by organizations

Some 35% of them indicate that there is no significant missing element in terms of areas to be tackled, but there should be higher focus on implementation and more realistic and achievable milestones. Others, mainly NGOs, indicated the need to add policies for addressing chemical pollution and new risks.

Among the elements that appear more often are the inclusion in the 7th EAP of a health & environment priority to protect human health and wildlife from endocrine disruptors (EDCs), chemical mixtures, nanomaterials and SVHC, with the policy goal to have all "known and suspected" SVHC substituted by 2020. For 40% of organisations, diseases (environmental non-transmissible diseases) should also be analyzed. Some also point to

¹ By 2050 the EU's economy has grown in a way that respects resource constraints and planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored.

² By 2050, the EU should cut its domestic greenhouse gas emissions by 80% compared to 1990 and all the sectors of the economy – power sector, industry, transport, agriculture, residential and tertiary should contribute to a varying degree and pace.

³ By 2050, European Union biodiversity and the ecosystem services it provides — its natural capital — are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided.

the need to promote a bio-based economy and the use of renewable materials where possible for all products.

A significant number of organizations (35%) mention as an important element the increase of policy coherence and integration of environment into other policies, e.g. transport. Among the options indicated to address policy coherence: more consistency in the implementation of the various policy papers and the need to clearly link the 2050 vision to medium-term targets for 2020 and 2030; harmonization of all EU policy objectives and the inclusion of binding targets e.g. setting a target for resource efficiency (such as a 80% absolute reduction in resource use) and an early agreement on a firm 2030 climate target with the ETS as its central policy instrument; elimination of multiple and overlapping targets and assessment of the interactions between targets; integrated approaches for food production (e.g. sustainable spatial planning for land use); an integrated climate change adaptation strategy that also aims to reduce natural disasters; long-term vision for the urban environment.

Another common issue was the international aspects of policies: the EU should consider the impacts of its policies on third countries, but also impacts on EU competitiveness by importing products with lower environmental standards.

Some other elements often mentioned: the necessity to take on board new technologies and innovation, to support knowledge base and research and to promote citizens involvement, governance and transparency. The use of economic instruments is another recurrent element, by strengthening price signals, including a stronger CO2 cost integration. Support for the creation of inclusive business models that account for business needs, including a differentiated approach for SMEs, and better information to customers to help them make choices.

Free responses by individuals

Almost one third of the individuals consider that no element is missing from the three visions mentioned in the question. Among the elements that appear more often in the free responses was the need for enforcement strategies and tools that will push the Member States to respond to and respect agreed environmental targets, implement legislation and other binding agreements, and promote compliance. Some respondents indicate the need to apply sanctions, while others say that more effort is needed for making rules compulsory for business.

Respondents mention also the need to transform not only the European economy, but also the society; to reduce consumption by changing people's consumption attitudes; to reduce the environmental footprint of production and consumption by promoting recycling; to value the resources we use; to set targets to be achieved and to measure progress in achieving these targets with other indicators than GDP.

Another very common element in most of the responses was the need to enhance the role that the environment is playing for human health and the wellbeing of society. Some respondents asked for an environmental social agenda and even a roadmap, others asked for assuring the resilience of the environment, or highlight the need to address new challenges in the fields of chemicals and nanomaterials, pointing to the need for testing new technologies before applying them.

The management of natural resources scored also high in the elements that the vision should contain. Respondents felt that the vision set out in the biodiversity strategy should

be complemented by action to promote the sustainable management of scarce natural resources, while others made explicit references to the need for action on soil, on reducing urban sprawl, on a comprehensive climate change adaptation that looks beyond climate change objectives, and the need to preserve the European culture, landscape and traditional land use practices. Other issues mentioned, but to a lesser frequency, were noise, air quality and the quality of urban environment and buildings. Only few respondents mentioned also the link of this vision with the global level asking for the footprint of Europe and its imports to be sustainable.

✓ *In your view, how important is it for the EU to address the following environmental challenges?*

The environmental challenges considered the most important (more than 50% of the respondents consider them very important) to be addressed at EU level are: biodiversity loss and degradation of ecosystem services; energy production and use; water pollution; climate change mitigation/greenhouse gas reductions; unsustainable consumption & production patterns; pollution from hazardous chemicals; outdoor air pollution; marine resource exploitation; environmental challenges linked to food and to energy production and use. Challenges that are comparatively given the least importance are indoor air pollution, major industrial accidents and noise (with respectively 31%, 30% and 23% of respondents considering them very important).

Businesses give less importance to the environmental challenges compared to other respondents, many of them (between 35 and 50%) considering them only important instead of very important. Overall, the environmental challenges given the most importance by businesses are unsustainable consumption patterns (65% consider it important and very important - more than production patterns), climate change mitigation and energy production & use. The same issues are topping NGOs' list but their answers are more concentrated. For instance 30% of businesses consider climate change mitigation very important and 40% important; when 72% of NGOs consider it very important. For NGOs, unsustainable production patterns are ranked more important than consumption patterns: they are considered very important by 77% of NGOs. Biodiversity loss & degradation of ecosystem services is ranked the most important by governmental organisations (74% of them consider it very important).

✓ *Which of the following best describes what needs to be done as a priority to address each of these challenges?*

Concerning the priority approaches to address the identified challenges, there is a strong call for EU action to address the identified environmental challenges: in only three cases the option "no need for further action" is chosen by more than 5% of respondents. Those cases were: indoor air pollution, noise and major industrial accidents, where respectively 10%, 6% and 9% of respondents consider that no further action is needed.

Concerning the type of action needed:

- The use of **market based instruments (MBIs)** is identified as a priority for unsustainable consumption and production patterns, and considered more relevant for consumption than production. MBIs are considered a priority also when dealing with resource overconsumption, potential scarcity and price volatility, which is also linked to consumption and production issues.
- **Improving existing legislation** is considered as a priority mainly for dealing with pollution issues: pollution from hazardous chemicals, water pollution, outdoor

and indoor air pollution, marine pollution, but also insufficient water quality, generation or proliferation of waste, and noise. It is also considered the preferred instrument to address biodiversity loss and degradation of ecosystem services; deforestation; major industrial accidents; and, although in a minor way, environmental challenges linked to the urban environment.

- **Filling the gaps through new legislation** seems a priority for most of the respondents in the case of adaptation to climate change; competitive uses of land and soil degradation and pollution. It is also rated as a priority by most of the respondents for marine resource exploitation; environmental challenges linked to food, housing, mobility, energy production and use.
- **Strengthening the mainstreaming of environmental considerations** in other policies appears as a quite important measure, even though not considered a priority by the majority of respondents.

It is worth noting that responses show a division on the best tools to address climate change issues: 27% are in favour of improving existing legislation, 26% of filling policy gaps and 21% of using MBIs to address mitigation/GHG reduction; while to address adaptation to the impacts of climate change 28% are in favour of filling policy gaps, 22% of strengthening the mainstreaming of environmental considerations and 18% of improving legislation.

More than 50% of businesses express no opinion on several issues such as marine resource exploitation, marine pollution or food. Very polarized answers by NGOs were registered on land use, with 28% showing no opinion and the others split among strengthening mainstreaming, more use of MBIs and legislative measures. Governmental organisations' answers show more dispersion on the measures to implement when addressing key sectors (food, housing, mobility).

✓ ***In your view, which of the following policies hold the greatest potential for improving the quality of the environment?***

Concerning the potential of other policies to improve the quality of environment, more than 40% of respondents considered that those with the greatest potential are, in order: energy (53% of respondents consider it holds the greatest potential), transport (47%), agriculture (46%) and the cross-sectorial climate change policy (41%). Also economic and social policies are considered having a significant potential: research & innovation, economic & financial policy (e.g. taxation), education & culture, regional policy. EU development cooperation and enterprise & SMEs policies are considered comparatively with a more limited potential for environmental improvements, with less than 15% of respondents considering them holding the greatest potential.

More than 50% of businesses see in research & innovation the greatest potential for improving the quality of environment, while a majority of NGOs and governmental organisations see in economic & financial policy high potential against a 12% of businesses. Interestingly, 55% of NGOs consider that public procurement has a significant environmental potential, against 24% of governmental organisations (who would have to apply them) who consider it with high environmental potential.

Free responses by organizations

Only 20% of the organisations chose to suggest an additional policy. Within other policies that can play a role in improving the quality of the environment the most quoted

have been research & innovation, as well as science development and ITC. Other policies that also scored high were health, chemicals and waste & recycling policies. Some respondents identified the need for more policies that will try to change behaviours, in particular consumer behaviour. Some also indicated the need for economic tools (reinforcement of taxation, shift of taxation from labour to resources, water pricing/taxes, tax for pesticides and chemicals, reform of EHS), and for addressing property rights and patents. Others mentioned biodiversity & nature protection, resource & product policies and regional policy. Finally, some respondents mentioned the SDS and the need for a holistic approach, as most of the European policies are interrelated.

Free responses by individuals

Around 30% of the individuals choose the option "other" in this question, with a majority of them pointing to the need to develop social and behavioral policies aiming to change people's attitudes, consumption patterns and responses. Some pointed to the need to address security issues and resilience of ecosystems and society, as well as policies for raw materials and minerals. Others suggested policies that will make the transformation to a more sustainable economy happen, that will examine how financial systems can promote sustainability and will promote more use of MBIs. Some respondents mentioned the need to develop new policies to address nanomaterials and ecotoxicity, as well as GMOs, while others asked for integrated spatial policies to address tourism, urban development, and sustainable agriculture.

✓ *In your view, which of the following policies hold the greatest potential for contributing to meeting our climate objectives?*

Concerning the policies with the greatest potential to contribute to meeting the climate objectives, energy, transport and agriculture are the sectors in which measures would carry the greatest potential. More than 80% of governmental organisations see the greatest potential in energy and transport policies. Economic & financial policy, environment policy, research & innovation are also mentioned among those with a significant potential.

Free responses by organizations

Only 20% of the organisations chose to suggest an additional policy area to support the climate agenda. Most of the replies indicate the need to address areas not covered by the ETS and to strengthen the emission trading scheme. A majority of replies also identified that more can be done by an integrated building and construction/housing policy embedding energy efficiency and by more efforts on waste policy and packaging. The reform of the CAP, as well as promoting the footprint concept, are considered also to be able to help achieving climate targets. Finally economic tools like taxation and reform of EHS are mentioned. Other issues: the need for more awareness raising, for better knowledge base and for improving the resilience of both the environment and the society. Some respondents pointed to the need for strong leadership in international discussions and for strengthening relations with third countries.

Free responses by individuals

Only 10% of the individuals choose to suggest an additional option, highlighting the importance of leading the international climate agenda, by supporting actions to address deforestation, provide for co-operation projects and build awareness raising. Some point to the need to promote more the use of renewable sources of energy, while others address

security issues, the resilience of ecosystems and society and their role in adaptation to climate change, as well as the role of soil as carbon sink. Some suggest further efforts on the implementation of agreed policies while others on climate change measures in urban areas, by reducing energy use and being more efficient.

2. NEW INTEGRATED APPROACHES TO IMPROVE COMPETITIVENESS AND ENHANCE ECOLOGICAL AND SOCIETAL RESILIENCE

- ✓ *In your view, what are the 3 most important initiatives that should be taken at EU level to reduce the environmental impacts of food production and consumption?*

Free responses by organizations

According to the majority of the responses from organizations, food policy should fully contribute to the EU objectives on climate change, air pollution and water protection. A lot of respondents stress the need to promote sustainable and resource efficient agriculture, adopt resource efficiency practices to reduce water use and reform the CAP to better contribute to climate change and environmental objectives. Issues related to land use and efficient spatial planning are also mentioned, as well as the link between food production and the state of Europe's ecosystems.

Food production issues of major concern were the use of pesticides and other harmful substances, the use of antibiotics and endocrine disruptors. Except these risks, the issue of food quality is mentioned by 30% of respondents who suggest that food should be produced locally using traditional practices and favoring organic cultivation. Some mention that urban agriculture could be promoted. Others mention that efforts should be made to take account of the ecological footprint of food produced in third countries and consumed in Europe. The need to address the conflict of land use for farming and for energy production is also mentioned, suggesting the use of guidelines and auditing.

Food waste is also an issue raised by a large part of the respondents, calling for an EU strategy with clear targets, with an increased role for the supply chains and with biowaste treated separately from waste. According to them food packaging should be tackled and the concept of LCA promoted. Education of consumers is needed to introduce good practices in consumption, identify healthy diets and promote less consumption of meat. Economic instruments and market approaches to reduce food waste (such as taxes on imports, higher prices of transport of non-local foods, increase of prices or tax on pesticides, tax on junk/unhealthy food, support for eco-labelling of sustainable food, EHS reduction) have been mentioned by many respondents together with other practical solutions.

Free responses by individuals

Responses to the question on food by individuals often mention the need to produce food locally (thus minimizing transport), using as less pesticides and artificial fertilizers as possible and using old traditional techniques that support sustainable agriculture and the landscape, and also supporting small producers instead of intensive agriculture. Organic farming is preferable to industrial agriculture and organic products should be made more affordable, and GMOs banned. Education of consumers on the dietary value of different foods and efforts to try to switch diets to less meat proteins is felt as an important action by 55% of the respondents. Sustainable use of soil is also quoted. Some of the

respondents (35%) mention that we need to take account of the ecological footprint of food produced in third countries and consumed in Europe, and some indicate that the concept of life cycle assessment needs to be applied also to food and that packaging needs to be reduced and recycled. Others mentioned also a variety of economic instruments and market approaches to reduce food waste, like more taxes on imports, higher prices of transport of non-local foods, increase of prices or a tax on pesticides, support for eco-labelling of sustainable food, etc. Some respondents also refer to actions in the food supply chain, pointing to the role of supermarkets and food-banks, as well as to stricter rules on labelling covering different indicators. Research and innovation are also mentioned by some respondents.

✓ ***In your view, what are the 3 most important initiatives that should be taken at EU level to reduce the environmental impacts of housing?***

Free responses by organizations

Respondents to this question are mostly governmental organizations and NGOs, as most business have not commented. The great majority feels that actions in this field should be focused on energy efficiency (70%) and on less consumption of materials and land for housing (50%), while at the same time promoting the use of environmentally friendly materials like wood (30%) and water efficiency (30%). Respondents indicate that buildings' renovation plays an important role and that targeted actions to improve buildings' performance in energy and water should be subsidized. Governmental organizations point to the need for better spatial planning and for targeted interventions supported by Structural funds, stressing the need for efficient recycling in towns and more efficiency in the provision of community services (mobility, waste collection, green spaces, etc). NGOs support in addition to the above a wider range of ideas from LCA approaches to new environmental and energy taxes. Some also ask for increasing efforts on awareness-raising on energy efficiency in third countries and mention deforestation issues linked to an overuse of forest resources for energy. All the few business that responded mention energy efficiency, new business models, and the role of novel materials and products aiming to reduce energy consumption.

Free responses by individuals

Individuals feel that actions to address the impacts of housing should be focused on energy and water efficiencies (70%), as well as less consumption of materials and land for housing (50%), while promoting the use of environmental friendly materials like wood (30%). Action in the field of energy should support insulation, solar panels, biomass, etc. Some consider that imports from countries with not so high environmental standards should be kept to a minimum or even banned, while others suggest limiting the ownership of a house to only one per family. A significant proportion of respondents (35%) call for improvements in the current houses and buildings, advocating for support for renovation and retrofitting of buildings, even setting binding targets for it. Some ask for more regulation and a clear reporting from home owners about the sustainability of their houses.

✓ ***In your view, what are the 3 most important initiatives that should be taken at EU level to reduce the environmental impacts of mobility?***

Free responses by organizations

Mostly NGOs and governmental organizations replied to this question. The majority suggest supporting a wider use of public transport by enhancing the network and services, promoting the use of bicycles and tele-working, subsidizing more efficient vehicles and using ITC in managing transport networks. Governmental organizations mention the promotion of environmentally friendly transport modes (electrification or renewable energy use in transport), while recognizing the need to promote the reduction of the average distance in daily commuting and to take action towards public information to stimulate behavioral changes. They indicate the need for integrated transport networks, for investment in clean energy and use of economic instruments like taxes or positive tax incentives. Respondents from academia and research mention developing zero emission transport modes; businesses ask for establishing an EU level playing field, for the use of new materials in transport and efforts to develop new engines to reduce emissions from vehicles, for the deregulation of the railway system and for free "cabotage" in order to improve efficiencies.

Free responses by individuals

To reduce the environmental impacts of mobility, the majority of individuals suggest the wider use of public transport and the interdiction for big private cars to enter large cities at certain hours. Half of the respondents mention different MBI that can be used, like taxes in fuels, subsidies for buying electric cars (reduced taxation, reduced electricity price), etc. Some call for better urban planning that will enable to reduce distances between living and working.

✓ ***Sustainable land use has been identified as a major environmental challenge. In relation to this, how important do you consider the following areas to tackle the issue at EU level?***

To address sustainable land use at EU level more than 40% of the respondents consider deforestation, conversion of agricultural land to urban land and conversion of land for energy crop cultivation as very important. The most important area for NGOs is the conversion for energy crop cultivation, with 70% of them considering it very important. 34% of governmental organisations give strong importance also to land fragmentation and more than 40% of individuals to desertification. Between 35 and 60% of businesses show no opinion on the different areas.

✓ ***In your view, how important are the following additional measures to the Soil Thematic Strategy for reducing, directly or indirectly, soil degradation?***

The reinforcement of existing legislation to improve the application of the "polluter pays" principle (55%) and the setting of binding targets (47%) are considered the most important measures to reduce soil degradation.

When looking into the breakdown of answers, more than 40% of businesses give some importance to the provision of platforms to exchange best practices and to the increase of public awareness on the role played by soil as a resource in the environment & the economy, while 40% consider not important at all setting of binding targets, and 30% show no opinion on the matter. Promoting public awareness is the most important

measure for governmental organisations, 66% of them considering it very important, while 47% of NGOs consider it only somewhat important. A majority of individuals see establishing a soil monitoring scheme to measure progress towards less soil degradation as a very important measure.

✓ ***In your view, how well does EU policy currently address the following environment & health related challenges?***

On many environment & health related challenges, the answers show that a significant number of respondents either express no opinion or find that EU policy is currently addressing them not well at all. More than 30% think that nanomaterials and the combined effects of chemicals as well as other challenges are not well addressed at all. At the same time, more than 30% show no opinion on endocrine disruptors, nanomaterials and nuclear radiation. EU current policy is addressing well or somewhat well outdoor air pollution, water pollution and climate change for around 30% of respondents. Concerning the specific type of organizations, around 60% of NGOs think the EU is addressing climate change somewhat well and that nanomaterials and the combined effects of chemicals are not well addressed at all.

Free responses by organizations

Only a limited number of respondents (20%) provided some further ideas in addition to the challenges indicated in the questionnaire, the vast majority coming from NGOs and governmental organizations. Most answers stress the need to address unknown environmental risks to health, mainly from chemicals, nanomaterials, endocrine disruptors, persistent organic pollutants and biocides. They also see the need to improve air quality and better monitor air quality related health problems, like asthma and allergies, and to address the combined effects of different environmental stressors. Governmental organizations mention the need for bio-monitoring and improving the quality of air for citizens, as well as addressing electromagnetic radiation for communications, transport, electricity like WIFI spots, etc. Businesses hardly commented on this question, the few calling for level playing field on possible health effects of electromagnetic fields.

Free responses by individuals

Some 40% of individuals provided some further ideas in addition to the challenges indicated in the questionnaire. Some mention the links of health with soil loss, landscape quality, and increase in antibiotics use, while other mention that scarcity of essential resources may have impacts on human health. The emerging risks from electromagnetic fields was central to the answer of 40% of the replies, mentioning electromagnetic radiations like WIFI spots, cellular phones in public transport and increasing exposure of children to them. Others say that the combination of impacts from chemicals, noise and electromagnetic pollution should be addressed. Few mentioned that bio-monitoring should be used as a toll to measure impacts. Few pointed also to the risks related to the use of GMOs without studying them further, and the loss of biodiversity and its impact on the pharmaceutical industry.

✓ ***In determining whether cities are sustainable, attractive and clean places to live, what is important for you?***

In determining whether cities are sustainable, attractive and clean places to live, the following issues are considered very important to more than 50% of respondents: local

transport; green urban areas incorporating sustainable land use; quality of local ambient air; waste production and management; waste water treatment; energy performance. When looking at the responses from NGOs the percentage goes up to 72% for energy performance, 79% for the quality of ambient air, and 87% for local transport. Governmental organisations consider very important local transport (82%), green urban areas (79%), energy performance (76%) and waste water treatment (71%). For more than 60% of individuals, nature and biodiversity is also very important. Around 40% of businesses show no opinion on the matter, with the exception of energy performance that is considered very important by 37% of them.

3. MAKING CHANGE HAPPEN

- ✓ *In your view, does the type of EU climate and environment legislation (Regulations, which have direct effect, vs. Directives, which need to be transposed into national law) make a difference in terms of delivering environmental benefits, and if so, why?*

Free responses by organizations

One third of the respondents either did not answer or indicated “no opinion/do not know”. Another third consider that both Regulations and Directives should be employed. Governmental organizations mention that Directives are preferable when the problem to be addressed requires regional differentiation and flexibility at local level, while Regulations can be more effective and quicker to implement. Businesses say that Regulations should be preferred, as they offer more harmonised standards, equal application and create a level playing field, but also agreed that certain issues are better tackled with Directives when there are different business practices in the EU. In both cases they stress the need not to hamper competitiveness and overburden industry with regulations. The remaining third (mostly NGOs and businesses) is in favour of Regulations because they come into force more quickly, they do not allow for divergences in implementation between Member States, they raise more easily awareness and make the rules clearer. Half of the respondents advocating for regulations mention the need for ambitious but also coherent legislation, calling for other areas linked to environment to be tackled and for new legislation to be developed addressing environment & economy. The need for coherence in policy making is mentioned (mainly by NGOs), the need to reinforce implementation through penalties and sanctions (NGOs and businesses), ideally at EU level instead of at national level. Some respondents, mostly businesses, consider that voluntary initiatives, or the development of and adherence to standards, should also be considered, as they can offer an alternative to legislative approaches and can deliver good results on the ground in implementing policy objectives.

Free responses by individuals

A third of the individuals has “no opinion/do not know”, while two thirds are mostly in favour of Regulations as the best legal instruments to achieve environmental objectives. The reasons mentioned for this are: comes into force more quickly, does not allow for divergences between Member States and makes rules clearer. Some mention the need to review adopted regulations, which should change if the policies are not working, through adaptive management practices.

- ✓ ***How would you rate the usefulness of increasing the information being actively disseminated on-line by Member States and the Commission on how EU environment legislation is being implemented?***

56% of respondents consider useful (or even very useful for 30%) increasing the information being disseminated on-line by Member States and the European Commission on how EU environment legislation is being implemented. 12% consider of little or no use this increase of information. These percentages are quite similar when looking at governmental organisations' answers, while on the opposite, 33% of businesses and 75% of NGOs consider this useful.

- ✓ ***What contribution do you think the following could make at EU level to strengthen the correct implementation of EU environment law by Member States and ensure a level playing field?***

70% of the respondents see as a very significant contribution to strengthening MSs' correct implementation of EU environment legislation: 1) complementing national inspections and surveillance with enhanced capacity at EU level to ensure consistency and effectiveness of implementation; 2) support for experts' networks to share best practice and develop projects of common interest; 3) implementation plans that target resources at solving environmental problems. Complementing national inspections and surveillance is considered significant by 90% of NGOs and almost 50% of them consider very significant also to develop or implement alternative dispute resolution mechanisms. Businesses globally give lower scores to the options described to the exception of a support for expert's networks, considered by 58% of them a significant contribution.

- ✓ ***Science provides the evidence-base underpinning the development and implementation of climate and environment policy. How would you rate the environmental data currently available to you?***

Some 35% of respondents consider sufficient or even excellent (5.7%) the environmental data currently available to them. Only 3% consider it insufficient. When looking at the breakdown by type of respondents, it shows that only 19% of governmental organisations find the available data sufficient against 23% of businesses and 25% of NGOs.

- ✓ ***How would you consider the potential of the following measures to strengthen the knowledge base for environment policy?***

To strengthen the knowledge base for environment policy, the following measures are considered with high potential (more than 40%): improve the science-policy interface and ensure that scientific environmental data are accessible and user-friendly; fill existing research gaps; improve knowledge on consumer's perceptions, values and their actual behaviour. 17% of the respondents consider, instead, that giving to citizens a greater role in monitoring environmental data carries low or no potential. A majority of governmental organisations (55%) find the highest potential in improving knowledge on consumer's perceptions, values and their actual behaviour.

Free responses by organizations

Only 30% of the organisations choose the "other" option, all groups pointing to the need for better environmental information and for improving its accessibility. Governmental organizations ask mainly for the improvement of knowledge base and for capacity building of expert networks; for knowledge dissemination as well as for linking

implementation with basic research. They also ask for efficient monitoring of policies and development of methods to address their efficiency, with the help of indicators; and for more use of bio-monitoring. Businesses ask more for monitoring and disclosure of information at Member State, regional/provincial and municipal level, while mentioning the need to improve statistics (for the waste sector in particular). They also mention CO2 labelling and the development of resource flow/e-accounting, as well as strategic planning linking key waste and material streams. They ask for efforts to shorten the periods to transfer results from innovation and research to SMEs. Academics and researchers ask in particular to improve access and share of environmental data and to improve research cooperation with other existing, global or regional, science initiatives. NGOs highlight the need to apply the precautionary principle, to make progress with SEIS and INSPIRE and other information tools, and to explore further the use and application of Market Based Instruments (MBIs).

Free responses by individuals

25% of the individuals chose the "other" option, pointing to the need for better environmental information, to make it accessible to all citizens and scientists. They also emphasise the role of research in facilitating knowledge base for policy making and put a lot of emphasis on the communication aspects and on the need for awareness raising campaigns to empower citizens.

✓ *How potentially effective do you consider the following initiatives to be in encouraging environmentally-friendly behaviour?*

To encourage environmentally-friendly behaviour, the use of incentives to reward environmentally-friendly behaviours and to discourage environmentally-damaging ones is considered effective by more than 75% (very effective by more than 40%) of the respondents. Conversely, applying different approaches for each specific context via "behavioural experiments" is considered the least effective, since only 18% of respondents find it very effective and 20% express no opinion on this specific option.

To NGOs, the least effective measure is the provision of more detailed information to consumers through more detailed labels (15% find it very effective). 70% of governmental organisations find effective (26% very effective) to increase consumer's education and awareness through targeted actions and on-the-spot information.

✓ *How significant do you consider each of the following actions to be for strengthening the external dimension of EU environment policy?*

To strengthen the external dimension of the EU, the action considered the most significant (seen as very significant by almost 50% of the respondents) is the enhancement of the integration of environment in the EU's external policies. More than 40% of the respondents also consider very significant strengthening international environmental governance, strengthening the EU leadership in Multilateral Environmental Agreements, EU leadership through setting unilateral targets and commitments, ensuring that EU is consistent in its interventions in international fora, promoting EU environmental standards abroad and building alliances with other countries in line with EU environmental objectives.

Almost 40% of businesses find not significant at all an EU leadership through setting unilateral targets when 83% of NGOs find it very significant.

Free responses by organizations

Global agreements are seen as the solution for dealing with global problems. There is the need to ensure coherence between environmental objectives, EU companies' practices abroad and the objectives set at EU level. There is also a need for EU leadership in incorporating anti-corruption and accountability commitments in climate financing. The external dimension of the EU environmental policy is considered essential. Development Aid and co-operation assistance to third countries should be linked to sustainability criteria and there is need to link trade and customs policies to the full reciprocity in legislation on imported products. NGOs ask in particular that the EU introduce and propagate an international energy and land quota scheme.

Free responses by individuals

10% of the respondents who chose to indicate an additional option wish to increase efforts on international trade policy (in particular for their impact on climate change) and labelling to avoid that products with chemicals banned in EU enter the EU market, and also efforts to promote globally more the European approach ("lead by example").

4. GENERAL FINAL COMMENTS

Free responses by organizations

Concerning the *final comments/suggestions*, these were mentioned:

From Businesses:

- Take into account best practices and initiatives from businesses.
- More integration of environment into other policies.
- No need for a 7th EAP, as Europe 2020 and the flagship initiatives fulfil this need.
- Support more targeted actions for resource efficiency (with focus on the food supply chain).
- Policy for indoor air quality, setting targets and a more ambitious NEC proposal.
- Support and implement ISO standards on packaging. Work with recyclers and manufacturers.
- More efforts in greening transport policy, address emissions of the transport sector.
- Focus on the prevention of exposures to hazardous chemicals through national and EU measures, particularly with regard to EDCs, and the review of the EU Environmental Noise Directive.
- Promote international agreements on climate change, since environmental considerations remain insufficiently tackled in the EU external relations.

From governmental organizations:

- Need to take on board the regional and social specificities in policy making.
- Consider the territorial dimension and the impacts of a future programme to promote better coordination of local stakeholders.

From NGOs:

- Promote the effectiveness of legislation, focus more on implementation.

- Green the EU Treaties, look for a coherent approach to sustainable development, integrate environmental performance assessments in the Annual Growth Survey and in the European Semester, use more evaluation and assessment of progress.
- Seek solutions to problems with management and new technologies.
- Promote a coherent approach to resource efficiency with clear targets, progress on setting indicators
- Introduce a 2050 energy efficiency target.
- Promote efficient land use, implement the EU Biodiversity target, support soil legislation, promote sustainable agriculture, organic farming and reform the CAP
- Address environment and health issues
- Improve sustainable production and consumption, work with consumers.
- Reduce Europe's global footprint, promote the collection of global ecological footprint data.
- Engage with society and stakeholders to promote awareness raising, education and governance.

Free responses by individuals

Concerning the *final comments/suggestions*, these were mentioned:

- There is no ownership in Member States of the Europe 2020 Strategy.
- In some areas, please do not reinvent the wheel: use the existing expertise/networks. Be pragmatic in the proposed actions. Do more integration for a better leverage of the programme.
- Implementing a vision change can be done best with the base of the society.
- Health should be recognized as a key output in developing environmental policies.
- Produce a scoreboard, and make it public, on the main gaps of each Member State in environmental policy. A barometer of national strengths and weaknesses in divers fields of environmental policy would probably not praise always the same member countries and criticize always the same others, but may encourage discussion and educate pressure groups.

LINKAGES OF ENVIRONMENT POLICY ISSUES

The importance of coherence is already recognised

The importance of coherence and linkages is regularly recognised in strategic documents. Europe 2020, the EU's growth strategy for the coming decade, has the aim for the EU to become a smart, sustainable and inclusive economy. These three mutually reinforcing priorities are to help the EU and the Member States deliver high levels of employment, productivity and social cohesion. Concretely, under this strategy the Union has set five ambitious objectives - on employment, innovation, education, social inclusion and climate/energy - to be reached by 2020.

Delivering Europe 2020 are a number of strategic documents, different in status and timescales, either ongoing or under discussion that relate to the EU's environment. They include: the Flagship Initiative on a Resource Efficient Europe under the Europe 2020 Strategy; the 2020 EU Biodiversity Strategy; the forthcoming Blueprint to safeguard Europe's water; Roadmap for moving to a low-carbon economy in 2050. On top of these, sectoral processes such as the 2014-2020 Multi-Annual Financial Framework (MFF) and reforms in sectoral policies like agriculture (legislative proposals for 2014-2020 Common Agricultural Policy) or transport (Transport White Paper), knowingly affect the context and scope for environmental policy action to 2020 and beyond.

This policy framework has been developed by the EU as a comprehensive body of environmental legislation with the objective of limiting impacts and pressures on the environment.

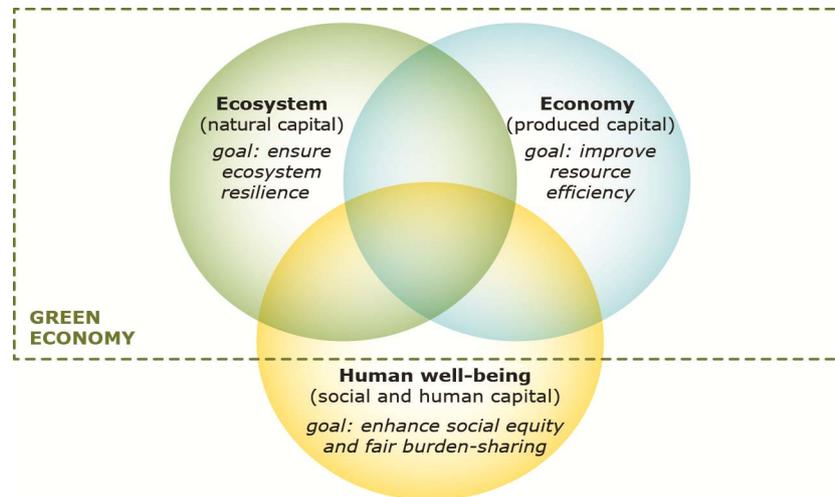
In this context, the 7EAP is useful in providing an overarching strategic framework that gives overall orientation and guidance to help frame the future development of EU policies, in all areas. The 7EAP can help tackle links between these three main objectives (ecosystem resilience, resource efficiency and human health and well-being), for example through:

- Developing, for agriculture, a perspective on resource efficiency in terms of nutrients, energy, chemical inputs, water and land take
- Developing, for chemicals, a perspective on risk assessment, reducing impacts on the environment (pharmaceuticals), and application of the precautionary principle (endocrine disrupting substances, nanomaterials etc.)
- Developing an integral perspective on consumption, marketing and labelling of products, and waste reduction through a reduce, reuse, recycle, resource virtual cycle

Green economy

The concept of a green economy recognises that ecosystems, the economy and human well-being (and the respective types of natural, produced, social and human capital) are intrinsically linked (Figure 1).

Figure 1 - The 'green economy' concept in the context of sustainable development



Assessment of whether interlinkages are adequately addressed

There have clearly been considerable successes in terms of addressing interlinkages and 'mainstreaming' environment into other policy areas. However, there are also criticisms of stakeholders that the current policy framework does not adequately address inter-linkages and those omissions in the current and planned strategic documents, meaning there is still not a clear and coherent long-term vision for EU environmental policy.

In particular, that developed separately, many of the policies and proposals overlap thematically and address multiple environmental problems and pressures in different policy areas, they present the risk of having conflicting agendas and not taking into account synergies and trade-offs within and between policy areas. A key question in the design of the 7th EAP thus concerns these existing inter-linkages, overlaps and omissions.

Whilst the European Commission does not necessarily accept the criticism, for example, the independent Institute for European Environmental Policy (IEEP), has provided an assessment of the degree to which some of the most relevant sectoral strategies (namely agriculture, fisheries, cohesion, energy & transport and industry) at the EU level formally address environmental policy issues developed under the 6th EAP (climate change, biodiversity, natural resource use and environment & health). The nature and strength of the link is defined as follows:

- **Strong link:** the proposal takes into account the environmental issue concerned by explicitly referring to it and by concrete policy actions. A strong link does not imply that the measures are considered sufficient or guarantee an effective outcome though.
- **Moderate link:** the proposal takes into account the environmental issue by explicitly referring to it, but proposed actions are not exhaustive/too weak to influence the environmental trend.

- Weak link: the proposal takes into account the environmental issue and proposes specific actions to a limited degree or insufficiently.
- Very weak link: the proposal makes a formal recognition of the environmental issue but does not propose any specific action.
- No link: the proposal does not refer to the environmental issue.

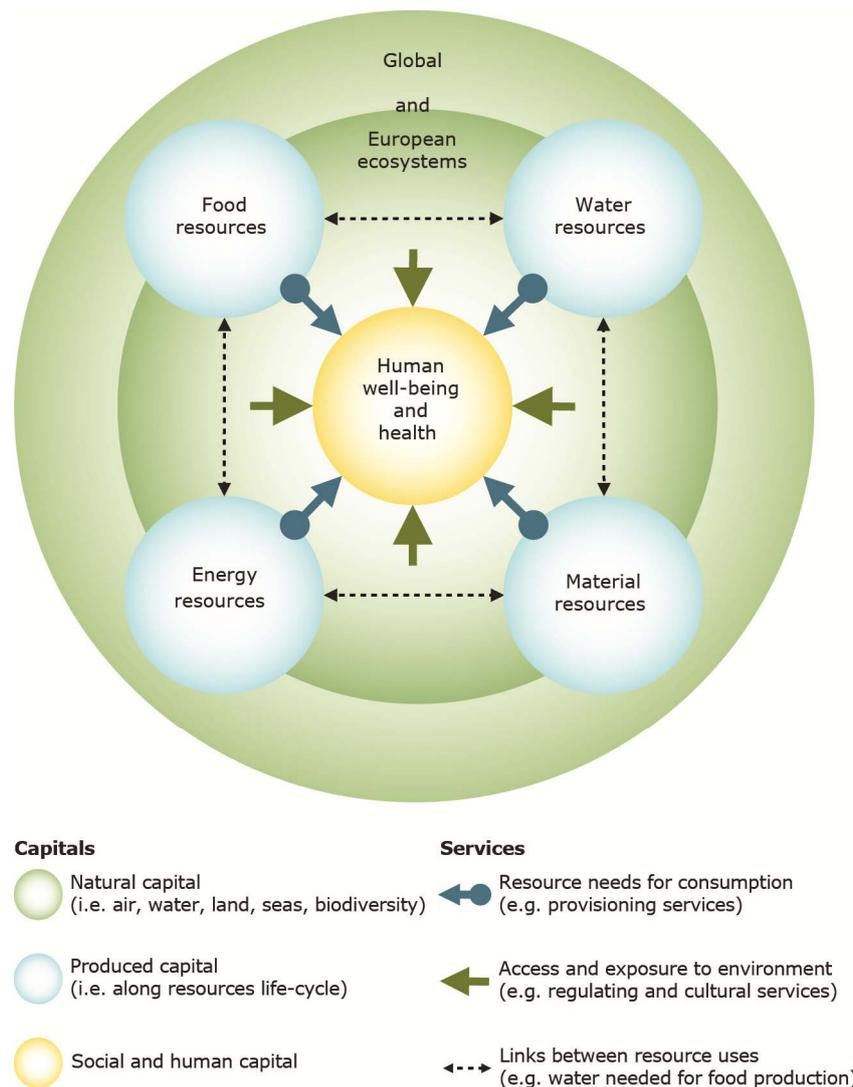
Table: How sectoral policy proposals address major environmental issues

		Climate change	Biodiversity	Natural resource Use	Environment & Health
Agriculture	<i>Legislative Proposals for 2014-2020 Common Agricultural Policy</i>	Strong link	Moderate link	Moderate link	Very weak link
Fisheries	<i>Legislative Proposals for 2014-2020 Common Fisheries Policy</i>	No link	Moderate link	Strong link	Very weak link
Cohesion Policy	<i>Legislative Proposals for 2014-2020 Cohesion Policy</i>	Moderate link	Weak link	Weak link	No link
Energy and transport	<i>Transport White Paper</i>	Strong link	No link	Moderate link	Moderate link
	<i>Energy 2020 Strategy</i>	Strong link	Very weak link	Strong link	Very weak link
	<i>Legislative proposal for Connecting Europe Facility</i>	Moderate link	No link	Very weak link	No link
Industry	<i>Flagship Initiative, Reinforcing competitiveness</i>	Very weak link	No link	Moderate link	Very weak link

Examples of Interlinkages

The links between **specific objectives 1-3** can be considered further through a resource use-efficiency lens. So, for example, the natural resources that are most directly relevant to human health and well-being can be roughly classified into four major categories from an economic perspective: **food** resources, **water** resources, **energy** resources and (other) **material** resources. Material resources are normally defined as covering biomass, metals, non-metallic minerals, and fossil fuels. In the context of human well-being it is more relevant to consider materials for housing and transport (e.g. sand, gravel, wood and metals), as well as other materials in day to day use especially chemicals, and upcoming materials likely to come into day-to-day use more and more such as nano-materials.

Figure 2 – Key natural resources to underpin human health and well-being



The different resources are heavily inter-linked. For example, food production relies on energy and water, and therefore cannot be considered in isolation. All four categories of resource requirement depend on the availability of **land** to support the resource use, i.e. food and (bio-)energy production requires agricultural land, water resource availability is affected by land cover and use, and material resource requirements and the development of economic activities will place an additional demand on land for housing, transport infrastructure and extraction of resources.

These multiple resource requirements thus often call for trade-offs to be accounted for between different types of uses for a given land area or for limited resources. Foot-print issues come into play where production processes are outsourced to areas outside Europe, again with indirect impacts on human well-being through global environmental feed-backs.

When sectoral policy proposals are considered against this background and the problem definition in Section 2, it shows that:

1. Regarding the EU's ecological and climate resilience through our natural capital:

There is significant integration of environment in CAP with measures such as agri-environment payments and a new Forest Strategy planned for 2013 for a sustainable forest

management. The CAP 2014-2020 includes an "integration scenario" where the greening is a central element, with a compulsory green payment composed of environmental measures such as permanent grassland or crop diversification. An ecosystem-based approach also prevails in the revision of the CFP where it has been given a greater importance in fisheries management. Biodiversity still stands weaker though in most of the sectoral policy proposals. Anticipating critical thresholds in pressures on ecosystems is a challenge at European and global levels. Proposals, mainly in the energy and transport sectors, aim at improving their contribution to a low-carbon economy.

2. Regarding a single market for sustainable, low-carbon growth, improving resource-efficiency and economic competitiveness:

The mitigation of GHG emissions is well established as a cross-cutting policy objective in sectoral strategies. For instance proposals have been put forward to foster carbon sequestration and promote agro-ecological restoration in the current debate on the reform of the CAP. The Transport White Paper also sets goals on emissions reduction through the achievement of a CO₂-free city logistics in major urban centres by 2030, for instance. Resource use and resource efficiency are addressed in all strategic documents. To name one, the Cohesion Policy review includes in its new thematic objectives supporting the shift towards a low-carbon economy in all sectors and promoting resource efficiency. Many proposals focus on economic (safety of supply, competitiveness) as well as environmental (reducing environmental impacts) sustainability. Lifecycle approaches to doing business and consuming in a circular economy are still lacking.

3. Regarding an environment conducive to better human health and well being:

Health issues linked to the environment are affected by sectoral policy proposals, with for example air pollution clearly affected by transport.

TARGETS SET BY EU ENVIRONMENT POLICY

The 7th EAP operates against a background of many existing targets, which provide a web of objectives for different policy areas. This Annex documents some of the main targets.

In the energy sector, major targets have been established for energy efficiency and renewable energy sources: the EU has made the commitment to reduce the consumption of primary energy by 20% by 2020, compared to energy consumption forecasts for 2020; this objective is part of the "20-20-20" targets. The 2020 target has not yet been fully translated into binding measures but some legislative steps have been taken on "zero-energy" buildings for instance.

Also part of the "20-20-20" targets: renewable energy sources should increase to 20% of final energy consumption, with specific targets on biofuels and electricity; and GHG emissions should be reduced by 20% by 2020 compared to 1990. Stronger reductions targets are set in strategic documents by 2030 and by 2050 (-40% and -80%). In this regard, the transport sector is subject to an extensive set of targets for the reduction of GHG emissions from cars and light commercial vehicles, but also from shipping and air transport. The Transport Roadmap in particular calls for airlines to increase their use of sustainable low-carbon fuels to 40% and shipping to reduce by 40% its carbon emissions by 2050 (compared to 2005 levels).

These targets also aim at improving air quality, with further strategic objectives for reduction of emissions by 2012 and 2020. Legislative measures set national emission ceilings for 4 relevant atmospheric pollutants (sulphur dioxide, nitrogen oxides, volatile organic compounds and ammonia), responsible for acidification, eutrophication and ground-level ozone pollution to be met by Member States by 2010.

Regarding waste, the EU waste policy aims at ensuring among other objectives that by 2020: waste is managed as a resource; waste generated per capita is in absolute decline; re-use and recycling of waste are economically attractive options for public and private actors; landfilling is virtually eliminated; illegal shipments are eradicated.

Such as turning waste into a resource, strategic objectives related to sustainable consumption and production are developed in the Roadmap to a Resource Efficient Europe for the transformation of the European economy by 2020. These non binding objectives include phasing out environmentally harmful subsidies, decoupling economic growth from resource use, setting of resource efficiency targets and indicators...

By 2020 again, water abstraction should stay below 20% of available renewable water resources, the impacts of droughts and floods should be minimised, with adapted crops, increased water retention in soils and efficient irrigation; alternative water supply should only be relied upon when all cheaper savings opportunities are taken. In the medium term, three important binding objectives prevail in the water sector: good ecological and chemical status of all surface and groundwater bodies by 2015; compliance with bathing water quality by 2015; and good environmental status in the marine environment by 2020.

The rapid adoption of the Regulation for the registration, evaluation, authorization and restriction of chemicals (REACH) was considered a milestone in the Review of the EU Sustainable Development Strategy which requires that by 2020 chemicals are produced and

used in ways that do not threaten human health and the environment. REACH provides compulsory measures on banning the manufacture, placing on the market or use of a chemical substance that poses an unacceptable risk to health or the environment.

As for biodiversity and nature, ambitious strategic objectives exist: halting the loss of biodiversity and the degradation of ecosystems by 2020; restoring at least 15% of degraded ecosystems; halting global forest loss by 2030; ensuring an objective of no net land take by 2050.

In terms of target development, The Roadmap to a Resource Efficient Europe (henceforth 'Roadmap')¹ announced that the European Commission would launch a joint effort with stakeholders to define indicators and targets for guiding actions and monitoring progress on the path to the 2050 resource efficiency vision.

The following table presents a more comprehensive inventory of EU environmental policy targets for the period 2010-2050, according to the 7th EAP problem definition. It shows the timeline for implementation of **strategic objectives** (in blue) and **binding objectives** (in red) set by EU legislation.²

¹ COM(2011)571

² Tables are based on "EU Environmental and Resource Policies: Strategic Objectives and Binding Targets", Susanna Paleari, CERIS-CNR for the EEA (forthcoming)

Objectives	Sources	Deadline for implementation
Ensuring that Europe's natural capital is sufficiently resilient to pressure and change		
<i>Pressure on ecosystems (from air pollution, eutrophication)</i>		
Reduction in excess acid deposition of 74% and 39% in forest areas and surface freshwater areas respectively	Thematic Strategy on Air Pollution, COM(2005)446 final	⇒2020
43% reduction in areas or ecosystems exposed to eutrophication	Thematic Strategy on Air Pollution, COM(2005)446 final	⇒2020
<i>Conservation Status (safeguard EU's most important habitats and species)</i>		
Achieve a significant and measurable improvement in the status of species and habitats covered by EU nature legislation	COM(2011)244 final	⇒2020
Biodiversity in the marine environment is maintained	Directive 2008/56/EC	⇒2020
<i>Biodiversity (terrestrial and marine species and habitats)</i>		
Halt the loss of biodiversity	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2010
Fishing within MSY	Review of the EU Sustainable Development Strategy, European Council, June 2006; COM(2011)571 final; COM(2011)244 final	⇒2015
Improve management and avoid overexploitation of renewable natural resources	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2015
Halt the loss of biodiversity and the degradation of ecosystem services	COM(2011)571 final	⇒2020
Halt global forest cover loss	COM(2008)645 final	⇒2030
No net land take	COM(2011)571 final	⇒2050
Better protection/restoration of ecosystems and their services and greater use of green infrastructure	COM(2011)244 final	⇒2020
Better management of EU fish stocks	COM(2011)244 final	⇒2020
Tighter controls of invasive alien species	COM(2011)244 final	⇒2020
Greater EU contribution to averting global biodiversity loss	COM(2011)244 final	⇒2020
<i>Soil degradation (soil erosion)</i>		
Reduce soil erosion and the rate of land take, increase soil organic matter	COM(2011)571 final	⇒2020
Natural capital and ecosystem services are properly valued	COM(2011)571 final	⇒2020
EU policies take into account their direct and indirect impact on land use	COM(2011)571 final	⇒2020
More sustainable agriculture and forestry	COM(2011)244 final	⇒2020
<i>Water quality (ecological and chemical status)</i>		
Surfaces and groundwater bodies in river basins achieve "good status" as required by the WFD	Directive 2000/60/EC	⇒2015
"Good environmental status" is achieved or maintained in the marine environment	Directive 2008/56/EC	⇒2020
Priority hazardous substances under Directive 2008/105/EC are eliminated from surface waters in accordance with the WFD	Directive 2008/105/EC	⇒2028
<i>Water pollution (from point sources and bathing water quality)</i>		
Bathing waters achieve a classification of at least "sufficient"	Directive 2006/7/EC	⇒2015
Extension of IPPC requirements to new activities	Directive 2010/75/EU	⇒2015

Objectives	Sources	Deadline for implementation
Ensuring that Europe's economy is highly resource efficient and low-carbon emitting		
<i>GHG emissions</i>		
EU-15 shall cut its aggregate GHG emissions by 8% compared to 1990 levels(2008-2012)	Kyoto Protocol approved by the EU in 2002	⇒2012
Stop to production of HCFCs	Regulation 1005/2009/EC	⇒2019
Reduce GHG emissions by 20% compared to 1990 levels	Proposals of the European Commission approved by the European Council in 2007	⇒2020
Reduce GHG emissions by approximately 10% compared to 2005 levels in sectors not covered by ETS, excluding LULUCF	Decision 406/2009/EC	⇒2020
Reduce GHG emissions by 40% compared to 1990 levels	COM(2011)112 final	⇒2030
Reduce GHG emissions by 80% compared to 1990 levels	COM(2011)21 final and COM(2011)112 final	⇒2050
Phase out of MAC designed to use F-gases with global warming potential >150 for new types of vehicles	Directive 2006/40/EC	⇒2011
Fleet average CO ₂ emissions from for new cars: 120g/km	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2012
1% yearly reduction in transport GHG emissions on average	COM(2011)571 final	⇒2012
Fleet average CO ₂ emissions from new cars: 130g/km (2012-2015)	Regulation 443/2009/EC	⇒2015
Phase out of MAC designed to use F-gases with global warming potential >150 for new vehicles	Directive 2006/40/EC	⇒2017
Fleet average CO ₂ emissions from new light commercial vehicles: 175g/km (2014-2017)	Regulation 510/2011/EU	⇒2017
Fleet average CO ₂ emissions from new light commercial vehicles: 147g/km	Regulation 510/2011/EU	⇒2020
Fleet average CO ₂ emissions from new cars: 95g/km	COM(2010)186 final	⇒2020
95 g CO ₂ /km as average emissions for the new car fleet	Regulation 443/2009/EC	⇒2020
Reduce life cycle GHG emissions x unit of energy from fuel and energy supplied by at least 6% compared to a fuel baseline standard	Directive 98/70/EC, consolidated version	⇒2020
Reduce CO ₂ emissions from the transport sector by 20% compared to 2008 levels	COM(2011)144 final	⇒2030
Reduce conventionally fuelled cars in cities by 50%	COM(2011)144 final	⇒2030
Major urban centers achieve essentially CO ₂ -free city logistics	COM(2011)144 final	⇒2030
30% of road freight over 300 km shifts to rail/waterborne transport	COM(2011)144 final	⇒2030
Reduce CO ₂ emissions from the transport sector by 60% compared to 1990 levels	COM(2011)144 final	⇒2050
Phase petrol cars out in cities	COM(2011)144 final	⇒2050
Shift 50% of road freight over 300 km to rail/waterborne transport	COM(2011)144 final	⇒2050
Shift to rail the majority of long and medium distance passenger road transport	COM(2011)144 final	⇒2050
Airlines increase their use of low carbon fuels by 40%	COM(2011)144 final	⇒2050
Reduce EU carbon emissions from shipping by 40% compared to 2005 levels	COM(2011)144 final	⇒2050
<i>Energy efficiency</i>		
Overall national indicative energy saving target	Directive 2006/32/EC	⇒2016

of 9% of the annual average amount of final energy consumption		
Reduce by 20% the consumption of primary energy compared to energy consumption forecasts for 2020	COM(2006)545 final; Proposals of the European Commission approved by the European Council in 2007; COM(2010)2020	⇒2020
All new buildings, occupied and owned by public authorities, are nearly-0-E- buildings	Directive 2010/31/EU	⇒2019
All new buildings are nearly-0-E-buildings	Directive 2010/31/EU	⇒2020
<i>Renewable energy sources</i>		
Increase RES to 12 % of total energy consumption	Decision 1600/2002/EC; Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2010
Increase biomass use by over 50% compared to 2003	COM(2005)628 final	⇒2010
Increase RES to 15% of total energy consumption	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2015
Increase RES to 20% of final energy consumption	Proposals of the European Commission approved by the European Council in 2007; COM(2010)2020 final	⇒2020
Increase RES to 20% of final energy consumption	Directive 2009/28/EC	⇒2020
Increase electricity from RES to 21% of total electricity consumption	Review of the EU Sustainable Development Strategy, European Council, June 2006; Directive 2001/77/EC	⇒2010
Achieve a percentage of 22% of the electricity production from renewable energies	Decision 1600/2002/EC	⇒2010
Increase biofuels to 5,75% of all petrol and diesel for transport purposes placed on the market by 31 December 2010	Directive 2003/30/EC	⇒2010
Increase biofuels to 8 % of all petrol and diesel for transport purposes placed on the market	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2015
Increase biofuels to 10% of the overall EU transport petrol and diesel consumption	COM(2006)848 final; Proposals of the European Commission approved by the European Council in 2007	⇒2020
Increase the share of energy from RES to 10% of the final consumption of energy in transport	Directive 2009/28/EC	⇒2020
<i>Decoupling (resource use from economic growth)</i>		
Achieve an EU average level of GPP equal to the one of the best performing Member States	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2010
50% of all tendering procedures should be green	COM(2008)400 final	⇒2010
Phase out environmentally harmful subsidies and substantially increase the share of environmental taxes	COM(2011)571 final	⇒2020
Price signals and environmental information in place to stimulate citizens and public authorities to choose the most resource efficient products and services	COM(2011)571 final	⇒2020
Market and policy incentives that reward business investments in efficiency are in place	COM(2011)571 final	⇒2020
Resource efficiency targets and indicators guide public and private decision-makers	COM(2011)571 final	⇒2020

Economic growth and wellbeing is decoupled from resource inputs	COM(2011)571 final	⇒2020
Economy grows respecting resource constraints	COM(2011)571 final	⇒2050
Waste generation		
Waste is managed as a resource	COM(2011)571 final	⇒2020
In absolute decline of waste generated per capita	COM(2011)571 final	⇒2020
No heavy metals (Pb, Hg, Cd, hexavalent Cr, PBB and PBDE) in new electrical and electronic equipment	Directive 165/2011/EU	⇒2019
20% reduction in the food chain's resource inputs	COM(2011)571 final	⇒2020
Disposal of edible food waste is halved	COM(2011)571 final	⇒2020
Waste management		
Ensure high quality recycling	COM(2011)571 final	⇒2020
Limit energy recovery to non recyclable materials	COM(2011)571 final	⇒2020
Virtually eliminate landfilling	COM(2011)571 final	⇒2020
Eradicate illegal shipments of waste	COM(2011)571 final	⇒2020
Recycling targets for batteries (by average weight): – 65% of lead acid batteries, – 75% of nickel cadmium batteries, – 50% of other batteries	Directive 2006/66/EC	⇒2011
Targets for end of life vehicles (by average weight per vehicle per year): – Reuse + Recovery: 95% – Reuse + Recycling: 85%	Directive 2000/53/EC	⇒2015
Recycling+ Reuse: 70% by weight of non hazardous construction & demolition waste	Directive 2008/08/EC	⇒2020
Recycling+ Reuse: 50% by weight paper, plastic, glass, metal from households	Directive 2008/08/EC	⇒2020
Landfilling of biodegradable municipal waste: reduction to 50% of total 1995 biodegradable municipal waste	Directive 1999/31/EC	⇒2010
Decontamination or disposal of equipment with PBC volumes > 5 dm ³	Directive 96/59/EC	⇒2010
Collection target for batteries: 25%	Directive 2006/66/EC	⇒2012
Separate collection for glass, plastic, metal, paper	Directive 2008/98/EC	⇒2015
Collection target for batteries: 45%	Directive 2006/66/EC	⇒2016
Disposal of biodegradable municipal waste: reduction to 35% of total 1995 biodegradable municipal waste	Directive 1999/31/EC	⇒2016
Water stress (water exploitation)		
Keep water abstraction below 20% of available renewable water resources	COM(2011)571 final	⇒2020
Alternative water supply options are only relied upon when all cheaper savings opportunities are taken	COM(2011)571 final	⇒2020
The impacts of droughts and floods are minimised	COM(2011)571 final	⇒2020

Objectives	Sources	Deadline for implementation
Ensuring that the health and wellbeing of EU citizens continue to benefit from high degrees of environmental protection		
<i>Transboundary air pollution</i>		
PM _{2,5} and ozone target values	Directive 2008/50/EC	⇒2010
National emission ceilings for SO ₂ , NO _x ; VOC, NH ₃	Directive 2001/81/EC	⇒2010
Second set of VOCs limit values for paints and varnishes	Directive 2004/42/EC	⇒2010
Target values for concentration of As, Cd, Hg, Ni, benzo(a)pyrene in air	Directive 2004/107/EC	⇒ 2012
New PM _{2,5} limit value + exposure concentration obligation	Directive 2008/50/EC	⇒2015
Extension of IPPC requirements to new activities	Directive 2010/75/EU	⇒2015
New ELV for selected VOCs and halogenated VOCs	Directive 2010/75/EU	⇒2015
New ELV for existing large combustion plants and for combustion plants which co-incinerate waste	Directive 2010/75/EU	⇒2016
Service stations with a throughput > 3,000 m ³ shall install PVRII technology	Directive 2009/126/EC	⇒2018
Emissions reductions: -82% of SO ₂ , -60% of NO _x , -51% of VOC _s , -27% of NH ₃ , -59% of primary PM _{2,5} compared to the year 2000	Thematic Strategy on Air Pollution, COM(2005)446 final	⇒2020
PM _{2,5} indicative limit value and exposure reduction target	Directive 2008/50/EC	⇒2020
Marine fuels with a sulphur content of over 0.1% by mass are prohibited at berth in EU ports and in Sulphur Emission Control Areas	Directive 1999/32/EC consolidated version	⇒2010
<i>Air quality in urban areas</i>		
47% reduction in loss of life expectancy as a result of exposure to particulate matter	Thematic Strategy on Air Pollution, COM(2005)446 final	⇒2020
10% reduction in acute mortalities from exposure to ozone	Thematic Strategy on Air Pollution, COM(2005)446 final	⇒2020
When purchasing road transport vehicles contracting authorities shall take into account energy and environmental aspects	Directive 2009/33/EC	⇒2010
Euro 5 standard for registration and sale of new types of cars	Regulation 715/2007/EC	⇒2011
Euro VI standard for new types of heavy vehicles	Regulation 595/2009/EC	⇒2012
Euro VI standard for all new heavy vehicles	Regulation 595/2009/EC	⇒2013
Euro 6 standard for approval of light vehicles	Regulation 715/2007/EC	⇒2014
Euro 6 standard for registration and sale of new types of cars	Regulation 715/2007/EC	⇒2015
<i>Chemicals</i>		
REACH restrictions concerning tri-substituted organostannic compounds, PHAs, DEGME, DEGBE, MDI, cyclohexane and ammonium nitrate	Regulation 1907/2006/EC and amendments	⇒2010
Phase out of several active substances contained in selected biocidal product types ³	Regulation 1451/2007/EC and Directive 98/8/EC consolidated version	⇒2010
Ban on the export of metallic mercury	Regulation 1102/2008/EC	⇒2011
Phase out of several active substances contained in selected biocidal product types	Regulation 1451/2007/EC and Directive 98/8/EC consolidated version	⇒2011

³ The complete list of active substances and the related dates by which products containing these active substances shall no longer be placed on the market for the relevant product-types is available at: http://ec.europa.eu/environment/biocides/pdf/list_dates_product_2.pdf

REACH restrictions concerning DOT compounds, Cd, dichloromethane (final deadline), acrylamide	Regulation 1907/2006/EC and amendments	⇒2012
Phase out of several active substances contained in selected biocidal product types	Regulation 1451/2007/EC and Directive 98/8/EC consolidated version	⇒2012
Phase out of several active substances contained in selected biocidal product types	Regulation 1451/2007/EC and Directive 98/8/EC consolidated version	⇒2013
Biocidal products containing “existing active substances” (on the market in the EU on 14 May 2000)not included in Annex I shall no longer be placed on the market	Directive 98/8/EC consolidated version	⇒2014
General principles of integrated pest management are implemented by all professional users	Directive 2009/128/EC	⇒2014
“Sunset date” for the following SVHC: 5-ter-butyl-2,4,6-trinito-m-xylene and MDA	Regulation 1907/2006/EC and amendments	⇒2014
“Sunset date” for the following SVHC: HBCDD, DEHP, BBP, DBP, DIBP, diarsenic trioxide, diarsenicpentaoxide, lead chromate, lead sulfochromate yellow, lead chromate molbydatesulphate red, TCEP and 2,4-DNT	Regulation 1907/2006/EC and amendments	⇒2015
REACH restrictions concerning DBT compounds (final deadline)	Regulation 1907/2006/EC	⇒2015
Ensure that chemicals are produced and used without threats to humans and the environment	Review of the EU Sustainable Development Strategy, European Council, June 2006	⇒2020

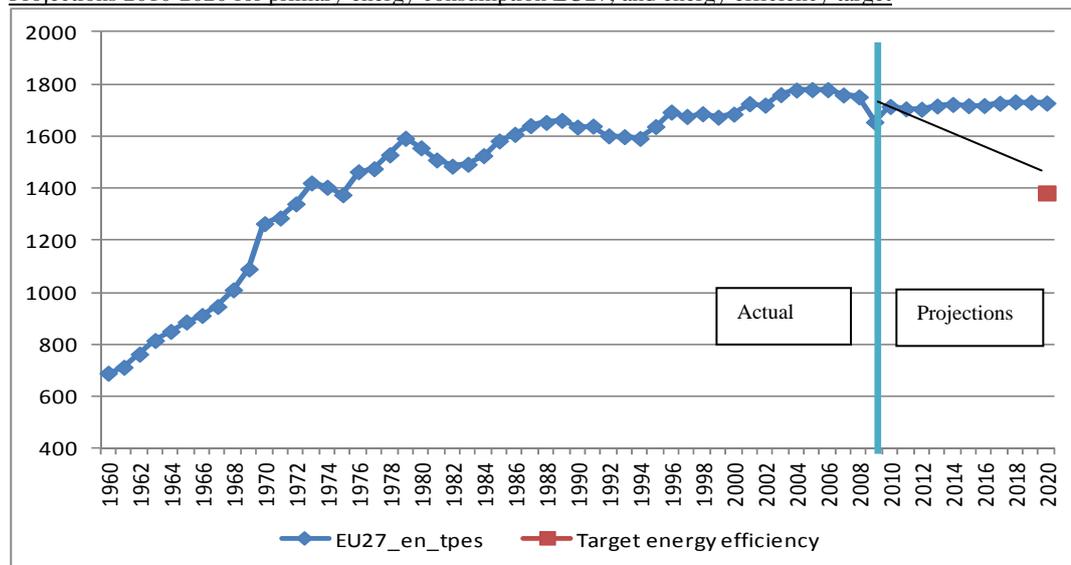
The EEA⁴ assessed the gaps to targets according to projected trends for the most critical targets by 2020 in 4 sectors: energy use, GHG emissions, air pollutants and waste. These targets are used as proxies for the transition towards a green economy. It shows a lack of structural break, which is needed for this economic transition, in the past and forecast trends, thus allowing to calculate a gap to target (see table below).

⁴ Towards a Green Economy in the EU, Gaps and macroprocesses, EEA, April 2012

Projected gap to target in energy use by 2020

Energy			
Target	Indicator	Projected trend towards 2020	Gap to target
Reduce by 20% the consumption of primary energy compared to energy consumption forecasts Saving target of 368 Mtoe of primary energy compared to projected consumptions of 1842 Mtoe	Total primary energy supply = total domestic energy supply + net imports (proxy for apparent consumption)	No significant break, energy consumption has increased steadily	2009: TPES= 1654 Mtoe Projection for 2020= > 1700 Mtoe Target= < 1400 Mtoe Gap = > 300 Mtoe

Projections 2010-2020 for primary energy consumption EU27, and energy efficiency target

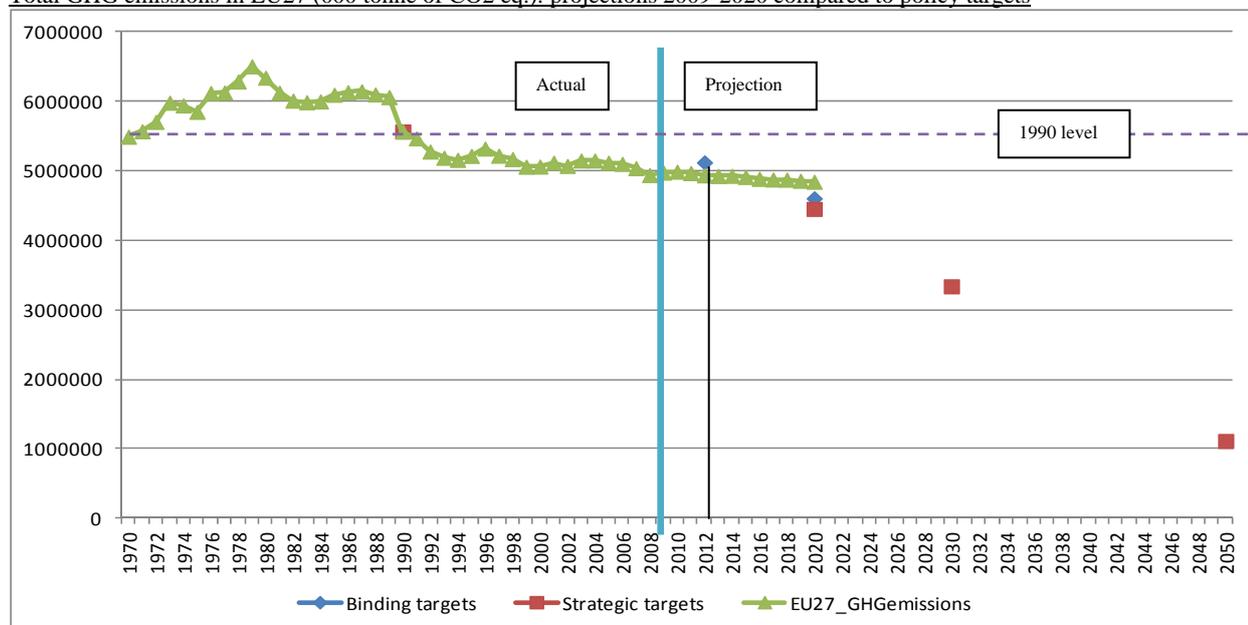


Source: EEA elaborations on IEA data

Projected gap to target in GHG emissions by 2020

GHG emissions			
Target	Indicator	Projected trend towards 2020	Gap to target
<u>Binding target:</u> reduce emissions by 10% compared to 2005 levels	GHG emissions	Slowly decreasing trend in the 2000s. Target likely to be achieved but not the targets for 2030 and 2050, especially if economic recovery from crisis increases.	<u>Gap-to-binding target:</u> 237 million tons CO2
<u>Strategic target:</u> reduce GHG emissions by 20% compared to 1990 levels (-40% by 2030; - 80% by 2050)			<u>Gap-to-strategic target:</u> 389 million tons CO2

Total GHG emissions in EU27 (000 tonne of CO2 eq.): projections 2009-2020 compared to policy targets



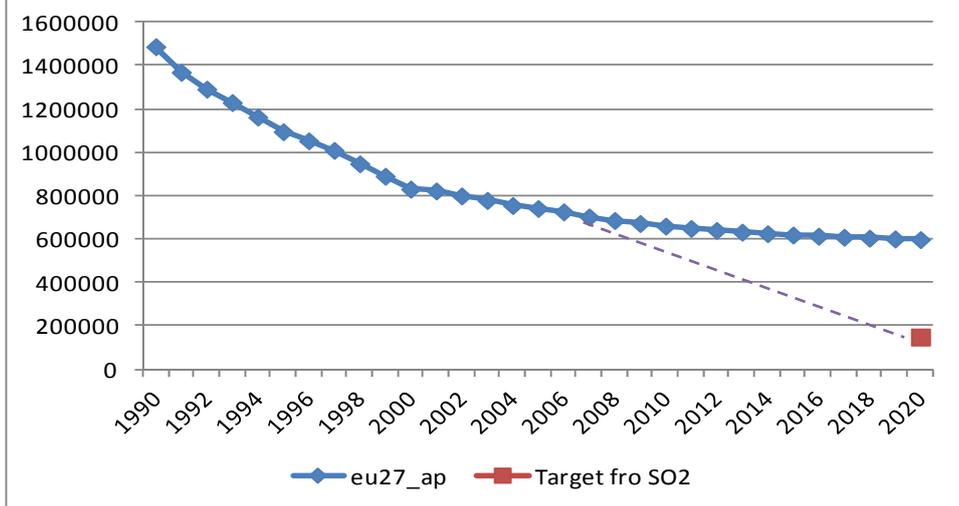
Source: EEA elaborations on EDGAR-HYDE 1.4; Van Aardenne et al. (2001) adjusted to Olivier and Berdowki (2001). CO2, CH4 and N2O included (for 1970-1989) and Eurostat (for 1990-2008)

Note: Significant structural breaks: 1980-1981 and 1986-1990 (1%). Actual data 1970-2008; projected data 2009-2020 based on autoregressive model AR (1) on the differences (1991-2008) (with three terms moving average)

Projected gap to target in air pollution by 2020

<i>Air pollutants</i>			
Target	Indicator	Projected trend towards 2020	Gap to target
Emissions reductions: -82% of SO ₂ , -60% of NO _x , -51% of VOC _s , -27% of NH ₃ , -59% of primary PM _{2.5} compared to the year 2000	Projections for group of substances (comparison with target for specific substance imprecise)	Targets could be met for tropospheric ozone potential, but not for SO ₂ : current trend of slowdown in SO ₂ reduction	See graph below

EU27 projections 2008-2010 for acidifying substances (tons of SO₂ equivalent) assuming the % target 2020 for SO₂



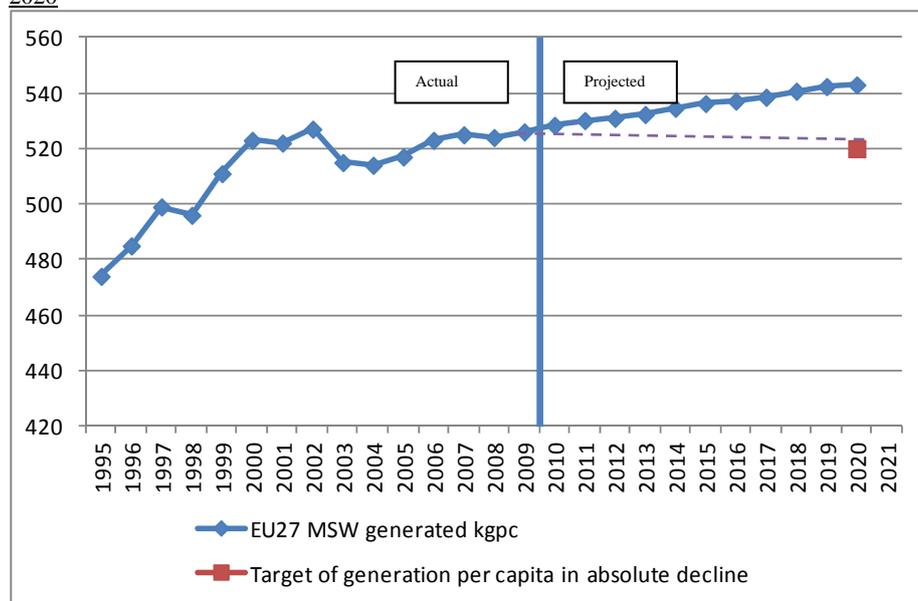
Source: EEA elaborations on Eurostat data

Note: Significant structural break: no. Actual data 1990-2007; projected data 2008-2020 based on autoregressive model AR (1) on levels

Projected gap to target in waste by 2020

Waste			
Target	Indicator	Projected trend towards 2020	Gap to target
Waste generated per capita in absolute decline; landfilling virtually eliminated	Level of per capita Municipal Solid Waste (MSW)	Increasing generation (increasing solid waste generation per capita for EU12) Decreasing trend in landfill use and increasing incineration to converge towards parity of the two in 2020	2008: MSW=524 kg per capita Projection for 2020= 542 kg/cap 2008: landfilled MSW = 207 kg/cap Projection for 2020 = 175 kg/cap

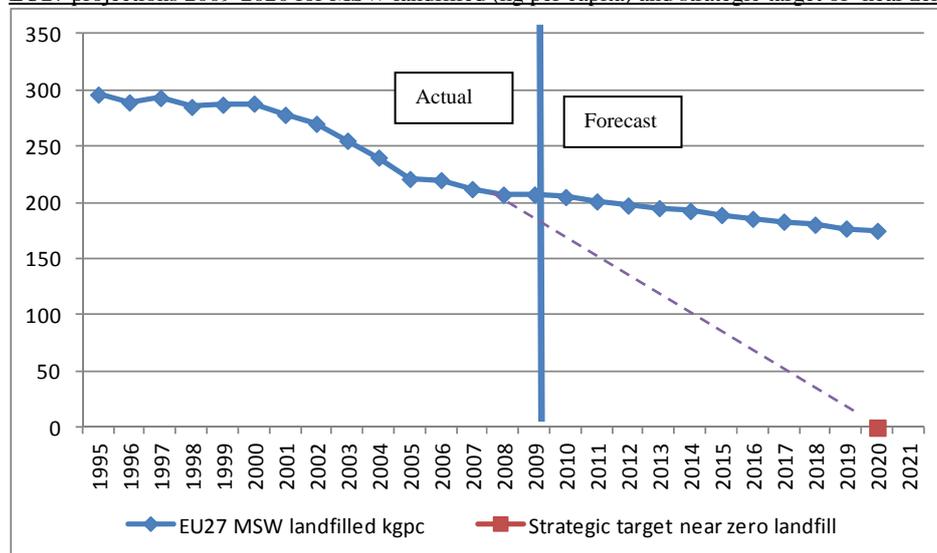
EU27 projections 2009-2020 for MWS generation (kg per capita) and objective of 'waste generated per capita in absolute decline' in 2020



Source: EEA elaborations on Eurostat data.

Note: significant structural breaks (1%): no. Significant structural breaks (5%): no. Actual data 1995-2008; projected data 2009-2020 based on autoregressive model AR (1) on the differences

EU27 projections 2009-2020 for MSW landfilled (kg per capita) and strategic target of 'near zero landfill' in 2020



Source: EEA elaborations on Eurostat data.

Note: significant structural breaks (1%): no. Significant structural breaks (5%): 2001. Actual data 1995-2008; projected data 2009-2020 based on autoregressive model AR (1) on the differences

THE OUTLOOK TO 2020 AND BEYOND TO 2050

1) The OECD Environmental Outlook to 2050¹

By 2050, the Earth's population is expected to increase from 7 billion to over 9 billion. Coupled with expected higher living standards, global GDP is expected to quadruple, with growing demand for energy and natural resources. To feed a growing population with changing dietary preferences, agricultural land is projected to expand globally in the next two decades to match the increase in food demand. Without new policies, global energy demand is projected to increase by 80%, and the energy mix would remain virtually unchanged from today's with fossil energy still supplying 85%.² Without new green growth policies, continued degradation and erosion of natural environmental capital are expected to 2050, with the risk of irreversible changes that could endanger two centuries of rising living standards. The costs and consequences of inaction are significant, both in economic and human terms. The OECD Environmental Outlook to 2050 suggests that without more ambitious policies, by 2050:

- More **disruptive climate change** is likely to be locked in, with global GHG emissions projected to increase by 50%. Atmospheric concentrations could reach almost 685 ppm by 2050, resulting in the global average temperature increase of 3 to 6 degree Celsius by the end of the century³.
- **Biodiversity loss** is projected to continue globally. The main pressures are land-use change and management (e.g. agriculture, urban sprawl), commercial forestry, infrastructure development, human encroachment and fragmentation of natural habitats, as well as pollution and climate change.
- **Global water demand** is projected to increase by some 55%, due to growing demand from manufacturing (+400%), thermal electricity generation (+140%) and domestic use (+130%). These pressures could imply water shortages that would hinder the growth of many economic activities.

¹ Environmental Outlook to 2050 (OECD, Paris, 2012)

² Other studies (such as IEA Technology Perspectives 2012) confirm this possible trend from business as usual, bringing the world on a path to 6 degree C global warming. Taking account of possible policy action currently under way, other IEA scenarios show a world, in which due to implementing some new policies and current climate pledges, climate change could be limited to 4 degrees. (IEA Energy Technology Perspectives, Pathways to a Clean Energy System, Paris 2012); The IEA 450 Scenario presented in the World Energy Outlook 2011, sets out an energy pathway consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO₂.

³ The Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC AR4) concluded in 2007 that based on available information, the equilibrium climate sensitivity (temperature increase as a result of a doubling of GHG concentrations) is likely to be in the range 2°C to 4.5°C, with a best estimate value of about 3°C. Values which are substantially higher than 4.5°C cannot be ruled out, but are unlikely. See also the Impact Assessment of the Roadmap for moving towards a low carbon economy (SEC(2011)288)

- The **health impacts** of urban air pollution will continue to worsen. Because of their ageing and highly urbanised populations, OECD countries are likely to have one of the highest premature death rates linked to ground-level ozone. The burden of disease related to exposure to hazardous chemicals falls more heavily in non-OECD countries.

The Environmental Outlook also highlights the linkages between different environmental issues, and the risk of passing irreversible “tipping points” (e.g. species loss, climate change, groundwater depletion, land and soil degradation).

The OECD’s Green Growth Strategy provides a framework for the best policy mix.

- (i) make pollution more costly than greener alternatives (with environmental taxes, emissions trading schemes to put a price on pollution),
- (ii) better price the true value of natural assets and ecosystem services (e.g. water pricing, payments for ecosystem services),
- (iii) devise proactive and effective regulations (e.g. standards for energy efficiency, to safeguard human health or environmental integrity);
- (iv) remove environmentally harmful subsidies (e.g. to fossil fuels);
- (v) encourage green innovation
- (vi) ensure policy frameworks that incentivise green investments.

Ensuring policy coherence across sectors lies at the heart of a greener growth path. The Outlook also highlights the green growth potential from tackling these environmental challenges, including poverty alleviation, fiscal consolidation and job creation. Impact assessments can be a useful tool towards achieving policy coherence.

The *OECD Environmental Outlook to 2050* also makes a clear conclusion: if we do not take policy action to address the key environmental challenges, the costs of inaction to the economy and human wellbeing of over-use of natural resources, pollution and waste will be significant. Early action, that is well designed is often the optimal solution.

2) Looking back – the OECD's analysis of the period covered by the 6EAP

In 2001, Environment Ministers adopted the 'OECD Environmental Strategy for the First Decade of the 21st Century'. The fundamental objective was to maintain ecosystem integrity, particularly climate, biodiversity and water. Four other objectives were also established:

- decoupling environmental pressures from economic growth;
- improving information for decision-making;
- enhancing the interface of social and environmental policies;
- improving global environmental governance and cooperation.

The OECD reports that the objectives of the Strategy have not been fully achieved. In particular, we risk crossing environmental thresholds. However, there have been areas of progress:

- Advances in the scientific and economic understanding of climate change, biodiversity, and other key elements of global change science;
- Participation of a better informed citizenry in environmental policy;
- Use of more cost-effective policy instruments;

- Initiatives by cities and other sub-national levels of government;
- The beginnings of an international carbon market;
- An increase in the share of official development assistance allocated to the environment, particularly to support implementation of the Rio Conventions;
- Strengthened environmental governance in areas such as the marine environment and chemicals.

Factors holding back progress are identified as:

- Prices do not sufficiently internalise environmental costs; and some subsidies create perverse incentives for environmentally harmful activities. For example, natural assets are consistently undervalued in conventional economic analysis and decision making. As a result, there is a gap between private returns from economic activity and the overall benefits that accrue to society.
- Policy ambition and implementation - there is wide variation among, and sometimes within, countries. Convergence with “top-runners” would help, but not be enough.

The scale of many environmental pressures are seen as outstripping the gains that current policies have achieved in terms of more efficient resource use and reduced pollution generation. Current economic structures, and the associated patterns of production and consumption, are reinforcing the dominance of existing technologies, infrastructure and related institutions. These are formidable barriers to the transition to a low-carbon, more resource-efficient economy. Overcoming this inertia will require substantial innovation, not just in technologies but also in the social and institutional relations in which they are embedded.

3) The EU perspective on global environmental challenges to 2050

The Commission commissioned modelling to complement the OECD Environmental Outlook, and to examine in more depth trends particularly of concern to the EU. The study⁴ provides a global, model-based analysis of five distinct, vitally important resource themes: (i) *Energy*, particularly with regard to scarcity associated with fossil fuels and their key role in climate change; (ii) *land* for agriculture/forestry and terrestrial biodiversity; (iii) *phosphorus*, especially with regard to its irreplaceable role in agricultural production; (iv) *fresh water* with attention to water stress in primary catchment areas; and (v) *fish stocks*.

Looking a few decades ahead, there is ample justification for increasing global concerns in the areas included in the resource efficiency initiative. The model projections suggest, for example, that in the absence of additional targeted policies:

- Global annual energy demand would increase by almost 80% between 2010 and 2050, with 90% of the demand growth in developing and emerging countries. The share of fossil fuels in the total energy demand is projected to remain large (close to 80%). Targets for greenhouse gas emissions would be a long way from being met.
- Increase in agricultural productivity will lag behind increase in food demand, resulting in further expansion in land use for agricultural production in developing countries, notably in Africa and especially up to 2030. This would lead to substantial loss of nature and biodiversity and associated ecosystem services.

⁴ EU Resource efficiency perspectives in a global context, PBL, 2012

- Global annual use of phosphorus fertilisers will increase by 40% up to 2050. Although immediate scarcity of phosphorus in physical terms is unlikely, extraction of this irreplaceable non-renewable resource will concentrate more and more in northern Africa.
- The number of people living in areas affected by severe water stress is projected to increase to 3.9 billion by 2050 (from 1.6 billion in 2000). Most of this increase will take place in South Asia.
- Commercially attractive fish stocks will continue to decline with some functional groups (of similar size and with similar feeding and habitat characteristics) approaching depletion.

With ambitious global efforts, in line with the EU and global objective to limit dangerous climate change to 2° C, the assessment finds that, there is substantial potential to improve efficiency in the use of these resources, a result which is also confirmed by a number of other studies and assessments:

- The increase in global annual energy use between 2010 and 2050 could be limited to less than 25%. For greenhouse gas emissions, this would halve the gap between the situation of unchanged policy and the 450 ppm CO₂ eq mitigation scenario⁵
- Net global agricultural expansion between 2010 and 2050 may be halted, with expansion in Africa reduced by half, by improving the efficiency of agricultural production, consumption and food supply chains. Most industrialised countries and emerging economies would see a net reduction in their agricultural areas, after 2020.
- The global increase, up to 2050, in the use of phosphorus fertilisers from primary sources could be limited to 11%; mainly by making better use of manure and by recycling phosphorus from human excreta. Additional phosphorus savings could be achieved by improving animal feed and by banning the use of phosphorus in detergents.
- Globally, water efficiency, in all sectors combined, could be improved by 25%.
- Fish stocks may recover and marine biodiversity may improve, thus, sustaining higher catches in the long term, following a temporary reduction in fishing efforts.

Although these potential improvements are substantial, complementary measures will be needed to curb negative trends. To accomplish biodiversity goals, for example, in addition to halting the expansion of agricultural land, other pressures, such as from fragmentation and nitrogen compounds, also need to be addressed. The situation regarding fresh water appears to be most alarming. The efficiency gains will not be sufficient to offset the effects of strong population growth in water stressed river basins. As a consequence, some 3.7 billion people will still be living in areas affected by severe water stress by 2050.

The potentials for ambitious improvements that would lead to a more efficient use of the five resources in focus are interrelated, and the analysis revealed many synergies. However, there are also some trade-offs, such as additional amounts of water and fertilisers needed to sustain

⁵ For a detailed analysis of global emission scenarios see the Impact Assessment of the Roadmap for moving towards a low carbon economy (SEC(2011)288, in particular section 5.1). Also according to recent IEA work, energy developments compatible with achieving the 2 degrees objective are also possible, thereby implying a great deal of energy savings, technology improvements and fuel switching. World energy demand growth could be kept at some 35% to 2050 and the share of fossil fuels could be reduced below 50%, while using clean and efficient technologies including CCS (IEA Energy Technology Perspectives, Pathways to a Clean Energy System, Paris 2012).

improved crop productivity, and the consequences of reduced deforestation when agricultural expansion is reduced.

As part of this workstream, analysis was also undertaken to illuminate the relationships between the EU and other world regions, from a global, long-term and integral point of view⁶. Its focus is on environment-related issues whereby actions within the EU, or the fact that no actions are being taken, are expected to have significant consequences elsewhere in the world, or where the EU needs global partners to effectively address a problem. One issue study explores future scarcities of natural resources, using phosphate and fish as examples, and two studies explore various aspects of biomass use for energy. Of these last studies, one concerns a longer time scale and the other is tailored to current and near-term policies. The studies show clearly that resource efficiency cannot be considered in an EU context alone, as the EU will be affected by global trends.

Starting from the European Council's objective to reduce EU GHG emissions by 80-95% compared to 1990 by 2050, in the context of necessary reductions by developed countries as a group, the Commission has evaluated the energy and climate effects of such global action with several scenarios as part of the Roadmap for moving to a competitive low carbon economy in 2050 and of the Energy Roadmap 2050. Achievement of 80% domestic GHG emission reduction in the context of global action is shown to be technically and economically feasible without entailing additional costs compared to current trends that are characterised by increasing fossil fuel prices and a great deal of modernisation investment that is necessary in any case. Energy consumption can be reduced in the EU by a third by 2050, which would ensure reaching the GHG objective if it is supplemented with a mix of low carbon technologies, including very high shares of renewable energy sources.⁷

⁶ Global integrated assessment to support EU future environment policies, PBL, 2012

⁷ See SEC(2011)288 and Energy Roadmap 2050, Impact Assessment and Scenario Analysis, December 2011

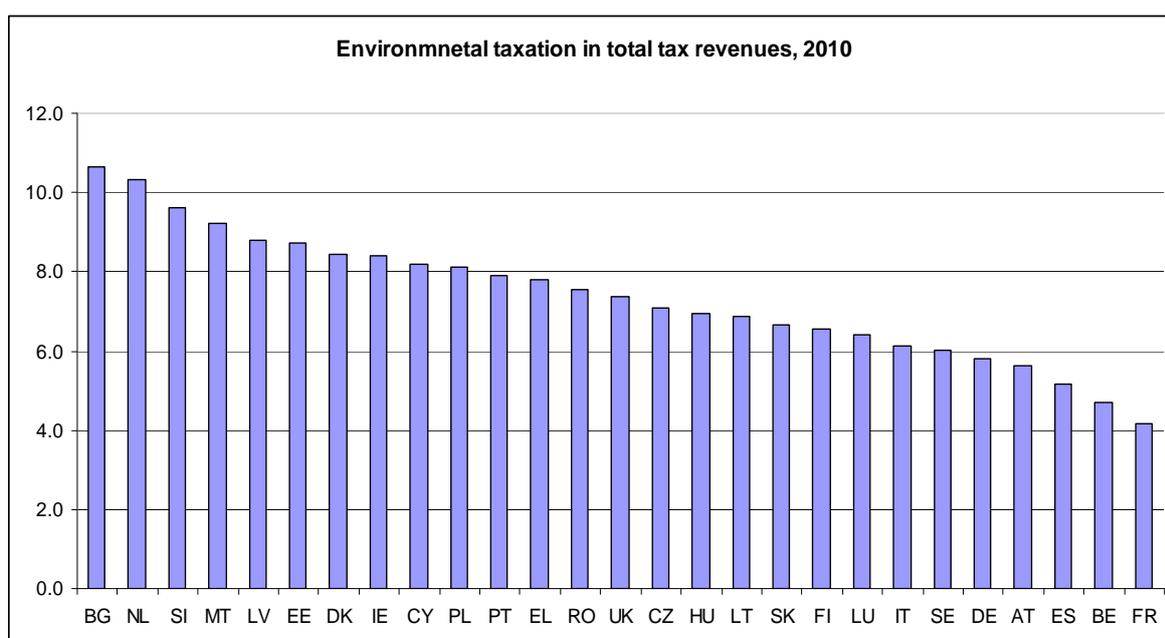
THE LINK BETWEEN THE ENVIRONMENT AND COMPETITIVENESS

The economic and financial context is much less favourable now than when the 6EAP was adopted. This makes it especially timely to examine the link between environmental protection and improving resource efficiency on the one hand and between growth and jobs on the other hand.

Governments are facing severe pressures to reduce budget deficits, there are nevertheless opportunities for environment related policies to contribute to fiscal consolidation (by removing environmentally harmful subsidies and shifting the tax burden from capital and labour to pollution), and to improving productivity and competitiveness (by promoting greener, more efficient technologies, and related employment opportunities).

The possibilities for fiscal consolidation

Fiscal consolidation would be helped by shifting taxes from labour to pollution. Environmental taxes are an efficient market-based instrument to achieve environment policy objectives, while supporting growth-friendly budget consolidation. Some Member States have achieved a relatively large proportion of environmental tax revenues (including energy taxes) as a share of total taxes, whilst maintaining fiscal revenues and improving competitiveness and energy efficiency. This demonstrates that it is possible to shift taxation onto environmentally harmful activities within a sound economic framework.



Source: Eurostat

Best practice in Europe is that environmental taxes contribute around 10% of all taxes. However, the average contribution of environmental taxes is only 6.3%. If all countries achieved what the frontrunners are, then there would be additional tax revenue equivalent to around 1.4% of Europe's GDP that could be used to reduce deficits or labour taxes.

A complementary action is to reform the subsidies offered for inefficient activities that are also harm the environment. This would also help fiscal consolidation. The OECD's work on fossil fuels, suggests that OECD governments could save up to 75 billion dollars a year, and other countries an additional 400 billion dollars a year. Another example is that in Europe we provide favourable tax treatment of company cars at a cost of almost half a percentage point of GDP. Such support could be better targeted on green cars.

The possibilities to improve productivity and competitiveness

The environment and natural resources are an input to the European economy. Because of this, they are linked to the economy's competitiveness. The macroeconomic viewpoint is not contentious: if resources are a factor for production, they impact on productivity and growth. However, if the theory is not contended, the debate lies on the potential for improving resource efficiency.

Whilst macroeconomic modelling of the economic underpinning for resource policy is relatively in its infancy, studies are being undertaken. For example, a top-down study for the Commission concludes that we could realistically reduce the total material requirements of the EU economy by 17% and that this could boost GDP by up to 3.3% and create between 1.4 and 2.8 million jobs. Every percentage point reduction in resource use is worth around 23 billion Euros to business and could lead to up to 100,000 to 200,000 new jobs in the short run.¹

In terms of bottom-up analysis, this tells a similar story. A few examples are:

- Study found that UK business could save around £23bn per year from resource efficiency measures that are either no or low cost².
- Empirical evidence suggests that a 10-20% reduction in resource and energy use in Germany is possible³.
- The consultant company McKinsey have identified resource efficiency potential linked to different measures⁴. They estimate that globally there is a \$3.5 trillion business opportunity from improving resource efficiency, according to the preliminary results of their study.
- Using waste as a resource and implementing EU waste legislation fully would save Europe €72 billion a year and create over 400,000 jobs by 2020.⁵

The potential for improved resource efficiency to pay off in terms of cost savings is likely to increase as the prices of natural resources fell over the twentieth century, but generally increased in the last decade. Resources will become scarcer and more expensive in the future – we need to anticipate this change. In particular, global demand for resources is increasing, as the world population grows towards 9 billion people and becomes richer.

¹ "Macroeconomic modelling of sustainable development and the links between the economy and the environment", GWS et al for the Commission, (2011)

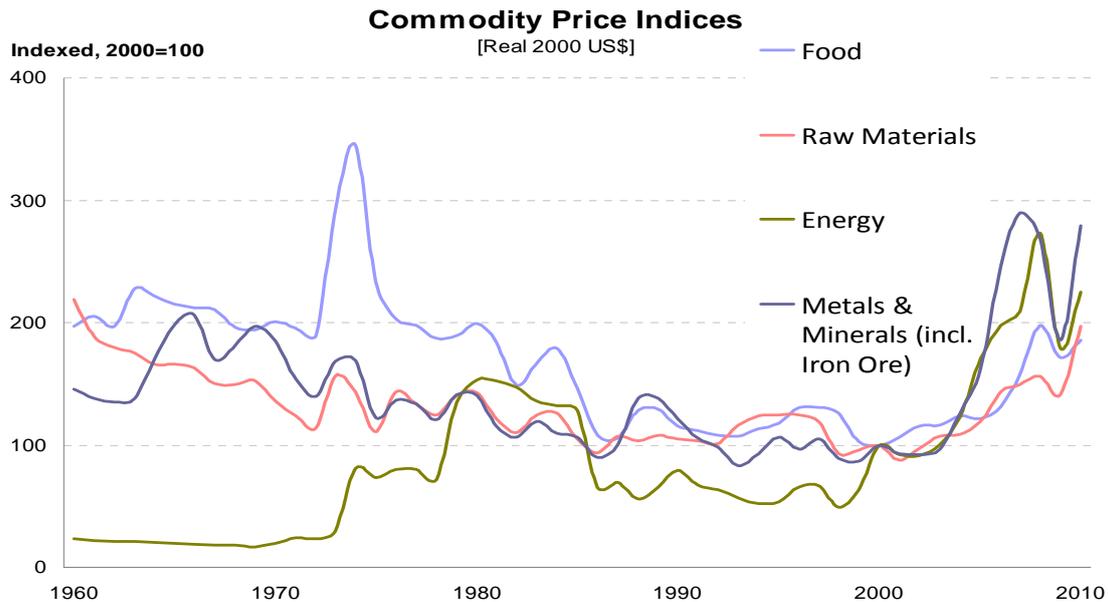
² Oakdene Hollins "Further Benefits of Business Resource Efficiency", 2011

³ Distelkamp, M., Meyer, B., Wolter, M.I. (2005) in: Aachener Stiftung Kathy Beys (Hrsg.) Ressourcenproduktivität als Chance, and MaRes Final Report, Wuppertal et al 2010, referencing others

⁴ McKinsey (2011) Resource Revolution: Meeting the world's energy, materials, food, and water needs

⁵ "Implementing EU waste legislation for green growth" BIO et al for the Commission, (2011)

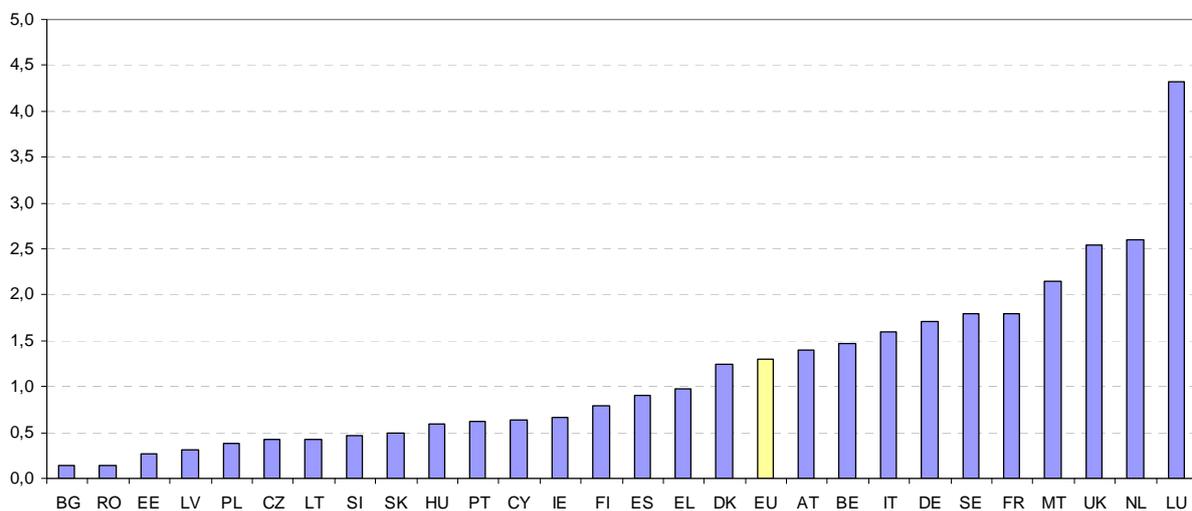
Resource prices over time



Source: World Bank Commodity Price Data (Pink Sheet), historical price data, available from <http://blogs.worldbank.org/prospects/globalcommodity-watch-march-2011>

At the same time, there is room to improve our resource efficiency. This is evidenced, for example, by the big differences between countries in their resource productivity – the GDP they can generate per 'unit' of resources. Clearly, there is room for best practice to be shared, and for countries to improve their performance.

Resource productivity (GDP/DMC) (EUR/kg), 2007



Source: ESTAT, 2011

Stimulating new innovations in resource efficiency will boost productivity and also international competitiveness. The global market for eco-industries is estimated at roughly EUR 1.15 trillion a year in 2010. There is broad consensus that the global market could almost double, with the average estimate for 2020 being around EUR 2 trillion a year.⁶ The EU-27 has a strong export position vis-à-vis nearly all of the world's largest economies.

⁶ "The number of Jobs dependent on the Environment and Resource Efficiency", Ecorys et al (2012)

Risks associated with resource use

As well as prices increasing, they are becoming more volatile and supply is becoming riskier. We are heavily dependent on material imports to Europe, making us vulnerable to supply shocks. There is an on-going shift in Europe to resource imports: by 2030 two thirds of resource use will be either imports or use outside the EU. The result is that the European economy faces a risk associated with resource use, which it needs to manage.

Matrix of risks associated with future European resource use

		Iron & steel	Other metals	Construction minerals	Industrial minerals
Availability	Geological availability	Iron production is energy intensive, but usable deposits of iron ore are geographically widespread	Rare earths: widespread resources in all continents	In some EU countries limited geological availability and topographical accessibility	Most industrial minerals are abundantly available in the earth crust, so generally low risk
	Ecological availability				
Technology	Extraction technologies				
	Substitution and recycling options	Increasing options to substitute iron and steel; increasing shares of scrap iron	Rare earths: limited recycling options	Potentials to recycle are high; shares in practice very different	Limited substitutability; unavailable for recycling, although indirect recovery (e.g. feldspar in glass)
Economic and policy issues	Economic availability			Restrictions due to competition for land	
	Power concentration	3 biggest iron ore producers control 75-80% of global supplies	High market concentration for some critical metals (e.g. antimony, gallium, germanium, indium, rare earths, tungsten largely from China)		High supply concentration for certain minerals (e.g. graphite); Barriers to trade
	Import dependency	High but not critical EU dependency on imported iron ore	Europe is 100% import dependent for many rare metals (e.g. rare earths)		High import dependency related to some IndM (e.g. phosphorous)
	Resource prices	Still among the cheapest metals, but expected future price increases may have economic impacts	Metals industry depends on several energy sources, most importantly electricity	Increase in the long run if spatial planning policies are not implemented	Global demand trends lead to price rise for certain IndM
	Economic vulnerability	Very high economic importance, as almost all industrial sectors depend on iron; EU is second largest manufacturer of iron and steel in the world	High importance of rare metals for many low-carbon technologies; Dependency of modern technology on aluminium, lead, copper	Sensitive to transport costs, have to be sourced locally	High importance in a wide range of industries; many IndM cannot be substituted
Environment	Environmental impacts	Globally, primary iron & steel production have the largest negative env. impacts of all metals (sector with very high energy intensity)	Mining of critical metals often causes considerable environmental burden, but their use in low-carbon may also bring environmental benefits	Landscape and habitat disruption. Emissions related to extraction, transport, processing and deposit	Related to extraction, transport, processing and deposit
	Risks of natural catastrophes	Japan is the largest global supplier of iron and steel; 5 Japanese mills are located in Tsunami affected areas			

		Fossil fuels	Agriculture	Wood	Fish
Availability	Geological availability	Resources will be diminishing in the medium-term	Critical availability of phosphorous		
	Ecological availability		Critical availability of land and water	European forests are generally well managed; continuous deforestation outside the EU due to land use change	Overfishing leads to collapsing fish stocks in the EU (and globally)
Technology	Extraction technologies	Become more complex and more expensive			
	Substitution and recycling options	High dependence on FF in energy supply. After combustion not available for recycling			Limited substitution in aquaculture production of fish
Economic and policy issues	Economic availability				
	Power concentration	Supply is highly concentrated	Future economically viable phosphorus reserves are concentrated in China and Morocco		
	Import dependency	High dependency on imports (50%) will increase	High import dependency on phosphorus and crops for feed		Rising import dependency
	Resource prices	Long-term price rise; price volatility and shocks	Rising food prices	Higher future prices due to increasing use of timber for energy and construction and growing global demand	
	Economic vulnerability	Dependence on ff in energy supply, transport and industrial processing; increasing demand			Negative impacts on fishery industries; fleets become increasingly economically unviable; employment is endangered
Environment	Environmental impacts	Fossil based emissions induce global warming	Climate impacts; soil degradation; water scarcity; biodiversity loss, etc.	Loss of forests due to conversion in agricultural land; climate change impacts	Biodiversity loss, destruction of vulnerable habitats, decreasing stability and water quality
	Risks of natural catastrophes		Reduced yields/harvests due to environmental impacts (climate change!)	Increasing intensity and frequency of extreme weather events due to climate change	

Resource efficiency and job retention and creation

Around 2.7 million people worked in the EU-27 eco-industry in 2008 which represented 0,81% of the total workforce (people age 15 - 64). In 2012, with extrapolation from reported figures, the total number of people working in eco-industries is around 3,4 million. The average annual growth (2000 - 2008) in eco-industry jobs is approximately 2,7 %. Overall, the general trend is therefore of a growing number of 'green jobs', with many more in jobs outside the eco-industry but dependent on the environment as an input.⁷

New technologies, such as nanotechnology, have also the potential to contribute to resource efficiency, growth and job creation, if the associated potential risks are adequately addressed.

⁷

The number of jobs dependent on the environment and resource efficiency improvements", Ecorys, 2012 (<http://ec.europa.eu/environment/enveco/jobs/pdf/jobs.pdf>).

Not surprisingly, the evidence is that improving resource efficiency leads to job creation. For example, as part of its action to combat climate change, the EU has committed to increase the share of energy from renewable sources to 20% by 2020. It is estimated that meeting this target under an accelerated deployment strategy will provide up to an additional 410,000 jobs and boost up to GDP by 0.24%⁸.

The new employment package "Towards a job rich recovery", proposes exploiting the big job potential areas for the future such as the green economy, where it identifies that over 20 million jobs could be created between now and 2020⁹.

⁸ "The impact of renewable energy policy on economic growth and employment in the EU", Employ-RES, 2009

⁹ <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/12/252>

THE UNDERLYING ANALYSIS OF PRIORITY OBJECTIVES¹

1) Protecting, conserving and enhancing the EU's natural capital	3
Biodiversity.....	4
Fresh, transitional and coastal waters	9
Marine waters.....	15
Air	23
Land and soil.....	27
Forests	34
Nutrient cycles	38
2) Turning the EU into a resource efficient, greener and more competitive low-carbon economy.....	44
Low-carbon economy (climate change mitigation)	45
Industrial emissions.....	49
Sustainable production and consumption	52
Waste.....	60
Water stress.....	72
3) Safeguarding EU citizens from environment-related pressures and risks to health and wellbeing	78
Air quality	79
Noise	85
Drinking and bathing waters.....	90
Chemicals.....	95
Climate change adaptation.....	101
4) Maximising the benefits of existing EU environment legislation	105
Compliance information	106

¹ The analysis in this Annex to the Impact Assessment accompanying the 7th EAP is an initial assessment to facilitate the definition of priorities and will be fully revised and deepened considerably in the impact assessment of the individual initiatives.

Partnership implementation agreements	110
Inspections and surveillance	113
Complaints handling	119
Access to justice.....	123
5) Improving the scientific evidence base for environment policy	129
Knowledge gaps.....	130
Emerging environmental risks	135
Streamline environmental data and information.....	138
6) Securing investment for environment policy and getting the prices right	142
Environmentally-harmful subsidies and market-based instruments	143
Private sector funding for environment and climate-related expenditure.....	149
Adequate finance to support environment and climate objectives	154
European Semester.....	160
GDP and Beyond	163
7) Improving integration and policy coherence	167
Improving integration and coherence	168
8) Meeting the urban environment challenge.....	174
Sustainable cities.....	175
9) Confronting global environmental challenges	181
Implementation of Rio+20 outcomes.....	182
Engagement in international environment and climate change negotiations.....	187
Ratifying Multilateral Environmental Agreements (MEAs)	192
Cooperation with third countries.....	194
Reducing the external impact of EU consumption	198

1) Protecting, conserving and enhancing the EU's natural capital

Biodiversity

Current situation

Current global rates of species extinction are now running at up to 1,000 times the natural rate, mainly due to human activities. In the EU, only 17% of assessed protected habitats and species are in favourable conservation status, about 25% of European animal species, including mammals, amphibians, reptiles, birds and butterflies are at risk of extinction, and 88% of fish stocks are over-exploited or significantly depleted. Thus in Europe, biodiversity is in crisis. The situation is no less worrying at the global level. The planet's natural and nature-based assets – from individual species to ecosystems such as forests, coral reefs, freshwaters and soils – are declining at an alarming rate. There are strong ethical and moral arguments in favour of protecting biodiversity in its own right, independently of its instrumental value to humans. Nonetheless, ecosystems provide a number of services that contribute directly and indirectly to human well-being giving us food, fresh water and clean air, shelter and medicine, mitigating natural disasters, pests and diseases and regulating the climate. Therefore biodiversity loss costs billions to the global economy every year, undermining economies, business prospects and opportunities to combat poverty. In the EU, This degradation represents enormous social and economic losses. Indeed it has impacts on jobs, since one in six jobs in Europe is directly or indirectly linked to the environment and biodiversity. To quote just one example, insect pollination, heavily declining in Europe, has an estimated economic value of €15 billion per year in the EU.

In the EU biodiversity is lost mainly due to changes in land use and habitat destruction, pollution, the overexploitation of resources, the uncontrolled spread of invasive alien species, and climate change. These pressures are all either constant or increasing in intensity.

Wider biodiversity protection is underpinned by the EU Biodiversity Strategy to 2020² and the EU 2020 headline target and 2050 vision adopted by the European Council in 2010. The strategy is in line with two major commitments made by EU leaders in March 2010: halting the loss of biodiversity in the EU by 2020, and protecting, valuing and restoring EU biodiversity and ecosystem services by 2050. It is also in line with global biodiversity commitments which the EU signed up to under the Convention on Biological Diversity (CBD)³ in October 2010.

EU nature conservation policy is largely driven by the Birds and the Habitats Directives⁴, which aim to ensure the favourable conservation status of selected species and habitats of Community importance. The LIFE+ instrument provides significant support to the development and implementation of these directives at the national level, through enabling their correct application at specific sites and through providing pan-EU networks addressing similar problems on the ground.

However, biodiversity is directly affected by a number of significant EU rules and policies, such as the Climate and Energy package, the Water Framework Directive (that requires freshwater bodies to be in good ecological status by 2015), the Marine Strategy Framework Directive (which requires good environmental status of the marine environment by 2020), and EU agriculture, fisheries and Cohesion policies, which have an enormous impact on the state of biodiversity in the EU and beyond.

² COM (2011) 244 final.

³ The CBD aims at ensuring the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources across the planet.

⁴ Directives 2009/147/EC and 92/43/EEC.

Future outlook

The 2010 EU Biodiversity Baseline⁵ published by the European Environment Agency (EEA) provides quantitative and qualitative information on the state of biodiversity in the EU. Up to 25% of animal species, including mammals, amphibians, reptiles, birds and butterflies face the risk of extinction. 65% of the habitats and 52% of the species covered by the Habitats Directive are still considered to be in an unfavourable conservation status. On average only 17% of protected habitats are in favourable conservation status, going down to 5% when looking specifically at grasslands and 7% for agro-ecosystems.

There is no single model of how the situation will develop by 2020. However, many predictions have been produced for different ecosystems, species, and climatic scenarios, such as those produced by the Netherlands Environmental Assessment Agency (PBL) (see 2010 EU Biodiversity Baseline). For instance, projections of biodiversity loss in the EU, based on the Mean Species Abundance (MSA) Indicator, show continuing decline beyond 2020 with no indication that the drivers and pressures on biodiversity and ecosystems will reduce in the absence of further action. Indications are that they will remain unchanged (overexploitation, pollution, habitat loss) or worsen (climate change, Invasive Alien Species).

Globally, the evidence is the same: with current policies and current effort the loss of biodiversity and ecosystems will continue. A recent study estimated that unless carbon emissions are cut drastically, 75% of the planet's coral reefs risk dying out or being subject to extreme damage within 20 years, rising to 95% by 2050. Projections based on the Mean Species Abundance show that global biodiversity is expected to decrease by from about 70% in 2000 to about 60% in 2050 on average.

Key challenges

Knowledge base

Chapter 14 of the EU 2010 Biodiversity Baseline includes an assessment of the data and knowledge gaps. On the basis of this and other analysis, the Commission is working with Member States to establish an integrated framework for monitoring and reporting in order to fill these knowledge gaps. In addition, the Irish Presidency (1st half 2013) has proposed to hold a meeting of the European Platform for Biodiversity Research Strategy to look at research needs and an EU mechanism for strengthening the science-policy interface for the implementation of the EU 2020 Biodiversity Strategy.

Implementation

The Commission is developing, together with Member States and stakeholders, a Common Implementation Framework (CIF) to achieve the targets and implement the different actions set out in the Strategy.

As part of the Biodiversity Strategy, the Commission has proposed a number of initiatives to significantly enhance the implementation of the Birds and Habitats Directives, such as: launch a new process at biogeographical level to strengthen management and restoration of habitats/species of EU conservation concern, improve cooperation with key sectors and continue to develop guidance documents, provide specific information exchange programmes on Natura 2000 for judges and public prosecutors, launch a major communication campaign on Natura 2000 by 2013; improve the flow, accessibility and relevance of Natura 2000 information and create a dedicated ICT tool as part of the Biodiversity Information System for Europe to improve the availability and use of data by 2012.

⁵

<http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline>

Financing

Funding under the EU's multiannual financial framework (MFF) has been important in tackling biodiversity protection in the past, both from the LIFE program, the structural funds as well as fisheries, agricultural, research, development funds. The Commission proposals for the 2014-2020 MFF seek to mainstream biodiversity into all the main instruments, and provide opportunities for financing of biodiversity and ecosystem services across sectors. The mobilisation of other sources of funding and innovative funding mechanisms is also being explored. In addition the Commission recently published a Staff Working Document on "Investing in Natura 2000: Delivering benefits for nature and people" [SEC 2011(1573)]. A recent assessment⁶ for EU-27, based on data supplied by the Member States, estimates the total investments needed for managing the network to be at least €5.8 billion per year, largely confirming earlier estimates. Preliminary estimates produced in the context of the CBD, conclude that the financing needs at global level on marine and terrestrial protected areas generally fall in the range of \$20 billion to \$50 billion a year. Estimates of needs that also include maintenance of biodiversity outside protected areas or for total ecosystem protection fall in the range of US\$ 300–400 billion per year. The LIFE instrument under the new MFF should continue to make an important contribution towards the development of the Natura 2000 network, particularly through finance for large-scale 'integrated' projects designed to mobilize finance also from other sources for implementation of national or regional plans and strategies for management of the Natura 2000 network.

Justification for the priority objective

The protection of nature was among the first policy areas developed under EU environmental legislation, as far back as 1979, in recognition of the fact that the protection of species and habitats has transboundary considerations, as well as important implications for the achievement of other EU policy objectives and the sustainability of many economic sectors in the EU. EU action in the area of biodiversity and nature protection is also important in ensuring a level playing field in the EU and avoiding the distortion of competition in the internal market. As such, the principle of EU involvement in managing biodiversity is now well established.

Indeed, against a background of alarming biodiversity loss, the 2010 Eurobarometer survey shows that 87% of EU citizens feel that biodiversity loss is a very or fairly serious problem in their country and 85% a serious problem in the EU. Fully 96% of respondents are in agreement that halting biodiversity loss is a moral duty stemming from society's responsibility to respect nature. Equally, 92% of citizens advocate protecting biodiversity on the grounds that our well-being and quality of life depend on them. Thus the action and targets outlined in the Strategy are meant to respond to these citizen's demand and are expected to prioritise action with the view stopping or preventing the long-term or permanent reduction in components of biodiversity (genes, species and habitats/ecosystems) and their potential to provide goods and services on which we all depend on.

This policy area is closely interrelated with other policies: water, air, marine, climate change, resource efficiency, trade, development and cooperation, sustainable production and consumption, agriculture, fisheries, cohesion, research. In particular, Target 3 is directly linked to the progress made under the CAP and the Target 4 to progress to be achieved under the CFP reforms. Moreover, the Strategy includes a strong international component to avert global biodiversity loss. It includes actions to: reduce indirect drivers to global biodiversity loss such as some EU consumption and production patterns, mobilise additional resources for third countries, 'biodiversity proof' EU development aid and regulate access to genetic resources and the fair and equitable sharing of benefits arising from their use.

As regards the Resource Efficiency flagship initiative, the protection of ecosystems and their

⁶ SEC(2011) 1573 final; Brussels, 12.12.2011

services as well as actions to combat the indirect drivers of biodiversity loss aimed for in the Biodiversity Strategy, will bring about a more sustainable production and consumption and thus contribute to a more sustainable use of resources. The Roadmap to a resource efficient Europe recognises that investing in natural capital is essential for our economic prosperity and wellbeing and sets as a milestone that by 2020 the loss of biodiversity in the EU and the degradation of ecosystem services will be halted and, as far as feasible, biodiversity will be restored.

As regards health, access to natural areas has proven to have positive influence on health conditions such as obesity, mental health, circulatory diseases and asthma. In addition, biodiversity is an enormous repository of genetic resources that allow making significant progress for research and development in a range of industries (pharmaceuticals, biotechnology, botanical medicines, crop protection, plant and animal breeding and cosmetics), thus contributing to the health and wellbeing of EU citizens.

No new policy initiative proposed in this context, rather a rapid and full implementation of the Biodiversity Strategy and the series of actions and deliverables it contains. One priority will be to ensure full implementation of the EU Birds and Habitats Directives, especially the management and restoration of sites in the Natura 2000 network. The following new and additional policy initiatives already announced in the Strategy are being developed in the context of the Common Implementation Framework (CIF), which support a co-ordinated and streamlined approach to implementation. This framework is being developed by the Commission with the Member States, as well as other key sectors and actors. It aims is to enhance implementation and create ownership by all parties involved. It is guided by experience in existing implementation frameworks of other policy areas, such as those developed for the Water Framework and Marine Strategy Framework directives and building on relevant existing governance structures:

- A Strategy on Green Infrastructure (2012) (Green Paper) to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in green infrastructure projects and the maintenance of ecosystem services, for example through better targeted use of EU funding stream and Public Private Partnerships which would allow leveraging private funds to contribute to achieve the biodiversity objectives. The Green Paper will be based on the mandate provided by the December 2011 Council Conclusions⁷ and the 2012 European Parliament resolution⁸, as well as recommendations produced by the Green Infrastructure Working Group, composed of Member state representatives, stakeholders and experts.
- An initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation of offsetting schemes). This was supported by the Council in its conclusions of December 2011, which called for a common approach for the implementation in the EU of the 'no net loss' principle, taking into account existing experience as well as the specificities of each member State. The Commission established a Working Group on no net loss of ecosystems and their services in early 2012, which is expected to adopt recommendations by mid-2013, to inform the 'no net loss' initiative which the Commission expects to propose in 2015.
- A legislative proposal to combat Invasive Alien Species (IAS) (2012) which will serve the purpose of filling the gaps left by existing legislation, thus providing a coherent and cost effective framework to prioritise action to tackle the problems caused by IAS. The main policy objective is to minimise the impact of such species on biodiversity, reduce the social and economy impacts of the establishment of IAS and minimise the effects to public and animal health. The proposal is expected to cover a) the prevention of new IAS entry into EU territory; b) early detection and rapid response; c) control and management to contain spread of already

⁷

<http://consilium.europa.eu/media/1379139/st18862.en11.pdf>

⁸

http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/EP_resolution_april2012.pdf

established IAS; d) horizontal/cross-cutting activities.

- A regulation on Access and Benefit Sharing of Genetic Resources to transpose the obligations of the Nagoya Protocol (2012)

Consideration will be given to the possibility of developing a strategy on the conservation of genetic diversity, which that could address mechanisms to support the use of a wider variety of breeds in agriculture and husbandry to conserve genetic diversity in this sector and avoid the current erosion of genetic resources.

Other policy and initiatives may develop as a result of actions in the Strategy.

Fresh, transitional and coastal waters

Current situation

In recent decades, considerable success has been achieved in reducing the discharge of pollutants to Europe's waters, leading to water quality improvements. However, information reported in the first Water Framework Directive (WFD) River Basin Management Plans (RBMPs) indicates that more than half of the surface water bodies in Europe are in less than good ecological status or good ecological potential, and additional measures will be needed to meet the WFD objective of achieving good status by 2015. The pressures reported to affect most surface water bodies are pollution from diffuse sources causing nutrient enrichment and hydromorphological changes, which have negative effects on freshwater ecosystems.

In addition, large areas, particularly in the south of Europe, are affected by water scarcity. 26 out of 110 water basins are characterised by water stress all year, and 43 are under stress during summer months. The problem of water scarcity goes beyond the physical water gap, as measured with indicators like the Water Exploitation Index. The cost of abstracting, conveying, purifying and further treating the water (including the increase of greenhouse gases emissions) can have large social and economic consequences across most sectors and regions. The pressures causing water stress include water abstraction for irrigation, rising demands from increasing urban areas and energy production. The impacts of climate change are expected to increase the pressure on Europe's water resources, underlining the importance of increased efficiency and savings in water use. Scenario analyses show that, even with strong improvements in water efficiency in all sectors, water stress would remain a problem in numerous EU catchments, including in south, central and western Europe.

In addition to water scarcity, Europe is also suffering from variations in precipitation regimes due to disruptions in the hydrologic cycle, land-use changes and climate change. This has increased the frequency and intensity of floods and droughts damage over the past thirty years. Between 1998 and 2009, Europe suffered over 213 major damaging floods, including the catastrophic floods along the Danube and Elbe rivers in summer 2002. In the same period, floods in Europe caused 1126 deaths, the displacement of about half a million people and at least €52 billion in insured economic losses. (Source: EEA⁹). Moreover, it was estimated that, by 2007, at least 11 % of Europe's population and 17 % of its territory had been affected by water scarcity, putting the cost of droughts in Europe over the past thirty years at EUR 100 billion.

Further socio-economic, land-use and climate changes are likely to exacerbate the situation.

Water policy in the EU encompasses, *inter alia*:

- The Water Framework Directive (WFD), together with its daughter directives on Groundwater and Environmental Quality Standards, requires: integrated water management based on the establishment of River Basin Management Plans to achieve, by 2015, 'good status' for EU waters (freshwaters, river mouths and coastal waters); and 'good potential' for artificial and heavily modified bodies of water. It also provides for the active involvement of interested parties and consultation of the public in water management decisions.
- The Floods Directive (FD)¹⁰ requires Member States to assess which water courses and coast lines are at risk of flooding, to map those areas as well as the assets and people at risk

⁹ <http://www.eea.europa.eu/highlights/natural-hazards-and-technological-accidents>

¹⁰ Directive 2007/60/EC

and to take adequate and coordinated measures to reduce this flood risk by developing flood risk management plans..

- EU policy on Water Scarcity and Droughts aims to prevent and to mitigate water scarcity and drought situations, with the priority to move towards a water-efficient and water-saving economy. The Commission presented an initial set of policy options to increase water efficiency and water savings in a Communication in 2007 on “Addressing the challenge of water scarcity and droughts”¹¹ which has been subject to yearly progress reports.

The implementation of the above instruments is closely connected to and influenced by other legislation, including:

- the Marine Strategy Framework Directive¹², the Urban Waste Water Directive, the Drinking and Bathing Waters Directive the Nitrates Directive, the Industrial Emissions Directive, the SEA/EIA Directives, the Habitats/Birds Directives, the REACH Regulation, Plant Protection Products and Biocides Regulations, the Sustainable Use of Pesticides Directive.
- actions under other policies, such as:
 - Common Agricultural Policy
 - Pharmaceuticals
 - Renewable energy and energy infrastructure/Trans-European energy and transport networks (TEN-Es and TENTs)
 - Cohesion Policy
 - Research Policy

The international dimension of EU water policy includes the enlargement process and the need to ensure that candidate countries correctly implement the acquis and the issue of transboundary river basins. For the latter, the Commission is involved in the work of international river Commissions (e.g. Rhine, Danube, Elbe) to ensure the WFD and FD are implemented also in river basins shared with countries outside the EU.

In response to continuing challenges facing Europe's water resources, the Commission proposes a Blueprint to Safeguard Europe's Waters Resources. It builds on the assessment of the River Basin Management Plans delivered by Member States under the WFD, the Fitness Check¹³ of EU freshwater policy, and the review of the EU policy on Water Scarcity and Drought¹⁴. The Blueprint has the long term aim of ensuring the sustainability of all activities that impact on water, thereby securing the availability of good-quality water for sustainable and equitable water use. To achieve this, the Blueprint focuses on:

- (1) Fostering **integration** of water concerns into sectoral policies by ensuring that the impact of climate change, socio-economic activities and regulations on the state of water resources is taken into account.
- (2) Increasing the use of **economic instruments** for a better allocation of resources and internalisation of external costs.
- (3) Achieving a more efficient **water governance** and effective working relationships between institutions, fully integrating water quality, quantity and hydromorphology concerns in water management.

¹¹ COM(2007)414; http://ec.europa.eu/environment/water/quantity/eu_action.htm#2007_com

¹² Directive 2008/56/EC

¹³ http://ec.europa.eu/environment/water/blueprint/fitness_en.htm

¹⁴ http://ec.europa.eu/environment/water/quantity/eu_action.htm

- (4) Improving **knowledge** and tools available to water managers, enabling effective decision making and reducing administrative burden.

The WFD includes the following legally binding targets to be achieved by 2015, unless exemptions apply:

- Good Water Status (ecological and chemical) for surface waters. This implicitly includes a quantitative element since good ecological status cannot be reached without ensuring the environmental flow, i.e. the amount of water needed by the aquatic ecosystem.
- Good Water Status (quantitative and chemical) for groundwaters

There is currently no legal target for water stress/efficiency and vulnerability to extreme events. This is analysed in the context of the Water Blueprint.

The Roadmap to a resource-efficient Europe sets as a milestone that "By 2020, all WFD River Basin Management Plans (RBMPs) have long been implemented. Good status – quality, quantity and use - of waters was attained in all EU river basins in 2015. The impacts of droughts and floods are minimised, with adapted crops, increased water retention in soils and efficient irrigation. Alternative water supply options are only relied upon when all cheaper savings opportunities are taken. Water abstraction should stay below 20% of available renewable water resources."

Future outlook

The impact assessment prepared for the Water Blueprint includes extensive modelling, which draws on climate, land-use and socio-economic scenarios and looks at implications for availability and use of water resources under different policy scenarios. The aim of this work is to optimise the allocation of water to different users. See section 2.5 and Annex 1 of the impact assessment accompanying the Water Blueprint. The main results show that water quality and availability are both going to decrease in the future, unless appropriate policies are put in place.

Key challenges

Knowledge base

Sound information is required to understand the challenges facing individual water bodies and catchments and the appropriate management responses to these challenges. This not only includes basic monitoring information on state and pressures, but also the analytical tools to interpret these in order to determine which measures and instruments need to be applied where and when. In many cases there is insufficient knowledge or tools, or gaps in the suite of knowledge or tools available to water managers, thus inhibiting effective decision making. These gaps concern mainly quantitative aspects of water management (i.e. how much water flows in and out of a river basin) and the lack of interoperability between different information sources available at various levels.

The Blueprint proposes to:

- 1) Improve WFD reporting requirements and statistical obligations (e.g. through framework regulations on environmental accounts and statistics), especially with regard to inter-operability of data. This includes harmonising the reporting timetables of the Urban Waste Water Treatment, Nitrates and Water Framework Directives.
- 2) Further develop the Water Information System for Europe (WISE) into a fully inter-operable, water information system based on the Shared Environmental Information System (SEIS), reducing reporting requirements while prescribing interoperability standards for the information produced at local and national level and through GMES.

Implementation

The Water Blueprint identifies four key implementation challenges:

1. **Insufficient use of economic instruments (e.g. water pricing, recovery of environmental costs) to address market failures** is preventing the implementation of measures targeting water efficiency, pollution reduction or water availability problems.
2. **Lack of or insufficient integration** of water policy goals and objectives into other policies and programmes (e.g. agriculture, cohesion, industry and urban and land use planning) is preventing funding and regulatory shortcomings from being addressed.
3. **Ineffective water governance** is preventing coordination problems from being tackled effectively. Governance of water and sectoral policies at Member State level is, in some cases, fragmented and limited by a lack of capacity and resources to fully address water management objectives. In some cases, there is lack of coordination in river basins shared between different administrative entities within Member States, between Member States and with third countries.
4. **Knowledge gaps** are preventing effective implementation, for instance with regard to water balances and ecological flows; and there is a lack of comparability or accessibility of data and information.

The above 4 main challenges emerge from the assessment of the RBMPs which are too often characterised by a lack of ambition as regards achieving the environmental objectives of good ecological status or potential, and by too many exemptions.. The plans also show that there is considerable scope for greater implementation of source control measures across all sectors and for the restoration of water bodies which have been significantly altered through physical modifications, leading to changes in water flows, habitat fragmentation and obstruction of species migration.

A wide range of options – both regulatory and voluntary -- were assessed in the context of the IA of the Blueprint. The policy options were subject to public consultation.¹⁵ A selected number of options have been retained and are presented in the Blueprint. They include non-legislative approaches such as guidance and tools in relation to water balances, target setting and cost-recovery, as well as action on improving information and reporting efficiency. Some legislative options have also been retained such as a possible new Regulation on water re-use standards. (See the Blueprint Communication)

Financing

Many initiatives taken in order to comply with EU water policy objectives require long term investment. When the necessary funding is not available, successful implementation can be jeopardised.

A range of EU funds are available to support implementation, including the **Cohesion Fund** (e.g. for the UWWTD), Rural Development funding under the **CAP** (e.g. for the creation of wetlands or construction of manure storage vessels), **LIFE+** funding for technology development (e.g. for improved water treatment or water efficiency) and **INTERREG** (e.g. support for governance of transboundary river basins). Research Framework funds have been important in improving the understanding of the status of, and pressures on, waters and future potential changes and challenges. The European Investment Bank is also an important source of loans for water infrastructure improvements.

However, EU funds cannot provide the majority of funding necessary to implement EU water policy, which needs to be generated within the Member States. Lack of available funding has been

¹⁵

http://ec.europa.eu/environment/consultations/blueprint_en.htm

cited by stakeholders as a moderate or severe constraint to implementation of several key pieces of EU water legislation, including the WFD and UWWTD. According to a study¹⁶ of 22 Member States, there exists a significant financial gap in relation to future compliance with the Urban Waste Water Treatment Directive by the Member States. The provision of finance can, therefore, be a significant challenge and the current economic crisis may make this more difficult. It is, therefore, important for Member States to plan for future investment needs. Across all sources of EU financial support, the extent to which funds can be successfully absorbed by Member States depends both on the ability of the Member State to provide match-funding and on the technical capacity to implement such projects. Member States need to find the necessary funding, including from the private sector and from cost recovery of water services, which may be supported by additional targeted investment from EU funds. The planning cycle of the Water Framework Directive and the Floods Directive allows for early identification and planning of investment needs if it is implemented correctly. Current water pricing levels and structure neither provide adequate incentives to increase water efficiency, nor ensure a sustainable financing of the measures needed to ensure the preservation of water resources and the supply of water for human and economic uses. In some cases, water users are either not charged at all or are not charged in relation to use, consumption or depletion of water resources. In cases where the 'polluter-pays' principle, enshrined in the Water Framework Directive, has been relied upon to reduce pollution at source, economic incentives have reduced the need for expensive 'end-of-pipe' treatment solutions. As a complement to water pricing, schemes for **payments for ecosystem services** (PES) such as water storage, flood regulation, carbon storage, etc. could provide an additional source of financing reflecting the real social, environmental and economic benefits that ecosystems deliver, and providing a wider perspective taking into account land use and the whole water cycle.

Proposals on this have been included in the Blueprint. They concern: streamlining of a range of sustainable water management priorities in the Cohesion and Structural Funds and EIB loans; fully exploiting conditionalities proposed as part of the Common Strategic Framework 2014-2020 and the CAP pillar II funding, in accordance with the Commission proposals on the CAP reform and on the Multiannual Financial Framework (MFF); enforcing the full implementation of WFD provisions on pricing and cost-recovery; developing guidance on cost-benefits assessment, etc. (See further in the Blueprint Communication)

Justification for the priority objective

The main need to act at EU level is triggered by the trans-boundary nature of most drivers, pressures and impacts: water quantity and quality, floods and droughts, and by the frequent higher effectiveness of upstream measures for managing water resources and preventing floods and droughts. Moreover, water resource management action (reservoirs, transfers, groundwater extraction) may lead to a shift in the impacts or exacerbate the problem in another area, country, sector or social group. Such side effects are often best addressed at trans-boundary or European level.

Integration of water into single market and common policies (e.g. agriculture, energy, transport, health, and other environmental policies) makes sense as the lack of Community action could significantly damage Member States' interests and could hinder the internal market. Coordinated action at EU level could overcome these disadvantages for taking action.

Water policy objectives should be streamlined in EU spending programmes (e.g. cohesion, rural development, agriculture, fisheries, social fund, research, external actions and the European Development Fund) to complement the resources spent by the Members States.

Cost of inaction and cost of mitigation measures will have different spatial effects and strong

¹⁶

COWI 2010. Compliance Costs of the Urban Wastewater Treatment Directive. Final report.

variability, meaning that impacts across the EU could vary considerably, justifying the need for Cohesion and Rural Development funding mechanisms.

There are often economies of scale in undertaking efforts at EU level for capacity building, research, information and data gathering, knowledge transfer, exchange of best practice, development and cooperation. For instance, intensive exchange of best practices with regard to climate adaptation between Member States with comparable conditions, or further streamlining research efforts will contribute greatly to a robust knowledge base for policy making at all administrative levels.

There are strong links downstream with water/marine policies, and upstream with soil, land-use and chemicals. Protection of Water resources contributes directly to biodiversity protection (preservation of the aquatic ecosystem / Adaptation to climate change (e.g. water scarcity, floods and drought) / Resource (water) efficiency policies. Water is also the basis of many economic activities beyond environment policy, e.g. agriculture and food industry, energy production, inland navigation, many water using industries, etc. The implementation of the Floods Directive contributes significantly to disaster prevention policies, also including other types of natural or man-made disasters.

Attaining the goals of the Water Framework Directive, implementation of the Floods Directive, decreasing water stress and vulnerability to extreme events will require further integration and coherence with other policy areas, including agriculture, cohesion, urban and land use planning, industry (energy, chemical), transport, research, etc. While the RBMP process could provide a mechanism to address potential conflicts, there are concerns that integration between water policy and sectoral policies is not sufficiently strong in many Member States and regions, and that further integration at EU level could support the implementation of strategic measures. The Blueprint puts specific emphasis on the integration dimension.

As part of the Blueprint exercise, preliminary options for tackling the main challenges and reaching water policy objectives have been explored involving voluntary or legal instruments, or combinations of both. This work has resulted in the identification of a preferred package of options, which includes non-legislative and legislative measures to improve knowledge and information, governance, investment, and integration of water issues into other policies.

Marine waters

Current situation

The marine environment is a vulnerable ecosystem which is under increasing pressure from human activities. The EEA State-of-the-Environment Report 2010 concludes that the marine environment is heavily affected, e.g. by pollution and overfishing.

Many marine environmental issues are of a very cross-cutting nature and need attention and action across various policy fields, from agriculture to fisheries, biodiversity, resource efficiency and sustainable consumption and production, external policy, including in the EU's neighbourhood, as well as regional and cohesion policy etc. They are complex environmental challenges of a multi-factor nature which require close collaboration between all levels of governance.

The EU's Marine Strategy Framework Directive (MSFD) 2008/56/EC¹⁷ is a key element in Europe's actions to address these pressures and ensure that the activities in the marine environment are carried out in a sustainable way. The Directive calls for the development and implementation of strategies by Member States so that all of the EU's marine regions and sub-regions attain 'Good Environmental Status' (GES) by 2020. GES is defined by means of eleven qualitative 'descriptors' which describe a healthy ecosystem or a functioning biodiversity on the one hand and the need to minimise the adverse effects caused by pollution from nutrients, contaminants, marine litter and underwater noise on the other hand. It is necessary to address all these environmental threats in an integrated way to ensure that our seas and oceans are healthy and deliver the full range of their ecosystem services

Many existing EU actions contribute to the achievement of GES. Member States will have to step up their efforts in implementing these existing EU obligations. A number of relevant future actions are proposed by this 7th Environment Action Programme (e.g. see separate fiches on eutrophication, biodiversity and water quality). Additional challenges and areas where progress can be driven most effectively at EU level due to their cross cutting and cross-border nature are the fisheries aspects of marine biodiversity and marine litter.

75% of EU **fish stocks** are overfished compared to 25% on average worldwide. This has led to a general decline in fish catches since 1985. This decline is particularly pronounced for species such as cod, with catches falling by an approximate average of 100.000 tonnes per year between 1985 and 2008. Presently, 93 % of the fish caught are immature; the average age of cod caught in the North Sea is 1.6 years with a weight of less than one kilo — a clear indicator that the quality of the marine ecosystem is declining. The size and trophic level of the populations of commercial fish species appears to be changing also because fishing has focused on large fish species for many years. This is of concern because it may have a cascading impact on ecosystem functioning and in the end on ecosystem resilience.

Overfishing leads to uncertain catches which in turn lead to more fishing, creating a harmful vicious cycle of depletion that affects both the viability and the sustainability of fishing in the EU. Fishing sustainably means fishing at levels that do not endanger the reproduction of stocks and that provide high long-term yields. This aim is defined as maximum sustainable yield (MSY).

Another significant threat to the sustainability of fish stocks and marine biodiversity is the illegal, unreported, and unregulated fishing (IUU), such as fishing without a licence, misreporting of

¹⁷ Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive), *OJ* 2008 L164/19.

catches, fishing in closed areas or with illegal gear, and taking undersized fish. Figures for IUU are uncertain but up to 49 % of the total catch in EU waters — with some variation depending on the stock — may be caught illegally (SOER 2010).

Another environmental challenge related to fishing is by-catch, the catch of non-targeted species. By-catch affects nearly all marine species including animals living on the seabed, marine mammals, reptiles such as turtles and seabirds. By-catch and discards of non-target fish species can be substantial — in some cases 50 % of the total catch. In the Mediterranean Sea, by-catch is considered to be the main threat to some of the most threatened shark and ray populations in the world with 42 % critically endangered, endangered, or vulnerable. Finally, fishing has a number of other impacts on the marine environment, e.g. impacts on the seabed by bottom trawling which can destroy fragile habitats such as cold-water coral reefs which take decades or centuries to grow.

In addition to the well documented pollution from nutrients and hazardous substances, every year, approximately 10 million tons of **litter**, mostly plastic, end up in the oceans and seas worldwide, turning them into the world's biggest plastic dump. Despite international, EU and national efforts to reduce the quantity of litter released into our seas over last two decades, quantities of litter, especially plastic, are increasing in all EU marine waters and the problem is one of the most important emerging environmental issues. This is due in part to an exponential increase in the quantity of end-of-life plastic that has been generated and the low recycling rate thereof, coupled with exceptionally slow degradation of plastic litter, if at all. Consequently, the negative environmental and socio-economic impacts (see below) of marine litter are expected to increase throughout the EU in the years to come if no action would be taken.

Environmental impacts relate primarily to marine fauna: over 1 million birds and 100,000 marine mammals and sea turtles are estimated to die each year globally as a result of plastic waste and other marine debris. In addition, marine litter damages ecosystems as a whole by contributing, for example, to the spread of invasive alien species or degrading habitats such as coral reefs and the sea floor. Marine debris also affects human health and safety through degraded marine water quality, potential contamination of food, risks linked to hazardous materials and damage to vessels. Information on the economic impacts of marine debris is relatively scarce but recent reports clearly indicate the serious economic consequences of marine litter for coastal communities and fishermen. For example, the cost of removing beach litter in UK municipalities has increased by 37% over the past 10 years to 18 million € per year. Similarly, removing beach litter costs municipalities in the Netherlands and Belgium approximately €10.4 million per year). Fishing gear lost at sea also causes economic loss to fisheries through damage to nets and to propellers, entangled in litter, resulting in lost operating time and time spent cleaning nets and the loss of fish stocks due to ghost fishing¹⁸. KIMO made an estimate for Shetland (UK) fisherman and came to an estimation that each boat could lose between 7.400 and 37.000 € per year due to the effects and presence of marine debris.¹⁹

An overview on the current situation, the existing legislation and the initiatives which are expected in relation to marine litter is provided in the recent Commission Staff Working Paper²⁰.

The **EU policy framework** protecting the marine environment is built on the Marine Strategy Framework Directive (2008/56/EC) which integrates a number of relevant policies for the protection of the marine environment including in particular the:

- Water Framework Directive (2000/60/EC) - WFD
- Urban Waste Water Treatment Directive (91/271/EEC), Nitrates Directive (91/676/EEC) and

¹⁸ 'Ghost fishing' is the term used for lost or abandoned fishing gear that continues to catch fish. It is environmentally detrimental and the fish caught is wasted.

¹⁹ see <http://www.kimointernational.org/MarineLitter.aspx>

²⁰ <http://ec.europa.eu/environment/marine/>

National emission ceilings Directive (2001/81/EC) setting upper limits on atmospheric emissions of eutrophying nitrogen pollutants, i.e. nitrogen oxides and ammonia

- Common Fisheries Policy (CFP)
- Integrated Maritime Policy
- EU Biodiversity Strategy and Natura 2000 legislation
- EU chemicals policy including REACH.

The **international framework** includes:

- Regional Sea Conventions (OSPAR, HELCOM, Barcelona, Bucharest)

As regards **fisheries**, in the proposal for the Reform of the Common Fisheries Policy, the Commission proposes that by 2015, fish stocks must be exploited at sustainable levels that produce the 'maximum sustainable yield' (MSY). The most important tool to achieve **maximum sustainable yield (MSY)** is the Common Fisheries Policy (CFP), but the Integrated Maritime Policy, the Marine Strategy Framework Directive and the EU Biodiversity Strategy all have a role to play.

Internationally, the MSY objective was adopted almost thirty years ago in the 1982 UN Convention on the Law of the Seas, reiterated in the 1995 UN Fish Stock Agreement, in 2002 in the Johannesburg Declaration, in 2010 in the framework of the UN Convention on Biodiversity (UNCBD) and finally in 2012 at the Rio+20 Summit which committed to intensifying efforts to meet the Johannesburg 2015 MSY target on an urgent basis. Important international partners, such as the United States and Australia, have already moved in this direction and the EU is lagging behind.

As regards **marine litter**, the Roadmap to a Resource Efficient Europe puts forward marine litter as an issue of concern and *"calls on the Commission to contribute to marine litter strategies in all four EU marine regions in close collaboration with coastal Member States or in the respective Regional Seas Convention"*.

Legislation and policies addressing the coastal and marine environment are relevant, notably the EU Integrated Maritime Policy (IMP), the Integrated Coastal Zone Management (ICZM), the Port Reception Facility Directive and the Marine Strategy Framework Directive (MSFD). The Directive identifies marine litter as one of the descriptors determining good environmental status as one under which *"properties and quantities of marine litter do not cause harm to the coastal and marine environment."*

Plastic waste, as the major source of marine litter, is addressed by the Waste Framework Directive, the Landfill Directive, the Waste Shipment Regulation, the Packaging Directive, the ELV (End of Life Vehicles) Directive, the WEEE (Waste from Electric and Electronic Equipment) and the RoHS (Restriction of Hazardous Substances in Electric and Electronic Equipment) Directive. The REACH Regulation and the CLP Regulation also have a role to play.

Due to its very nature, the issue of marine litter has a strong international component. Within some Regional Sea Conventions, action plans on marine litter have been finalised (e.g. Barcelona Convention) or are under development. The EU has also signed up to a number of international commitments related to the marine environment, which it aims to achieve mainly through the MSFD. These include the 2020 'Aichi' biodiversity targets under the Convention on Biological Diversity, the 2002 WSSD target, UNCLOS or the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA). The reduction of marine litter was also discussed at the Rio+20 Conference in June 2012 which concluded: *"We further commit to take action to, by 2025, based on collected scientific data, achieve significant reductions in marine debris to prevent harm to the coastal and marine environment."* (See point 163 of the final Declaration).

The Marine Strategy Framework Directive sets out the achievement of "**good environmental status**" (GES) in all EU marine waters **by 2020** which must be translated into specific environmental targets by Member States by July 2012.

Under the CFP, a number of existing long-term management plans was based on the MSY principle. Furthermore, the Commission bases its annual TACs and quotas proposals on scientific advice issued by the International Council for the Exploration of the Sea (ICES) for achieving MSY by 2015. Descriptor 3 of the Marine Strategy Framework Directive is one of the 11 descriptors for good environmental status (GES) which builds on MSY and goes beyond this objective by introducing additional criteria and indicators in order to achieve healthy stocks for all commercial fish and shellfish. Good environmental status has to be reached for all marine waters by 2020. A similar objective is set as target 4 under the Biodiversity Strategy 2020.

The 2011 Commission proposal on the reformed CFP introduced the necessary measures which would allow the achievement of MSY by 2015 and reduce the impact from fisheries to the marine environment. This would result in major environmental improvements and be a significant step forward. However, "good environmental status" is a more ambitious target which goes beyond MSY as defined at the moment. Additional measures may need to be taken to reduce fisheries impacts (mainly by-catch and damage to the sea floor) and achieve GES, possibly also through other policies (e.g. marine protected areas).

The Roadmap to a Resource Efficient Europe further endorses this objective (it states that "*by 2015 fishing is within maximum sustainable yields*") and stresses the need to ensure sustainable management of fishery resources within the context of the latest Commission proposals for the reform of the Common Fisheries Policy and to make further proposals to phase out all fisheries subsidies that could be environmentally harmful.

Existing targets on **marine litter**, such as those in the MSFD or the Resource Efficiency Roadmap (see above) are of a qualitative nature. Quantitative targets do not exist yet but are increasingly being discussed. The final version of the Ministerial declaration of OSPAR 2010 states: '*We note that quantities of litter in many areas of the North-East Atlantic are unacceptable, and therefore we will continue to develop reduction measures and targets, taking into consideration an ambitious target resulting in a reduction in 2020*'. Within this context, a discussion was held on a proposal to reduce marine litter by 40 % by 2020. In the final declaration of the Rio+20 Conference a commitment towards a significant reduction by 2025 was included (see above).

Future outlook

The current and future status of marine environment is currently being compiled by Member States as first step in the implementation of the Marine Strategy Framework Directive. In October 2012, Member States will report the pressures and impacts on the European Seas and describe their definition of "good environmental status" and targets on how to achieve GES. The Commission will analyse these reports, publish its findings and make recommendations to Member States in 2013. There is, however, already a wealth of other information available on the future trends of marine pollution and other threats. Below, a summary is given which relates to fisheries and marine litter only.

In the Impact Assessment accompanying Commission's proposal for a Regulation on the Common Fisheries Policy (CFP), a set of impact indicators to capture impacts and progress towards environmental, economic and social sustainability objectives was defined. A small number of stocks can reach currently defined MSY levels by 2015. However, the targets set by the Marine Strategy Framework Directive and the Biodiversity Strategy require a more ambitious approach.

The Commission's Impact Assessment demonstrated that a "business-as-usual" approach results in a modest, insufficient progress towards achieving the objectives, but environmental sustainability is not achieved. Therefore, the Commission analysed a number of options which factored in the

environmental impacts. The conclusions showed that taking measures to improve the environmental sustainability of fisheries would significantly increase the number of stocks that are fished at sustainable levels by 2020 by at least 13 times. At the same time, it was demonstrated that this was not enough to reach 100% environmental performance, i.e. "good environmental status".

For a large number of stocks, it is currently not possible to predict the future trends due to a data poor situation and other methodological difficulties. Furthermore, indexes to measure the impact of fishing activities on the marine environment will need longer historical series before they are considered reliable and collection of more specific data on by-catch and sea-floor damage. At the same time, it is expected that further technical measures, such as improvements in gear technology or seasonal closures, will reduce adverse impacts on marine ecosystems.

Without progress in the reform of the CFP, as proposed by the Commission, healthy marine stocks as well as the reduction of by-catch of un-wanted species and of the impact of the fishing sector on the wider marine ecosystem will not be achieved.

On **marine litter**, the available evidence suggests that the problem is increasing. This is due in part to an exponential increase in the quantity of end-of-life plastic that has been generated (expected to increase more than 20% until 2015) and the low recovery rate thereof, coupled with the fragmentation into micro particles and exceptionally slow degradation of plastic litter, if at all, which all adds to the plastic which is already in the seas. The upcoming reporting under the Marine Strategy Framework Directive (MSFD) (e.g. on initial assessment and environmental targets) and on-going projects and studies should allow developing a baseline for the EU in 2013, which could be used as a basis to establish an EU-wide target.

Key challenges

Knowledge base

The knowledge base on the health of the marine environment is ever increasing but still full of knowledge gaps. The recent Green Paper on Marine Knowledge 2020 (COM(2012) 473)²¹ sets out the challenges and the proposed way forward by the Commission.

On **fisheries**, despite the Data Collection Framework (DCF) which exists since 2002, there are still significant gaps to cover all commercial **fish stocks**, including the deep-sea stocks. In order to have reliable information to determine MSY, the Commission would need more and reliable biological fisheries data collected by the Member States.

On **marine litter**, it is recognised that there is sufficient knowledge to move towards solution-orientated actions, but more scientific knowledge on the amounts, sources, pathways and distribution trends and impacts of marine litter is needed, due to limited systematic regional measurements.

Several actions will reduce the knowledge gap on marine issues:

1. Reporting under the MSFD due in October 2012 will provide a unique picture of the current state of pressures and impacts that EU marine waters face.
2. The Marine Knowledge 2020 agenda of the Commission is the holistic and cross-cutting initiative which addresses the better exploitation of available information (see reference to Green Paper above).
3. The 2008 Strategy for Marine and Maritime Research aims to provide the interdisciplinary knowledge base necessary to underpin the EU Maritime and Marine Environment Policy.

²¹ http://ec.europa.eu/maritimeaffairs/policy/marine_knowledge_2020/documents/com_2012_473_en.pdf

Many on-going projects under FP7 support the marine knowledge base in many aspects.

All in all, completion of these efforts will bridge part of the current knowledge gap and will also help outline where further research efforts are needed in order to better support policy making. A review of the future research and knowledge needs will be necessary when the above-mentioned initiatives have produced some results. It can be expected that increases in the level of monitoring of the marine environment will be needed to fully address MSFD requirements, but resourcing this will be a challenge.

On **fisheries**, the Data Collection Framework for Fisheries (DCF) will be reviewed in the context of the current revision of the CFP and it is expected to fill in those gaps so as to cover all stocks and provide necessary input for setting MSY levels. There is a need to enhance the DCF to ensure it collects adequate data on the impacts of fisheries (by-catch and damage to the sea floor).

On **marine litter**, pilot projects are ongoing to identify the main sources of litter and the gaps in the plastic cycle (with a view *inter alia* to identifying adequate measures to limit marine litter). These complement several ongoing research projects under FP7 (e.g. MARLISCO, HERMIONE, PERSEUS).

Implementation

Current policies are not delivering the desired environmental objectives. However, the implementation of the Marine Strategy Framework Directive is in relative early stages and is expected to deliver first results only from 2015 onwards when the programme of measures will be defined by the Member States. The Commission will continue its efforts on all aspects of the implementation through working closely with Member States and other stakeholders through the Common Implementation Strategy.

On **fisheries**, the Commission proposed a reform of the Common Fisheries Policy which will allow significant progress towards these objectives. Once agreed, a full and timely implementation of the reform supported by a strong European Maritime and Fisheries Fund (EMFF) with a whole catalogue of funding possibilities for the fishing industry will be a necessary and important step towards achieving "good environmental status".

Addressing **marine litter** is complex and involves many sectors, activities and policies. Nevertheless, it is estimated that 80% of marine litter comes from land-based activities, and is often the result of shortcomings in the implementation of waste legislation. Stepping up implementation efforts in the area of waste, but also under the MSFD and other relevant legislation, through the implementation of the Resource Efficiency Roadmap, as well as through international action, would therefore result also in important progress in marine litter reduction. A more comprehensive overview of existing legislation which needs to be implemented fully in order to help reducing marine litter is provided in the recent Commission Staff Working Paper (see reference above).

Financing

Financing of actions to protect the marine environment and implement EU legislation, in particular the MSFD and other related environmental legislation, is foreseen by the Commission proposal on the European Maritime and Fisheries Fund (EMFF). Also actions financed under the Cohesion Funds and the Common Agriculture Policy can contribute towards restoring, maintaining and improving the health of the marine environment.

Justification for the priority objective

Specific actions under this policy objective are only foreseen in relation to fisheries and marine litter.

As regards **fisheries**, the depletion of fish stocks has severe environmental, economic and social consequences and contributes to other biodiversity loss by disrupting and destroying habitats and

ecosystems. The 2011 Commission proposal on the reformed CFP, including its impact assessment, has considered reaching MSY among many other options and possibilities. This fisheries target is an essential but not sufficient step towards achieving GES, reaching the EU's marine biodiversity commitments (set out in both the MSFD and Biodiversity Strategy) and contributing to promoting more sustainable fisheries. The review of the progress towards the targets will allow taking stock and proposing additional, targeted action, if necessary.

As regards **marine litter**, implementing fully the waste *acquis* alone would go a long way to reducing the levels of marine litter at no additional cost. The Marine Framework Strategy Directive will also promote measures by Member States to reducing marine litter substantially by 2020. Nevertheless, marine litter is also a good example of a complex, cross cutting, and increasing environmental problem, the causes of which are diverse and involve and impact a wide variety of sectors, beyond waste (environment, tourism, fisheries, agriculture, plastic production, design, sustainable consumption and production etc.) and policies (climate protection, habitat and biodiversity, marine policy etc.).

In order to drive the implementation of EU action in all the various sectors and monitor progress, an EU-wide target can be considered complementary to the national targets or the GES description in the MSFD. In particular, such an EU target :

- will be useful to deliver the necessary mobilisation across sectors, borders and policies in support for better waste policies, more sustainable consumption and production, more efficient use of resources.
- will be a good tool to sensitize the wider public about marine pollution issues and the attitude change needed, i.a. as regards littering.
- will be an effective success indicator for the implementation of relevant EU policy, in particular on waste management.
- will help reaping the win - win opportunities associated with increased attention to marine litter, including the high potential for improving resource efficiency in handling plastic waste by collecting it, avoiding landfilling and minimizing energy recovery in favour of recycling. Plastic recycling alone is expected to create with a given recycling rate of 70% by 2020, more than 150 000 jobs in the EU. A life cycle approach from production to use and final disposal of plastic products could be implemented.
- will promote better monitoring of progress.
- will implement the agreements in Rio +20 on marine litter for the EU.

The feasibility, the added value and the design of such a target will need to be assessed further following the evaluation of the Member States' MSFD reports due in October 2012 and the outcome of on-going studies and research projects.

Achieving the **good environmental status** objective requires a better integration of marine environment concerns in other policies (e.g. fisheries, agriculture, resources, waste, air, climate change), more political support for protection measures and adequate financing of necessary measures. A more coherent and coordinated approach to Integrated Maritime Policy, pollution from ships, energy policy, Maritime Spatial Planning, Integrated Coastal Zone Management, nature conservation, water management, resource efficiency and waste management (including packaging and packaging waste directive, landfill directive) will deliver better results and multiple benefits in the medium and long term. In turn, actions to achieve good environmental status under the MSFD (such as reduction of marine litter) will contribute to a better state of the seas and be a step towards realising other policy objectives, no least on biodiversity and on resource efficiency.

The socio-economic impacts of the decline in **fisheries** and the increased efficiency of the industry are significant. Employment in the EU fisheries sector has decreased, particularly in communities

that are traditionally highly dependent on fishing — for example, in Portugal, employment in the fisheries sector fell by 55 % between 1990 and 2006 (Eurostat, 2008). The economy of many communities, however, depends on fisheries and the profitability of the EU's fishing fleet has been maintained by EU and national subsidies. In some Member States these have reached a level, where the national budget for managing and subsidising fisheries exceeds the economic value of the catches (SOER2010). With reduced fishing opportunities, rising fuel prices, profitability risks being further reduced.

Achieving good environmental status in all EU marine waters as required under the Marine Strategy Framework Directive (MSFD) necessitates stepping up efforts to implement the MSFD. This will be done through the agreed activities with Member States and stakeholders in the MSFD Common Implementation Strategy.

In addition to these efforts (and those mentioned in other fiches), the Commission will explore further initiatives in relation to fisheries and marine litter.

As regards **fisheries**, success or failure in achieving ‘good environmental status’ in 2020 will be strongly dependent on the outcome of the CFP reform and the implementation of the objective of maximum sustainable yield for fish stocks (MSY). Therefore, the Commission will assess in 2016 (based on data of 2015) the progress in achieving MSY and the necessity of additional actions in order to achieve “good environmental status” by 2020.

As regards **marine litter**, an overall EU target for the reduction of marine litter or specific sub-targets would be a useful tool to complement the specific criteria and indicators that are set by the MSFD. An overall EU target could more easily monitor progress across the EU in relation to the main policies which need to be fully implemented in order to reduce marine litter, mainly the waste legislation.

According to the MSFD Technical Subgroup on Marine Litter appropriate monitoring for litter on beaches is already in place in some regions. The group proposed that a measurable and significant reduction goal of marine litter by 2020 should be adopted. Reductions in the amount of marine litter in the order of 50% per decade may be a feasible target when adequate measures are taken (JRC 2011).

However, the feasibility, the added value and the design of such a target will need to be assessed further following the evaluation of the Member States’ MSFD reports due in October 2012 and the outcome of on-going studies and research projects.

Many Commission's policy proposals to be adopted in the short/medium term will have a direct or indirect impact on the marine environment. One cross-cutting initiative will be the follow up to the recent Green Paper on Marine Knowledge 2020.

On **fisheries**, the focus will be on the implementation of the CFP reform once agreed. In this context may be a number of specific proposal emerging, e.g. the revision of the DCF.

As regards **marine litter**, an overview of expected initiatives with relevance is provided in the recent Commission Staff Working Document (October 2012). In addition, an EU-wide target may be proposed, as described earlier.

Air

Current situation

The main sources of air pollution damaging the natural environment are: ammonia (NH₃) from agriculture; road transport (NO_x and Volatile Organic Compounds (VOC) emissions); power generation and industry (SO₂, VOCs and NO_x); and increasingly, shipping transport (SO₂, NO_x) and small combustion sources (NO_x, VOCs).

Emissions of some pollutants in Europe declined significantly in the period 1990 – 2009, in particular sulphur dioxide (SO₂), in line with tightening air pollution policies. However, emission reductions for eutrophying substances such as ammonia have been more modest, and there is no significant downward trend at the moment. Ozone is also an exception, where reductions in the ozone precursor emissions have not been accompanied by reductions in ground level ozone concentrations, mainly due to long range ozone transport on the hemispheric scale.

As a result, between 1990 and the present there has been an 80% reduction in the ecosystem area affected by exceedance of 'critical loads'²² for acidification. For eutrophication, however, the situation is alarming, as most of continental Europe still exceeds critical loads and the affected area has been reduced only slightly over the last decade. Moreover, around 35% of agricultural land is exposed to ground-level ozone concentrations above the target value for protection, causing reduced yields with an estimated loss of economic value for crops in the range of €6 billion.

According to still preliminary emission data received in 2010, 12 Member States are likely to exceed their 2010 emission ceilings for NO_x, and 2 Member States are set to exceed the 2010 ceilings for ammonia.

The 6EAP set the long-term objective to 'achieve levels of air quality that pose no significant risk for human health and the environment'. The 2005 Thematic Strategy on Air Pollution sets interim targets towards this, framed as (a) reductions in human health and ecosystem impact, and (b) emission reduction targets to achieve the health and ecosystem reductions. The targets are aspirational but have been politically endorsed by Council through Council conclusions adopted in 2006.

The National Emission Ceilings Directive 2001/81/EC sets national emission ceilings restricting total emissions of each of four pollutants (NO_x, SO₂, VOCs, ammonia) that can be emitted by a Member State, set so as to limit the transboundary impact of air pollution in particular on ecosystems. The directive is closely connected to the UNECE Convention on Long-Range Transboundary Air Pollution, which in its Gothenburg Protocol establishes binding national emission ceilings for the EU and other UNECE parties which have ratified the protocol, including the US, Switzerland and Norway. (Eastern European, Caucasian and Central Asian (EECCA) countries are party to the LRTAP Convention but have not yet signed up to ceilings in the Protocol.)

As outlined above, EU legislation sets limit values and national emission ceilings with legally binding deadlines.

The Roadmap to a resource-efficient Europe sets the milestone: "By 2020, the EU's interim air quality standards will have been met, including in urban hot spots, and those standards will have

²² A 'critical load' is (roughly) the maximum pollution load of a particular substance per unit area that the given ecosystem can bear.

been updated and additional measures defined to further close the gap to the ultimate goal of achieving levels of air quality that do not cause significant impacts on health and the environment."

Future outlook

There exists a well-developed integrated modelling suite centred around the 'GAINS' (Greenhouse Gas and Air Pollution Interactions and Synergies) Integrated Assessment Model developed by the International Institute for Applied Systems Analysis (IIASA). Preliminary modelling results indicate that baseline emissions in 2020 will exceed the 2005 TSAP indicative emission targets for 2020 for the following pollutants: SO₂ (by 6%), PM_{2.5} (by 53%), NH₃ (by 16%), VOCs (by 13%), and NO_x (by 27%). As a consequence, the impact targets established by the TSAP for reduction of forest acidification and especially eutrophication would not be met without additional measures. Model projections and simulations of additional control measures are being developed to provide robust indications on the optimal balance of further emission reductions across pollutants, countries and economic sectors that would be necessary to improve protection of the environment.

With regard to compliance with legal obligations, more than 10 Member States have reported emissions in excess of their NO_x emission ceilings, which Member States largely blame on transport emissions from diesel cars which, under "real world conditions", have been found to be higher than foreseen under the Euro regulations. This projected non-compliance situation may not be fully resolved in some regions until 2020-2025.

Key challenges

Knowledge base

The main challenges related to the knowledge base relate to:

- the extent to which industry, transport, agriculture, shipping, small-scale combustion sources are driving the main ecosystem impacts and exceedances of regulatory thresholds
- the reduction potential from these sources and associated costs
- How much further progress can be made towards the long-term environmental protection objectives, and the economically optimal combination of measures needed to achieve this progress
- the extent to which measures should be taken at international, EU or national/local level, and how this should be framed in policy
- the impact of current and possible future climate policy measures on the achievement of air quality objectives and vice-versa (both in terms of synergies in transport and energy, and some potential trade-offs)

There are also particular issues to be addressed, such as the apparent mismatch for ozone between precursor reductions and stable concentrations; better quantification of the impacts of air pollution on ecosystems (i.e. not only whether critical loads are exceeded, but the impact this exceedance has on ecosystems); the quality of emission inventories for certain pollutants/sectors/areas; improved spatial resolution of the models, and so on.

Implementation

Implementation of the NECD national emission ceilings for SO₂ (substantially supported by the Large Combustion Plants Directive 2001/80/EC) has radically reduced the acidification problem in the EU. Progress on eutrophication has been much less evident: this is partly because the relevant ceilings (ammonia and NO_x) are not fully implemented (2 Member States are likely to be in non-compliance of the ammonia ceiling and 12 of the NO_x ceiling) but mainly because substantial further reductions beyond those agreed in the NECD are necessary to solve the eutrophication problem. For ozone, the relevant ceilings are those for NO_x and NMVOCs; implementation of the

NO_x ceilings is poor (12 MSs in exceedence) and again those ceilings may be inadequate to solve the problem, as evidenced by the lack of reduction in ozone concentrations as a result of those reductions in precursor emissions that have taken place. The poor implementation of the NO_x is related to poor implementation of source control legislation (e.g. for the emission of nitrogen compounds). There are two specific challenges to implementation:

1. Slow implementation of the National Emission Ceilings Directive on the part of Member States: the Directive leaves a large discretion to Member States to determine the measures required to meet limit values/emission ceilings, and many Member States have been late in organising and poor in implementing the necessary measures.
2. Poor control of sources regulated at EU level: one particularly salient problem is the apparent failure of the Euro vehicle standards, resulting in higher real world emissions than measured in the test cycles. Emissions of NO_x are thus much higher than expected and severely limit the ability of Member States to meet the NO_x ceiling. Also, there is significant scope to make the agricultural use of mineral fertilizers and manure management more efficient, thereby minimizing emissions of ammonia to air.

These are being addressed as follows:

- Slow implementation is being addressed through a combination of infringement actions and support measures, such as workshops to exchange experience on the most effective measures, databases of measures, and financial support for capacity-building (see below).
- Poor control of sources is being addressed by maximising pressure to solve the failure of the Euro vehicle standards in the context of implementation of the Euro 6 legislation; and by working to ensure that any further measures on ambient air quality are matched by the necessary source controls at EU level.

Financing

The main financing challenges are as follows:

- there are substantial challenges relating to monitoring and assessment in many Member States, and constrained administrative budgets are putting increasing pressure on the monitoring infrastructure, threatening the survival of some important data sources.
- Regional and local authorities argue that because the appropriate measures are not taken at national and (in some cases) at EU level, they are left with no option but to take extremely expensive measures at the local level which are far less cost-effective in solving the problem. There is some indication that within Member States, responsibility for meeting objectives is delegated but that necessary finance for implementation is not provided.
- Opportunities under the CAP (Rural Development) for providing financial incentives on the agriculture sector to reduce ecosystem impacts are not fully realised.

These are being addressed as follows:

- The Commission is examining options for funding support for air quality assessment, also with regard to ecosystem impacts, in the structural funds
- The Commission is working to integrate air pollution concerns into Rural Development Programmes and Rural Development Partnership Contracts.

Further options will be considered in the context of the TSAP review.

Justification for the priority objective

There are substantial constraints in the air quality policy stemming from other policies, in particular transport, small-scale combustion and agriculture. To be credible, tightening of ambient air quality objectives or emission ceilings will in most cases need to be accompanied by appropriate source controls at EU level to give Member States confidence that their own efforts to achieve targets at national level will not be countered by the lack of appropriate EU action.

In particular, there is a need to take action because:

- There are substantial difficulties in meeting the existing national emission ceilings. These are in part related to poor or late implementation at national level of EU legislation. Options to redress this must be identified, including the relevant balance between further national and EU legislation;
- The existing legal framework should be aligned with the latest scientific evidence;
- The existing legal framework provides only interim objectives toward the goal of no significant environmental impacts. At the ceilings set in current legislation, there are still substantial environmental problems driven by air pollution. As a longer-term step beyond compliance with existing legislation, the review should examine options for further progress towards the long-term target.

Options will be assessed as part of the Impact Assessment for the 2013 review of the Thematic Strategy on Air Pollution (COM(2005)446).

The main synergies, as well as possible trade-offs, are with climate change, energy and agriculture policy. These will be examined in detail in the impact assessment for the air quality review. Synergies with agricultural policy could include more efficient use of resources such as effective nitrogen management in fertilizer in the EU.

The Air Quality Review will seek to identify the optimal combination of measures to resolve the implementation problems described above and make further progress towards the existing air quality targets. The Commission intends to propose an upgraded strategy looking beyond 2020, assessing the scope for the use of national emission ceilings, air quality standards, source controls and further measures to reduce emissions from key sources. It is too early to indicate which measures may be brought forward, although a revision of the National Emission Ceilings Directive will clearly be required to reflect the recently agreed revision of the Gothenburg Protocol, including ceilings for 2020 and possibly beyond.

The review will comprise an overarching Communication revising the 2005 TSAP, together with an impact assessment of a list of future initiatives, including possible legislative proposals.

Accompanying non-legislative initiatives may include:

- An international clean air programme to address any issues best dealt with on that scale, such as action on ozone precursors.
- An innovation programme integrating AQ priorities into the key EU innovation actions and highlighting the role of air policy in driving innovation and creating jobs
- A research agenda outlining the long-term research needs (e.g. improved techniques for assessing AQ ecosystem impacts).

Land and soil

Current situation

Land use is a crucial aspect of human development and at the same time the human imprint on land is a principal cause of environmental degradation. Globally, urban sprawl and the spread of low-density settlements are among the main threats to sustainable territorial development.

Soil degradation is driven or exacerbated by human activity, such as unsustainable agricultural and forestry practices (including the conversion of grassland to arable land), industrial activities and tourism, but also by soil sealing (the permanent covering of soil with an impermeable material) associated with land take for infrastructure development, urban and industrial sprawl. In some regions there are also insufficient incentives to re-use brownfield sites, which results in increasing pressure on greenfield land. Furthermore, the value of soil (and landscape) is generally not fully appreciated or recognised as a finite and non-renewable resource. Land and soil degradation in its various forms remains a fundamental and persistent problem worldwide and in the European Union (EU).

At the global level, desertification, land degradation and drought affect over 1.5 billion people in more than 110 countries, 90% of whom live in low income areas. According to UNEP, every year up to 50,000 km² of land are degraded²³. The planet annually loses 24 billion tonnes of topsoil. Over the last two decades, enough has been lost to cover the entire cropland of the United States. Desertification costs the world more than \$40 billion a year in lost productivity²⁴.

In the EU, the 2010 Status of the Environment Report of the European Environment Agency²⁵ highlights a number of factors contributing to soil degradation:

Soil sealing and associated **land take** are leading to the loss of important soil functions, such as water filtration and storage, and food production. Between 1990 and 2000, at least 275 hectares of soil were lost per day in the EU, amounting to 1,000 km² per year. In some Member States land take has far exceeded the EU average of 9% in the period 1990-2006. Built-up areas increased by almost 50 % in Ireland, by more than 30 % in Spain and Portugal and by more than 25 % in the Netherlands – rates much higher than the increase in population²⁶.

A JRC model of **soil erosion** by water has estimated the surface area affected in EU-27 at 1.3 million km² (i.e. more than 25% of the total EU territory). Almost 20% of this area is estimated to be subjected to annual soil loss in excess of 10 tonnes per hectare. Erosion is not only a serious problem for soil functions (estimated to cost €53 million per year in the United Kingdom alone²⁷), it also has an impact on the quality of freshwater, as it transfers nutrients and pesticides to water bodies.

EU soils contain more than 70 billion tonnes of organic carbon, which is equivalent to almost 50 times our annual greenhouse gas (GHG) emissions. However, inadequate arable production may lead to a **decline of soil organic matter**. In 2009, European cropland emitted an average of 0.45 tonnes of CO₂ per hectare (largely resulting from land conversion)²⁸. The conversion of peatlands

²³ http://www.unep.org/geo/GEO4/report/GEO-4_Report_Full_en.pdf.

²⁴ <http://www.nyo.unep.org/action/15f.htm>.

²⁵ <http://www.eea.europa.eu/soer>.

²⁶ <http://ec.europa.eu/environment/soil/sealing.htm>.

²⁷ Safeguarding our Soils. A Strategy for England, DEFRA, 2009, p. 11.

²⁸ <http://www.eea.europa.eu/publications/european-union-greenhouse-gas-inventory-2011>.

and their use is particularly problematic. For instance, although only 8% of farmland in Germany is on peatland, it is responsible for about 30% of the total GHG emissions of its whole farming sector²⁹.

As an extreme form of land degradation, **desertification** seriously impairs all soil functions. While no thorough scientific assessment has yet been carried out at European level, the unfavourable trend in the productive capacity of soil (e.g. depth, structure, salinity, etc.) is contributing to desertification. Maps produced by the JRC in preparation for the World Atlas of Desertification, show areas where productive capacity has been constantly decreasing in the past few decades³⁰. Twelve EU Member States have declared themselves to be affected by desertification under the United Nations Convention to Combat Desertification (UNCCD).

It is difficult to quantify the full extent of local **soil contamination**, as the vast majority of Member States lack comprehensive inventories (this is covered by the proposed Soil Framework Directive – see below). In 2006, the European Environment Agency estimated that there were three million potentially contaminated sites in the EU, waiting identification and assessment. It also estimated that 250,000 of them were actually contaminated, thus continuing to pose serious environment and health risks.

Finally, **land fragmentation**, for example by roads and buildings, can act as a severe barrier for some wildlife, interrupting migration paths and affecting their habitats. The EU is one of the most fragmented regions in the world, with almost one third of the land having a moderately high to very high degree of fragmentation due to urban sprawl and infrastructure development, in particular for transport and energy. Landscape fragmentation caused by linear structures and urban expansion can have a number of detrimental effects, such as an overall reduction in size and persistence of wildlife populations, changes in local climate, increasing pollution and noise from traffic, thus contributing further to biodiversity loss. In fact, 70% of European species are threatened by the loss of their habitats – including soil.

The **Environmental Impact Assessment (EIA) Directive**³¹ and the **Strategic Environmental Assessment (SEA) Directive**³² require the assessment of environmental impacts of projects (EIA) as well as plans and programmes (SEA), in particular with a view to identifying measures to avoid, mitigate or offset negative impacts. Their implementation has shown that they can improve the consideration of environmental aspects in planning and implementation projects, plans and programmes in the Member States, contribute to more systematic and transparent planning, and improve participation and consultation of all stakeholders (public, NGOs, associations, national authorities at all levels, and authorities from neighbouring Member States). The Commission has noted that the effect of these directives could be further improved by better guidance regarding the assessment of effects of climate change and biodiversity, identification of alternatives, and an improved data situation³³. The EIA Directive is currently being revised.

On 22 September 2006, the Commission adopted a **Soil Thematic Strategy**³⁴ and a proposal for a **Soil Framework Directive**³⁵, which is currently in the ordinary legislative procedure. The proposed directive has the objective to use soils sustainably, while at the same time protecting soil functions,

²⁹ http://ec.europa.eu/environment/soil/pdf/report_conf.pdf, p. 17.

³⁰ COM(2012) 46.

³¹ Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (OJ L 175, 5.7.1985, pp. 40–48), as amended.

³² Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (OJ L 197, 21.7.2001, pp. 30–37).

³³ COM(2009) 378.

³⁴ COM(2006) 231.

³⁵ COM(2006) 232.

³⁶ 'The future we want', paragraph 206 (<http://www.un.org/en/sustainablefuture/>).

³⁷ SEC(2006) 620.

such as biomass production, water filtration, carbon reservoir, and habitat for species. To this end, it would require identifying areas at risk of erosion, organic matter decline, salinisation, acidification, compaction and landslides. Member States would then have to implement appropriate programmes of measures to address these soil degradation processes. Furthermore, Member States would be required to set up an inventory of contaminated sites in their territory within 25 years from the transposition of the directive into national legislation. The directive would also introduce – for the first time in the EU – an obligation to remedy the contaminated sites so identified (no deadlines is however provided for such remediation).

As a Party to the **Convention on Biological Diversity** (CBD), the EU has also committed to a number of global 2020 targets of relevance for land and soil conservation. For example, Target 14 aims to ensure that "*Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded*"; Target 15 aims to ensure that "*Ecosystem resilience and the contribution of biodiversity to carbon stocks have been enhanced, through conservation and restoration, including restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification*", and Target 5 aims to ensure that "*The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced*" (Global Target 5).

The **EU Biodiversity Strategy to 2020** includes action to tackle habitat loss and fragmentation of land in the EU. Two of the Strategy's 6 targets are specifically aimed at addressing these issues: Target 1 is "*To halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments: (i) 100 % more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status; and (ii) 50 % more species assessments under the Birds Directive show a secure or improved status*". Target 2 is that "*By 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems*". These targets have been endorsed by the Council of the EU.

Aspects of soil protection have been an integral part of Good Agricultural and Environmental Conditions (GAEC) under the **Common Agricultural Policy (CAP)** since the introduction of cross compliance in 2003. Emphasis has been placed on limiting erosion, retaining and improving organic matter, and avoiding compaction. In addition, Rural Development provides for agri-environment schemes which may specifically support soil-protective operations (8.8% of the agri-environment budget spent in 2007-2008).

The 2011 **Resource Efficiency Roadmap** contains a milestone on land and soil: "By 2020, EU policies take into account their direct and indirect impact on land use in the EU and globally, and the rate of land take is on track with an aim to achieve no net land take by 2050; soil erosion is reduced and the soil organic matter increased, with remedial work on contaminated sites well underway." It also sets out a number of actions to be carried out by the Commission and Member States. The Council has acknowledged the milestones of the Roadmap as "pointing out the general directions for future actions and stimulating discussion on potential targets".

Meanwhile, the June 2012 United Nations Conference on Sustainable Development (**'Rio+20'**) resulted in global commitment to strive to achieve a 'land-degradation neutral world', to which the EU has signed up. The Rio outcome document also recognises 'the need for urgent action to reverse land degradation' and 'the economic and social significance of good land management, including soil'³⁶. It is the first official recognition by world leaders of land and soil degradation as a global problem requiring urgent action.

In conclusion, there is a need to raise awareness about the importance of land and ensure that trade-offs between competing land uses are properly evaluated and subject to transparent decisions. At the same time, soil is a key component of the land resource which is not yet sufficiently and

coherently protected at EU level. Soil degradation is continuing, costing an estimated €38 billion/year ³⁷ and threatening food security, exacerbating climate change and jeopardising the achievement of biodiversity targets.
Future outlook
There is no comprehensive modelling of European land uses, land take and soil degradation at EU level. However, reports mentioned above by the European Environment Agency and analysis accompanying the EU 2010 Biodiversity Baseline ³⁸ show that soil degradation (erosion, loss of organic matter, compaction, salinization etc.) is on-going in the EU at a rate which is worrying and that land take as well as biodiversity loss will continue unless corrective actions are taken. For example, in the eight years to the end of 2020 we can expect that an extra 8,000 km ² of European fertile land will be lost to food production, around 4.5 billion tonnes of topsoil will have been washed away because of water erosion, more than 700 million tonnes of CO ₂ will have entered the atmosphere as a result of soil organic matter losses from cropland, and 62% of the habitats and 52% of the species covered by the Habitats Directive ³⁹ would continue to be in an unfavourable conservation status.
Key challenges
Knowledge base
<p>The European Commission's Joint Research Centre (JRC) has been carrying out a wide range of actions aimed at reducing the gaps in the knowledge base concerning both land⁴⁰ and soil⁴¹.</p> <p>For land, the main scientific support on land use, land cover and soil conditions is the Land Use/Cover Area frame statistical Survey (LUCAS)⁴² of Eurostat, which gathers harmonised information on land cover and land use on a regular basis. From 1985 to 1990, the European Commission implemented the CORINE Programme (Coordination of Information on the Environment), which has then given rise to the CORINE Land Cover (CLC) project, which is now managed by the European Environment Agency (EEA). CLC provides information on the physical characteristics of the earth surface. Images acquired by earth observation satellites are used to derive land cover information and thus estimate land take. However, the spatial data resolution used in CLC is thought to underestimate by 30-50% actual land take in the EU. In order to have a more accurate picture, the resolution needs to be increased.</p> <p>More knowledge is also needed at global level, building on the results of current work on so called 'indirect land use change' (ILUC) in the context of biofuel policy and other relevant studies, including on deforestation and work done by Friends of the Earth on global land consumption⁴³. For soil, there are significant knowledge gaps, including within the EU. For instance, there is no system for monitoring soil conditions across the EU. In addition, very few Member States have national monitoring systems in place. In particular, there is no comprehensive inventory of contaminated sites in the EU. Establishing a cause-effect links between contaminated sites and health is still very challenging as human exposure patterns are usually multiple and complex, thus methodologies to characterize the health implications of contaminated sites in Europe need to be developed.</p>

³⁸ <http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline>.

³⁹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7–50).

⁴⁰ <http://ies.jrc.ec.europa.eu/our-activities/scientific-achievements/Land-Use-Modelling-Platform.html>

⁴¹ <http://eusoiils.jrc.ec.europa.eu/>.

⁴² http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/LUCAS_%E2%80%94_a_multi-purpose_land_use_survey.

⁴³ <http://seri.at/global-responsibility/2011/10/19/europes-global-land-demand-a-study-on-the-actual-land-embodied-in-european-imports-and-exports-of-agricultural-and-forestry-products/>.

Moreover, soil erosion, organic matter levels, compaction, and soil biodiversity conditions are currently evaluated on the basis of patchy and often non-comparable data.

In summary, the knowledge base on land and soil issues at the EU level still leaves to be desired. While information on general trends is sufficient to indicate the persistence of serious threats and the need to act, better spatial and in-situ monitoring will be needed to improve European responses in future.

Implementation

The main implementation challenge relates to the need to make progress on the Soil Framework Directive in the Council.

Concerning the other three pillars of the Soil Thematic Strategy (awareness raising, research, and integration), progress up to the end of 2011 was presented in a Commission report⁴⁴ adopted in February 2012. The report underlines that erosion, soil sealing and acidification have all increased in the past decade, and the trend is likely to continue unless challenges such as rising land-use, the inefficient use of natural resources and the preservation of organic matter in soil are addressed. It also highlights the importance of preserving European soils if we are to safeguard supplies of quality food and clean groundwater, healthy recreational spaces, and lower greenhouse gas emissions. Moreover, it indicates aspects of soil protection have been an integral part of the Common Agricultural Policy (CAP) since the introduction of cross compliance in 2003. The Commission has proposed to further clarify and specify soil-related standards in the context of the overall CAP reform to 2020⁴⁵. In particular, it proposed new measures on organic matter protection, including a ban on arable stubble burning and an obligation not to plough wetlands and carbon-rich soils. In addition, the new Rural Development proposal includes the objectives of sustainable management of natural resources and climate mitigation and adaptation, including by means of improved soil management and enhanced carbon sequestration in agriculture and forestry. The greening of the first pillar of the CAP, as proposed by the Commission, would improve the situation further, particularly in relation to erosion and soil organic matter. On biodiversity, the report presents an indicator-based map prepared by the JRC⁴⁶ showing a preliminary assessment of where soil biodiversity is threatened. This includes areas of high population density and/or intense agricultural activity (e.g. cereals and industrial crops, animal husbandry, greenhouses, fruit orchards, vineyards and horticulture).

The EU will need to respond to the Rio+20 objective of achieving a 'land-degradation neutral world'.

Financing

EU funding has been important in tackling land use and soil issues in the past, and ought and will continue to be available, both from the Structural Funds in supporting soil restoration (e.g. the rehabilitation of 'brownfield' sites), conservation of protected areas, establishment of green infrastructure, and from Rural Development in tackling soil degradation in agriculture. Financing for land improvements, including green infrastructure and other habitat measures, is available at a European level from LIFE and other EU funding sources. In addition, innovative financing mechanisms are also being explored, such as payment for ecosystem services.

As part of the proposed Common Strategic Framework (CSF) 2014 to 2020⁴⁷, a number of key actions related to soil protection and sustainable land management are identified for funding under the five funding instruments covered by the CSF:

⁴⁴ COM(2012) 46.

⁴⁵ http://ec.europa.eu/agriculture/cap-post-2013/legal-proposals/index_en.htm.

⁴⁶ http://eusoiils.jrc.ec.europa.eu/library/maps/biodiversity_atlas/index.html, p. 62-63.

⁴⁷ SWD(2012) 61 final.

- Under the the European Regional Development Fund (ERDF) and Cohesion funding: soil protection, investment in green infrastructure (including Natura 2000 sites), and actions to decrease the fragmentation of natural areas and restore heavily modified sites and habitats;
- Under the ERDF: support for sustainable integrated urban development, including soil descaling measures and rehabilitation of contaminated sites (funding for the remediation of contaminated sites can be envisaged only in cases where the polluter liable for the contamination is unknown or cannot be made to bear the costs);

Under the European Agricultural Fund for Rural Development (EAFRD): support for production techniques that enhance the buffer and filter functions of soils and promoting management practices that improve organic matter content of soils, improve soil quality and contribute to protecting soil from erosion, compaction, salinization, landslides and loss of organic matter; improve soil management through support for practices to prevent soil degradation and depletion of soil carbon stock, such as low tillage, winter green cover, and the establishment of agro-forestry systems and new forests.

Justification for the priority objective

The challenges outlined above and the fact that soil degradation in Europe continues, make it important that the EU improves the way in which it deals with soil and land-related issues. Whilst the Soil Thematic Strategy has helped raise their profile, there is still no systematic monitoring and protection of soil quality across Europe nor a coherent approach to trade offs between land uses.

The EU *acquis* has established a set of environmental objectives to be achieved which are very much affected by direct or indirect land use change resulting from decisions taken in other policy areas. Urban sprawl and the spread of low-density settlements is one of the main threats to sustainable territorial development; public services are more costly and difficult to provide, natural resources are overexploited, public transport networks are insufficient and car reliance and congestion in and around cities are heavy. At the same time urban sprawl and soil sealing threaten biodiversity, increase the risk of both flooding and water scarcity, and exacerbate climate change. Therefore there is a need to look at long term targets to foster a more strategic approach to land use in the Member States which adequately integrates environmental objectives, mitigates negative impacts and promotes practices that benefit the environment, such as ecosystem restoration or the use of Green Infrastructure.

Such targets should address the most problematic man-made problems that lead to soil and land degradation which include erosion (affecting the most fertile part of soil, which is the top layer, and causing water quality problems and siltation of rivers and lakes), the loss of soil organic matter (seriously problematic not only for soil fertility, but also in relation to climate change), and land take, which impacts most soil functions, notably food production, water retention, and biodiversity. The impact assessment that will accompany the Communication on land as a resource in 2014 will inter alia present options for targets and discuss whether they should be binding or indicative, whether they should apply at EU level or also at national or regional levels.

These targets would complement the Soil Thematic Strategy, support the proposed Soil Framework Directive and respond to the call made in Rio+20 to achieve a land degradation neutral world by offering a vision to the EU and Member State as to where we would like to be in 2020 and beyond. This vision would help competent authorities and stakeholders to actively address soil and land impacts in the implementation of relevant measures and actions and would profit from a proper monitoring system of the evolution of soil and land conditions in the EU.

Soil, other ecosystems and land are the principal areas of focus for environmental integration into agricultural policy in particular. In areas such as climate policy, the situation is mainly synergistic – keeping the organic matter in the soil is good for the soil, its productivity and the climate. Reducing soil degradation, habitat loss, fragmentation and land take is essential to achieve many of the objectives of other policies (e.g. climate change, water, air, agriculture), however due to the very

high competing demands on land to also achieve other EU policy objectives (e.g. energy, transport, internal market, etc.) there is a need to look at the possible trade-offs and assist Member States in developing a long-term, strategic and integrated vision to make the most efficient use possible of this resource.

The use of land is nearly always a trade-off between various social, economic and environmental needs, e.g. housing, transport infrastructure, energy production, agriculture, nature protection. Land use decisions can play an important role in achieving a more sustainable use of land by taking account of the quality and characteristics of different land areas and soil functions against competing objectives and interests. They result in long-term commitments which are difficult or costly to reverse. At the moment, these decisions are often taken without proper prior analysis of the impacts, for example through a strategic environmental assessment. This is all the more worrying as land is a finite and increasingly scarce resource. It is therefore necessary to raise awareness about the importance of land and of the economic, social and environmental implications of land use decisions and related trade-offs so that decisions can be made to ensure land continues to support human development and the environment in a sustainable manner. For this to happen, the integration of land use aspects into decision making at all relevant levels needs to be improved. Spatial planning ought to follow an integrated approach, with full commitment of all relevant public authorities (and not only planning and environmental departments), in particular those governance entities (e.g. municipalities, counties and regions) which are normally responsible for the management of land. The possibilities offered by the Strategic Impact Assessment (SEA) Directive and, when relevant, the Environmental Impact Assessment (EIA) Directive, should be fully exploited. Setting targets for soil and land would help to call attention to this issue and guide action.

The Commission plans to adopt a Communication on land as a resource in 2014, which will analyse land-use effects and trends, including impacts at global level, and highlight best practices in the Member States, inter alia building on the Soil Sealing Guidelines⁴⁸. The starting points for this work are the milestones on land and soil set out in the Resource Efficiency Roadmap and the outcome of Rio+20. The Communication will seek to explain how initiatives such as the Common Agricultural Policy reform proposal, the European Innovation Partnership on agricultural productivity and sustainability, the Resource Efficiency Roadmap, energy and transport policy can work together in a coherent way to address the challenge of land take and land use change.

In the context of this Communication the Commission envisages, following an impact assessment, recommending specific targets on land and soil (e.g. land take, soil erosion, and soil organic matter) to support and complement the Soil Thematic Strategy and the proposed Soil framework Directive, meet the milestone in the Resource Efficiency Roadmap and work towards biodiversity and water related objectives.

The following related initiatives are currently in the Commission's policy pipeline: a Green Paper on Green Infrastructure (2012), the Water Blueprint (2012), a Communication on sustainable food (2013), a number of initiatives linked with energy policy, notably the package on indirect land use change (ILUC) (2012 and following years), and an initiative ensure there is no net loss of ecosystems and their services, e.g. through compensation or offsetting schemes (2015).

⁴⁸ Guidelines on best practice to limit, mitigate or compensate soil sealing, SWD(2012) 101 final/2.

Forests

Current situation

The 2010 Green Paper, made a comprehensive assessment of the state of EU forests and the challenges currently facing them, concluding that forest protection serves both environmental and economic goals.

Forests cover 42% of EU land area and are significant contributors socio-economically as well as environmentally. If well managed, they can provide numerous environmental benefits, such as soil protection, regulation of freshwater supplies and regional/local climate, carbon sequestration, and biodiversity conservation without under-mining their socio-economic role.

The major challenge to the EU forest environment consists in meeting increasing demand for biomass and forest products, driven by renewable energy targets and other bioeconomy needs. On biomass for energy alone, expectations are that woody biomass will account for about 60% of the EU bioenergy target for 2020. Meeting this demand whilst maintaining the capacity to provide ecosystem services is the key issue.

Forest ecosystems face threats from an increasingly warmer and dryer climate, and impacts of soil and air pollution. Climate change scenarios project a further increase in summer drought and winter precipitation, as well as rising air temperatures, thus increasing risks of negative impacts on forest tree vitality. The European Nitrogen Assessment⁴⁹ estimates that ammonia (NH₃) and nitrogen oxide (NO_x) emissions have reduced forest biodiversity across more than two-thirds of Europe. Despite the fact that 50.84% of Natura 2000 are forests, covering more than 382 009 km², and that 23% of total EU forests are under Natura 2000, areas of high natural value are restricted to relatively small and isolated areas in an increasingly fragmented landscape, and forest management has significantly altered the structure and the tree species composition of European forest ecosystems.

Forest fires are among the most visible threats and cause severe damage to the environment, although they are occurring on a small part of the total EU forest area. While fires occur naturally and are an integral component of the dynamics of forest ecosystems in European landscapes, 95% of the forest fires in Europe are human-induced⁵⁰. Uncontrolled fires cause extensive environmental, social and economic damage, including human casualties, damage to property, reduced soil fertility through loss of organic matter and loss of investment in nature conservation.

On average, about 65,000 fires in Europe burn half a million hectares of wild land and forest areas every year. The damage caused by forest fires has multiple facets and most of it is related to biodiversity/biomass loss and GHG pollution, the latter reaching values of up to 30% of total GHG emissions. Various estimates put this damage at about 3,000€ per hectare. Climate change studies show an increasing risk of forest fires not just in the Mediterranean but across the EU. However, burnt areas vary considerably from one year to the next depending on seasonal meteorological conditions (Spring droughts, combined with high temperatures during summer and strong wind during fires) and fuel build-up (unmanaged forests).

There is a long history of the EU contributing to the implementation of sustainable forest management through common policies, based on the principle of subsidiarity and the concept of

⁴⁹ <http://www.nine-esf.org/ENA>

⁵⁰ Comprehensive Monitoring of Wildfires in Europe: The European Forest Fire Information System (EFFIS) Jesús San-Miguel-Ayanz et al. *European Commission, Joint Research Centre Italy*

shared responsibility. The EU has already adopted a significant number of instruments and measures in forest-related areas, such as the EU Forestry Strategy and Forest Action Plan, the Timber Regulation, the Forestry Measures under Rural Development Regulation or the Renewable Energy Directive. In the international framework, the EU maintains bilateral and multilateral relationships with third countries covering forestry issues.

A new EU Forest Strategy is currently under preparation to replace the strategy established by Council Resolution in 1998. A Commission communication on the future strategy is expected to be adopted in 2013. It will seek to improve co-ordination, communication and co-operation in the forest sector. In the Biodiversity strategy, a forest sub-target aims at ensuring that European forests have management plans or similar instruments in place and that these adequately take into account biodiversity needs.

There is no international forest convention, but the 46 parties to FOREST EUROPE, a policy process between European states that includes all 27 MS, are currently negotiating a "pan-European legally binding agreement on forests", which should include environmental issues.

Future outlook

Some modelling of EU and international forest trends is available under wider land use and deforestation modelling, such as FAO's global forest resources assessment (FRA) which operates with a 10 year cycle⁵¹.

Specific European forest sector modelling has been carried out by UN-ECE in their European Forest Sector Outlook Studies EFSOS I (1960-2000-2020) and EFSOS II (2010-2030)⁵². Both studies foresee important increase in demand for forest output.

The European Forest Fire Information System (EFFIS) has been tracking forest fire occurrences (number of fires, burnt area, average fire size) since 2000 and holds data for some Member States as far back as 1980. Most trends suggest that the extent and frequency of forest fires are likely to increase. This is due to climate change, increased biomass stocks due to abandonment of forest management and other factors.

Key challenges

Knowledge base

The Forest Green Paper of 2010 led to renewed interest in a more comprehensive forest information system based on MS data, to take the knowledge base for forests forward so that both the EU and Member States could approach forest related policy and action guided by relevant up to date knowledge. The Commission has chaired ad hoc working group of MS and stakeholder experts, resulting in a report⁵³ that summarizes priorities for EU level harmonization of certain forest parameters, such as those in the fields of forest resources (biomass availability), biodiversity in forests, with a focus on data needed to feed the Bio-energy policy.

The European Forest Fire Information System (EFFIS), in operation since 2000, allows participating Member States and neighbouring countries to convey data on fire occurrence into a central database managed by JRC. EFFIS also produces daily fire danger forecasts and fire damage assessments based on GIS and remote sensing data. The information feeds the European Data Centre (EFDAC). In 2012, EFFIS has been extended to North African and Middle East countries.

Current knowledge gaps and mismatches between what is monitored and what is needed for policy makers mean that a revision of the approach on forest information is required. This is the main

⁵¹ <http://www.fao.org/forestry/fra/en/>

⁵² <http://www.unece.org/fileadmin/DAM/timber/docs/sp/sp-20.pdf> ; <http://www.unece.org/efsos2.html>

⁵³ <http://ec.europa.eu/environment/forests/pdf/Fin%20report%20info%20monit%20wg.pdf>

focus of the work following up the Green Paper. The EFFIS model, which overcomes the traditional tension between MS reluctance to have a formal EU forest policy and the equally recognised need to ensure EU forests are delivering on broader policy objectives is a very practical and flexible tool.

Implementation

Implementation problems related to forest policy at EU level include lack of consistency regarding forest information and the definition of 'best practice'. This weakens the capacity of the EU to tackle the challenge mentioned above and makes access to Rural Development funding more problematic. The Green Paper findings on forest information and the Biodiversity Strategy should be fully implemented in order to make progress on some of these issues. For forest fires, best practice varies extensively, with more effective preventive action in some Member States than in others with similar climates and vegetation. The overall functionality of EFFIS could be greatly improved by upgrading data inputs from certain Member States.

Financing

Between 2007 and 2013, financing has been available for a range of forest actions under LIFE+ and the Rural Development Regulation. During 2000-2006, around 9% of rural development money was spent on forestry measures, mainly afforestation. At the same time, LIFE+ has financed numerous small forest related projects, covering nature protection as well as wood processing. During the present financing period, a substantial part of LIFE+ funding in relation to forests has gone to a large monitoring project.

The Rural Development proposal for the next MFF cycle contains continued financing possibilities for forest protection and forest fire measures.

Since 2002, the EU Solidarity Fund has been available to provide Member States or regions with speedy, effective and flexible support to deal with damage caused by disasters, including forest fires, but has not been used for that purpose.

As Rural development co-funding is a problem for some Member States concerned, they have recently been turning to the European Investment Bank (EIB) in order to fund major fire prevention projects.

Justification for the priority objective

A number of EU policy objectives, such as those on biodiversity, renewable energy, green economy and climate change mitigation, depend on EU forests fulfilling a number of environmental and productive functions. As there has not been any comprehensive EU forest resources assessment so far and because MS forest information systems are fragmented and not always compatible among one another, there is a need to improve information flows on certain key forest parameters that are related to EU policies. This could be done by supporting ad hoc approaches under the LIFE+ instrument.

Forest fires are a serious concern in a very significant part of the EU and neighbouring countries. Fires represent risk to lives and safety, to property, to nature and environmental services. Forest fires can have adverse impact on the development of affected regions for many years after the event. High nature value areas (N2000) are particularly threatened by forest fires. The impacts are cross-sectoral and there are significant trans-boundary elements (preparedness, shared capacities, information sharing). Forest fire risk is expected to rise as a consequence of global warming, leading to dryer conditions in large parts of the EU.

A number of other policy areas are affected by or linked to forests, notably bioenergy and bioeconomy, water soil and biodiversity protection, forest based industries and so on. Forest fires mostly affect rural areas, and they impact the resource base of the rural economy, such as forest-based industries and tourism. Forest fires cause very significant greenhouse gas emissions and can

have serious air pollution impacts.

Efforts should focus on supporting improved forest information and better forest protection, including fire prevention actions, a greater focus on biodiversity and on the role of forests as sinks or sources of carbon through sustainable forest management which addresses the multiple opportunities and demands on forests whilst respecting the limits of what forests can sustain. The forest information work is the basis for a more acceptable knowledge base on EU forests – without this the challenge of biomass from forests, the forest's role in sequestration, the bio-economy and on forest biodiversity cannot be met. Therefore, this is the prime focus of EU environmental work in relation to forests.

The general policy would be to improve the level of forest protection and the contribution of forests to environmental objectives including biodiversity conservation, notably through integration of such actions into the revised Forest Strategy (2013).

The 1998 Forest Strategy is currently being revised and this will most likely lead to adoption of a follow-up version in 2013, based on a Commission Communication.

The Commission will take forward the outcome of the discussion launched by the Green Paper, by supporting forest information work related to environmental policies, within the main lines of an EU level forest information system that is based on the approach of the EFFIS model and other work to date, to which individual Member States will participate on a voluntary basis.

To support forest fire and forest information actions, better use of Rural Development, Structural Fund and LIFE funding would help ensure the challenges are addressed.

Nutrient cycles

Current situation

The European Nitrogen Assessment⁵⁴ identified five key threats posed by reactive nitrogen⁵⁵: water, air and soil quality, greenhouse gas emissions, ecosystems and biodiversity.

Similarly, excessive phosphorus releases to the environment cause significant negative effects in freshwater, the marine environment and in soil.

A major impact of excessive releases of nutrients is eutrophication. This process causes excessive growth of plants in water, marine and terrestrial ecosystems with several negative impacts, such as oxygen depletion in waters. It also deteriorates bathing water quality and can significantly increase the cost of drinking water treatment. The current situation regarding eutrophication in the EU is as follows:

- Fresh waters (lakes/rivers): 33% of monitored sites were reported as eutrophic (based on reporting by 17 Member States under the Nitrates Directive for the period 2004-2007)⁵⁶;
- Coastal/marine waters: the EEA SOER 2010⁵⁷ report notes that eutrophication is a major threat to EU coastal and marine waters, particularly for the Baltic and Black Sea in general and for several eutrophication 'hot spots' scattered throughout the Mediterranean and the North East Atlantic, often near estuaries and fjords.
- Eutrophication of waters is one of the major issues which need to be tackled in order to reach good ecological and environmental status under the WFD and MSFD. While land-based sources of nutrients – both diffuse (e.g. organic/mineral fertiliser use in agriculture) and point sources (e.g. from urban wastewater treatment plants) are reducing, they remain the key sources of nutrient flows to waterways in the EU. Nitrogen deposition from air pollution, meanwhile, is another significant source: approximately 24 % of the nitrogen load to the sea surface stems from atmospheric deposition⁵⁸.
- Excess nitrogen deposition can cause eutrophication in terrestrial ecosystems; in 2004, half of the geographical range of natural and semi-natural habitat across EU-25 was still exposed to atmospheric nitrogen deposition above the level from which harmful effects in ecosystem structure and function may occur, (EEA Report n°4/2009).

The European Nitrogen Assessment concluded that "*Cost-benefit analysis highlights how the overall environmental costs of all reactive nitrogen losses in Europe (estimated at €70–€320 billion per year at current rates) outweigh the direct economic benefits of reactive nitrogen in agriculture. The highest societal costs are associated with loss of air quality and water quality, linked to impacts on ecosystems and especially on human health.*"

However, such cost-benefit analyses are difficult to make and should be interpreted carefully. Moreover, fertiliser use in agriculture is indispensable for feeding the world; added fertiliser (with other inputs) accounts for up to 60% of the EU agricultural output annually. Therefore, policies

⁵⁴ <http://www.nine-esf.org/ENA>

⁵⁵ Collectively any chemical form of nitrogen other than di-nitrogen (N₂). Reactive nitrogen (Nr) compounds include NH₃, NO_x, N₂O, NO₃⁻ and many other chemical forms, and are involved in a wide range of chemical, biological and physical processes

⁵⁶ http://ec.europa.eu/environment/water/water-nitrates/pdf/sec_2011_909.pdf

⁵⁷ <http://www.eea.europa.eu/soer/europe/marine-and-coastal-environment>

⁵⁸ HELCOM Pollution Load Compilation 2009. http://www.helcom.fi/publications/en_GB/publications/

should increasingly focus on addressing the nutrient cycle in a holistic way with continued attention for long term efficient use without negative side effects. Resource efficient management of nutrients throughout the entire cycle will not only reduce environmental pressures, but also lead to economic and social benefits such as reduced need for fertilizers and reduced health risks. It may also reverse current depletion rates for limited phosphorus resources, crucial for agriculture and to be safeguarded for many generations to come.

There is a wide range of EU policies and legislation which address the negative impacts of nutrients on the environment and the reduction of sources of nutrients, in particular:

- The Water Framework Directive (WFD) (2000/60/EC) and the Marine Strategy Framework Directive (MSFD) (2008/56/EC) define good ecological / environmental status as including no significant impacts from eutrophication and require the establishment of a programme of measures to address significant releases of nutrients into the aquatic environment, building on existing EU measures (see below).
- The Nitrates Directive (NiD) (91/676/EEC) addresses water pollution from agricultural sources.
- The Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC) and Industrial Emissions Directive (2010/75/EU) regulate discharges from wastewater and, as regards the industrial emissions, nitrogen emissions to air.
- The National Emission Ceilings Directive (NEC) (2001/81/EC) sets upper limits on atmospheric emissions of eutrophying nitrogen pollutants, i.e. nitrogen oxides and ammonia
- The Regulation on Phosphates in Detergents (Regulation (EU) No 259/2012) bans the use of phosphates in detergents.
- The EU Common Agriculture Policy, in particular the agri-environment schemes under Rural Development Programmes (but also cross-compliance for the Nitrates Directive) contribute to reducing nutrient releases into the environment.
- The Waste Framework Directive introduces end of waste criteria for nutrient recycling.

In addition, there is a comprehensive international framework addressing nutrient pollution, which includes the Regional Sea Conventions (OSPAR, HELCOM, Barcelona and Bucharest) and the UNECE Convention on Long-range Transboundary Air Pollution (CLRTAP).

Specific - legally binding - targets are fixed under the WFD, MSFD, NiD and UWWTD. They relate to reaching good status in all waters and requirements for treatment installations and best agricultural practices aimed at preventing nutrient leaching and run off. EU targets on nutrient reductions are indirectly set by water quality objectives to be achieved. Action programme measures established under the NiD and minimum waste water treatment requirements under the UWWTD must be designed in such a way that enables water quality targets to be met. Additional measures are required under the Water Framework Directive in order to achieve good status.

The HELCOM, OSPAR and Bucharest Regional Sea Conventions set specific targets on reduction of nutrient loads/nutrient reduction plans. Nutrient reduction is also covered in general terms by the Barcelona Convention (land-based sources pollution).

The NEC Directive lays down specific objectives to protect the environment and human health by 2010. The objective for eutrophication is limited to soil eutrophication for which the critical loads for eutrophication are to be achieved in the long term. These NEC Directive objectives are presently being reviewed, with the aim of updating them by 2013.

Future outlook

The FATE model (Impacts of nutrients in terrestrial and aquatic ecosystems)⁵⁹ comparing the estimates for 2005 with those of 1991, concluded that the total nitrogen and phosphorus loads to the sea have decreased by 9% and 15% respectively at European continental scale. Since nutrient transport pathways in soil are slow, it is likely that the effects of reduced fertiliser use and increased efficiency of nutrient use have not yet been fully seen. While projections of the model for the year 2020 estimate an increase in nutrient loads (6% for N; 4% for P), the full implementation of the UWWTD and the recently agreed ban on phosphates in detergents will reduce nutrient emissions. However, the highest potential for nutrient load reductions is estimated to come from the optimisation of manure fertilisation. Efforts under the NiD have seen substantial improvements in manure management in recent years both in terms of storage and application techniques. All these measures may not be sufficient to eliminate eutrophication in 2020 due to the time needed for ecosystems to recover to an unpolluted state.

Other modelling results for nitrogen emissions from agriculture show similar results. For nitrates from agriculture the MITERRA model showed that measures implemented under the Nitrates Directive significantly decreased N leaching as well as gaseous N emissions. The latter results in similar reductions of N-depositions from the atmosphere.

The Clean Air for Europe Programme and the 2005 Thematic Strategy on Air Pollution showed that eutrophication of soils and waters is a major feature of air pollution-related damage to the environment. Current policy will only reduce the impacts from nitrogen emission to a limited extent by 2020.⁶⁰

According to the European Nitrogen Assessment (2011) eutrophication is decreasing. However, existing international policies have not been fully implemented, and even under favourable land use scenarios, reactive nitrogen export to European waters and seas is anticipated to remain a problem in the near future. Achieving substantial progress requires integration of nitrogen-related issues into sectoral policies and efforts to reduce overall inputs of reactive nitrogen to watersheds, e.g. through changes in agricultural practices and efficient management of other N flows.

Key challenges

Knowledge base

The main challenge relates to the lack of exact knowledge about nutrient pathways in soil. This complicates assessing the effectiveness of measures to reduce nutrient emissions from diffuse sources, such as agriculture, and their impacts on water quality, biodiversity and ecosystems. Several parameters, such as climate, soil type and characteristics, influence significantly nutrient flows, which make such analysis complicated. Moreover, the intrinsic link between agricultural practices and the nutrient cycle requires in-depth knowledge of crop cultivation and animal rearing and related nutrient loss pathways (e.g. ammonia, NO_x and N₂O losses from manure management).

Another important knowledge gap relates to the lack of a solid scientific basis for accurate assessment of the status of coastal and marine waters and for the underlying drivers which cause eutrophication.

Furthermore, it is still difficult to find reliable scenarios that define the baseline and possible future milestones or targets related to non-compliance rates, nutrient loads, planning/construction of installations, etc.

Despite improvements in our understanding of atmospheric air emissions and nitrogen oxides and

⁵⁹ <http://fate.jrc.ec.europa.eu/rational/home>

⁶⁰ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0446:FIN:EN:PDF>

ammonia, both contributing to eutrophication, there are still some limitations in fully assessing the impacts of emission reduction measures on the pollutants. *Inter alia* there is a need to better understand the impacts of eutrophying pollutants on ecosystems in Natura 2000 areas and on EU neighbouring seas.

More knowledge is also required to address the N cycle in an integrated way, in view of the different reactive forms of nitrogen, their releases and interaction. Such an understanding should form the basis for the gradual reorientation of fragmented policies focusing on a specific part of the nutrient cycle (leaching to waters, gaseous emissions to air) towards integrated policies considering the whole cycle.

However, these knowledge gaps should not prevent efforts now to achieve more efficient nutrient use, as a considerable body of information already exists on the subject.

Various institutes in the EU are engaged in studies and modelling work (e.g. European Nitrogen Assessment or the JRC). The Commission is also supporting studies on the impact of the NiD on N gaseous emissions, on manure efficiency and processing, on effective action programme measures as well as on resource efficiency and closing the nutrient cycle, which includes identification of nutrient saturated regions and development of best agricultural practices.. Furthermore, there are plans to improve the quantitative assessment of air pollution impacts on ecosystems and biodiversity, including Natura 2000 areas.

Ideas for a new forward looking approach to improve implementation of EU environmental policies are developed in the Communication on Improving the delivery of benefits from EU environment measures: building confidence through better knowledge and responsiveness [COM (2012)95].

Implementation

Existing legislation is not yet fully implemented. In particular, the Nitrates Directive, the Urban Wastewater Treatment Directive and the NEC Directive are lagging behind their objectives and their deadlines, despite progresses achieved during the past years.

Regarding nitrates, all Member States have designated nitrate vulnerable zones and have adopted action programmes, and most Member States continue to improve the quality of these programmes based on experience and monitored results. While ten Member States have taken a whole territory approach⁶¹ to addressing nitrate issues, some still have to complete vulnerable zone designations. In some of the EU 12 Member States, lack of financing for expanding manure storage capacity is an issue. The linkage of the nitrates directive to cross compliance under the CAP is promoting controls and respect for the legal requirements.

Under the Urban Wastewater Directive, several Member States have achieved high rates of implementation. Nevertheless, there remain areas of non-compliance, particularly in agglomerations in some of the Member States, and implementation rates in all new Member States are significantly lower. The availability of financial support and lack of planning/coordination are the main bottlenecks. While all but two Member States are in compliance with the NEC Directive for ammonia, non-compliance with the 2010 ceilings for nitrogen oxides is widespread: 11 out of 27 Member States reported exceeding of ceilings for 2010.

The implementation of the Water Framework Directive and the Marine Strategy Framework Directive are at earlier stages. The assessment of River Basin Management Plans under the WFD will be presented as part of the Water Blueprint and is expected to show that eutrophication is still a significant problem requiring additional measures.

⁶¹ The action programme applies throughout their territory

Financing

Lack of financial resources delays or prevents construction of technical installations for urban wastewater treatment and construction of manure storage vessels (a key element to prevent nitrogen pollution from manure). EU structural funds (Cohesion Funds) are available for construction of technical installations. Manure storage construction partial funding is available under rural development within the Common Agriculture Policy and several Member States have used state aids to help support construction. In addition, most Member States have included in their rural development programmes agri-environmental measures aimed at nutrient input reduction. However, available resources in the EU funds and Member States -which need to co-finance- are not sufficient to cover investment needs. The availability of appropriate funding must be safeguarded for the next financial period 2014-2020.

Justification for the policy objective

The central element of this objective is to interlink and integrate the existing EU policies that play a role in tackling eutrophication. This will contribute to a more holistic approach to the nutrient cycle and its loss pathways. Fine tuning measures under the different policies will contribute more effectively to overall reduction of nutrient loads to the environment and prevent shifting of nutrient emissions from one environmental compartment to another (water/air). For instance, measures to reduce ammonia emissions from stables might lead to increased nutrient leaching following manure application if it is not combined with appropriate measures on manure spreading.

Ensuring better integrated implementation of the relevant environment policies affecting the nutrient cycle will also contribute to resource efficiency and economic benefits across different policy areas. For example, the promotion of best agricultural practices goes hand in hand with nutrient resource efficiency (e.g. mineral fertilizers application reduction; best use of manure as nutrient source), while pollution prevention has a double positive impact of reducing costs of treatment for drinking water purposes and associated energy consumption.

The proposed actions to increase implementation efforts will reduce water pollution, biodiversity loss and, provided the ecosystem has enough time to recover, reduce eutrophication impacts.

Moreover, the actions will contribute to an approach that takes into the account of the whole nutrient cycle, following the overarching assessments carried out under the Water Framework Directive, the Marine Strategy Framework Directive and the Air Quality Review. It may also trigger further integration of these policies. This will allow for an assessment of whether current EU measures are sufficient or need to be complemented by additional measures. With this approach, the nutrient cycle can be managed in a more cost-effective and resource efficient way than today.

The pro-active approach the Commission applies to support implementation of the NiD, including intensive contacts with MS to agree on realistic milestones to reach compliance and significant efforts to stimulate exchange of best practices between Member States, in combination with legal action where required, has brought implementation of this directive to an advanced stage. This could be usefully extended to:

- Gradually implementing the actions proposed under the Communication on Improving the delivery of benefits from EU environment measures (COM (2012)95), including the development of 'Structural Implementation and Information Networks' (SIIF's) and Implementation Agreements with Member States. These agreements, based on milestones to be achieved, will contribute to shifting the centre of gravity from the current ex-post approach (legal action based on non-compliance) towards a forward looking ex-ante approach.
- Enhancing technical cooperation efforts and sharing of best practices between Member States and fostering more coordination among different national/regional authorities responsible for implementation through means of establishing expert networks and web-

based exchange platforms.

- Strengthening the scientific basis for assessments of eutrophication under the Water Framework Directive, the Nitrates Directive and the Marine Strategy Framework Directive aiming at agreed assessment criteria and harmonised evaluations on the sources and scale of the environmental. Knowledge relating to the effectiveness of measures should be further strengthened.
- Harmonisation of monitoring and reporting obligations – as suggested under the Water Blueprint exercise- will contribute to more effective data collection and water quality assessment.

Some additional measures at national or EU level may be necessary. As part of the 2013 air policy review, the NEC Directive will be reviewed. The Air review will also include a thorough analysis of the remaining distance to the human health and environmental protection objectives, including on eutrophication of soils and waters, which will remain a major policy challenge for 2020 and beyond.⁶²

In addition to the challenge of eutrophication, there are an increasing number of other environmental and health problems linked to the nutrient cycle, e.g. air pollution from nutrients, inefficient use of resources.

A Green Paper on sustainable use of phosphorus and how to ensure its resource efficient use in future is being considered in the context of the implementation of the Roadmap to a resource efficient Europe.

Finally, the integrated analysis of the nutrient cycle, as presented in the European Nitrogen Assessment, will be evaluated in order to identify further improvements on synergies between existing EU legislation and explore the scope of further integration of these policies that would contribute to improvement of cost-effectiveness and resource efficiency in the nutrient cycle. The Commission will prepare a report on the nitrogen cycle based on a review of contributions from all legal and policy sources to reducing problems associated with nitrogen use.

The Commission may present further measures in the context of the review of the air quality policy and legislation in 2013, which will include the revision of the NEC Directive and related policy initiatives.

Furthermore, the Green Paper on Phosphorus will launch a stakeholder and institutional consultation and will seek to integrate the approaches from this Green Paper into relevant upcoming proposals (Fertilizer Regulation, Sustainable Food Communication).

The Commission may support studies analysing the nutrient cycle, its loss pathways and possible remedial action of which the outcome may be used as a basis for a more integrated, cost-effective and resource efficient nutrient management, which minimising releases to the environment. E.g. the nutrient recycling from wastewater treatment will be investigated to reduce emissions and recycle fertiliser.

Other actions (SIIF's, partnership agreements) promoting compliance of existing policies will be developed, such as actions on improving the delivery of benefits from EU environment measures (COM (2012)95). These actions will increase compliance rates and maximise benefits of EU environmental legislation (such as the Urban Wastewater and the Nitrates Directives) and contribute to reducing impacts resulting from an imbalance in the nutrient cycles, such as eutrophication. Finally, the follow up to the Water Blueprint and the related Fitness Check of water policy may trigger further actions, such as the streamlining of monitoring and reporting obligations under the Nitrates Directive, the Urban Wastewater Treatment Directive, the Marine Strategy Framework and Water Framework Directives. This will improve water quality assessment across the EU.

⁶² see also separate fiche on air policy

2) Turning the EU into a resource efficient, greener and more competitive low-carbon economy

Low-carbon economy (climate change mitigation)

Current situation

The EU has a binding legal framework in place to reduce greenhouse gas (GHG) emissions for the period to 2020. The Climate and Energy Package includes the 20-20-20 targets for 2020: a reduction of EU greenhouse gas emissions of at least 20% by 2020 (conditional target to move to 30% reduction), 20% of final energy consumption to come from renewable energy by 2020 and 20% reduction in primary energy use compared with projected levels, to be achieved by improving energy efficiency. While the 20% greenhouse reduction target and 20% renewables target are binding, the 20% energy efficiency improvement target is aspirational.

The Climate and Energy Package sets an EU wide cap for the EU emission trading system (EU ETS) and national targets for the sectors not covered by the EU ETS. The EU ETS cap for 2020 sees ETS emissions, excluding aviation, reduce by around 21% compared to 2005. After 2020 the cap continues to decrease annually with an amount equal to 1.74% of the average 2008 to 2012 cap resulting in 2030 and 2050 in an emission reduction around 40% and 70% respectively below 2005 emission levels. The sectors not covered by the EU ETS have national emission limits which together will lead to an overall reduction of the EU's greenhouse gas emissions in the covered sectors by 10% by 2020 compared to 2005.

Currently, the EU is overall well on track to meet its emissions reduction and renewables targets for 2020, but further efforts are needed to achieve the 20% energy efficiency target.

Future outlook

In January 2008 the Commission presented the Impact Assessment for its proposal on a Climate and Energy package, based on a set of model based projections. Since then the situation has considerably changed. The impact assessments accompanying the Communications "*Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage*" from May 2010 and "*Roadmap for moving to a competitive low carbon economy in 2050*" from March 2011 represent an updated and improved version of the modelling tools and the baseline scenario. The Commission is continuously working on updating its baseline reflecting the most recent developments and available data.

The methodology applied uses the models PRIMES (for the EU energy system modelling), GAINS (for non-CO2 emissions from agriculture and industry), CAPRI (to assess production from agriculture and subsequent emissions), G4M and GLOBIOM for land use, land use change and forestry emissions and removals. Employment and competitiveness impacts for energy intensive industries were assessed using the GEM E3 model.

According to the baseline scenario, more efforts will be needed by Member States in order to meet the targets from the Climate and Energy Package.

Key challenges

Knowledge base

The Commission bases its climate policies on the best available current science and on the scientific consensus of experts in the field of climate change. The assessments of the Intergovernmental Panel on Climate Change (IPCC) continue to represent the consensus of thousands of scientists worldwide, based on peer-reviewed research and multiple lines of analysis and datasets.

According to the IPCC 4th Assessment Report (AR4), in the absence of additional action,

temperatures are expected to rise well above 2°C before the end of this century, leading to increasing climate-related losses and catastrophes. Contributing to the long-term objective of keeping global average temperature increase below 2°C compared to pre-industrial levels requires reducing global greenhouse gas emissions by 50% by 2050 compared to 1990 levels. In the context of necessary reductions by developed countries as a group, the EU needs to reduce its greenhouse gas emissions by 80-95% by 2050 compared to 1990.

Since the publication of the AR4 in 2007, climate science has greatly evolved, reflected in the numerous peer-reviewed scientific publications. The recent publication of the special topic reports of the IPCC's 5th Assessment (the working group reports are expected to be published in 2014) point to a growing level of certainty in both the predictions of the world's future climate and the attribution of the changes we are currently seeing around us to man-made greenhouse gas emissions.

Areas where research is on-going to increase the knowledge base in this field include: climate sensitivity and feedbacks, low-carbon technological development, energy price modelling and estimates of realised international action on climate change. In addition, the drivers behind global deforestation rates require further research so that they can be addressed in a legal greenhouse gas emissions mitigation context. There is also a need for indicators regarding labour market dynamics, job creation potential, skills requirements and job quality in emerging green sectors and polluting industries in order to support labour market transitions of affected workforce.

Implementation

Full implementation of the EU Climate and Energy Package includes implementing the Emissions Trading Directive 2009/29/EC in order to reduce greenhouse gas emissions in the sectors covered by the Directive by 21 % by 2020 compared to 2005 and implementing the Effort Sharing Decision (ESD) 406/2009/EC in order to meet national emission limits which together will lead to an overall reduction of the EU's greenhouse gas emissions in the covered sectors by 10% by 2020 compared to 2005. Also, set out in article 9 of the ESD, a legal accounting framework for laying the basis for the possible future contribution of the Land Use, Land Use Change and Forestry (LULUCF) sector was proposed in early 2012. It is foreseen to be followed by a second step on the actual inclusion of the sector, once the accounting rules have been implemented and proved robust. Implementation of Directive 2009/28/EC regarding the achievement of the target of 20% of final energy consumption delivered by renewable energy sources will also be important.

The implementation of the third phase (2013-2020) of the **EU ETS Directive** (auctioning, single Union registry, harmonised free allocation) is largely completed.

In the **sectors not covered by the EU-ETS**, GHG emissions were down in 2008 and 2009 in most Member States due to the economic recession, but once the economic situation improves additional efforts might be required to reach the ESD targets. The European Environment Agency's report "Greenhouse gas emission trends and projections in Europe 2011" suggests that only 11 Member States will reach their 2020 targets with existing measures. Nine Member States may fail to reach their targets domestically even with additional measures.

Financing

The EU ETS Directive requires Member States to use at least 50% of the auctioning revenues (100% for the redistributed amount and aviation) for climate and energy related purposes specified by the Directive.

For the 2014-2020 Multiannual Financial Framework the Commission has proposed to increase the share of EU spending for climate related purposes to at least 20% of the whole budget. Hence the mainstreaming of climate action into all relevant EU policies including energy, transport, industry, trade, agriculture and rural development, consumers and health policy, employment, research and innovation, maritime and fisheries and regional policy on EU and national level gains in

importance. Approximately 35% of the 'Horizon 2020 - the Framework Programme for Research and Innovation' budget will be used to support climate policy objectives. The Connecting Europe Facility will co-fund projects which will close gaps in Europe's energy infrastructure and will facilitate integration of renewable energy sources.

In addition, through the innovative co-financing NER300 programme, the Commission is supporting large scale demonstration projects of carbon capture and storage (CCS) and innovative renewable energy technologies.

Also under the LIFE programme proposed by the Commission, regional low-carbon, climate resilient strategies and small-scale climate projects by SMEs, NGOs and local authorities will be supported.

Justification for the priority objective

The Europe 2020 Strategy for smart, sustainable and inclusive growth includes five headline targets that set out where the EU should be in 2020. One of them relates to climate and energy: Member States have committed themselves to reducing greenhouse gas emissions (GHG) by 20%, increasing the share of renewables in the EU's energy mix to 20%, and achieving the 20% energy efficiency target by 2020.

Also in the Annual Growth Survey 2012, the Commission called on Member States to advance on green taxation, to phase out environmentally harmful subsidies and to reinforce or preserve expenditure in growth-friendly areas such as energy efficiency.

Action on climate change is linked to various other EU policies including environment, resource efficiency, energy, transport, industry, trade, agriculture and rural development, consumers and health policy, employment, research and innovation, maritime and fisheries and regional policy. Integrating climate objectives into other EU policies becomes more and more important, also in the context of climate mainstreaming in the next EU budget.

Regarding ETS, the Commission is considering options for reinforcing incentives by changing the timing of the supply of allowances to be auctioned. This could take the form of temporarily reducing the amount of auctioning allowances early on in phase 3 and bringing this amount back to the market before the end of 2020. Structural solutions are also being considered.

As to the non-ETS sectors, it is essential for Member States to closely monitor the situation and put in place the necessary policies and measures as soon as possible, especially in sectors where changes take time, such as buildings, infrastructure and transport. Proposals at EU level, such as the planned review of the regulation related to HFCs and the proposal on the modalities to reach 95g/km for the CO₂ efficiency of cars in 2020 are important EU tools to help Member States to reach their targets.

A proposal for a new F-gases Regulation is being drafted by the Commission which will seek to further reduce high global warming potential (GWP) F-gases and stimulate innovation and green technologies by improving market opportunities for alternative low GWP technologies.

In the context of rising emissions from the transport sector, it is important to accelerate efforts to promote cleaner transport and achieving a more competitive transport manufacturing industry, inter alia through confirming and implementing the 2020 CO₂ targets for light duty vehicles, the development of a strategy to limit CO₂ emissions from heavy duty vehicles and reducing greenhouse gas emissions from road transport fuels.

The CO₂ emissions from international maritime transport are currently unregulated. However, the CO₂ emissions related to EU routes are expected to increase by 8% by 2020 compared to 2005. Hence, in accordance with the recommendation of the Council and the Parliament in the Climate and Energy Package, the Commission is considering making a proposal to address these emissions.

The contribution of the LULUCF sector also is currently not included in Member States GHG accounts towards the 2020 target. The sector encompasses important GHG stocks in agricultural soils and forests, and captures changes to these resulting in significant emissions and removals. Therefore, in March 2012 the Commission made a proposal that (1) sets out common accounting rules, thereby providing a solid basis for future legal initiatives to include the sector and (2) requests Member States to develop action plans to better exploit the mitigation potential of LULUCF activities.

The Commission also proposed in November 2011 legislation to significantly enhance the monitoring and reporting of GHG emissions, in particular to meet new requirements arising from the package of EU climate and energy laws for the period 2013-2020. This legislation notably aims at facilitating further development of the innovative EU climate policy mix, helping the EU and Member States keep track of progress towards meeting their emission targets for 2013-2020 and ensuring the EU and Member States comply with current and future international monitoring and reporting obligations and commitments.

The Commission supports also other EU-wide measures that are currently being implemented or are in preparation, such as the proposal for the Energy Efficiency Directive, the increase of EU climate-related expenditure to at least 20% of the 2014-2020 EU budget and the implementation of the 'NER 300' demonstration programme.

Industrial emissions

Current situation

Industrial activities play an important role in the EU economy, contributing to sustainable growth and jobs. However, industrial activities also have a significant impact on the environment. Hence, emissions from industrial installations have been subject to EU-wide legislation since the 1970's. Today, the largest industrial installations in the EU continue to account for a considerable share of total emissions of key atmospheric pollutants. They also have other important environmental impacts, including emissions to water and soil, generation of waste and CO₂ emissions, as well as significant use of resources.

In 2010, a major streamlining and consolidation of existing EU law on industrial emissions resulted in the adoption of Directive 2010/75/EU (the IED). The Directive sets out the main principles for the permitting and control of installations based on an integrated approach to prevent and abate pollution. It applies to some 50 000 installations in the energy sector, production and processing of metals, the mineral industry, the chemical industry, certain waste management activities and a number of other activities ranging from paper and pulp manufacture, to slaughterhouses and the intensive rearing of pigs and poultry.

The Directive makes obtaining a permit conditional upon installations applying the best available techniques. This "BAT" concept is at the core of the EU green industrial policy. It promotes the development and use of the most effective and advanced techniques that can be employed to prevent and, where that is not possible, to reduce emissions. In doing so it simultaneously promotes resource efficiency. This allows reducing the impact of industrial activities on the environment as a whole in an integrated manner by driving the uptake of advanced techniques and encouraging industry to develop new ways of operating. For the large combustion plant sector alone, the implementation of BAT will result in EU-wide net benefits of between €7-28 billion per annum, with a reduction in premature deaths of approximately 13,000 each year.

To determine which techniques qualify as the "best available" and promote a level playing field, reference documents (so-called 'BREFs') are drawn up for each industrial sector through a process of information exchange involving Member States and stakeholders. The conclusions of these documents are adopted through secondary EU law.

Thus, the Directive is an important tool to stimulate the diffusion of state-of-the-art environmental technologies across industry whilst supporting the development of emerging techniques - novel techniques that, if commercially developed, could provide either a higher general level of protection of the environment or at least the same level of protection of the environment and higher cost savings. This provides opportunities for industry to benefit from the emergence of new markets in green technologies and to reduce the cost of compliance with environmental legislation.

Future outlook

Existing BREFs were published under the former legal regime for industrial emissions. The aim is now to complete the review of all BREFs under the new legal regime and adopt conclusions for all sectors covered by 2020. This will result in revised permit conditions for a majority of the 50,000 installations covered by the Directive and offers opportunities for reducing pollution. As such, the full implementation of the industrial emissions policy will contribute to a wide range of objectives, including measures related to air, water and soil protection.

However, up to now the focus has been on pollution abatement, mainly through end-of-pipe

solutions rather than on pollution prevention and improving resource efficiency. There has also not been a strong focus on innovation and emerging techniques. As a result, EU industries are not drawing on the full range of benefits from the identification and application of best available and emerging techniques.

Key challenges

Knowledge base

A central challenge is to move from an approach based on end-of-pipe solutions to an approach based on enhancing the prevention of pollution notably through improved resource efficiency.

The broad variety of activities covered by the Directive and the large number of installations that fall within the scope of the Directive require the development of an over-arching knowledge base on the current degree of uptake of BAT and the existence and development of emerging techniques. Increased transparency notably through copies of permits being made available online will facilitate building this knowledge base. The application of the Shared Environmental Information System principles will ensure that national data on implementation of the Directive is widely available. This work is in its infancy, but will become a comprehensive system demonstrating the manner in which industrial emissions are controlled at a national level in an online format.

Provisions concerning support for emerging techniques will become an integral part of the knowledge sharing across the EU. By 2020, emerging techniques will have been identified for all activities covered under IED. The use and sharing of that information, and ensuring the links with research programmes across the EU will be key to the further greening of the European industry.

Implementation

The biggest challenge for the successful implementation of the industrial emissions policy relates to the uptake of best available techniques.

The success of the outcome of the voluntary information exchange process leading to the BAT conclusions depends on a number of critical factors, such as the commitment of stakeholders to provide the right information in a timely manner. Recently adopted guidance⁶³ should help to make the process successful in this respect.

There also remains a challenge in encouraging the development of innovative solutions and the actual take-up of emerging techniques to tackle industrial pollution.

Moreover, adequate training programmes are needed for the incumbent workforce in highly polluting industries to equip them with the skills needed to implement innovative techniques aimed at improving resource efficiency and reducing industrial as well as GHG emissions.

Financing

The Commission's environmental aid guidelines explain how funding measures for those "frontrunner" cases, where measures and techniques which go beyond BAT are being implemented, can remain in compliance with the EU state aid rules. Further opportunities of public support in compliance with the EU Environmental Aid Guidelines exist for those installations which take up BAT at an early stage. The Commission will also develop guidance under the Industrial Emissions Directive on how to encourage the development and uptake of techniques that provide either a higher level of environmental protection or at least the same level of protection and higher cost savings than existing best available techniques.

In order to cope with workers' skills transition in highly polluting industries, the European Social Fund (ESF) provides considerable resources to fund training schemes. The Commission will ensure

⁶³ Commission Decision 2012/119/EU.

that the next ESF programme is also steered to stimulate local practices around training and public employment services.

Justification for the priority objective

A fully implemented IED is a central pillar of the European Union's Resource Efficiency Policy. By ensuring the generalised application of best available techniques by EU industries across many sectors and enhancing their efforts to promote the uptake of emerging innovative technologies, the impacts of industrial emissions on the environment will be lowered and the resource efficiency (i.e. more efficient use of raw materials, minimisation of water use, maximisation of energy efficiency, etc., at all stages of the industrial production process) will improve. It will also encourage more innovation in new technologies and provide opportunities for the EU's eco-innovation industry.

The priority objective consists in developing a novel approach to the IED implementation which puts a strong focus on resource efficiency and focuses on:

- i) moving away from the past approach, which focussed on end-of-pipe pollutant abatement and consider measures aimed at preventing emissions and enhancing resource efficiency;
- ii) the swifter uptake of best available techniques by EU industry;
- iii) the development and uptake of emerging techniques.

The exchange of information between the Commission, Member States and stakeholders as part of the IED implementation process will encourage the swifter implementation of a more holistic set of BAT conclusions will act as a driver for innovation in European industry. Instead of being limited to the 'frontrunners', the uptake of best available techniques will become a feature across EU industry. This will enable costs to be reduced, which in turn should generate new incentives for developing innovative approaches, allowing a continuous improvement of the overall environmental performance of industry.

Finally, to ensure that the potential for the development of emerging techniques is effectively identified and targeted, the Commission will work to develop a framework, including an enhanced exchange of information on such techniques covering also information on funding opportunities, which will assist EU industry in their efforts to green their activities.

In the short term, the Commission intends to:

- 1) Refocus the review cycle of about 30 best available techniques reference documents for all activities covered by the IED, with the aim of adopting BAT conclusions. This will involve an intense information exchange process engaging Member States, environmental NGOs and industry experts, followed by a debate leading to the identification of the best available techniques and emerging techniques for each of the sectors concerned.
- 2) Develop guidance on the efficient use of resources (raw materials, water, energy) in the industry sectors covered by the IED ("Resource Efficiency BREF").
- 3) Develop guidance on emerging techniques.

Sustainable production and consumption

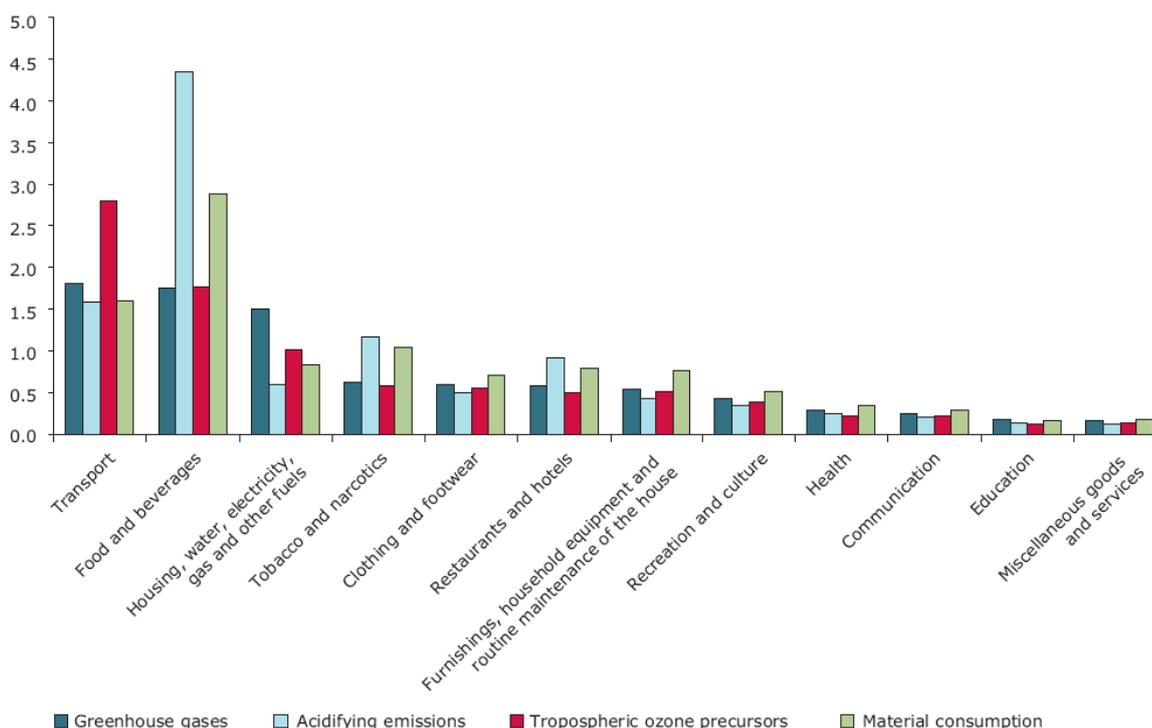
Current situation

Current economic growth is based on intensive and increasing use of resources. The annual material consumption in the EU per person is almost 15 tonnes, and waste generation amounts to more than 5 tonnes, with half going to landfill. Globally, environmental pressures are driven by increasing world population and growing middle class.

Unsustainable production and consumption patterns lead to environmental damage, inefficient use and depletion of the earth's resources, presenting risks to economic growth, resilience and well-being. Trends show that the era of plentiful and cheap resources is over. Sources of minerals, metals and energy, as well as stocks of fish, timber, water, fertile soils, clean air, biomass, biodiversity are all under pressure, as is the stability of the climate system. Businesses are facing rising costs for essential raw materials and minerals, their scarcity and price volatility are having a damaging effect on the economy.

The EEA State of Environment Report 2010 concludes that the majority of environmental pressures and impacts are caused by three consumption categories – food, housing and mobility.

Pressure intensity relative to average across all consumption categories



Note: * Austria, Czech Republic, Denmark, Germany, France, Italy, the Netherlands, Portugal and Sweden.

Source: EEA and ETC/SCP, 2010.

Fig 1. Relative environmental pressures intensities of private consumption categories in 2005

Environmental impacts of food consumption: Consumption of food and drink is estimated to cause 15% of GHG emissions, 37% of acidifying emissions, 14% of tropospheric ozone precursors and 19% of material resource use generated by national consumption (EEA and ETC/SCP, 2010). Environmental impacts are caused during all stages along the food production chain, but agricultural production and to a lesser extent industrial processing are responsible for the most

significant impacts. As regards products, meat and dairy products have the biggest impacts, in terms of both GHG emissions and land use, in the EU and globally.

Environmental impacts of housing: If the pressures caused by the product categories associated with housing and related infrastructures are added up, housing is estimated to cause 38% of GHG emissions, 22% of acidifying emissions, 32% of tropospheric ozone precursors and 38% of material resource use. The majority of environmental pressures are caused by energy use while the houses are in use, while around one fifth are caused during their construction. Other impacts of housing and associated infrastructure such as residential roads and parking include land sealing — making land impermeable — as well as urban sprawl leading to land take and fragmentation.

Environmental impacts of mobility: If the pressures caused by the product categories associated with mobility are added up, personal mobility is estimated to cause 20% of GHG emissions, 19% of acidifying emissions, 32% of tropospheric ozone precursors and 15% of material resource use activated by national consumption. GHG emissions from passenger transport continue to grow. Emissions of pollutants from transport that affect local air quality are declining across member countries of the European Environment Agency, but passenger cars are still among the top six individual polluting sources for NOX, particulate matter (PM10, PM2.5), carbon monoxide (CO) and non-methane volatile organic compounds (NMVOC). As a result, ambient concentrations of nitrogen dioxide (NO2) still exceed 2010 limit values in many cities around Europe (EEA, 2010a).

The existing policy framework includes and builds on the implementation of the Integrated Product Policy (COM(2003)302), the Thematic Strategy on the Sustainable Use of Natural Resources (COM(2005)670) and the Sustainable Consumption and Production Action Plan (COM(2008)398). Policies include:

- **Demand side**: Ecolabel, Energy Label; Energy Star, Green Public Procurement (GPP);
- **Products**: Ecodesign, internal market directives, clean vehicles legislation
- **Producers**: European Eco-Management and Audit Scheme (EMAS), Corporate Social Responsibility (CSR), etc.

The Roadmap to a Resource Efficient Europe (COM(2011)571) defines the overall objective to decouple environmental impacts from economic growth, including that “*By 2020, citizens and public authorities have the right incentives to choose the most resource efficient products and services, through appropriate price signals and clear environmental information. Their purchasing choices will stimulate companies to innovate and to supply more resource efficient goods and services. Minimum environmental performance standards are set to remove the least resource efficient and most polluting products from the market. Consumer demand is high for more sustainable products and services.*” The Roadmap also sets milestones and actions for the three key sectors of food, housing and mobility, and emphasizes that the transition to a green and low-carbon economy will require significant innovation, from small incremental changes to major technological breakthroughs.

Specific initiatives exist in the area of industrial policy, consumer policy, internal market, public procurement and energy.

- ***Industrial policy***: the Ecodesign directive (2009/125/EC) sets legally binding minimum environmental performance requirements for selected energy-using and energy-related products.
- ***Consumer policy***: the Consumer Agenda (COM(2012)225) proposes a series of actions to protect and empower consumers including improving environmental information on products, increasing availability of ‘green’ products and ensuring that more products on the market meet minimum environmental criteria.
- ***Internal Market policy***: the Single Market Act (COM(2011)206) foresees the adoption of harmonised methodology for assessment of environmental performance of products.

- *Public Procurement*: the Commission has proposed new directives on public procurement (COM(2011)895 and 896) to further clarify and enable green public procurement.
- *Energy policy*: the Energy Performance of Buildings Directive (2010/31/EU) obliges national authorities to set standards of energy performance for buildings corresponding to the life-cycle cost optimal level, for the new buildings to meet the near-zero energy standard from 2019 in the public sector and from 2021 in the private sector; the proposal for an Energy Efficiency Directive (COM(2011)370) obliges Member States to set national energy efficiency targets, to refurbish 3% of the building stock in the public sector to meet at least minimum energy performance requirements, and for public authorities to procure only products, services and buildings with high energy efficiency performance.

Quantitative targets to be attained by 2020 for GHG emissions (20% reduction compared to 1990) and energy efficiency (20% reduction of primary energy use) have been politically endorsed in the EU.

Specific short- and mid-term targets have been set for several priority product categories:

- Legally binding:
 - a. *Road vehicles*: GHG reductions by 2020 - 95g/km average emissions from a fleet of each producer for passenger cars, 147g/km for vans;
 - b. *Fuel for road vehicles and non-road machinery*: 6% reduction of GHG intensity;
 - c. *Buildings*: 100% of new public buildings to be near zero energy by 2019 and all other new buildings by 2021 (Energy Performance of Buildings Directive 2010/31/EU).
 - d. *Energy using products*: specific levels of performance (mainly energy efficiency in the use phase but also emissions of ozone depleting substances, air emissions, water consumption and noise where relevant) to be met by all products sold on the internal market by the specified date (usually 3-5 years from the adoption of the implementing measure) for selected priority products (Implementing measures under Ecodesign directive 2005/32/EC and 2009/125/EC).
- Aspirational:
 - a. *Buildings*: Existing buildings are cost-efficiently refurbished at the rate of 2% of the building stock a year by 2020 (Resource Efficiency Roadmap COM(2011)571);
 - b. *Food*: 20% reduction of resource input by 2020. 50% reduction of edible food waste by 2020 (Resource Efficiency Roadmap COM(2011)571).
 - c. *Mobility*: 1% yearly reduction, beginning in 2012, in transport GHG emissions (Resource Efficiency Roadmap COM(2011)571)

Future outlook

Existing modelling of global trends shows that the demand for resources and the pressures on the environment will increase. The UN estimates that by 2030, the world will need at least 50%% more food, 45%% more energy and 30% more water. It is estimated that 9 billion people in 2050 will need three times more material resources – 140 billion tons annually. The demand for food, feed and fibre is projected to increase by 70%, but 60% of our ecosystems underpinning these resources are already degraded.

According to the management consultancy firm McKinsey, global benefits of resource productivity could amount to \$3.5 trillion annually by 2030 and bring us half way to achieving our climate goals. The report also underlines the need to double investments in key resource systems, which currently amount to \$2 trillion a year, as well as its potential benefits - annual returns of above 10%. UNEP also estimates that investments equal to 2% of global GDP per year until 2050 will be needed to

support the transition to a green economy.

The Resource Efficiency Flagship (COM(2011) 21) includes EU modelling assumptions and possible parameter variations as regards resource efficiency.

The EEA SOER 2010 report includes EU outlooks and scenarios for future developments in the three key sectors – food, housing and mobility. For all three areas, the situation is unlikely to improve under business as usual. For example, consumption of meat is broadly forecast to increase globally with significant impacts on global forest resources and water catchments, increasing tensions on land availability and uses, and biodiversity conservation. Commission Communication on addressing the challenges of deforestation and forest degradation to tackle climate change and biodiversity loss (COM (2008)645) committed the EU to halt global forest cover loss by 2030 at the latest and to reduce gross tropical deforestation by at least 50 % by 2020 compared to current levels. These targets will not be achieved if the business as usual scenario is maintained on food production and consumption, as well in the energy policy (i.e. increasing demand for biofuels crops expected by 2020). The trend towards fewer people per household is likely to continue, leading to increased demand for heating/cooling energy and construction materials unless rising energy and material efficiency offsets these trends; a further 30% increase in passenger transport demand between 2010 and 2030 is projected under business-as-usual with significant environmental impacts.

The life-cycle impacts of the main consumption categories and products groups have been the subject of several Commission studies⁶⁴, which also modelled the scope of improvement potential. The results of these studies will allow for prioritisation of product categories to be covered by future policy measures, identification of environmental aspects to be addressed and selection of most effective policy instruments to be applied. Another study on Environmental Improvement Potential of Residential Buildings modelled potential energy saving from improvement of energy efficiency in buildings, and the on-going modelling work will estimate the potential for efficiency improvements in relation to other resources such as land, water and materials. A Commission study on the impacts of EU consumption of food and non-food imports on deforestation is being finalised and its results will contribute in identifying policy actions to reduce the EU impact on global forest resources and the main commodities associated to deforestation trends in the country of origin.

Key challenges

Knowledge base

Main challenges related to knowledge base include the following:

- Full understanding of the relation between consumption, production, resource use and environmental impacts, including trade-offs between different kinds of environmental impacts, both within the EU and in third countries;
- Comprehensive data as regards the overall environmental impact of consumption and the economic cost of this impact, including the role and type of EU demand (imports) on these impacts, including the role and type of EU demand (imports) on these impacts;
- Models predicting how environmental impacts would be affected by changes in consumption and production patterns, efficiency improvements, business models and performance of products;
- Data and harmonized methods on life-cycle impact of products both at macro- and micro-economic level and on the distribution of performance of products on the EU market and so the

⁶⁴

Studies on the Environmental Impacts of Products (EIPRO), Environmental Improvement Potential (IMPRO) and Prioritisation and Quantification in EU Product Policy.

potential for improvement;

- Understanding how to better design measures that influence consumer behaviour;
- Ways to raise the awareness of business, in particular SMEs, about how they can benefit from resource efficiency improvements.

The following actions are being taken to address them:

- Development of resource efficiency indicators and related systems for collection of necessary statistical data.
- Development of methodologies for estimation of environmental footprint of products and organisations.
- Scientific studies including those of the International Resource Panel and the forthcoming study on the EU impacts of consumption on deforestation.

Implementation

The implementation of sustainable consumption and production measures, including environmental taxation, green public procurement or incentives to producers and consumers differs widely from one Member States to another. This results in a fragmented and ineffective system, potentially creating barriers for higher market uptake of more resource efficient technologies, business models, products and consumption modes. There are difficulties to establish an EU level playing field, since many EU schemes, such as eco-label or green public procurement, are voluntary

In the context of the Europe 2020 Resource Efficiency Flagship Member States are encouraged to improve their policies aimed at sustainable growth and step up efforts to improve resource efficiency as part of the European Semester of economic governance. Specific sectoral policies and legislation will ensure harmonisation or improvement of national policies. For example, the Energy Efficiency Directive will stimulate energy efficiency measures related to buildings and household energy use. The Ecodesign Directive sets and harmonises the minimum requirement for environmental performance of selected priority products on the internal market.

Financing

Main challenges related to financing include the following:

Private side: The fact that financiers are often unfamiliar with risks and returns on investments in resource efficiency presents an obstacle to investment. Uncertainty with regard to policy direction and credibility adds financial risk, and the longer-term investments are often not favoured by financial markets, which are geared to short-term performance. Investments in green solutions do not have the same returns in different Member States because of differences in regulation or implementation. While improved environmental performance of products can bring economic benefits to producers through optimised production processes and supply chains and the use of innovative technologies, funding needed to assess the environmental impacts and implement the necessary changes to improve environmental performance of products is not always available.

Public side: The lack of financial incentives to stimulate producers and consumers to supply and demand green products at a time where public budgets are under pressure is another challenge., as are the administrative costs associated with implementing policy measures, e.g. to implement the Ecodesign directive, Green Public Procurement, enable broad access to life-cycle data, etc.

The following actions are being taken to address them:

- The European Investment Bank (EIB) is developing an instrument to invest in resource efficiency;
- New financing objectives for the 2014-2020 EU Structural funds under the new thematic

objectives: ‘supporting the shift towards a low-carbon economy in all sectors’, ‘protecting the environment and promoting resource efficiency’ and ‘promoting sustainable transport and removing bottlenecks in key network infrastructures’ will allow financing of much broader scope of projects than before.

- Improved access to funding for enterprises is to be one of the main objectives of the new industrial policy (to be adopted in late 2012)
- Financial Roundtable – a platform for better coordination of investment activities aimed at improved resource efficiency in industry

Justification for the priority objective

The business as usual scenario will not produce the desirable shift towards more sustainable and resource efficient production and consumption because of market and regulatory failures resulting from insufficient life-cycle information of products to market actors, preventing markets from ensuring that the price of resources and products reflect related environmental impacts and reinforcing market fragmentation. By focusing on the drivers of the problem (unsustainable consumption and production), the proposed action is complementary to other actions, in particular the application of market based instruments to address market failures, and to the traditional environmental policy approach, which focuses on tackling environmental pressures.

The approach of setting binding targets and introducing mandatory requirements will be applied, subject to an impact assessment, where the voluntary approach has proven insufficient or where market based instruments are not applicable, e.g. where environmental damage occurs outside the EU.

Individual elements of justification of the proposed policy approach:

- Setting targets: to give predictability about the policy direction and unlock investment in resource efficiency; prevent the loss of competitiveness of EU industry by prompting early adaptation to resource constraints that can create first mover advantages; tackle the rebound effect by limiting the increase of resource use due to increased efficiency.
- The ecodesign approach: transform markets by phasing out the worst performing products based on wider resource efficiency criteria not limited to energy efficiency, thus contributing to more resource efficient production and consumption. This has a significant improvement potential where technology exists but the market does not take it up, e.g. household water using products – the ecodesign measures can save 900PJ of energy and up to 12% of total household water consumption annually.
- Benchmarking of environmental performance of products and organisations: currently there is insufficient knowledge about what constitutes good environmental performance in a sector. By filling this knowledge gap and incentivising performance improvement, bigger leaps of performance improvement can be obtained in targeted priority sectors.
- Market share of green (legal and sustainably produced) products: by increasing availability of green products on the market, their affordability (and therefore their consumption in comparison to other products) would increase. Green products are rewarded by accessing advantages from economies of scale and increased demand.
- Consumer access to information: empowering and encouraging consumers to make informed consumption choices, driving consumption towards environmentally better performing products.
- Binding GPP targets: exploiting the potential of public spending, which represents 17% of GDP, to drive green markets, especially for products that are not purchased by private consumers (e.g. infrastructure, products used in the health sector, etc.); overcoming

fragmentation in the Single Market due to significant differences between GPP practices of different MS; public entities are in an ideal position to consider the full cost to society of their procurement choices (integration of externalities).

- Alignment of incentives: addresses fragmentation of the Single Market: companies and products are subject to different treatment in different Member States based on their environmental performance (e.g. eco-cheques in Belgium vs. no incentives for buying green products in many Member States; in some federal states of Germany and Italy, companies receive local tax breaks if they have environmental management schemes in place, whilst in other Member States no such incentives are available; in the UK, waste sent to landfill is taxed, with systemic increases for environmentally harmful company behaviour (Landfill tax escalator), while companies in many other Member States are not subject to such schemes; in some Member States greener companies have advantages in public procurement due to different take-up of GPP, while in others they do not); incentives provided to outdated and harmful practices continue to put green companies in disadvantage.
- Education and communication activities focusing on consumer behaviour: providing information is not in itself sufficient to influence consumer behaviour. Better knowledge about behavioural economics will help stimulate more sustainable consumption patterns.
- Promoting consumer awareness raising and education of resource efficiency is justified by growing evidence that consumer behaviour is affected by many other factors other than economic ones. New demand side policies oriented on consumers have to take other factors affecting consumers, e.g. social norms, habits, etc. into account otherwise they will be ineffective.

This initiative has strong linkages to industrial, energy, agricultural, trade, climate change and consumer policies. Inconsistencies and constraints associated with these policies need to be analysed and addressed. It has the potential to stimulate economic growth and the competitiveness of EU industries by enhancing their resilience in the face of natural resource scarcity and associated price volatility and stimulate eco-innovation.

This policy also has the potential to empower consumers by improving their awareness and knowledge about the environmental impact of their consumption.

This initiative has a strong focus on the integration of environmental concerns into other policies, in particular industrial policy (ecodesign of products), single market policy (harmonisation of legal requirements for products and companies, enabling companies and consumers to benefit from access to the whole internal market), consumers policy (empowering consumers to make informed purchasing decisions), agriculture, food and energy policies (reduction of food wastage, sustainable food production and consumption, promotion of sustainable energy sources and technologies), climate change and biodiversity policies (reduction of greenhouse gases emissions, conservation of global natural resources, halt deforestation).

It is intended to establish a set of targets to reduce resource use and overall environmental impact of consumption for the whole economy and the main sectors. These targets will be based on material and water efficiency, land use, including dependency on resources sourced from outside the EU border, and other relevant environmental impacts, such as global deforestation.

In order to attain these targets an effective mix of regulatory and market based instruments, voluntary initiatives and incentives will be developed. The existing legal instrument and new policy measures will be consolidated into a comprehensive legal framework for sustainable production and consumption.

The policy approach will include a mix of regulatory, market based instruments, voluntary initiatives and incentives consisting of improved existing instruments (e.g. the Ecodesign directive, Ecolabel and EMAS Regulations, GPP policy) and new policy measures, with a view to improving

the environmental performance and resource efficiency of products throughout their lifecycle, thus ensuring a more coherent framework for sustainable production and consumption.

This may include, subject to impact assessment:

- a) applying the ecodesign approach (i.e. setting minimum environmental performance requirements) to priority product categories;
- b) setting environmental performance benchmarks for priority products and production sectors and linking incentives for products and companies to these benchmarks;
- c) reducing EU consumption impact on natural resources, both inside and outside the EU, by addressing the demand side;
- d) setting mandatory targets for market share of green products in the priority sectors;
- e) ensuring consumer access to clear, comprehensive and reliable information on the environmental footprint of products they purchase and consume;
- f) setting binding targets for public authorities in Member States for the uptake of Green Public Procurement practices;
- g) ensuring coordination and alignment of incentives mechanisms at EU, Member State and local level and in the private sector for production and consumption of green products;
- h) promoting education and communication activities to address behavioural aspects of unsustainable consumption.

The Communication on the Single Market for Green Products will be the first phase of the policy aimed at resource efficient and sustainable production and consumption. It will focus on the knowledge base, including the development of methodologies for life-cycle assessment of products and organisations (Product Environmental Footprint and Organisation Environmental Footprint), ecodesign methodologies for addressing the material aspects (mass per unit, recyclability, recycled content, durability) and facilitate the development of life-cycle data and databases. During the following two years, Member States and industry will test and apply these methods on voluntary basis.

Policy initiatives on Sustainable Food and Sustainable Buildings will be presented in 2013. These will provide an analysis of main problems and barriers to sustainability, identify main stakeholders and outline the policy actions and measures that should be implemented to improve resource efficiency and limit the environmental impact in these sectors.

In the process of revision of the existing instruments such as the Ecodesign Directive, Energy Label Directive, Ecolabel and EMAS Regulations and others, scheduled for 2014-2015 the Commission will assess what targets would be appropriate and feasible and how the instruments can be improved, complemented or replaced by more effective ones, with a view to establishing a more coherent framework for sustainable production and consumption.

Waste

Current situation

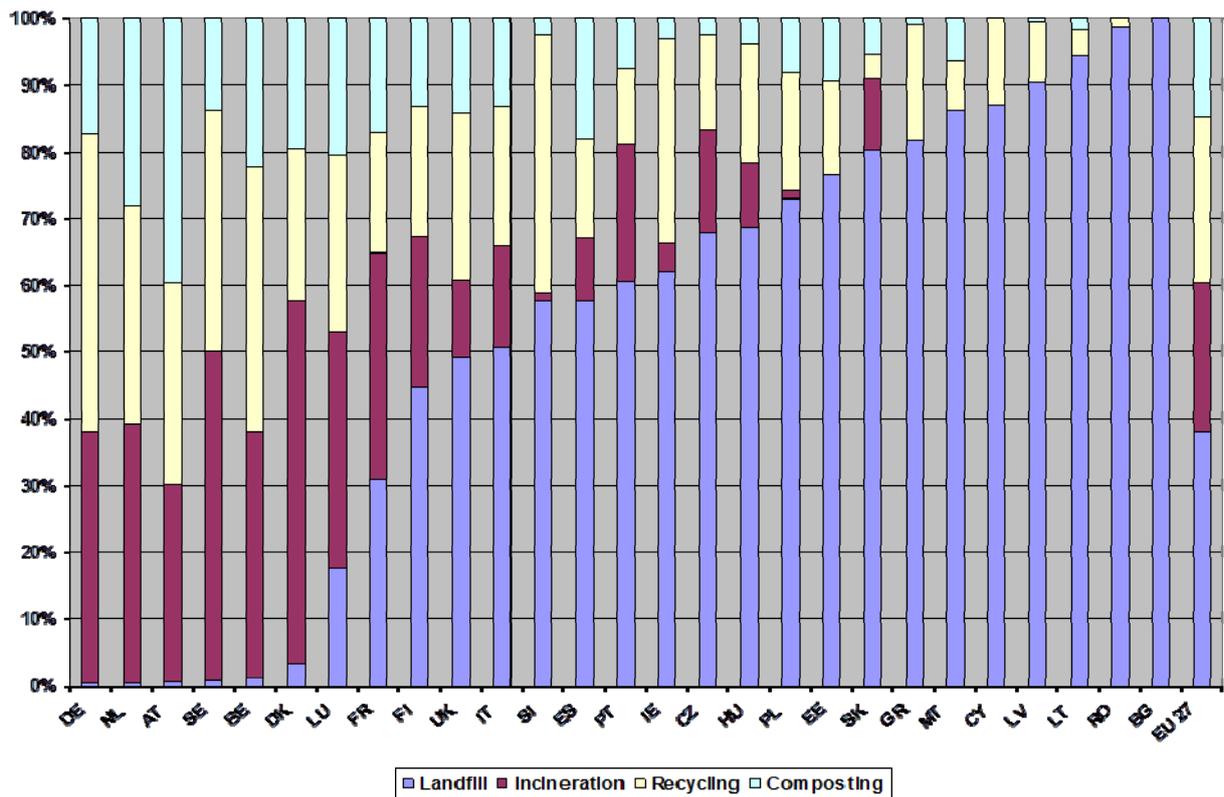
Waste policy is one of the first environmental areas covered by a European legislation: the first Waste Framework Directive was adopted in 1975 and since that period several waste stream related Directives were adopted. It is estimated that today around 40% of the waste generated in the European Union is covered by binding targets on re-use, recycling, recovery or in terms of landfill diversion.

The European Union approach related to waste management is based on the application of the 'waste hierarchy' consisting of 5 steps, in descending order of priority: prevention, re-use, recycling (including composting), recovery (including energy recovery), and disposal (landfilling or incineration without energy recovery). It has been confirmed by Directive 2008/98/EC on waste (Waste Framework Directive, WFD)⁶⁵. The hierarchy applies as a priority order in national waste prevention and management legislation and policy.

According to the 2010 statistics each year in the European Union we throw away 2.7 billion tonnes of waste, 98 million tonnes of which is hazardous. On average only 40% of our solid waste is re-used or recycled, the rest going to landfill or incineration. In some Member States more than 70% of waste is recycled, indicating the possibilities of using waste as one of the EU's key resources. At the same time, based on the same legislation, many Member States landfill over 75% of their waste.

The implementation of the waste management hierarchy may look different for each waste stream. However, *municipal solid waste* management is representative enough to be used as a proxy for the state of waste management in a country. Municipal solid waste (MSW) consists of waste collected by or on behalf of municipal authorities and disposed of through the waste management system. The bulk of this waste stream is from households, though "similar" wastes from sources such as commerce, offices and public institutions are included. It comprises around one third of total "non-mineral" waste generated by Member States⁶⁶. Quantities of MSW have increased from 474 kg/capita in 1995 to over 502 kg/capita in 2010⁶⁷.

According to the most recent (2010) EUROSTAT data, the situation is as follows:



Large differences persist between Member States indicating that the waste management hierarchy is not fully complied with in a number of countries. The most striking difference is in the ratio between landfilling and recycling. Landfilling, according to the milestone of the Resource Efficiency Roadmap⁶⁸, should be virtually eliminated by 2020. Yet, an important number of Member States heavily rely on this waste management option, contravening the principles of sustainable waste management and the waste hierarchy. In 2010, 10 Member States landfilled more than 70% of their municipal waste, and 12 recycled less than 25%. This compares to 6 Member States which landfilled below 5% of their municipal waste and recycled over 50% of this waste.

Economic conditions to support the waste hierarchy

According to a recent study performed for the Commission⁶⁹, based on the experience of the most advanced Member States it seems that without economic instruments in place at an appropriate level, it is difficult to meet the European targets and virtually impossible to achieve the aspirational targets of the Roadmap on Resource Efficiency. According to this analysis, a combination of the following instruments seems the best way to improve waste management:

- **Landfill and incineration taxes and/or bans** – landfilling rates have decreased in countries where bans or taxes have driven up costs for landfilling. Recycling rates in the same time are higher in countries where the access cost for incineration is higher.
- **"Pay-as-you-throw" schemes** have proved very efficient in preventing waste generation and encouraging citizens to participate in separate waste collection.
- **Producer responsibility schemes** have allowed several Member States to gather and redistribute the funds necessary to improve separate collection and recycling. .

The current situation is as follows:

- Landfill taxes are either inexistent or at a rate which is far too low (less than 25€/tonne) in the Member States facing higher landfilling rates. A minimum rate should be set progressively in place to start moving waste management up the waste hierarchy, the revenues of such taxes being invested in new infrastructures aiming at increasing recycling and reuse rates;

- Producer responsibility schemes are in place in several Member States but often for a limited number of waste streams and with a great variety of application in terms of cost-efficiency and transparency. These systems might be "optimised" in the coming years;
- PAYT schemes are not yet used on a large scale in all MS. It seems that these systems are present only partly (not on the whole territory) in only 5 Member States.
- The possibilities offered by the Cohesion policy funds are not always optimally used to build the required infrastructure in the less advanced MS, not enough investments being driven to the first steps of the waste hierarchy.
- So far no economic incentives are in place for what concern secondary raw materials.

Hazardous waste

As regards ***hazardous waste***, it consists of particularly heterogeneous waste streams (such as hazardous industrial waste, waste oils, chemicals used in households, expired medicines, specific mining waste, etc.) and can pose severe risks to the environment and human health, if not properly managed. There is a lack of comprehensive information at EU level. Member States report on an aggregated level, which does not allow drawing conclusions about the overall situation.

According to the available information, 98 million tonnes of hazardous waste are generated in the EU with significant differences in terms of waste generated per capita, due to different industrial structures and the presence of mining activities in some countries. 7% of the hazardous waste generated in the EU is incinerated with energy recovery, 41% is recovered otherwise (including recycling), 6% is incinerated without energy recovery and 46% is landfilled. The management options vary from Member State to Member State. These differences reflect different waste types being generated, as well as the existence of appropriate treatment facilities. Some Member States are not self-sufficient as regards the treatment of specific hazardous waste streams (e.g. for POP contaminated wastes); these waste streams have therefore to be shipped to another Member State for their treatment and/or disposal.

Inappropriate disposal and treatment facilities for hazardous waste, and in particular for mining waste, have given rise to some concerns, bearing the risk for major accidents (such as the red mud accident in Kolantar, Hungary) which can cause severe damages to human health and the environment.

Economic instruments can also play a role in order to reduce landfilling of hazardous waste and encourage re-use, recycling and recovery. Currently, no overview of the use of such instruments to manage hazardous waste is available at EU level.

Illegal shipment of waste

With respect to ***illegal shipments of waste***, for 2009, Member States reported around 400 cases. For 2009, about half of the illegal shipments reported by Member States were shipments between Member States while the other half involved shipments into or out of the EU. The total number of illegal shipments is considerably higher than the ones officially reported. For instance, after the reporting period (2007-2009), joint enforcement actions of a network of European inspection services (IMPEL) showed that over 20% of shipments containing waste in the EU did not comply with Regulation (EC) No 1013/2006⁷⁰.

Recycling activities and the internal market

A number of barriers to the movement of recyclable materials in the internal market still exist, inter alia preventing economies of scale, although a number of relevant aspects have been addressed through EU legislation including the Waste Shipment Regulation.

Examples of existing internal market barriers:

- 1) Some Member States do not allow activities of recycling companies or waste transporters from

other Member States even if they have permits or registration in another Member State. The reasons given are that the company must have a seat or establishment in the Member State where they carry out waste operations or be registered as a waste transporter in both Member States. The Commission is currently examining these practices.

- 2) Economic operators have complained of the heavy administrative burden caused by the requirements to notify in advance or provide certain information relating to waste shipments going for recycling or recovery in other Member States. The Stoiber Group found that €44 Million could be saved if electronic systems would replace the current paper notifications.⁷¹ The Commission is currently preparing a study to examine the feasibility of introducing national or EU-wide electronic systems.
- 3) Some types of waste going for recycling are sent through postal services to other Member States, for instance printer cartridges. Due to the difficulties to control such shipments by postal services some Member States have either totally banned or restricted the shipments and thereby excluded the possibility for the subsequent recycling operations. The Commission has started to examine these practices.
- 4) Differing levels of inspection of key EU waste requirements across MS, including with respect to waste shipments, undermine a level playing field for environmentally sound recycling activities in the EU.

The **legal basis** for the waste management hierarchy is Art 4 of the WFD.

The **policy objectives** related to the implementation of the hierarchy are laid down in the following policy documents:

- **2011 Commission Report on the implementation of the Thematic Strategy on Waste Prevention and Recycling**⁷². *Main conclusions*: the full potential of many of these resources is not being exploited and although recycling of municipal waste in the EU has doubled in 10 years, there are large differences in the situation in the Member States. All these issues are inherently linked to the level and the enforcement of the EU binding targets for recycling and landfilling.
- **2011 EU Roadmap to a Resource Efficient Europe**⁷³. *Main conclusions*: if waste is to become a resource to be fed back into the economy as a raw material, then much higher priority needs to be given to re-use and recycling. The 2020 milestone for the EU should be to achieve a state where waste is managed as a resource. The Roadmap includes milestones for 2020 based on a better implementation of the waste hierarchy (waste generation in absolute decline, reuse and recycling at their "maximum level" and economically attractive, energy recovery limited to non-recyclable waste, virtual elimination of landfilling). Several supporting measures are identified in the Roadmap to move towards these milestones, including measures to expand and clarify the producer responsibility concept for waste management, to improve product design in line with these targets, to use structural funds in priority for the first steps of the waste hierarchy, to remove possible harmful subsidies not aligned with the waste hierarchy.
- **2011 Raw Materials Communication**⁷⁴. *Main conclusions*: to face the expected increase in resource demand, the Communication highlights the importance of ensuring high recycling rates and the re-injection in the EU economy of secondary raw materials.

With respect to the use of economic instruments for the management of **municipal solid waste and construction and demolition waste**, EU legislation encourages Member States to set producer responsibility schemes for 4 waste streams: packaging, batteries, electric and electronic waste (WEEE) and end-of-life vehicles (ELVs). Also, producer responsibility schemes can be set up for other waste streams (Article 8 of the Waste Framework Directive). This is the case in the most advanced MS. These schemes should be progressively set in place, preferably with an appropriate level of public control and a transfer of the full financial responsibility to the producers (or those

who place products on the market) and a clear internalisation of the costs in the product price (direct link between the tariffs applied and the individual recycling costs of the products); if not, alternative solutions should be set in place to finance the additional costs linked to the development of separate collection, sorting and recycling of these waste streams.

EU waste legislation lays down the basic requirements for shipments of waste. Member States are required under EU and international law (the EU waste shipment regulation transposing the UN Basel Convention) to provide for systems of written notification and prior consent for shipments of hazardous waste for recovery and all waste for disposal. The objective is to safeguard the necessary controls for environmental and health purposes. Since the early 1990's this has been balanced by EU Court jurisprudence and provisions aimed at ensuring free movement of waste for recovery within the EU. Basically, it means that Member States may not raise any objections to such waste shipments, unless explicitly provided for in the EU waste shipment regulation.

A number of **targets** already exist, both legally binding/quantitative and aspirational.

Aspirational targets for 2020 ("milestones") have been set in the Roadmap to a Resource Efficient Europe:

- waste generation in absolute decline,
- reuse and recycling at their "maximum level" and economically attractive,
- energy recovery limited to non-recyclable waste, virtual elimination of landfilling.

Legally binding targets can be found in horizontal pieces of EU waste legislation and in waste stream specific Directives. The most important ones set out in horizontal pieces of EU waste legislation are:

- **Article 11.2 of the WFD** stipulates that Member States shall take the necessary measures designed to achieve the following targets:
 - o by 2020, the preparing for re-use and the recycling of waste materials such as at least paper, metal, plastic and glass from households and possibly from other origins as far as these waste streams are similar to waste from households, shall be increased to a minimum of overall 50 % by weight;
 - o by 2020, the preparing for re-use, recycling and other material recovery, including backfilling operations using waste to substitute other materials, of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the list of waste shall be increased to a minimum of 70 % by weight.

By 31 December 2014 at the latest, the Commission shall examine these measures and targets with a view to, if necessary, reinforcing the targets and considering the setting of targets for other waste streams. The report of the Commission, accompanied by a proposal if appropriate, shall be sent to the European Parliament and the Council. In its report, the Commission shall take into account the relevant environmental, economic and social impacts of setting the targets (Article 11.4 WFD).

- The **Landfill Directive**⁷⁵ obliges Member States to progressively reduce the landfilling of biodegradable waste. According to Article 5.2, there are three stages in which landfilling rates for this waste stream are to be reduced, as follows:
 - a) by 16 July 2006, biodegradable municipal waste going to landfills must be reduced to 75 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;
 - b) by 16 July 2009, biodegradable municipal waste going to landfills must be reduced to 50 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available;
 - c) by 16 July 2016, biodegradable waste going to landfills must be reduced to 35% of the

total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data are available.

By 16 July 2014, the Council shall re-examine the 2016 target (bullet point (c)), on the basis of a report from the Commission on the practical experience gained by Member States in the pursuance of the targets laid down in paras (a) and (b) accompanied, if appropriate, by a proposal with a view of confirming or amending this target in order to ensure a high level of environmental protection.

- Article 6.1 of the **Packaging and Packaging Waste Directive** 94/62/EC sets differentiated recycling and recovery targets, for several categories of packaging waste. Such targets are up for review in 2014.

Revision of the targets:

In 2013, the Commission is launching a review of the targets contained in the WFD, the Packaging and the Landfill Directive.

Use of economic instruments:

No quantitative targets are in place for what concerns economic instruments. The Roadmap on resource efficiency includes a general objective of making prevention, re-use and recycling 'economically' attractive, to ensure that public funding from EU budgets is used in priority for the first steps of the waste hierarchy and to extend the scope of producer responsibility notably through guidance on take back and recycling schemes.

Regarding **hazardous waste**, the legislative framework consists essentially of articles 17 to 21 of the WFD, the definition of the properties that render wastes hazardous in Annex III thereto, and Decision 2000/532/EC on the list of waste.

EU legislation does not foresee targets on the use of economic instruments for hazardous waste.

To combat **illegal shipments of waste**, the EU Waste Shipment Regulation (WSR) and the Basel Convention provide the overall basis for further action.

With respect to the **recycling activities and the internal market**, EU waste legislation lays down the basic requirements for environmentally sound management and shipments of waste⁷⁶. There seems nonetheless scope for further enhancing the functioning of the internal market in waste recycling. This is not a problem of existing EU legislation, but rather of potential implementation problems.

Future outlook

The Commission, together with EEA, is developing a modelling tool aiming to establish projection of waste generation and management, taking into account the existing waste management plans and strategies of the Member States, and develop waste management scenarios for the EU and each Member State, which will allow diagnosing the current situation and future trends, distance to targets, compliance with the hierarchy. The focus in a first phase is on municipal waste.

As regards **hazardous waste**, there is a lack of data and models that would allow predicting its evolution by 2020. A Commission study shall develop a modelling tool in order to establish correlations between sectorial output and hazardous waste generation. This tool shall contribute to improving the monitoring of the progress in MS.

Key challenges

Knowledge base

Deficiencies in the knowledge base and the reliability of data on waste streams, volumes and management systems across the EU, which result in problems with comparability and monitoring of MS' performances, the harmonised implementation across the EU, and the development of targeted

measures for improvement, lack of information/monitoring/evaluation of the measures set in place by the Member States to apply the waste hierarchy. Considerable progress has been accomplished in collecting comparing and increase the reliability of waste statistics. The main forthcoming challenges might be summarised as follows:

- MSW: data on prevention, re-use and energy recovery are still partial.
- No data are yet available for household and similar waste and construction & demolition waste (WFD targets, 1st data to be reported by Member States in 2013/2014).
- Overall inconsistencies in reporting methodology.
- Limited information regarding the link between production processes in a given sector and hazardous waste generation;
- Limited information about the self-sufficiency of Member States with regard to hazardous waste facilities and on the appropriateness of mining waste facilities;
- Limited data on available infrastructure allowing assessing whether, with planned investments and developments, Member States are on the right track to meeting the targets.
- Insufficient information on the use of the appropriate instruments by the Member States to implement the waste hierarchy (economic and legal instruments, public awareness efforts etc.).
- Rather limited systematic knowledge about internal market barriers facing recycling activities in the EU.
- Still uneven information across the Member States as regards the supply of specialised workforce and the development of adequate training in the waste management and recycling sectors.

What is being done to address existing challenges:

Reinforcement of the Waste Data Centre in EUROSTAT: it is essential to improve the statistics and their verification methods in order to get reliable and verified data on waste generation and management. Continuous efforts are already being made by the Commission to improve the verification methods and identify possible inconsistencies and incoherencies in the Member States' reports. The creation of the Waste Data Centre in EUROSTAT has improved the situation as all statistics are now gathered and verified by one team of experts. The role of EUROSTAT in terms of verification might be increased in the coming years.

In the EU Skills Panorama, European Commission aims at providing an overview about skill needs and supply in the Europe, including skill needs for greener economy. If relevant, new reporting obligations for instance on the use of economic instruments might be considered in the future. The development of modelling tool with EEA (see below) will contribute to achieve 'ex-ante' evaluations comprising projections of waste generation and treatment.

Implementation

The persistent implementation gap in waste legislation and the resulting wide disparity between Member States in terms of performance in waste management not only put the European environment and human health at risk, but also prevent the EU economy as a whole, and its recycling and waste management industry in particular, from reaping the benefits of proper implementation. Among the most important barriers to better implementation of European legislation at national level there is in some cases a lack of commitment and resources for implementation control and enforcement in combination with structural, institutional and constitutional constraints.

Concerning the application of market-based instruments aiming at creating the economic conditions to support the waste hierarchy, the main challenges are related to:

- Absence of clear will and sometimes expertise, for instance at local level, to adapt fiscal policies to the waste hierarchy; also the share of competences between the National, Regional and local authorities is a barriers for defining integrated policies (fiscal and waste management policies are not often in the same level of competence);
- Lack of experience/knowledge/guidance to set up transparent and cost efficient producer responsibility systems; lack of dialog between the involved actors (municipalities, national authorities, producers, waste management companies), lack of public control on existing schemes linked with an absence of a clear legal share of responsibilities in the whole waste management chain; lack of transparency;
- Not enough exchange between Member States on the best practices for what concerns economic instruments;
- In some MS, lack of enforcement of basic legislation (illegal landfilling is an obstacle to landfill taxes);
- In some MS, presence of harmful subsidies (e.g. to support incineration);
- Not enough data and information on the possible development of a new economic tool to favour secondary raw materials.

The Commission has already taken a number of steps aiming at improving the implementation of waste legislation. Actions taken include: active monitoring of the transposition of the revised WFD into national legislation; launch of conformity assessment studies; extensive series of awareness-raising and best practice exchange events organised in individual Member States (19 Member States covered in years 2009 – 2011) and addressing issues such as landfilling, waste management planning, waste prevention programmes; preparation of a number of guidance documents on the WFD and other waste Directives; numerous infringement cases; in-depth analysis of the practices in the best performing Member States (e.g. use of economic instruments). Work is also on-going on the review of the hazardous properties (Annex III to the waste Framework Directive) and of the list of waste will ensure consistency of the rules for classifying wastes and chemicals.

In order to streamline and optimise the implementation efforts, the Commission intends to focus on the following immediate actions:

- Establishing a good picture of the current situation, going beyond EUROSTAT statistics. Currently available information and data confirm the existence of implementation gaps, but are insufficient to explain the underlying reasons for failure of certain Member States to implement successful waste management policies, based on the same EU legislation.
- Transposition of the WFD into national legislation. At the moment, 4 out of 19 infringements launched for non-communication of the measures to transpose the WFD are still on-going. Commission priority is to ensure that all Member States have transposed the Directive and notified their transposition measures. The next step will be a conformity check of the notified legislation, which will be launched in the 1st half of 2012.
- Monitoring implementation of the WFD in the MS. This will include:
 - o Assessment of the content of the national WMPs and Waste Prevention Programmes (WPPs) in order to establish whether they conform to the requirements of the WFD and properly address the current waste management situation in each country.
 - o Monitoring the actual implementation of WMPs and WPPs to establish whether a Member State is in practice moving up the waste management hierarchy by reducing landfilling and increasing recovery. The following criteria should be applied equally to all Member States: (i) sufficiency of waste management infrastructure, (ii) meeting the targets of waste legislation.
 - o Anticipation of future potential implementation problems by developing with EEA a

reference modelling tool.

- In 2012, the Commission has outsourced the screening of the WMPs and practical waste management policies of 10 Member States selected on the basis of their performance (using a set of independent criteria), identifying gaps and problems, drafting recommendations, and holding bilateral discussions on possible solutions with the relevant authorities. Meetings with the selected Member States are planned to take place in autumn 2012 and will have as their main objective the discussion of roadmaps proposing concrete improvements in the waste management systems.
- Simultaneously, an agreement has been recently reached with the European Environmental Agency (EEA) on a possible content of a Pilot Project on waste. As a result, the EEA will develop a *modelling tool* aiming at setting in place an *early warning system* to anticipate possible problems with implementation by comparing the expected impacts of the national waste management policies to the legally binding targets and objectives as defined in the EU legislation. Setting up such a system will be an essential tool in improving the enforcement of waste legislation across the EU.
- The results of the study on economic instruments have been used in the context of the 2012 Country Specific Recommendations of the Commission to make clear recommendation to the Member States to set in place the appropriate economic instruments to support the waste hierarchy. Additional initiatives are foreseen to develop guidance on producer responsibility schemes in order to ensure that transparent and cost effective systems are set in place. New studies are foreseen to analyse the possibilities of creating new economic instruments to favour secondary raw materials for instance on the basis of the avoided emissions of GHG due to recycling.
- Finally, the proposed Multiannual Financial Framework (MFF) 2014-2020 should ensure a more transparent and systematic application of *conditionalities* in the area of waste management. In practice, this means that investment of EU money in waste management projects is conditional to the fulfilment of certain *ex ante* conditions, including the development of waste management plans in accordance with the WFD and with the waste hierarchy and the use of appropriate economic instruments. Control of the fulfilment of the *ex-ante* conditions should be an element of all financing decisions for waste management projects. EU's financial assistance to constructing waste management infrastructure should only be agreed provided there is evidence that it does not affect waste management options ranking higher on the waste management hierarchy, whilst each recipient should be required to clearly demonstrate that, within a concrete time perspective, there is a real chance for decreasing landfilling and increasing recycling.

As regards ***hazardous waste***, the following actions are envisaged:

- Improve the statistical basis by comparing systematically hazardous waste generation in a given sector and statistics on national production/economic activities;
- Make a comparison between hazardous waste generation and existing treatment infrastructure (as a means to verify "self-sufficiency");
- Identify hazardous waste streams that (i) bear particular risks, (ii) could move up the waste hierarchy in certain Member States without undue burden and (iii) could be regarded as a priority because they contain critical raw materials;
- Promote BATs for hazardous waste management by reviewing BREF documents and promoting the exchange of best practices between MS;
- Assess options, including through ecodesign requirements, to reduce the presence of (potentially) hazardous substances upstream.

With respect to combatting *illegal shipments of waste*, the Commission services are currently assessing options to establish minimum criteria for inspections of waste shipments.

Other possible actions in this context include:

- Drafting of guidelines for the WSR correspondents (e.g. on the distinction between waste versus non-waste and hazardous versus non-hazardous waste);
- The development of an electronic system for data interchange on the transboundary movement of waste and a better identification of waste through customs codes;
- New actions at international level for instance the development of guidelines on the transboundary movement of e-waste.

When taking the above actions forward, the Commission will inter alia build on the existing support and expertise internally from the EUROSTAT and the Joint Research Centre (JRC), and from the EEA.

Financing

By transforming the economic conditions related to waste management, proper waste management should become a profitable business in all MS. However, investments are needed to build the necessary infrastructure and shape citizens habits even if a clever and appropriate use of economic instruments might be able to finance not only the required infrastructure but also the operational costs in the long run. Financing can be obtained at:

- **EU level (use of structural funds):** The biggest challenge is to steer the financing to the options ranking high on the waste management hierarchy, and avoid financing waste disposal. The use of *conditionalities* (which should include setting in place appropriate economic instruments) in funding should contribute to solving this problem. Another problem linked to EU funding is the absorption capacity of Member States.
- **National level:** Member States will have to use the right economic instruments to encourage the options ranking high on the hierarchy and discourage those ranking low.

The persistence of obstacles to the proper functioning of a recycling market in the EU means that the full potential of this sector in terms of business opportunities and job creation is not being fully exploited. New investments are hampered by market fragmentation and the lack of economically attractive functional markets for secondary raw materials operates as a negative incentive for waste recycling and recovery.

What is being done to address existing financing challenges:

- Preparation of *ex-ante conditionalities* for the Multiannual Financial Framework (MFF) 2014-2020 (see above);
- Use of economic instruments by Member States:
 - o The results of the Commission study on economic instruments⁷⁷ will be presented to the Member States, and a follow-up study on EPR schemes (analysis of the main successes/limits of the systems in place, conditions for success) will be launched in 2013. The Commission is planning to organise a conference on EPR/waste management and, if relevant, publish guidance on some aspects of the EPR schemes.
 - o The results of the abovementioned studies will be used in the context of the screening exercise of national performances in waste management (mentioned above), in particular to prepare recommendations for less performing Member States, and in the 2014 review of the targets which might be accompanied by measures to encourage the use of appropriate economic instruments.
 - o The Commission intends to verify whether these instruments (or similar alternatives) are

in place before allowing further use of structural funds (*ex-ante conditionality*).

- The Commission has developed recommendations for the less performing Member States in the context of the 2012 Country Specific Recommendations (European Semester 2012).

Justification for the priority objective

Improving waste management makes better use of resources and can open up new markets and jobs, as well as encourage less dependence on imports of raw materials and lower impacts on the environment. The Commission study "Implementing EU legislation for green growth"⁷⁸ concludes that full implementation of EU waste legislation would save €72 billion a year, increase the annual turnover of the EU waste management and recycling sector by €42 billion and create over 400,000 jobs by 2020. According to an estimation based on the same study, moving towards the objectives of the Roadmap on Resource Efficiency could help to create 526,000 jobs compared to 2008 and an additional turnover of € 55 billion. If the material currently going to disposal have been recycled through simply implementing the existing legislation, we could have avoided between 146 and 244 Mt CO₂ emissions eq. (equivalent to taking approx. 47 million cars off the roads per year, corresponding to 19%-31% of the EU climate reduction targets)⁷⁹.

It follows from the Commission's 2011 Raw Materials Communication⁸⁰ that, as worldwide demand for raw materials increases, greater efforts will have to be made to improve recycling and the use of secondary raw materials. Higher recycling rates will reduce the pressure on demand for primary raw materials, reduce the EU dependency on some key raw materials (today the EU is importing six times more resources than it exports), help to reuse valuable materials which would otherwise be wasted, and reduce energy consumption and GHG emissions from extraction and processing.

Better implementation of the existing legislation and meeting the milestones of the Resource Efficiency Roadmap will amongst others boost innovation, create jobs most of them impossible to delocalize, develop new business opportunities in niches (recycling and reuse) in which the EU has a specific expertise, reduce GHG emissions and pressure on the natural resource base and help decrease EU dependency on imported raw materials. These multiple benefits are all in line with the priorities and the targets defined in the Europe 2020 Strategy aiming at a sustainable, inclusive and smart growth in the European Union.

Several policies areas (e.g. industry, cohesion, climate action, research) can contribute - but also benefit from – a circular economy where waste is minimized or used as a resource. It has been demonstrated that improved waste management is a cost effective way to reduce GHG emissions particularly if the whole life cycle is taken into account. Reducing the demand of specific raw materials by increasing recycling can also contribute to reduce air emissions of various pollutants linked with primary extraction and process of raw materials. Increasing recycling rates in the EU can directly contribute to the Raw material policy of the EU aiming at ensuring a safe and stable access to raw materials for the European Industry. More importantly, increasing prevention, reuse and recycling significantly contributes to job creation, as such activities are much more labour intensive than waste disposal and are conducive to economic efficiency and resource savings. An important part of the jobs in the waste management sector (for instance in separate waste collection and sorting) are impossible to delocalize and this represents a real opportunity for less qualified people. At the same time, improving recycling and reuse of specific materials for instance in electric and electronic goods is boosting innovation and creating jobs for highly skilled workers.

The proposed actions - including the revision and possible adaption of the targets of the Landfill, Packaging and Waste Framework Directives as foreseen in 2014 - are fully in line with the Commission's priority to ensure better implementation of EU law and with what was proposed in the Resource Efficiency Roadmap: "*Fully implementing EU waste legislation in particular by ensuring strict application of the waste hierarchy and the effective use of economic instruments, with the aim to use waste as a resource and, by 2020, to virtually eliminate landfilling and limit*

energy recovery to non-recyclable materials."

With respect to the issue of environmentally sound recycling in the internal market, examples of concrete action that could be taken include:

- Establish a consistent information exchange and problem-solving system⁸¹ related to waste management and shipments in the EU, including through closer links between operators and authorities. This could initially be done between a smaller group of interested Member States (such as is currently the case within IMPEL where not all, but only certain interested countries participate in projects). The intention would be to progressively spread this system across the whole EU.
- Enhance co-operation at EU level, in particular between the Commission and the EEA, to bridge the knowledge gap.

Continue examining the feasibility of a possible electronic notification system for waste shipments – at EU or national levels. This would reduce administrative burden for operators and authorities as proposed by the Stoiber Group.

A certain number of initiatives are considered for the short/medium term period: a legislative proposal on plastic bags, reinforcement of inspection requirements in the Waste Shipment Regulation, green paper on plastic waste, implementation of the actions set out in the Resource Efficiency Roadmap, the Raw Materials Initiatives (including the Innovation Partnership on Raw Materials), application of *ex ante conditionalities* regarding EU funding etc.

Water stress

Current situation

Water stress is one of the impacts on the aquatic ecosystems that may prevent the achievement of good water status. Therefore, the goal to prevent or significantly reduce water stress is to be considered as a sub-set of the broader good status goal addressed in the main fiche on water quality⁸². Water quality and water quantity are two sides of the same coin and cannot be addressed in isolation.

Large areas, particularly in the south of Europe, are affected by water scarcity. 26 out of 110 water basins are characterised by water stress all year, and 43 are under stress during summer months. The problem of water scarcity goes beyond the physical water gap, as measured with indicators like the Water Exploitation Index. The cost of abstracting, conveying, purifying and further treating the water (including the increase of greenhouse gases emissions) can have large social and economic consequences across most sectors and regions. The pressures causing water stress include water abstraction for irrigation, rising demands from increasing urban areas and energy production. The impacts of climate change are expected to increase the pressure on Europe's water resources, underlining the importance of increased efficiency and savings in water use. Scenario analyses show that, even with strong improvements in water efficiency in all sectors, water stress would remain a problem in numerous EU catchments, including in south, central and western Europe.

In addition to water scarcity, Europe is also suffering from variations in precipitation regimes due to disruptions in the hydrologic cycle, land-use changes and climate change. This has increased the frequency and intensity of droughts damage over the past thirty years. It was estimated that, by 2007, at least 11 % of Europe's population and 17 % of its territory had been affected by water scarcity, putting the cost of droughts in Europe over the past thirty years at EUR 100 billion.

Further socio-economic, land-use and climate changes are likely to exacerbate the situation.

Water policy relevant to the issue of water stress in the EU encompasses, *inter alia*:

- The Water Framework Directive (WFD), together with its daughter directives on Groundwater and Environmental Quality Standards, requires: integrated water management based on the establishment of River Basin Management Plans to achieve, by 2015, 'good status' for EU waters (freshwaters, river mouths and coastal waters); and 'good potential' for artificial and heavily modified bodies of water. It also provides for the active involvement of interested parties and consultation of the public in water management decisions. WFD Article 9 requires the implementation of water pricing policies that provide an incentive to the efficient use of water as well as the recovery of the costs (including environmental and resource costs) of water services.
- EU policy on Water Scarcity and Droughts aims to prevent and to mitigate water scarcity and drought situations, with the priority to move towards a water-efficient and water-saving economy. The Commission presented an initial set of policy options to increase water efficiency and water savings in a Communication in 2007 on "Addressing the challenge of water scarcity and droughts"⁸³ which has been subject to yearly progress reports.

The implementation of the above instruments is closely connected to and influenced by other legislation, including:

- the Marine Strategy Framework Directive⁸⁴, the Urban Waste Water Directive, the SEA/EIA Directives, the Habitats/Birds Directives.

– actions under other policies, such as:

- Common Agricultural Policy
- Renewable energy and energy infrastructure/Trans-European energy and transport networks (TEN-Es and TENTs)
- Cohesion Policy
- Research Policy

The international dimension of EU water policy includes the enlargement process and the need to ensure that candidate countries correctly implement the *acquis* and the issue of transboundary river basins. For the latter, the Commission is involved in the work of international river Commissions (e.g. Rhine, Danube, Elbe) to ensure the WFD and FD are implemented also in river basins shared with countries outside the EU.

In response to continuing challenges facing Europe's water resources, the Commission proposes a Blueprint to Safeguard Europe's Waters Resources. It builds on the assessment of the River Basin Management Plans delivered by Member States under the WFD, the Fitness Check of EU freshwater policy⁸⁵, and the review of the EU policy on Water Scarcity and Drought⁸⁶. The Blueprint has the long term aim of ensuring the sustainability of all activities that impact on water, thereby securing the availability of good-quality water for sustainable and equitable water use. To achieve this, the Blueprint focuses on:

- (1) Fostering **integration** of water concerns into sectoral policies by ensuring that the impact of climate change, socio-economic activities and regulations on the state of water resources is taken into account.
- (2) Increasing the use of **economic instruments** (e.g. water pricing, cost-recovery) for a better allocation of resources and internalisation of external costs.
- (3) Achieving a more efficient **water governance** and effective working relationships between institutions, fully integrating water quality, quantity and hydromorphology concerns in water management.
- (4) Improving **knowledge** and tools available to water managers, enabling effective decision making and reducing administrative burden.

The WFD includes the following legally binding targets to be achieved by 2015, unless exemptions apply:

- Good Water Status (ecological and chemical) for surface waters. This implicitly includes a quantitative element since good ecological status cannot be reached without ensuring the environmental flow, i.e. the amount of water needed by the aquatic ecosystem.
- Good Water Status (quantitative and chemical) for groundwaters.

There is currently no legal target for water stress/efficiency and vulnerability to extreme events. This is analysed in the context of the Water Blueprint.

The Roadmap to a resource-efficient Europe sets as a milestone that "By 2020, all WFD River Basin Management Plans (RBMPs) have long been implemented. Good status – quality, quantity and use - of waters was attained in all EU river basins in 2015. The impacts of droughts and floods are minimised, with adapted crops, increased water retention in soils and efficient irrigation. Alternative water supply options are only relied upon when all cheaper savings opportunities are taken. Water abstraction should stay below 20% of available renewable water resources."

Future outlook

The impact assessment prepared for the Water Blueprint includes extensive modelling, which draws

on climate, land-use and socio-economic scenarios and looks at implications for availability and use of water resources under different policy scenarios. The aim of this work is to optimise the allocation of water to different users. See section 2.5 and Annex 1 of the impact assessment accompanying the Water Blueprint. The main results show that without modification to the institutional and policy measures already implemented or planned, water scarcity in 2030 is expected to increase.

Key challenges

Knowledge base

Sound information is required to understand the challenges facing individual water bodies and catchments and the appropriate management responses to these challenges. This not only includes basic monitoring information on state and pressures, but also the analytical tools to interpret these in order to determine which measures and instruments need to be applied where and when. In many cases there is insufficient knowledge or tools, or gaps in the suite of knowledge or tools available to water managers, thus inhibiting effective decision making. These gaps concern mainly quantitative aspects of water management (i.e. how much water flows in and out of a river basin) and the lack of interoperability between different information sources available at various levels.

To address these challenges, the Blueprint proposes to:

- 1) Improve WFD reporting requirements and statistical obligations (e.g. through framework regulations on environmental accounts and statistics), especially with regard to interoperability of data.
- 2) Further develop the Water Information System for Europe (WISE) into a fully interoperable, water information system based on the Shared Environmental Information System (SEIS), reducing reporting requirements while prescribing interoperability standards for the information produced at local and national level and through GMES.

Moreover, the Blueprint proposes the refinement of water accounts developed by the Commission and the EEA in the Blueprint preparatory process as a basis to improve water allocation at river basin level.

Implementation

The Water Blueprint identifies four key implementation challenges:

- 1) **Insufficient use of economic instruments (e.g. water pricing, recovery of environmental costs) to address market failures** is preventing the implementation of measures targeting water efficiency, or water availability problems.
- 2) **Lack of or insufficient integration** of water policy goals and objectives into other policies and programmes (e.g. agriculture, cohesion, industry and urban and land use planning) is preventing funding and regulatory shortcomings (e.g. overabstraction for irrigation) from being addressed.
- 3) **Ineffective water governance** is preventing coordination problems from being tackled effectively. Governance of water and sectoral policies at Member State level is, in some cases, fragmented and limited by a lack of capacity and resources to fully address water management objectives. In some cases, there is lack of coordination in river basins shared between different administrative entities within Member States, between Member States and with third countries.
- 4) **Knowledge gaps** are preventing effective implementation, for instance with regard to water balances and ecological flows; and there is a lack of comparability or accessibility of data and information.

The above 4 main challenges emerge from the assessment of the RBMPs which are too often characterised by a lack of ambition as regards achieving the environmental objectives of good ecological status or potential, and by too many exemptions. The plans also show that there is considerable scope for greater integration of drought risk management and, more generally, quantitative aspects of water management into the RBMPs.

A wide range of options – both regulatory and voluntary -- were assessed in the context of the IA of the Blueprint in order to address these challenges. The policy options were subject to public consultation.⁸⁷ A selected number of options have been retained and are presented in the Blueprint. They include non-legislative approaches such as guidance and tools in relation to water balances and ecological flow, water trading, water leakage, water efficiency target setting, and cost-recovery. It also envisages enforcement action in relation to water pricing, a possible new Regulation on water re-use standards, the promotion of Green Infrastructure, the inclusion of water using devices in the work plan of the Ecodesign Directive, etc. (See further in the Blueprint Communication)

Financing

Many initiatives taken in order to comply with EU water policy objectives require long term investment. When the necessary funding is not available, successful implementation can be jeopardised.

A range of EU funds are available to support implementation, including the **Cohesion Fund** (e.g. for Green Infrastructures such as floodplains), Rural Development funding under the **CAP** (e.g. for the creation of wetlands), **LIFE+** funding for technology development (e.g. for improved water efficiency) and **INTERREG** (e.g. support for governance of transboundary river basins). Research Framework funds have been important in improving the understanding of the status of, and pressures on, waters and future potential changes and challenges. The European Investment Bank is also an important source of loans for water infrastructure improvements.

However, EU funds cannot provide the majority of funding necessary to implement EU water policy, which needs to be generated within the Member States. It is, therefore, important for Member States to plan for future investment needs. Across all sources of EU financial support, the extent to which funds can be successfully absorbed by Member States depends both on the ability of the Member State to provide match-funding and on the technical capacity to implement such projects. Member States need to find the necessary funding, including from the private sector and from cost recovery of water services, which may be supported by additional targeted investment from EU funds. Current water pricing levels and structure neither provide adequate incentives to increase water efficiency, nor ensure a sustainable financing of the measures needed to ensure the preservation of water resources and the supply of water for human and economic uses. In some cases, water users are either not charged at all or are not charged in relation to use, consumption or depletion of water resources. In cases where the 'polluter-pays' principle, enshrined in the Water Framework Directive, has been relied upon to reduce pollution at source, economic incentives have reduced the need for expensive 'end-of-pipe' treatment solutions. As a complement to water pricing, schemes for **payments for ecosystem services** (PES) such as water storage, flood regulation, carbon storage, etc. could provide an additional source of financing reflecting the real social, environmental and economic benefits that ecosystems deliver, and providing a wider perspective taking into account land use and the whole water cycle.

Proposals to address these challenges have been included in the Blueprint. They concern: streamlining of a range of sustainable water management priorities (Green Infrastructure) in the Cohesion and Structural Funds and EIB loans; fully exploiting conditionalities (on water pricing, metering, minimum irrigation efficiency improvements) proposed as part of the Common Strategic Framework 2014-2020 and the CAP pillar II funding, in accordance with the Commission proposals on the CAP reform and on the Multiannual Financial Framework (MFF); enforcing the full implementation of WFD provisions on pricing and cost-recovery; developing guidance water

trading and cost-benefits assessment, etc. (See further in the Blueprint Communication)

Justification for the priority objective

The main need to act at EU level is triggered by the trans-boundary nature of most drivers, pressures and impacts: water quantity and quality, floods and droughts, and by the frequent higher effectiveness of upstream measures for managing water resources and preventing floods and droughts. Moreover, water resource management action (reservoirs, transfers, groundwater extraction) may lead to a shift in the impacts or exacerbate the problem in another area, country, sector or social group. Such side effects are often best addressed at trans-boundary or European level.

Integration of water into single market and common policies (e.g. agriculture, energy, transport, health, and other environmental policies) makes sense as the lack of Community action could significantly damage Member States' interests and could hinder the internal market. Coordinated action at EU level could overcome these disadvantages for taking action.

Water policy objectives should be streamlined in EU spending programmes (e.g. cohesion, rural development, agriculture, fisheries, social fund, research, external actions and the European Development Fund) to complement the resources spent by the Members States.

Cost of inaction and cost of mitigation measures will have different spatial effects and strong variability, meaning that impacts across the EU could vary considerably, justifying the need for Cohesion and Rural Development funding mechanisms.

There are often economies of scale in undertaking efforts at EU level for capacity building, research, information and data gathering, knowledge transfer, exchange of best practice, development and cooperation. For instance, intensive exchange of best practices with regard to climate adaptation between Member States with comparable conditions, or further streamlining research efforts will contribute greatly to a robust knowledge base for policy making at all administrative levels.

There are strong links downstream with water/marine policies, and upstream with soil and land-use. Protection of Water resources contributes directly to biodiversity protection (preservation of the aquatic ecosystem / Adaptation to climate change (e.g. water scarcity and drought) / Resource (water) efficiency policies. Water is also the basis of many economic activities beyond environment policy, e.g. agriculture and food industry, energy production, many water using industries, etc.

Attaining the goals of the Water Framework Directive and decreasing water stress and vulnerability to extreme events will require further integration and coherence with other policy areas, including agriculture, cohesion, urban and land use planning, industry (energy), research, etc. While the RBMP process could provide a mechanism to address potential conflicts and properly cover quantitative aspects, there are concerns that integration between water policy and sectoral policies is not sufficiently strong in many Member States and regions, and that further integration at EU level could support the implementation of strategic measures. The Blueprint puts specific emphasis on the integration dimension and on quantitative aspects of water management.

As part of the Blueprint exercise, preliminary options for tackling the main challenges and reaching water efficiency objectives have been explored involving voluntary or legal instruments, or combinations of both. This work has resulted in the identification of a preferred package of options, which includes non-legislative and legislative measures to improve knowledge and information, governance, investment, and integration of water issues into other policies as mentioned above.

3) Safeguarding EU citizens from environment-related pressures and risks to health and wellbeing

Air quality

Current situation

Air pollution - including indoor air pollution - continues to pose considerable risks to the health of millions of people. According to the EEA, about 80-90% of the urban population in the EU is exposed to concentrations of particulate matter in excess of the WHO guidelines, and similarly for ozone and other pollutant gases as NO_x, CO. These risks include both short-term effects such as exacerbations of allergy and asthma, and long-term effects including increased risk of disease and earlier death from cardiovascular chronic respiratory diseases and cancer. These exposures translate into health impacts of around 500 000 premature deaths in Europe mainly due to high PM concentrations⁸⁸. With most of the people spending 60%-90% of their time in indoor environments⁸⁹, improving indoor air quality will also help reducing exposure to most of the ambient air pollutants.

On the positive side, and despite these remaining problems, emissions of certain pollutants such as heavy metals and sulphur dioxide have been greatly reduced over the last 2 decades, in line with tightening air pollution policies. Still, around 35% of agricultural land is exposed to ozone concentrations above the target value for protection.

As regards ecosystem impacts, there has been a reduction of 80% in the ecosystem area where critical loads for acidification are exceeded, although large parts of northern Europe are still affected. For eutrophication however, most of continental Europe still exceeds critical loads and impacts have reduced only slightly over the last decade. Overall, there has been a very substantial reduction in emissions of the key pollutants over the last couple of decades which in most cases has been accompanied by a reduction in concentrations and impacts. The exception is ozone, which is a complicated photochemical pollutant (i.e. it is formed by atmospheric reactions in the presence of sunlight from a range of other emitted chemicals). Here, reductions in the precursor emissions have not been accompanied by reductions in ozone concentrations.

Ambient levels for the protection of human health from PM₁₀, PM_{2.5}, ozone, NO₂ and some other pollutants are set in Directive 2008/50 (for ozone the level is a target value, to be met where possible, and for the others the levels are limit values, to be strictly respected). Directive 2004/107 sets target values for key heavy metals and for polycyclic hydrocarbons. The National Emission Ceilings Directive 2001/81/EC sets national emission ceilings restricting total emissions of each of four pollutants (NO_x, SO₂, VOCs, ammonia) that can be emitted by a Member State, set so as to limit the transboundary impact of air pollution in particular on ecosystems. The directive is closely connected to the UNECE Convention on Long-Range and Transboundary Air Pollution, which in its Gothenburg Protocol establishes binding national emission ceilings for the EU and other UNECE parties which have ratified the protocol, including the US, Switzerland and Norway.⁹⁰

The main sources of air pollution are road transport, where vehicle emissions are regulated at EU level as well as future transport policy defined; industry, where emissions from large installations are regulated by the Industrial Emissions Directive 2010/75/EU; agriculture, regulated in part by the IED and the Nitrates Directive 91/676/EEC and encouraged to implement better practices via the agri-environment measure of the rural development policy (where measures are largely the prerogative of the Member States); and increasingly, shipping transport regulated by Directives 1999/32/EC, and small combustion sources, where the Ecodesign Directive 2009/125/EC provides the main control instrument.

According to still preliminary emission data received in 2010, 12 Member States are likely to exceed their 2010 emission ceilings for NO_x, 2 Member States are set to exceed the ceilings for

VOCs, and 2 are set to exceed the ceilings for ammonia.

The 6EAP set the long-term objective to 'achieve levels of air quality that pose no significant risk for human health and the environment'. The 2005 Thematic Strategy on Air Pollution sets interim targets towards meeting this objective, framed as reductions in human health and ecosystem impact, and emission reduction targets to achieve the health and ecosystem reductions. The targets are aspirational but have been politically endorsed by Council through Council conclusions adopted in 2006. As outlined above, the legislation sets limit values and national emission ceilings with deadlines that are legally binding.

Future outlook

There exists a well-developed integrated modelling suite centred around IIASA's 'GAINS' model. The modelling indicates that on baseline assumptions, all the Thematic Strategy on Air Pollution targets for the year 2020 for emission reductions may be met, with the exception of the ammonia target. However, this is based on optimistic assumptions for the baseline trend in Member States which may need to be modified in the light of recent developments and the experience gained from recently completed review of the Gothenburg Protocol of the LRTAP Convention. The real (rather than expected) emission reductions achieved in the transport sector is a particular issue of concern. Currently new studies have been launched to calculate the impact on the 6EAP objectives for impact reduction. It is likely that PM impacts and acidification will be significantly reduced, while ozone and eutrophication will be reduced to a much lesser extent (PM impacts is nevertheless expected to remain much higher in absolute terms than ozone impacts).

With regard to compliance with legal obligations, many Member States are currently failing to achieve the limit values for PM but this is projected to be more or less resolved by the second half of the decade. However for NO₂ there is widespread non-compliance, largely blamed by Member States on transport emissions from diesel cars which are much higher than foreseen under the Euro regulations. This projected non-compliance situation may not be fully resolved in some regions until 2020-2025. Note that legislation (and in particular Directives 2008/50/EC and 2004/107/EC) is set not only to reduce the cumulative health burden but also to provide a minimum level of health protection everywhere in the EU. Thus the picture for compliance with legislation reflects the completeness of the minimum protection, and not necessarily the priorities in terms of absolute health impacts.

Key challenges

Knowledge base

The main challenges related to the knowledge base are:

- Is the evidence base for setting health-related standards still adequate?
- To what extent are industry, transport, agriculture, shipping, and small-scale combustion sources driving the main health-related exposures, ecosystem impacts, limit value exceedances and emission ceiling exceedances?
- What is the reduction potential from these sources and associated costs?
- How much further progress can be made towards the 6EAP objective, and what is the economically optimal combination of measures to do so?
- To what extent should measures be taken at international, EU or national/local level, and how should this be framed in policy?
- What impact do measures in current and possible future climate policy have on the achievement of AQ objectives and vice versa (both in terms of synergies in transport and energy, and some potential trade-offs such as biomass)?

There are also particular issues to be addressed such as the apparent mismatch for ozone between precursor reductions and stable concentrations; quantification of the impacts of air pollution on ecosystems (i.e. not only whether critical loads are exceeded, but what ecosystem impact does the exceedance have); the quality of emission inventories for certain pollutants/sectors/areas; improved spatial resolution of the models, and so on.

The health evidence base is being addressed by a grant agreement with WHO. The remaining issues are being dealt with in an integrated assessment service contract with IIASA in consultation with the relevant services and stakeholders. The IIASA contract is supplemented by a number of smaller contracts on ozone, PM and inventories, with further contracts on road transport, AQ/biodiversity impacts, and agricultural emissions in the pipeline.

Implementation

There are three main challenges to implementation;

- Slow implementation on the part of Member States (applies both for ambient air quality standards and national emission ceilings). The Directives leave a large discretion to Member States to determine the measures required to meet limit values/emission ceilings, and many Member States have been late in organising and poor in implementing the necessary measures
- Transboundary impacts (applies for ambient air quality standards); many Member States argue that their scope to achieve ambient concentrations is limited due to transboundary pollution over which they have limited control
- Poor control of sources regulated at EU level (applies both for ambient air quality standards and national emission ceilings): one particularly salient problem is the apparent failure of the Euro vehicle standards, resulting in higher real world emissions than measured in the test cycles. Emissions of NO₂ are thus much higher than expected and severely limit the ability of Member States to meet NO₂ values, particularly in urban locations.

These are being addressed as follows:

- Slow implementation is being addressed by a combination of infringement actions and support measures such as workshops to exchange experience on the most effective measures, databases of measures, and financial support for capacity-building (see below).
- Transboundary impacts are being addressed partly in the regional context by the revision of the Gothenburg Protocol of the LRTAP, and partly within the EU with revision of the National Emission Ceilings Directive
- Poor control of sources is being addressed by maximising pressure to solve the failure of the Euro vehicle standards in the context of implementation of the Euro 6 legislation; and by working with the services concerned to make sure that any further measures on ambient air quality are matched by the necessary source controls at EU level.

Financing

The main financing challenges are as follows:

- there are substantial challenges on the monitoring and assessment side in many Member States, and constrained administrative budgets are putting increasing pressure on the monitoring infrastructure, threatening the survival of some important data sources.
- Regional and local authorities argue that because the appropriate measures are not taken at national and (in some cases) at EU level, they are left with no option but to take extremely expensive measures at the local level which are far less cost-effective in solving the problem. There is some indication that within Member States, responsibility for meeting objectives is delegated but that necessary finance for implementation is not provided.

- Some sectors (particularly transport) argue that the necessary action is too costly in the context of current crisis-related problems faced by the sector.

These are being addressed as follows:

- An implementation pilot project has been launched jointly with the EEA, to bring cities together to share experience of implementation of AQ policy. Further, €150m is currently earmarked in LIFE+ for the period 2014-2020 for integrated projects on AQ management between cities or regions with AQ problems – around 15 projects are envisaged, covering around 10% of the EU population.
- Provision for funding of urban development, including air quality and transport-related initiatives, is provided in the regional funds in the MFF. The root cause of the problem will be addressed by identifying the most appropriate level for future action.

The arguments of affected stakeholders will be considered in the overall cost and benefit assessment for the review, bearing in mind the health and economic costs of current air pollution, and also potentially beneficial implications for the stakeholders themselves, such as improved market share in clean technology.

Justification for the priority objective

There are substantial constraints in the air quality policy stemming from other policies, in particular transport, small-scale combustion and agriculture. To be credible, tightening of ambient air quality objectives or emission ceilings will in most cases need to be accompanied by appropriate source controls at EU level to give MSs confidence that their own efforts to achieve targets at national level will not be countered by the lack of appropriate EU action.

In particular, there is a need to take action because:

- There are substantial difficulties in meeting the existing ambient air quality limit values and emission ceilings. These are in part related to implementation problems with other EU legislation, principally the Euro vehicle emissions standards, but also to poor or late implementation at national level. Options to remedy this must be identified, including the relevant balance between further national and EU legislation;
- The existing legal framework should be aligned with the latest scientific evidence;
- Closer links between air quality policy and innovation should be established. Strong long-term goals for pollution reduction should stimulate innovation and green investment, but the signals have been taken up only to a limited extent. The review will identify why and examine options for improvement.
- The existing legal framework provides only interim objectives toward the goal of no significant environmental or health impacts. At the ambient air quality levels set in current legislation, there are still substantial health and environmental problems driven by air pollution. As a longer-term step beyond compliance with existing legislation, the review should examine options for further progress towards the long-term target.
- There have been substantial developments in related policies (see section 9 below) which, while largely beneficial for air policy, can introduce some negative side-effects (e.g. biomass combustion and particulate pollution). A review is needed to redress any trade-offs in the early stages of implementation (i.e. before entrenchment of poor practices).

All relevant options for improving air quality and its management in the EU will be considered in the Impact Assessment for the review of the Thematic Strategy on Air Pollution (COM(2005)446) in 2013.

The main synergies with other policy areas are as follows:

- Substantial synergies with climate change and energy policy, although also possible trade-offs.

Both will be examined in detail in the impact assessment.

- Synergies with agricultural policy – more efficient use of resources such as effective fertilizer nitrogen management and- reduction of ozone pollution will increase agricultural yield, but also trade-offs (air quality policy may impose additional pollution control costs on the sector)
- Synergies with innovation policy - properly-designed measures will improve market position in the clean technologies of the future
- Synergies with environment policies such as biodiversity, water and marine – reduction of air pollution could contribute towards the target to restore 15% of degraded ecosystems in the Biodiversity Strategy, for instance. The impact will be as far as possible characterised in the Impact Assessment.
- Synergies with noise policy, in that local traffic management measures will reduce both air and noise pollution.

The following aspects of integration are particularly important to the achievement of AQ objectives:

- Full implementation of the Euro 6 controls on diesel passenger cars, and effective progress on transport policy in general
- Further reducing ammonia emissions from agriculture, e.g. with the support of the agri-environment provisions of the CAP measures included in the rural development programmes
- Targeted funding under regional policy to promote capacity-building and key AQ-related infrastructure particularly in urban areas (such as improving public transport provision, reducing public transport emissions by retrofit schemes, and so on).
- Controls on PM and NO_x emissions for small-scale and domestic combustion and related sectors in the Ecodesign Directive implementation.
- Integration into the main EU innovation support programmes to ensure that AQ needs are reflected
- Integration into Horizon 2020 to ensure that AQ research priorities are reflected.

The 2013 review will seek to identify the optimal combination of measures to resolve the implementation problems described above and make further progress towards the air quality targets. It is too early to indicate which measures may be brought forward, although a revision of the National Emission Ceilings Directive will clearly be required to reflect the recently agreed revision of the Gothenburg Protocol, including ceilings for 2020 and possibly beyond.

The review will comprise a chapeau communication revising the 2005 TSAP together with an impact assessment of a list of future initiatives, including possible legislative proposals.

Accompanying non-legislative initiatives may include:

- An urban clean air programme to empower national and local actions to improve air quality including funding possibilities (LIFE+, Cohesion Funds) and softer initiatives such as green public procurement, labelling etc.
- An international clean air programme to address any issues best dealt with on that scale, such as action on ozone precursors, work on short-lived climate forcers (e.g. methane under the UNFCCC, black carbon under the LRTAP).
- An innovation programme integrating AQ priorities into the key EU innovation actions and highlighting the role of air policy in driving innovation and creating jobs
- A research agenda outlining the long-term research needs (epidemiology, socio-economic impacts, assessment techniques etc.).

Noise

Current situation

Urbanization, growing demand for motorized transport and inefficient urban planning are the main driving forces for environmental noise exposure. Furthermore, noise pollution is often linked to urban areas where also air quality can be a problem.

The World Health Organisation (WHO) has established that there is sufficient evidence from large-scale epidemiological studies linking the population's exposure to environmental noise with adverse health effects. WHO Guidelines for Community Noise⁹¹ recognise the effects of environmental noise as a serious health problem in the EU, and recent studies indicate that noise exposure in Europe presents an increasing trend compared to other environmental stressors⁹².

Noise pollution can annoy, disturb sleep, affect cognitive function in schoolchildren, cause physiological stress reactions and cardiovascular problems in chronically noise-exposed subjects⁹³. Stress can trigger the production of certain hormones which may lead to a variety of intermediate effects, including increased blood pressure. Over a prolonged period of exposure these effects may in turn increase the risk of cardiovascular disease and psychiatric disorders.

Road and rail noise alone is linked to 50 000 fatal heart attacks and 200 000 cases of cardiovascular disease in Europe annually, at an estimated treatment cost of €40bn⁹⁴. According to WHO, at least one million healthy life years are lost every year from traffic-related noise in the western part of Europe⁹⁵.

Noise pollution also has economic costs, including devaluation of house prices, productivity losses from health-related impacts and distributional impacts. Social costs are related to premature death or morbidity (poor concentration, fatigue, hearing problems). The social costs of traffic, rail and road noise across the EU was recently estimated to amount to €40 billion a year, of which 90% is related to passenger cars and goods vehicles. This was about 0.4% of total EU GDP⁹⁶ including health care costs. According to the 2011 Commission's White Paper on Transport, the noise-related external costs of transport would increase to roughly 20 billion € by 2050 unless further action is taken.

On the basis of scientific evidence on the threshold of night noise exposure (indicated by the parameter L_{night} defined in the Environmental Noise Directive 2002/49/EC), the WHO has recommended a L_{night} value target of 40 decibels (dB) to protect the public, including the most vulnerable groups such as children, the chronically ill and the elderly. A L_{night} value of 55 dB is recommended as an interim target for countries that cannot follow night noise guidelines in the short term for various reasons and where policy-makers choose to adopt a stepwise approach.

According to the European Environment Agency (EEA), more than 60% of the EU population is exposed to night time noise levels in excess of the WHO target and 30% in excess of even the interim target of 55 dB. According to the WHO, preliminary estimates of noise-related health impacts in the western part of EU alone account for more than 1 million disability adjusted life years (DALYs)⁹⁷.

The Environmental Noise Directive 2002/49/EC requires that Member States map noise exposure in their territory above certain thresholds, and establish action plans aimed at reducing noise exposure. However, it does not establish legally binding limit values for noise exposure. It also introduces the concept of quiet areas, to be used as a place where people can rest, but there has been little progress in Member States on identifying and preserving these areas.

Most⁹⁸ Member States have set legally binding noise limit values or are currently revising them⁹⁹.

Others¹⁰⁰ have guideline values in place.

The noise maps produced so far during the 1st round of noise mapping, revealed that noise limit values were often transgressed without sufficient measures having been implemented. There is some evidence that in some countries, the implementation of measures to control noise or to protect exposed populations was not linked to whether a value is binding or not.

Another issue is the wide range of limit, trigger and guideline values. Only a limited number of Member States¹⁰¹ specifically used health-based assessments or drew on WHO health-based assessments in establishing noise limit values. Due to often different bases, concepts and levels of differentiation, it was difficult to summarise and compare the different levels in the Member States¹⁰².

The main sources of noise pollution are road, railway and aircraft transport, which are subject to EU regulation. Industries are of lower overall impact. Regulation at source includes limits on road vehicles, on road vehicles tyres, on railway vehicle noise, and on aircraft; noise limits and operating restrictions on airports; and limits on outdoor machinery. Vehicle noise and operating restrictions at community airports are two legislative measures which are currently under review.

Future outlook

EU-wide modelling is not available given that there is as yet no common noise assessment methodology and the national methods which are in use are not readily comparable. Common Noise Assessment Methods (CNOSSOS-EU) are currently being developed to allow comparable data and EU level analysis of the results.

The very poor information available on the trends towards 2020 does not allow precise forecasting of expected noise levels in 2020, but it seems reasonable to expect that noise levels will not decrease in the period up to 2020, mainly due to transport traffic increase and the low level of ambition associated with existing national and EU noise regulation.

Key challenges

Knowledge base

Between 2009 and 2011 the EU funded a large coordination action to establish future research directions and policy needs for noise and health in Europe, encompassing 33 participating institutes from Europe¹⁰³.

The main challenges for the noise policy knowledge base relate to:

- whether the evidence base for setting health-related standards is still adequate and whether noise annoyance is adequately considered in the estimate of noise health impact
- the extent to which transport is driving the main health-related exposures and national limit value exceedances
- the reduction potential from noise sources and associated costs
- the extent to which measures should be taken at international, EU or national/local level, and how this should be framed in policy
- the impact of measures in current and possible future environmental policy on the achievement of objectives

Implementation

There are four main challenges to implementation:

- Lack of harmonised mapping methods, which prevents comparability of noise maps and their use at EU level. The adoption of the CNOSSOS-EU common methods will finally enable this, supported by the further development of EU guidance documents, for instance on how to prepare action plans, how to define quiet areas and how to report data.
- Delayed implementation on the part of Member States of both noise maps and action plans.
- Incomplete noise reduction plans. The Environmental Noise Directive leaves broad discretion to Member States to determine the measures required to reduce noise levels, and many Member States tackle noise only in specific locations rather than as part of a global noise reduction action plan.
- Poor control of sources regulated at EU level: Article 1.2 of the Noise Directive foresees the Directive to be a basis for developing Community measures to reduce noise emitted by major sources. However, the Directive has thus far not been used for this purpose.

These challenges are being addressed as follows:

- The framework of Common Noise Mapping Methods is being finalised by means of support from the JRC and service contracts, under the supervision of the Noise Regulatory Committee.
- Slow implementation is addressed by means of EU Pilot in those cases where a Member State has not taken any action, or in specific cases where action is found to be required (e.g. following a petition). With the second round of noise mapping the control on the compliance with the Directive will become more stringent.
- A set of issues has been identified for a possible review of the Directive, including the introduction of trigger or target values at EU level, and a better enforcement of the link between noise maps and action plans.

Financing

The main financing challenges are as follows:

- MS invest very limited resources not only in implementing action plans, but also in noise mapping and action planning
- Because the appropriate source-related measures are very weak at EU level (e.g. reduction of noise from motor vehicles), the national and local authorities are left only with extremely expensive measures at the local level (e.g.: noise barriers) which are far less cost-effective in solving the problem.
- Industry is reluctant to accept obligations to reduce the noise of motor vehicles (even modestly) citing the straitened economic climate.
- Some promising solutions to the environmental noise problem (e.g. electric vehicles) are still relatively costly and with a very limited market penetration.
- The costs of environmental noise for the EU were estimated to amount to 0,4 % of GDP¹⁰⁴.

These are being addressed as follows:

- A call is foreseen in the FP 7 to analyse the socio-economic aspects associated to national, regional and EU wide noise and air pollution policy and to explore ways to better integrate the socio-economic dimension in those policies
- Provision for funding is foreseen in the context of Life+ projects.

The arguments of affected stakeholders will be considered in the overall cost and benefit assessment for the review of the Directive, bearing in mind the health and economic costs of current noise

situation, and also potentially beneficial implications for the stakeholders themselves, such as improved market share in clean technology transport systems.

Justification for the priority objectives

There are substantial constraints in the noise policy stemming from sources out of control of environment policy. To be credible, tightening of noise objectives by e.g.: setting target or trigger limits will in most cases need to be accompanied by appropriate source controls at EU level to give Member States confidence that their own efforts to achieve targets at national level will not be countered by the lack of appropriate EU action.

In particular, there is a need to take action because:

- so far the noise policy did not produce any measurable reduction in impacts (at overall EU level, while obviously local and specific hot spots may have seen noise reductions by e.g.: noise barriers);
- there is at the moment no target set for the “acceptable” health/social/economic cost of noise, in contrast to other fields e.g.: air quality, with comparable health, social and economic impacts.

All relevant options for improving noise and its management in the EU will be considered in the review of the Directive.

The main synergies with other policies are as follows:

- Substantial synergies with air quality policy (alignment of technical aspects and combined action plans), although also possible trade-offs with climate policy and energy, in that noise reduction in transportation may in extreme cases require the increase in energy and combustibles consumption.
- Synergies with innovation policy: properly-designed measures will improve market position in the clean technologies of the future, as in the case of electric road vehicles, silent trains and silent aircrafts.
- Synergies with urban policy, in that environmental noise reduction is a major issue and challenge for cities, and quiet areas add great value to cities and city centres.

The following aspects of integration are particularly important to the achievement of noise objectives:

- Full and ambitious implementation of the vehicle noise directive and the tyre noise Directive, and effective progress on transport policy in general.
- Targeted funding under Life+ and regional policy to promote capacity-building and implementation of noise reduction action plans.
- Integration into Horizon 2020 to ensure that noise & health research priorities are reflected.

The Commission is considering a possible revision of Directive 2002/49/EC to align specific definitions and incorporate the most effective noise regulatory framework. This could also include a mechanism to verify and report to the Commission the actual noise values.

The current regulatory philosophy is that transparency will drive action to reduce noise: Member States must map noise exposure, develop action plans, and map again to show their impact, and thus the affected population have the information needed to make their case. The revision of the Directive 2002/49/EC would consider the effectiveness of this approach, including in guiding EU legislation on noise sources. In particular, the revision will consider whether the approach should be supplemented or replaced by the establishment of trigger or limit values.¹⁰⁵ In addition, technical aspects of the Directive would be improved and simplified.

Accompanying non-legislative initiatives may include a research agenda outlining the long-term research needs (epidemiology, socio-economic impacts, assessment techniques etc.).

A legislative procedure is being finalised concerning the noise operating restrictions at community airports (2011/0398). The Commission already proposed a new regulation on the adoption of challenging targets for the road vehicles (revised Directive 70/157/EEC).

Drinking and bathing waters

Current situation

High quality drinking waters and bathing waters have always been a central aim of the EU's environment and health policy. By achieving a high environmental quality, significant benefits for public health, in particular as regards water-borne diseases, were achieved. At the same time, availability of clean drinking and bathing water has a high value for the economy. In the case of drinking water, all areas of the economy and the public rely on a stable and high quality supply. And bathing water quality is a prerequisite for developing a successful, sustainable tourism industry. Finally, the public awareness and interest in these policies is very high which is, e.g., demonstrated by the regular media interest when publishing the annual bathing water report or in the occurrence of drinking water pollution, e.g. with bacteria or chemical substances.

Overall, compliance rates for drinking water and bathing water are high. Nowadays, the drinking water and the bathing water quality are largely at levels that do not cause major public health concerns. To achieve this, high investments in infrastructure and treatment were made in the past to secure high drinking water quality for the consumer and to introduce sufficient wastewater treatment which often was the cause for poor bathing water quality. However, some areas of implementation require increased efforts to close existing implementation gaps. There are still a significant number of people in the EU not having access to sanitation and clean drinking water.

The WHO¹⁰⁶ concludes that by "*improving access to safe drinking water and adequate sanitation, in addition to the health benefits through prevention of diarrhoeal and other waterborne diseases, significant economic benefits may be gained.*" These include health care savings, productive days gained per year, increased school attendance, time savings resulting from more convenient access to services and value of deaths averted (based on future earnings). To illustrate this, Hunter et al. (2009)¹⁰⁷ found that benefit-cost-ratio of 8.93 (i.e. an investment of 1\$ has an average benefit of nearly 9\$) can be achieved with measures improving water supplies in rural communities. This was based on estimates of cost savings of acute illness and irritable bowel syndrome of US\$million 1687 and 4295, respectively (2004 prices), and intervention costs in terms of capital costs and annual intervention costs were estimated to US\$ million 5467 and 321, respectively (2004 prices)¹⁰⁸.

More detailed information on the current health and economic impacts of poor drinking and bathing water quality in EU27 is difficult to compile and does currently not exist. As an indication on the scale of the remaining challenges, the current situation is described in terms of level of compliance.

Drinking Water

- Large water supplies (> 1000 m³ or serving > 5000 people): in general the implementation of the DWD has led to safe drinking water in the European Union with compliance rates generally over 90%.
- Small water supplies (< 1000 m³ or serving < 5000 people) supply more than 48 million consumers in the EU. Preliminary results suggest that the level of non-compliance in 2010 was at 36% affecting 17.5 million consumers in the EU. A more detailed analysis of the level of compliance is under preparation.

Bathing Water

Overall in 2011, 92.1 % of bathing waters in the EU met the minimum water quality standards set by the bathing water directives. Bathing water quality improved in the 0.6 % of sites in 2011 compared to 2010. The number of all bathing waters with excellent quality or complying with the

more stringent guide values reached 77.1 %. However, there are remaining pollution problems of bathing waters in particular in relation to freshwaters (rivers and lakes), which are often linked to the lack of sufficient urban wastewater treatment or pollution from agriculture.

The two main pieces of legislation are the Directive 98/83/EC on the quality of water intended for human consumption (DWD) and the Directive 2006/7/EC concerning the management of bathing water quality and repealing Directive 76/160/EEC. The new Bathing Water Directive provides for increased public information through beach profiles and logos. So far, these provisions have not been taken up widely and systematically. Furthermore, the Water Framework Directive 2000/60/EC establishes clear links to these two Directives, by establishing drinking water protected areas (Article 7) and introducing bathing waters as protected areas under Article 6. The management and protection of these two types of waters is incorporated into the River Basin Management Plans and the Programme of Measures under the Water Framework Directive (WFD).

Moreover, there are international guidelines, such as the WHO guidelines on health which sets safety levels (parametric values) for DW quality parameters (non-binding).

Legally-binding parameter-specific limit values are set out in the Drinking Water Directive and the definition of excellent, good, sufficient and poor bathing water quality in the new Bathing Water Directive. The compliance levels give a very good indication on the quality of the bathing water and drinking water.

Future outlook

There are no overall modelling tools available and predictions on trends are more qualitative.

On **Drinking Water**, there is information available including the following aspects:

- Increased health risk for emerging parameters (such as pharmaceuticals or endocrine disrupting substances) that are known to pose problems in drinking water.
- Worrying situation for small drinking water supplies will continue, mainly for bacteriological parameters.
- Ex-post action approach will continue (action based on ex post sampling). No trigger for more proactive approach (such as establishment of water safety plans in order to do the monitoring throughout the production and distribution chain and not only at the tap).

On **Bathing Water**, the overall trend is positive in the light of further reduction of the sources of pollution mainly from urban wastewater and agriculture. However, improvements in quality, in particular in inland waters, have been difficult because further investment, in particular on sewage treatment and agriculture pollution, is needed to move from a 'sufficient' to an 'excellent' water quality.

Key challenges

Knowledge base

Overall there is a wide range of scientific and administrative information available for drinking water and bathing water. However, the assessment of environmental and health impacts for the EU and the related costs and benefits is complex from a methodological point of view and is not available at the moment.

There are increasing efforts to provide real time quality data, e.g. in holiday resorts where the water quality information is updated immediately after the analysis has been completed. Bathing Water reporting is also identified as a good example in the recent Communication on Improving the delivery of benefits from EU environment measures (COM (2012)95). However, the data management at EU level does not allow a streamlining of data and a comprehensive overview of the

situation because most information is held at regional and local level. Also the reasons for non-compliance are often not clear because they are not investigated in detail or not sufficiently reported by Member States. Finally, for drinking water, the extent and the time of a certain incident of non-compliance are often not clear, nor is the number of consumers affected.

There is constant need to update health risks and compliance monitoring requirements to the state-of-the-art based on latest scientific knowledge.

The WHO updates regularly its guidelines for drinking and bathing water. Furthermore, increased data availability and assessments in the context of REACH or other EU substance-related legislation (e.g. pesticides and biocides) contributes significantly to closing the knowledge gap.

The recent reporting exercises on the regular reporting and the small water supplies will provide most up to date analysis including the identification of data gaps. Furthermore, the working groups mandated by the Drinking Water Committee will prepare guidance on action for small water supplies and prepare possible amendments for annex II and III on monitoring.

Several bottlenecks in the directive and options to resolve them (related to small water supplies, monitoring, water safety planning, reporting) were identified in the past. Stepping up the implementation including related information management (e.g. through reporting) could address most of them.

In addition, further efforts in research are carried out to understand the impacts on public health and its costs and benefits for the EU.

Implementation

The challenges of the implementation of the **Drinking Water Directive** are, in particular:

- Risk assessment and risk management (RA/RM) for small water supplies
- Water risk management to prevent pollution (poorly addressed in the Directive)
- Possibly misuse of the derogation system
- Adequate monitoring and reporting

For the **Bathing Water Directive**, the main challenges are related to the new elements of the new Directive, in particular the more stringent monitoring requirements, the beach profiles and public information (incl. real time data provisions). For both Directives, the full integration into the Water Framework Directive management cycle has not been achieved yet. For example more efficient water resource protection by establishing drinking water protected areas would ultimately reduce treatment costs. The upcoming analysis of the first River Basin Management Plans will provide more details. (See also the Blueprint on Water and water fiche).

On Drinking Water, some initiatives are taking place such as the new reporting exercise for small supplies or the revision of the annexes II and III. Furthermore, a recent guidance on risk assessment and risk management for small supplies has been finalised¹⁰⁹. Furthermore, the information management will be improved in the future through increased use of the Water Information System for Europe (WISE). In the implementation of the Bathing Water Directive, the Commission will initiate a process to prepare implementation guidance and address the link to the Water Framework Directive (WFD) in more detail.

Financing

The EU funds, in particular the Structural and Cohesion Funds, have always provided significant support for investment in infrastructure (networks and treatment) for water supply and sanitation. In particular the investments in urban wastewater treatment have contributed significantly to the improvement and maintenance of good bathing water quality in the EU and reduce pollution of

ground and surface water used for the abstraction of drinking water.¹¹⁰

The Fitness Check for Water Policy, linked to the Blueprint on Water, identified that the main obstacles to such heavy infrastructure investments are available financial resources (national co-financing of EU funds), the absorption capacity of local or national administrations (often by lengthening planning procedures) and lack of political will.

In addition, there are a number of specific challenges for drinking water, in particular:

- Lack of monitoring/insufficient sampling frequency often due to lack of financial resources,
- Lack of financial resources is often the cause for insufficient action to prevent and repair leakages in supply networks (spills).

Finally, the water pricing policy in many Member States is not set up to support cost-efficient water services and factor in the environmental and resource costs (see upcoming analysis of Water Framework Directive (WFD) River Basin Management Plans as part of the Blueprint for details – see also water fiche).

The new MFF continues to foresee a significant portion of investment in water infrastructure, mainly in EU-12 (based on Commission proposal). The detailed investment programmes of the Member States have not been established yet but will require careful monitoring so to ensure that investments are done in such a way to improve low and maintain high compliance levels for bathing and drinking water.

Justification for the priority objective

More effort in this policy area is needed in order:

- To guarantee high level of drinking water and bathing water quality in the EU to protect the health of all citizens.
- To ensure an effective management of water resources minimising pollution of waters which are relevant for human health.

A possible revision of the Drinking Water Directive was launched in 2007/2008 and all related studies and consultations have identified the needs for better implementation. Other options were considered in this preparatory process including the preparation of a legislative proposal, but it was decided in early 2011 that better implementation was the most appropriate course of action at the moment.

This initiative contributes mainly to an improved health protection of EU citizens. In addition, there are strong links with water/marine policies, and upstream with soil, land-use and chemicals. There is a need for full consistency with horizontal topics: economic instruments, urban, implementation, knowledge base and financing.

In particular, the link to the Water Framework Directive is clearly developed (mainly through Articles 6 and 7 on protected areas). Further integration and coherence with other policy areas, including agriculture, cohesion, urban and land use planning, industry (energy, chemical), blue growth (coastal tourism) and research will need to be fostered.

The environment and health benefits introduced by the Drinking Water Directive and new Bathing Water Directive have already resulted in a high level of protection of EU citizens. However, implementation efforts need to be stepped up to address specific issues which have not received sufficient attention in the past. On the Drinking Water Directive, the level of compliance for small water supplies is still very low and a consolidated data gathering has taken place for the first time in 2012. On the Bathing Water Directive, the new provisions of revised Directive 2006/7/EC will all enter into force in 2014 at the latest. The more stringent provisions (e.g. regarding monitoring) and the new elements (e.g. beach profiles) have not been implemented fully yet and more efforts should

be made to enforce these new instruments effectively. Finally, the cost-effective implementation of both Directives will benefit from a closer link to the River Basin Management Planning under the Water Framework Directive (2000/60/EC). Effective protection of water resources and resource efficiency would be the result of such a closer integration.

Specific actions to step up implementation could be:

For Drinking Water:

- Develop a Strategy for implementation and compliance (including infringements) as well as for more strategic and restrictive approach on derogation requests;
- Better implementation through means of guidance (e.g. link to WFD and RBMP) and appropriate action to deal with non-compliance situations (e.g. for small supplies and link to inappropriate urban wastewater treatment in rural areas);
- Improvement of data and information management building on WISE (Water Information System for Europe) and the link to the information systems at national level (see also SIIF in the Implementation Communication).
- Amendment of annexes for monitoring and analysis;
- Increased cooperation with related policies (e.g. WFD, REACH) and relevant international organisations, mainly WHO, e.g. as regards risks from emerging pollutants.

For Bathing Water:

- Develop a Strategy for implementation and compliance (including infringements);
- More active information to citizens, e.g. as regards beach profiles or providing near real time data and linking better the EU WISE with the national systems (see also above).
- Better implementation through means of guidance (e.g. link to WFD and RBMP) and appropriate action to deal with non-compliance situations (e.g. for monitoring);

With these implementation actions at EU level, it should be possible for Member States to achieve full or almost full compliance with the requirements of the two Directives.

No specific policy proposal is foreseen in the short term in this policy area. However, there are specific initiatives at Committee level which will have to be approved by the Commission, in particular the revision of annexes II and III of the Drinking Water Directive. A progress report in the implementation efforts could be envisaged, considering also the need for any further policy/legislative initiative in the medium term.

Chemicals

Current situation

Chemicals contribute in a multitude of ways to modern-day living. Although many serve our general well-being, some chemicals are toxic and can harm our health. In recent years a worrying increase in certain environment and health problems has been partially explained by the use of such chemicals.

The EU has laws to protect human health from harmful chemicals in the environment and while certain progress has been achieved thanks notably to initiatives such as REACH, recent reports point to the need for further action to deal with new and evolving issues (Mixtures, Nanomaterials and Endocrine Disruptors) as well as improving coverage and inter-linkages in the current chemicals *acquis* (e.g. for chemicals in products).

REACH is a key part of the EU's endeavour to make the use of chemicals safer. However since the positive effects of REACH on public health are expected (according to the Impact Assessment) to materialize 10 years after the start of REACH implementation (i.e. 2016), it is too early to quantify the benefits just 5 years after REACH has entered into force. Nonetheless a Commission review of the key drivers of particular relevance to the generation of benefits shows some progress. The quality of the information available for risk assessment has improved and current evidence suggests that there is an improvement in the situation due to REACH. However, REACH will only attain its full health and environment potential when it is effectively implemented and SVHC are no longer in circulation.

In recent years more information has come to light on the need for action to deal with the combined effects of different chemicals (**Mixtures**), chemical substances or materials that are manufactured and used at an extremely small scale (**Nanomaterials**), chemicals that interfere with the endocrine (hormone) system (**Endocrine Disruptors**) and **Chemicals in Products**.

➤ Mixtures

Human are exposed daily to various concentrations of chemicals from a range of sources. Some studies suggest that different chemicals in combination can have damaging effects on health even when they are below the “safe-level” for individual chemicals (e.g. Danish 2009 study). In addition the EEA State of Environment Report 2010 identifies the *combined effects of chemicals* as an issue requiring attention, while the European Parliament has consistently drawn attention to the need to take account, of the combined effects of different chemicals on human health and the environment.

➤ Nanomaterials

Nanomaterials have the potential to improve the quality of life and to contribute to industrial competitiveness in Europe. However, the new materials may also pose risks to the environment and raise health and safety concerns. In the light of current knowledge and opinions of the EU Scientific and Advisory Committees and independent risk assessors, nanomaterials are similar to normal chemicals/substances in that some may be toxic and some may not. Possible risks are related to specific nanomaterials and specific uses. Therefore, nanomaterials require a risk assessment, which should be performed on a case-by-case basis, using pertinent information. Current risk assessment methods are applicable, even if work on particular aspects of risk assessment is still required..

➤ Endocrine Disruptors

Endocrine Disruptors are chemicals that interfere with the hormone (endocrine) system causing adverse health effects. These endocrine disrupting chemicals (EDCs) can have effects at very low

doses. Recent reports (such as the Kortenkamp Report and EEA Weybridge + 15) point to the rise in Europe in the number of people diagnosed with breast, testis and prostate cancers. This rise has been partly attributed to endocrine disruptors. The Weybridge report suggests that the rates of endocrine diseases and disorders have changed in line with the rapid expansion in the growth of the chemical industry.

Existing policy/legislative framework

Horizontal chemicals legislation (REACH and CLP) in place provides a baseline protection for human health and the environment. This legislation is also linked to the EU's waste policy/legislation (WEEE, RoHS, Basel).

A legislative framework is likewise in place governing the placement of biocidal products on the market.

In addition, an array of legislation exists in the Cosmetics, Pharmaceuticals, Plant Protection Products, Toys and Occupational Safety and Health sectors which also contribute to the protection of human health and the environment.

➤ Mixtures

Currently, within the framework of EU legislation, there is no mechanism for a systematic, comprehensive and integrated assessment of mixture effects taking into account different routes of exposure and various product types. Acknowledging these concerns, the Council of Environment Ministers adopted conclusions on the combination effects of chemicals on 22 December 2009. In its conclusions, the Council invited the Commission to assess how and whether existing legislation addresses this problem and to suggest appropriate modifications and guidelines. On 31 May 2012 the Commission reported to the Council and proposed to launch a new process to ensure the risks associated with chemical mixtures are properly understood and assessed. The Council in June 2012 called on the Commission *to address the identification and assessment of combination effects of chemicals across different sectors.*

➤ Nanomaterials

The Council in June 2012 called on the Commission to address *the safety and sustainability of nano and advanced materials in a coherent approach across different legislation*. The Commission has recently reviewed the regulatory framework applying to nanomaterials. It concluded that that REACH sets the best possible framework for the risk management of nanomaterials when they occur as substances or mixtures but more specific requirements for nanomaterials within the framework have proven necessary. The Commission envisages modifications in some of the REACH Annexes and encourages ECHA to further develop guidance for registrations after 2013. Moreover, there are plans to make a new proposal on Novel Foods which will also address nanomaterials. The Commission has also presented information on nanomaterial types and uses, including safety aspects, as promised to the European Parliament. The Commission will create a web platform with references to all relevant information sources, including registries on a national or sector level, where they exist. A first version mainly based on links to available information will be put on line as soon as possible. The Commission will assist in the elaboration of harmonised data formats, to improve exchange of information. In parallel, the Commission will be launching an impact assessment to identify and develop the most adequate means to increase transparency and ensure regulatory oversight, including an in-depth analysis of the data gathering needs for such purpose. This analysis will include those nanomaterials currently falling outside existing notification, registration or authorisation schemes. .

➤ Endocrine Disruptors

The Commission's 2011 Work Programme proposes a review of the 1999 Community Strategy for Endocrine Disruptors and if appropriate, a revision. The Commission is also required under the Plant Protection Product Regulation and the Biocidal Products Regulation to come forward with

proposals for criteria for the identification of substances with endocrine disrupting properties by end 2013. The Commission is also required by June 2013 to review the way endocrine disrupting substances are authorised under REACH. The Council in June 2012 called on the Commission to address *endocrine disruptors, based on scientific achievements, including in all relevant EU legislation with the aim of reducing exposures to endocrine disruptors and protecting human health and the environment, in particular children.*

➤ **Chemicals in Products**

No comprehensive EU policy on chemicals in products exists that addresses the requirements of public health, environment and waste. Current legislation (e.g. REACH, General Product Safety Directive and Waste Framework Directive) covers certain products but an overall consistent and comprehensive approach is lacking. The Council in June 2012 called on the Commission to address *a comprehensive approach for minimising exposures to hazardous substances, including chemicals in products and enabling consumers and purchasers to have access to better information on products as well as stimulate non-toxic material cycles.*

Targets

The 2002 WSSD Plan of Implementation sets out the commitment, as advanced in Agenda 21, “*to the sound management of chemicals throughout their life cycle and of hazardous wastes for sustainable development as well as for the protection of human health and the environment, inter alia, aiming to achieve, by 2020, that chemicals are used and produced in ways that lead to the minimisation of significant adverse effects on human health and the environment...*”

This target is politically endorsed at WSSD and within EU implementing legislation (e.g. Recital (4) of REACH).

Future outlook

No quantitative comprehensive modelling evidence exists for Mixtures, Nanomaterials and for Endocrine Disruptors.

EUROSTAT has updated a “baseline study” which calculates an index of the improvements in risk reduction due to REACH. Current evidence suggests that there is an improvement in the situation due to REACH. The potential health and environment benefits (hereinafter “benefits”) were assessed in the 2003 REACH impact assessment. Benefits of REACH arise from the application of appropriate risk reduction measures – by industry in the first instance and mandated by authorities in the second – enabled by a systematic collection and generation of information on hazards and uses of chemicals.

The impact assessment provided an illustration of the potential scale of the expected long term health benefits due to these risk reduction measures. The positive effects of REACH on public health were assumed to start to occur 10 years after the start of REACH implementation, i.e. 2016, and would be fully observed after another 20 years, with total health benefits due to REACH in the order of magnitude of EUR 50 billion over the 30 years period (after discounting). The long-term benefits of REACH on the environment were estimated by another study to be up to EUR 50 billion over the 25 years period (after discounting). Notwithstanding the methodological difficulties the overall conclusion was that the benefits of REACH were expected to far outweigh the costs.

The Commission is launching a study to assess the progress in meeting the WSSD 2020 Target. Preliminary indications suggest that there is a risk that the target will not be met and that further action will be necessary to address remaining challenges.

Key challenges

Knowledge base

While there are still knowledge gaps which prevent an overall quantitative assessment of the impact of chemicals on health and the environment, much is being done to increase the knowledge about the safety of chemicals and particularly the chemicals addressed in this fiche. A number of individual studies have been launched or are in the pipeline.

Research projects under FP5 and FP6 are starting to deliver (e.g. in the field of Endocrine Disruptors). However, research needs to continue under HORIZON 2020, for example in the development of new diagnostic tools to improve the assessment of potential risk posed by environmental/chemical contaminants. Moreover, the Chemical Data Centre and the Knowledge Data Base (see separate fiche) will help to furnish the necessary additional scientific data.

Implementation

- 1) REACH implementation/enforcement is slow and uneven across the Member States. Greater coordination within the REACH mechanisms will be essential if the WSSD 2020 goal is to be reached.

Challenges relating to Mixtures, Nanomaterials and Endocrine Disruptors:

- 2) *Mixtures*: Securing Member State support for the implementation of the actions set out in the Commission's Communication on Mixtures and determining further actions based on the experience gained;
- 3) *Nanomaterials*: The REACH approach to hazard assessment and risk characterisation, with its built-in flexibility, makes it overall suitable for nanomaterials. The key remaining question is to what extent data for one form of a substance can be used to demonstrate the safety of another form, due to still developing understanding of e.g. drivers of toxicity.
- 4) *Endocrine Disruptors*: The 1999 Community Strategy has expired. The main challenge will be to secure support for a new strategy on endocrine disruptors. Reaching agreement on criteria will also be a challenge. In this context the Commission will have to develop and implement a systematic approach for the identification and assessment of Endocrine Disruptors to be applied across different legislation.

Challenges relating to the development of a Chemicals Strategy, including Chemicals in Products

- 5) Securing sectoral support for a comprehensive chemicals approach that (also) addresses chemicals in products, which is fact-based and also targets the specific areas of concern listed above.

The following actions are being taken to address them:

- 1) *Implementation*: Make more systematic use of information from all relevant ECHA activities to better enable targeted enforcement activities by the Member States. Develop enforcement indicators to have better knowledge of the implementation of REACH and achieve a more harmonised and systematic approach.
- 2) *Mixtures*: A Commission Communication on Mixtures was adopted in May 2012¹¹¹.
- 3) *Nanomaterials*: A Commission Communication on Regulatory Aspects of Nanomaterials was adopted in October 2012.
- 4) *Endocrine Disruptors*: The Commission is reviewing the Union strategy on endocrine Disruptors with a view to propose a new EU strategy. The Commission is also developing general criteria for the identification of endocrine disruptors, which will be applied in the areas of Biocides and Plant Protection Products and which will contribute to the targeted

review of how to deal with endocrine disruptors under Authorisation in REACH.

- 5) *Chemicals in Products*: A project to identify possible actions to trace chemicals in products in underway within UNEPs Strategic Approach to International Chemicals Management (SAICM).

Financing

There are substantial resource challenges in many Member States, due to constrained administrative budgets. Some sectors (particularly industry) argue that action may be too costly in the context of current crisis-related problems faced by the sector.

Securing funding through HORIZON 2020 may also present a challenge in view of competing demands. There are no funding mechanisms in place to assist Member States with REACH implementation. Nonetheless ECHA provides advice and Member States are advised and updated on developments including guidelines etc. through the different forums/meetings (e.g. regular CARACAL meetings). For the new policy initiatives - effective evaluations and cost effective solutions will be applied where possible.

Justification for the priority objective

The current chemicals *acquis* has evolved over many years to provide a comprehensive framework resulting in a high level of protection for EU citizens and the environment. However, in recent years certain specific concerns have been identified which demand a more comprehensive approach. These concerns need to be addressed, if the EU is to achieve the WSSD 2020 goal and a non-toxic environment by 2050

This solution seems to be the most efficient approach to address identified shortcomings and to develop the chemicals *acquis* where necessary to address new and evolving issues. It focuses on the implementation of REACH and proposes to elaborate a strategic approach covering the new /evolving areas requiring attention.

Chemical policy has strong links with other policy areas (water, marine, waste, health, industry, employment and research). Work on the strategy will require good co-operation with these sectors. As stated in the Roadmap to a Resource Efficient Europe, avoiding the use of dangerous chemicals and promoting green chemistry can help protect key resources like soil and water, and make others, like materials, safer, easier and less costly to recycle and reuse. The approach to chemicals management promoted by fully implementing REACH will help identify opportunities for substituting dangerous chemicals with safer and technologically and economically viable alternatives.

Implementation and enforcement of REACH will need to be monitored carefully by Member States and the Commission and is likely to require additional effort. REACH Annexes regarding registration obligations will be revised for nanomaterials (proposal in 2013). Initiatives will be taken to revise the data requirements for substances in 1 – 10 tonnes and registration obligations for polymers (2015).

There is no overall comprehensive policy framework/strategy in place for the chemicals *acquis* that enables the efficient management of chemicals across legislation, supports the objectives of a resource efficient Europe, promotes innovation and which provides a broad framework for addressing new/evolving issues. To overcome this, the Commission proposes to elaborate a strategy that will bring together all relevant policy areas and product sectors where chemicals are used to formulate a single, coherent approach to supplement the existing legislation where needed. This strategy should be in place by 2018 and should also address gaps in the implementation of the Chemicals *acquis*.

The following policy proposals are expected in this context in the short/medium term:

- Commission Report on the General Review of REACH
- Commission Communication on the Second Regulatory Review of Nanomaterials
- Commission Staff Working Paper reviewing the Community 1999 Strategy on Endocrine Disruptors.
- Commission Staff Working Paper setting out the objectives and main elements of a Chemicals Strategy, including Chemicals in Products

Climate change adaptation

Current situation

There are still a number of knowledge gaps on addressing the adverse effects of climate change in Europe. This concerns, in particular, the generation and sharing of sound data and modelling results essential for assessing climate related risks, potential damages and cost-efficient adaptation options. Moreover, a number of EU policies are or will gradually be affected by the adverse effects of climate change but often do not sufficiently take into consideration the need to adapt to those negative effects. In addition, not all Member States, regions, cities are at the same level of knowledge, development or capacity to respond to the adverse effects of climate change. Some are not considering how to respond/deal with the adverse effects of climate change, vulnerabilities and adaptation needs. Finally, the private sector, including insurance and finance markets, is not yet fully delivering the right products and services to help private agents in increasing their resilience to climate risks.

The main existing EU policies on adaptation to climate change followed the adoption, on 1st April 2009, of the White Paper "Adapting to climate change: Towards a European framework for action" (COM(2009) 147 final).

Future outlook

In the EU context, the main physical and climatologic conditions whose transformations and variations are associated to what is perceived as climate change are temperature rise, precipitation changes, extreme weather events, sea level rise and temperature variability. Such drivers will result in climate change related hazards such as flooding, droughts, heat waves or glacial retreat. Moreover, notwithstanding the significant uncertainties around estimates of impacts due to climate related hazards, all models show that adaptation action can significantly reduce the damage costs. The development of adaptation plans or strategies usually correlate well with the undertaking of effective adaptation measures. Twelve Member States have now adopted national adaptation measures. Other Member States are in the process of doing so.

Information on climate change impacts, costs and adaptation options are available from research projects such as ClimateCost, CLIMSAVE, PESETA, PESETA II, and RESPONSES. Furthermore, the European Environment Agency will publish reports on the climate change, impacts, vulnerability and adaptation in Europe by the end of 2012.

Key challenges

Knowledge base

Thanks to global, EU and national research projects our understanding of many aspects of climate change impacts, vulnerabilities and adaptation has significantly improved over the past few years. Nevertheless, significant knowledge gaps remain for many sectors and policy areas. In order to develop more effective, evidence-based policy actions, there is a need to strengthen the knowledge base on climate change impacts, vulnerability, and adaptation (e.g. costs and benefits, areas for adaptive intervention). Given the complexity of climate/socioeconomic systems, uncertainties inevitably related to climate change will remain a key challenge for adaptation decision making. Thus, adaptation actions need to be evidence-based but also kept flexible to account for climate variability and extremes.

Some key issues related to the development and strengthening of the knowledge base on climate

change adaptation include:

- Closing knowledge gaps relevant for making the EU more climate-resilient. This could mean combining a sectoral approach with a cross-cutting/horizontal approach
- Fostering the dissemination and integration of knowledge, in particular via the European Climate Adaptation Platform and training and dissemination activities to foster its use.
- Further supporting the mainstreaming of adaptation into the EU Research and Innovation policy.
- Supporting the development of pan-European climate services to provide better observation, interpretation and prediction of the climate system, in particular within the framework of GMES (Global Monitoring for the Environment and Security).

In the domain of knowledge strengthening and dissemination, a major focus has been the development of the EU Climate Adaptation Platform, which was launched in March 2012.¹¹² It is an electronic portal, providing information, analytical tools and guidance documents on climate change impacts, vulnerability and adaptation to policy makers at all levels (EU, national, regional and local). It is also accessible to the scientific community and the public at large and can, inter alia: disseminate the best scientific information on current and projected climate change impacts and vulnerabilities; provide guidelines and tools to develop adaptation strategies; provide intelligent search functions for adaptation related information, including publications, research projects, adaptation measures, case studies, datasets and guidance documents; and, facilitate the establishment of networks among stakeholders facing similar adaptation challenges and facilitate exchange of information across the EU.

Implementation

The White paper on adaptation contains over 33 actions, which have already been implemented or are being currently implemented. A corresponding "Joint Action Plan" has been drawn up and is frequently updated and discussed within the European Commission relevant services.

Financing

The Commission proposal for the next Multiannual Financial Framework (MFF) 2014-2020 recognises the need to increase funding available for mitigation and adaptation actions in response to risks from climate change. It includes a minimum contribution of 20% for climate related expenditure and all EU funds will need to take climate change into account in their funding allocation decisions. Yet, in a context of tight fiscal consolidation objectives, the financial corridor to act is getting thinner for the EU as well as for Member States. Other actors, institutions and instruments should step up if the EU is to cope with adaptation and residual damage costs associated with climate change.

In 2011, the European Investment Bank (EIB) invested almost EUR 18bn in climate action. In particular, the EIB supports lending that fosters resilience in sectors which are particularly vulnerable to climate change and subject to governments and local authorities that need to adapt to climate change (i.e. flood control and drought management measures in the water sector). Financial institutions in general could address barriers to effectiveness of lending and of other financial instruments for adaptation measures. This would help implementation of viable projects that foster economic, social and environmental resilience to climate change.

Private capital investments and technical expertise will be needed to complement public efforts. Public Private Partnerships (PPP) can be a useful tool to combine financial and knowledge resources from both the public and private sectors to support adaptation. PPPs can increase capacity in developing new financing programmes, enhancing research and development activities and building technical capacity.

Increasing risks due to climate change imply that a more comprehensive approach is needed for risk management, giving insurance a bigger role to play. Insurers and public funds could pool resources

to cover very high risks. Insurers could also work with the authorities on spatial planning and standardisation to reduce risks and incentivise more resilience in investment location decisions. Insurers could also provide clients with available information and references to climate change risks and risk prevention measures. This would increase awareness on climate change risks and ease access to finance for adaptation actions.

Justification for the priority objective

While mitigation is absolutely necessary to limit the impacts of climate change to a manageable degree, even the most ambitious emission reductions pathways, in line with the 2°C target, would not lead to any reduction in temperature increases before the 2040s to 2050s below the business-as-usual scenarios. Adaptation is hence a must to help the achievement of all our policy objectives, including sustainable green jobs and growth.

Most recent estimates suggest that the yearly mean damage costs of climate change in the EU would be around EUR 20bn in the 2020s, between EUR 90bn and EUR 150bn in the 2050s, and between EUR 600bn and EUR 2500bn in the 2080s, depending on the climate scenario.¹¹³ Moreover, notwithstanding the uncertainties around such estimates, all models show that adaptation action can significantly reduce the damage costs, showing significant net benefits for adaptation already now.

The EU adaptation strategy will focus on the areas of actions with an EU value added. In particular, an EU Adaptation Strategy would help sharing information, good practices, address knowledge gaps and take measures consistent with the vulnerabilities and risks faced by different regions/cities that might face the same impacts even if they belong to different countries. When it comes to making EU policies climate resilient, this can only be done at EU level. This equally holds for devising effective approaches for dealing with the frequent impacts of climate change, which have a transboundary dimension (cross-border effects on flooding, sea-level rise, etc.). In relation to the mobilization of the private sector's role in enhancing the EU's resilience to climate change, prevailing market failures and lacks of incentives need to be addressed mostly at EU level, due to the regulatory responsibility for the relevant legislation and for the sake of avoiding the distortions of the single market.

The EU Adaptation Strategy will relate to the implementation of the Europe 2020 Strategy and in particular to the resource efficiency flagship as well as to the implementation of the post 2013 Multiannual Financial Framework. Mainstreaming climate action into all relevant EU funding streams is the approach chosen by the Commission to support the EU's transition towards a low-carbon economy and to help build resilience to changes brought about by climate change. The proposed MFF includes a 20% minimum target spending for climate related action. Furthermore, all EU relevant funds will need to take climate change into account in their funding allocation decisions. The identification of and reporting on climate-related expenditure ("tracking procedure") is also foreseen.

Adaptation to climate change is a crosscutting issue and will affect key EU policies including: Cohesion policy, Common agricultural policy, policies related to disaster risk management, maritime policy and environmental policies.

Building on the achievements of the Adaptation White Paper, the EU Adaptation Strategy (planned for 2013) will provide a more comprehensive approach to climate change adaptation in Europe. The main policy objective is to have a more resilient Europe at national, regional and local level, in particular by facilitating the exchange of good practices and co-ordination. The objective is also to strengthen the knowledge base on climate change impacts, vulnerability and adaptation and to mainstream adaptation into policies, strategies and programmes at EU level (and develop dedicated adaptation action where needed).

4) Maximising the benefits of existing EU environment legislation

Compliance information

Current situation

The latest state of the environment report of the European Environment Agency (EEA) indicates downward trends that call for better implementation of the EU environmental *acquis*.

EU environment legislation

- treats environmental information as being necessary for the management of certain tasks, for example many instruments provide for systematic monitoring of aspects of the state of the environment such as air quality, water quality and the status of habitats and species;
- contains requirements for the general publication of certain types of environmental information either in a specific context (for example, air quality alerts to the general public) or as part of a general provision for active dissemination found in the Access to Information Directive, 2003/4/EC;
- provides for the periodic flow of information from Member States to the Commission in the form of implementation reports. These implementation reports generally involve use of a pre-agreed template and form the basis of Commission reports for the whole EU;
- reflects developments in information and communication technology (ICT). ICT has greatly increased the possibilities – but also the challenges – for disseminating environmental information. For example, ICT allows information to be presented in digital maps so that information can be localised. The EU environment *acquis* has sought to address this challenge through the INSPIRE Directive, 2007/2/EC, which aims at streamlining the management of spatial information.

In addition to legislation, the 2008 SEIS (Shared Environmental Information System) initiative (COM(2008)46 final) seeks to optimise the way that ICT is used in the field of the environment.

Article 5 of the Aarhus Convention requires active dissemination to cover certain categories of information.

Article 7 of the Access to Information Directive requires certain generic categories of information (such as authorisations and data or summaries of monitoring data) to be actively disseminated.

INSPIRE directive 2007/2/EC has legally binding targets on network services (discovery, view, download) for the public authorities with monitoring provisions in place and linked to an EU geo-portal.

There is political consensus on the principles laid down in the 2008 Communication on SEIS and 2010 Environment Council request to present a SEIS Implementation Plan in which context further targets will be formulated.

Future outlook

There is no specific modelling. However, general societal trends include an ever greater ICT capacity and an ever greater reliance on this. In particular, there is an expectation that information will be obtainable online with the minimum of difficulty.

Key challenges

Knowledge base

Significant progress has been made by the Member States, the Commission and the European Environment Agency on streamlining environmental reporting and the systems for monitoring, reporting and information gathering throughout the 6th Environmental Action Programme. Despite such progress, the 2011 final assessment of the 6th Environment Action Programme highlighted several shortcomings in the provision of regular information for policy implementation, assessment and public participation.

Two main challenges stand out:

1) Quality of information:

Problems regarding quality aspects such as accuracy, validity, reliability, timeliness, relevance, completeness, comparability and coherence over time of both information and data have been reported in various thematic areas and affect all actors, from the EU level to the citizen. However, the situation is also highly variable from one thematic domain to another and/or between geographical regions. Addressing these quality issues will therefore require a differentiated approach.

2) Improving data flows and information systems:

While there is a policy framework and specific provisions that support active dissemination of environmental information, there is a weakness at the level of individual pieces of environmental legislation. In particular, there has been insufficient focus on translating general concepts of active dissemination into information systems centred on the specificities of individual instruments. As a result, the information disseminated for individual instruments is less structured and useful than it might be.

In as much as environmental impact assessment duties are a key part of the environment *acquis*, the quality of environmental impact assessments is affected by wider problems to do with availability and access to data.

There is a particular need for more 'location-based' information services for the environment. Beyond raising the awareness and acceptance of measures for protecting the environment, location-based services offer the public the opportunity to oversee the implementation of the environmental *acquis* in their neighbourhood and to deliver feedback.

With regard to the quality of information, the Commission is working on a wide front, notably in the context of SEIS, for example seeking to promote the SEIS principle that information should only be collected once and to be used for many purposes.

With regard to improving data flows and information systems, the Commission is also working across a wide front, for example the data sharing obligations of the INSPIRE directive should remove obstacles to sharing between public authorities.

This is the general background against which the specific initiative described at 5 below is being developed.

Implementation

To ensure overall consistency in active dissemination, it would be useful to translate general requirements into more operational terms for individual instruments. Apart from giving more operational meaning to general requirements, a focus on individual instruments would allow several benefits of active dissemination to be realised. These include the following:

- Allowing the effective implementation of individual pieces of EU environment legislation to

be easily tracked.

- Facilitating the flow of information to environmental professionals in both the public and private sectors, so increasing their productivity;
- Opening the prospect that current reporting requirements could be more easily fulfilled through Commission access to national information systems;
- Reducing the administrative burden that can result from information having to be provided on request;
- Reinforcing the trend towards e-government.

The recent Commission Communication on Improving the Delivery of Benefits from EU Environment Measures: Building Confidence through Better Knowledge and Responsiveness, COM(2012)95 states that the Commission will assess

- the feasibility for Member States, with support from the Commission, to develop structured implementation and information frameworks (SIIFs) for all key EU environment laws. These would be designed to clarify the main provisions of a directive as well as identify the types of information needed to demonstrate how EU law is being implemented on the ground. SIIFs would be aimed at existing legislation and, together with initiatives under the Shared Environmental Information System (SEIS), would guide the development by Member States of information systems that track implementation on the ground on a consistent basis.
- how EU funding could be used for the development, upgrading and deployment within Member States of relevant interoperable information systems and related training.

Further to the Communication, it is proposed to assess the SIIF concept by developing a pilot SIIF for a single instrument, viz. the Urban Waste Water Treatment Directive, 91/271/EEC and, depending on the experience gained, extend the concept to the wider environment *acquis*. The UWWT Directive requires Member States to ensure that cities and towns have collecting and treatment systems for waste-water. It requires data to be gathered on the performance of treatment systems and there is also provision for periodic reporting to the Commission. The directive is one of the main drivers for infrastructure investment in many Member States. For example, in the Cohesion fund period 2007 to 2013, planned investments will amount to about 14 billion EUR.

Five principles will guide the SIIF pilot: information gathering and management, transparency, regular updating, forward looking perspective and reduction of administrative burden. The pilot will also seek to promote active dissemination of information about national measures that could help in resolving compliance problems, for example planned investments to address an identified UWWT infrastructure deficit.

The national information systems it is aimed at putting in place should have benefits for citizens, business and administrations, including the Commission itself, given the scale of EU co-financed investments. The pilot will also take account of and complement existing work to improve information management at EU level through WISE (Water Information System for Europe), the ICT-based system that Member States use to report compliance with water directives.

Financing

Online information systems are now an established feature of administrations across the EU. Member States have also adapted to electronic reporting in WISE. However, a Member State using a SIIF may need to make additional ICT investments in order to ensure the full functionality intended.

In the context of a pilot SIIF, DG Environment will explore how EU funding might assist Member States who wish to upgrade their information systems.

Justification for the priority objective

In a period of increasing scarcity of resources in public administrations, efficient information management is crucial. The SIIF concept complements established efforts to better manage information and fully exploit ICT, for example SEIS and the Digital Agenda.

Business-as-usual is not considered satisfactory. In particular, experience with current information on implementation shows that

- information can often only be obtained on request;
- information is often out-of-date when provided through reports;
- information is often presented in ways that make it difficult to assimilate and connect with other relevant information.

Better information systems for UWWT should assist the work of regional policy in particular. If the SIIF pilot is successful, similar benefits could be envisaged with regard to other instruments involving co-financing.

To the extent that active dissemination of information features in relation to co-financing, it can contribute to the overall goal of making implementation of specific environmental instruments easier to track on the ground. For example, a SIIF might show that, for a town with an UWWT infrastructure deficit, EU co-finance is helping to achieve compliance.

The SIIF policy initiative does not imply any change to the current legislative framework. However, it does differ from business as usual in offering the prospect that, for the UWWT Directive initially – and possibly for other instruments at a later stage, Member States who apply a SIIF will organise implementation around well-structured and regularly updated national information systems.

Depending on experience with the pilot SIIF, the Commission will extend the concept to other parts of the environment *acquis*.

No legislative proposals are envisaged at this stage but it is not excluded that, in light of further studies on active dissemination and the 2014 review of INSPIRE, further provisions on active dissemination might be considered appropriate.

Partnership implementation agreements

Current situation

The latest state of the environment report of the European Environment Agency (EEA) called for better implementation of the EU environmental *acquis* as an important element of the future policy approach to achieve significant environmental improvements on the ground.

Own-initiative and complaint-led examination of Member State implementation show that there are many implementation problems across the environment *acquis*.

Member States have responsibility for implementing EU environment legislation. The Commission's role as guardian of the Treaties is to ensure that Member States respect their obligations. The Commission has enforcement powers under Article 258 and 260 to enable it to fulfil this role. In addition, the Commission assists Member States to achieve compliance through a range of actions, including for example production of guidance documents and administration of EU funding instruments that can co-finance implementing measures such as infrastructure investments.

Until now, partnership agreements are not amongst the tools that are used to resolve implementation problems in the field of the environment.

There are no specific formal provisions for partnership agreements in the field of the environment.

Future outlook

Not relevant in this context. What is at issue is how best to comply with existing EU environment requirements.

Key challenges

Knowledge base

In the context of a possible role for specific partnership agreements, the knowledge challenges would relate to

- Ensuring that the Commission has all relevant information to allow it to enter a partnership agreement. Relevant information would cover aspects such (1) the extent of the problem identified, (2) the means of identifying, quantifying and monitoring it, (2) the likelihood of success of the measures envisaged to resolve the problem.
- Ensuring a high level of transparency both as regards the partnership agreements themselves and their execution.

These knowledge-related issues would need to be addressed in the context of any specific partnership agreements that are proposed.

Implementation

The main challenges in relation to implementation have been referred to in Commission Communications COM(2008)773 and COM(2012)95.

The recent Commission Communication on Improving the Delivery of Benefits from EU Environment Measures: Building Confidence through Better Knowledge and Responsiveness, COM(2012)95 states that improved environmental outcomes could be achieved *inter alia* through two types of partnership implementation agreement. One type would aim at improving how the

environment is safeguarded or at preventing environmental problems from arising in the future. Examples would be agreements under which the Commission helps a Member State to establish or improve an information system designed to manage protected areas or a complaint-handling mechanism for better responding to citizen concerns. The other type would aim at remedying problems that have already arisen. An example would be a remedial plan to resolve specific problems through a targeted and adequately resourced work programme featuring milestones, information to the public and other safeguards.

Since the Communication, one Member State has published online a remedial plan to address a systemic failure in relation to waste management that was the subject of a judgment of the Court of Justice. Some of the issues addressed in the judgment have featured in petitions to the European Parliament. It is hoped that, in terms of transparency, this approach may serve as a model in other cases, making it easier for citizens and the European Parliament to understand how serious implementation problems are being addressed by Member States.

Further to the Communication, it is proposed to explore the idea of partnership agreements in the context of a pilot structured implementation and information framework (SIIF) for a single instrument, viz. the Urban Waste Water Treatment Directive, 91/271/EEC and, depending on the experience gained, extend the concept to the wider environment *acquis* (see separate fiche on information). The UWWT Directive requires Member States to ensure that cities and towns have collecting and treatment systems for waste-water. The directive is one of the main drivers for infrastructure investment in many Member States. For example, in the Cohesion fund period 2007 to 2013, planned investments will amount to about 14 billion EUR.

The pilot SIIF will seek to develop improved information systems at national level to enable implementation to be more easily tracked. The information systems would inter alia cover infrastructure deficits and the measures and investments envisaged to address these deficits. This will create a bridge to the concept of partnership agreements because information on measures and investments to close implementation gaps would represent core content of any such agreements. For this reason, one of the aims of the pilot SIIF is to explore the possibility of a partnership agreement with one or more Member States with a significant infrastructure deficit. Under such an agreement, the Member State(s) concerned would specify in detail how it would close the deficit and this might then be integrated into an operational programme for EU co-financing. Any partnership agreement would be guided by the five principles underpinning the pilot, i.e. information gathering and management, transparency, regular updating, a forward-looking perspective and reduction of administrative burden.

Financing

Financing challenges are related to the implementation of the agreement by a Member State (not to the act of setting them up) and include the need to fund major infrastructure deficits such as those concerning the Urban Waste Water Treatment Directive, 91/271/EEC and EU waste legislation and to support conservation-friendly farming in relation to EU nature legislation.

The LIFE instrument provides an important mechanism for catalysing improved implementation of the EU environmental *acquis*. Since 1992, use of the LIFE instrument has been targeted increasingly at supporting implementation of the *acquis*, and LIFE projects have developed methods and tools for facilitating *acquis* compliance. Best practice and solutions developed in the context of LIFE projects have been diffused for replication in other countries facing similar implementation challenge. This policy support function will be reinforced under the next LIFE Regulation through the introduction of integrated projects which are specifically aimed at providing finance for the implementation of strategies and action plans required under specific environment (and climate) legislation.

Justification for the priority objective

Experience with complex infringements in the field of the environment (for example, systemic problems in the areas of waste and waste-water treatment) indicates that solutions require detailed planning and co-ordinated and effective deployment of resources (sometimes involving EU co-financing). It makes sense to reflect this experience in the Commission's tool-box for fulfilling its role as guardian.

Partnership implementation agreements would not replace the other established tools that the Commission uses in its role as guardian of the Treaties. Their intended role is complementary and their possible value would need to be judged on a case-by-case basis.

The SIIF pilot for UWWT – including any partnership agreements that emerge - should assist the work on regional policy in particular. If the SIIF pilot is successful, similar benefits could be envisaged with regard to other environment instruments involving co-financing.

Partnership agreements could be a means of reinforcing the contribution that integration can make to environment policy. Linked to better information systems and improved transparency, such agreements could result in a more targeted approach to resolving specific environmental problems.

The SIIF policy initiative described earlier does not imply any change to the current legislative framework. However, any proposed partnership agreements that emerge from the SIIF pilot should differ from business as usual by creating a more concerted, targeted and transparent approach to resolving specific problems.

Depending on experience with the pilot SIIF, the Commission will extend the concept of partnership agreements to other parts of the environment *acquis*. Their use is likely to be prioritised to cover a handful of the most serious and pressing environmental problems in individual Member States. No legislative proposals are envisaged at this stage.

Inspections and surveillance

Current situation

The latest state of the environment report of the European Environment Agency (EEA) called for better implementation of the EU environmental *acquis* as an important element of the future policy approach to achieve significant environmental improvements on the ground. The high number of infringements, complaints and petitions related to EU environment legislation points to a need to generally reinforce implementation monitoring and enforcement within Member States and at EU level, including through environmental inspections and surveillance.

Environmental inspections are an important control mechanism for avoiding environmental dumping and “safe havens” within the European Union and to ensure appropriate conditions for protection of the environment and a level playing field for the operation of the single market.

The current EU legal framework on environmental inspections at national level is set out in the horizontal Recommendation providing for minimum criteria for environmental inspections in Member States 2001/331/EC (RMCEI) and in various pieces of binding sectoral legislation, notably the Industrial Emissions Directive¹¹⁴, the Seveso III Directive¹¹⁵, the Landfill Directive¹¹⁶ and the Laboratory Animals Directive¹¹⁷. It is therefore a combination of fragmentary sectoral binding and horizontal non-binding provisions. Some of the binding provisions, i.e. those contained in the IED, while adopted have still to come into force.

The main objective of the RMCEI is to contribute to increasing effectiveness of environmental inspections, to the reduction of disparities between Member States, and, thus, to a more consistent implementation and enforcement of EU environment law with resulting benefits that include a clean environment that safeguards public health.

Accordingly, the RMCEI contains minimum criteria for planning, conducting, following up and reporting on environmental inspections. The aim is to guide Member State inspectors to carry out their work in a structured and consistent way.

Currently, the scope of the RMCEI is limited to industrial installations and other enterprises and facilities whose air emissions or water discharges or waste disposal or recovery activities are subject to authorisation or permission under EU law.

Although legally non-binding, RMCEI has been influential. Its principal focus is in the area of industrial inspections and it has helped to build confidence in EU initiatives in this area. Against this background, a number of binding inspection provisions have been adopted since 2001 based on RMCEI principles (for example the IED).

The review of RMCEI implementation showed that it has been an important first step toward the proper implementation and effective enforcement of EU environment legislation. It has stimulated some Member States to improve their inspection systems and to better organize their limited resources in order to focus on the installations that pose the highest risk.

However, information on RMCEI in practice shows weaknesses and problems regarding its implementation, and thus the need for its revision¹¹⁸. The implementation problems primarily relate to:

- the non-binding nature of the instrument;
- the lack of awareness in certain Member States;
- the limited administrative capacity and resources of certain Member States and/or a failure

to deploy resources in the most effective and targeted way;

- limitations in the content of the instrument such as vague definitions of a number of terms and insufficient provisions on key activities such as preparation of plans.

Moreover, information about inspection practice on the ground shows that there are still disparities in the way inspections are organised and carried out in the individual EU Member States.

Over and above these problems is the fact that RMCEI does not address the wider environment *acquis*, notably on issues such as nature, waste shipments and activities relevant to protection of water resources. The specific legally binding requirements for national environmental inspections in sectoral pieces of EU legislation do not make up for these shortcomings in RMCEI since they do not cover all subject-areas.

An additional problem concerns the lack of an appropriate provision for co-ordination of inspection and surveillance activities across different environmental sectors within individual Member States. Some implementation problems cut across different pieces of environment legislation – for example, illegal landfilling within protected nature sites involves both waste and nature conservation legislation. Without provisions on co-ordination, inspections and surveillance may not be guaranteed to cover all relevant problems in the most effective way.

Furthermore, there is a lack of an appropriate provision for trans-boundary co-operation between Member States on inspections and surveillance, something important in relation to problems such as illegal trade in waste. The existing framework also lacks provisions on a capacity at EU level to ensure that national inspection and surveillance systems are broadly consistent, coherent and effective in order to guarantee a uniform application of EU environment law.

It must therefore be stressed that, as it stands, EU environment law is not subject of a coherent and consistent set of criteria on inspections and surveillance across all sectors.

The overall result is a problem of inconsistency in the use of inspections and surveillance to detect and prevent breaches of environment law on the ground and therefore of an un-level playing field. This is a contributory factor in the costs of non-implementation mentioned in COM(2012)95.

The European Union Network for the Implementation and Enforcement of Environment Law (**IMPEL**) has been established in the 1990s and plays a valuable role as regards sharing of best practices and exchange of information between the national environmental enforcement authorities themselves and between them and the Commission. Other key networks exist for judges, prosecutors, police dealing with environmental crime and government lawyers. The Commission co-operates with these but sees scope for developing this co-operation further, for example in relation to synergistic links across different networks (to identify common problems, avoid duplication of roles and assist each other).

Due to the nature of environmental inspections as a monitoring and control instrument, quantitative targets are set up in the current relevant legislation mostly in a general way requiring the Member States to ensure that regular inspections are carried out. Some pieces of EU environment legislation foresee the factors to be taken into account by the national inspection authorities when planning the number and the frequency of inspections, e.g. Article 23 of the Industrial Emissions Directive prescribes using a systematic appraisal of the environmental risks of the concerned installations based on specific criteria. Some sectoral provisions include more concrete requirements regarding the inspections frequency, e.g. Article 34 of Directive 2010/63/EU on the protection of animals used for scientific purposes requires that breeders, suppliers and users of non-human primates shall be inspected at least once a year.

Future outlook

Environmental inspections are an indispensable instrument for ensuring compliance with environmental legislation but they should not be seen in isolation from other supervision and

enforcement tools. Although it is difficult to establish direct links between well-functioning inspections systems on the one side and better implementation and better state of the environment on the other side, it could be assumed that effective and regular inspections contribute significantly to environmental compliance assurance.

Assuming that no further EU action is taken, the trend toward uneven and partial implementation of the RMCEI is likely to continue. There could be some improvements as a result of new technologies and recognised benefits from targeted/risk-based approaches. However, these benefits are unlikely to arise quickly. Resource and skills shortages in some Member States would remain if inspections are not prioritised politically.

Experience sharing and knowledge building is likely to continue, but mainly in the context of IMPEL and on a voluntary basis. This implies that participation, contribution and benefits will take place at a slower pace and will not be distributed evenly across the EU. Member States with smaller resource- and skills-base are less likely to contribute to and benefit from this co-operation.

Key challenges

Knowledge base

With regard to environmental inspections and surveillance, knowledge gaps are relevant in the following ways:

- From the perspective of the competent authorities, there are likely to be knowledge gaps in terms of best practice in planning, organising, carrying-out and follow-up of inspections and knowledge gaps in terms of application of EU legislation.
- From the perspective of citizens, there are knowledge gaps in terms of how to access information on the functioning of the national inspections systems and on the compliance record of individual installations.

The Member States' reports on implementation of RMCEI and several related studies are available.

There is information and data available relating to experience gained from DG ENV's own work on implementing EU environment law and its cooperation with the national stakeholders. A large number of completed and on-going IMPEL project reports are relevant too.

A study into possible options for strengthening the EU level role with regard to environmental inspections and strengthening the Commission's capacity to undertake effective investigations of alleged breaches of EU environment law is currently being carried out.

Implementation

The current situation above already sets out the shortcomings of the existing framework, including with regard to implementation of the RMCEI.

The Commission has been carefully considering measures for strengthening the EU framework on environmental inspections at national level and for enhancing the EU capacity regarding inspections.

Recent legislative provisions, notably binding inspection provisions in the IED, should, from the expiry of the transposition deadline on, strengthen the basis for industrial inspections.

The recent Commission Communication on Improving the Delivery of Benefits from EU Environment Measures: Building Confidence through Better Knowledge and Responsiveness, COM(2012)95:

- Enlarges the concept of inspection to also cover surveillance. This allows for checks in areas beyond the classic one of industrial inspections

- Leaves open whether a general horizontal instrument should be binding or not
- Keeps open the possibility of continued new sectoral binding provisions
- Recognises the need for an EU dimension as regards inspection and surveillance and focuses on four options:
 - An EU-level inspection and surveillance capacity
 - Limited inspection role for the Commission that respects Member States' administrative autonomy
 - More systematic use of peer-review inspections, drawing on existing initiatives of IMPEL
 - Arrangements for independent expert input on an ad hoc basis to address situations that present very particular implementation challenges.
- Places inspections and surveillance in a wider context in which complementary mechanisms such as national complaint-handling criteria are also envisaged.

Furthermore, the Commission has been supporting IMPEL and other networks, for example organising regularly conferences and workshops on implementation and enforcement of EU environmental legislation, covering also inspection-related issues.

Financing

Administrative burden and costs for inspectorates count among key reasons for the current uneven and partial implementation of the RMCEI. Budgets for inspectorates have also stagnated over the last decade. The trend is towards a reduction of national budgets due to government cutbacks in face of the financial crisis. Against this background, it is important to ensure that Member States see environmental policy as a priority, devote enough resources for monitoring and enforcement actions, and make better use of best practices in inspections efficiency, e.g. using web-based tools, risk-based approaches to inspection planning, self-auditing by operators and enhanced dialogue between inspectorates and operators in order to ensure better knowledge of environment law.

The Commission launched a number of studies to assess the socio-economic, environmental and financial implications of various possible measures for strengthening the framework on inspections. As mentioned above, the EU dimension of this aspect is being looked at in an on-going study.

Justification for the priority objective

Against the background of the above-mentioned 2012 Communication, it is intended to propose, subject to the conduct of a full impact assessment, a general binding instrument on inspections and surveillance.

The differences that such a proposal would make compared to business as usual would be as follows:

- A general binding instrument would mean that, instead of only limited areas of the environment *acquis* being subject to explicit binding provisions on inspection and surveillance, the wider environment *acquis* would become subject to such provisions..
- A general binding instrument would ensure that, in cases of serious shortcomings within Member States, the Commission would have a well-defined role in order to address these shortcomings.
- The new instrument would reflect advances in the practice of inspections that have arisen over the past decade, for example in relation to use of risk-based approaches to better target inspection activities and maximise the effectiveness of available resources.

- The new instrument would make improved arrangements for trans-boundary co-operation between Member States on environment inspections.

Two main options were identified for a general binding instrument on inspections and surveillance and it was assumed that both needed to include a horizontal instrument in order to reflect the full extent of the environment *acquis* and address the cross-cutting nature of inspections and surveillance as an aspect of implementation and enforcement:

Option 1: Dual approach of upgraded non-binding Recommendation and binding sectoral provisions

This option represents an evolution of the approach that has been followed over the last decade. The chief added value would consist in a significant improvement in the scope and content of the 2001 Recommendation as a first step, leaving open the possibility to develop further binding sectoral provisions based on the upgraded Recommendation as opportunities present themselves. This dual approach has delivered results over time (see for example the agreement on binding inspection provisions in the IED) but only the part of it included in sectoral binding legislation is directly enforceable.

Option 2: A general binding instrument on inspections

This option would entail proposing a general binding instrument on inspections and surveillance either in the form of a directive or a regulation. Such an instrument would be enforceable and could be complemented by a set of guidance for specific environmental areas.

Option 2 is the preferred choice for the following reasons:

- 1) The EU environment *acquis* is now both extensive and mature and its credibility to a large extent depends on effective implementation. It is therefore important to put in place a consistent and coherent set of binding provisions on inspections and surveillance rather than proceed further by using a piecemeal approach.
- 2) There is already an existing pattern of translating the non-binding criteria into binding criteria and it now appears preferable to complete this approach by way of a general binding instrument.
- 3) Only a legally binding framework can ensure that all Member States treat environmental inspections and surveillance as having a sufficient political priority.

These options will be examined in detail by way of an impact assessment procedure. This will also examine different options in relation to a possible EU dimension to the horizontal instrument and take into account the results of an on-going study on this.

The justification for pursuing – subject to the conduct of a full impact assessment - a horizontal instrument with a binding character focusing on improving inspections and surveillance undertaken by the Member States is as follows:

- Environment policy lags behind comparable EU policy areas in that it lacks a proper general framework for inspections and surveillance. Some binding provisions on inspections have been put in place but these are limited and piecemeal. This means that there is an insufficient guarantee that environmental problems on the ground – illegal abstraction of water being just one example – will be detected and addressed.
- Given that problems of compliance with environment legislation can often be cross-cutting in terms of different environmental media and different legal instruments – and can also manifest themselves across frontiers, a general binding instrument would, through appropriate requirements, help ensure proper co-ordination of inspection work within and between Member States, and so contribute to administrative streamlining and effectiveness.
- At the same time, a general instrument would seek to build on what has already been achieved in the area of environmental inspections and thus not represent a fundamentally

new concept. Thus, it could draw on concepts such as inspection plans already found in RMCEI.

- A general binding instrument would create a framework in which best practice guidelines could be developed in consultation with Member States and applied more consistently and effectively across the EU.
- A general binding instrument would contribute to good governance by reducing discrepancies in the way that environmental non-compliance is identified and tackled across the EU.
- A general binding instrument would give Member States, citizens and business confidence that there is a level playing field in terms of environmental controls.

Business-as-usual is not considered satisfactory:

- RMCEI was a cutting-edge and influential initiative when adopted in 2001 but after a decade it needs to be replaced by a binding instrument. As noted above, there are many shortcomings in the current framework which cannot be satisfactorily resolved through non-binding means.
- As sectoral legislation in domains such as nature and water has become mature, the credibility of implementation on the ground becomes more important. Without improved and binding criteria for inspections and surveillance, there is a risk of uneven and ineffective implementation.

The concept of inspections is already established in EU environment law. In reinforcing compliance with EU environment legislation, provisions on inspections and surveillance will contribute to the Commission goal of effective implementation of EU law in general.

Integration of environmental considerations into other policy areas could, in principle, contribute to an effective implementation of EU environment law by helping to create the conditions for compliance with EU environment requirements and reducing the risks that a system of inspections and surveillance needs to address. However, integration will not displace the need for such a system.

Complaints handling

Current situation

The latest state of the environment report of the European Environment Agency (EEA) called for better implementation of the EU environmental *acquis* as an important element of the future policy approach to achieve significant environmental improvements on the ground. The high number of infringements, complaints and petitions related to EU environment legislation points to a need generally to reinforce implementation monitoring and enforcement within Member States. The nature of environment related grievances require remedies not only at national but often at regional and local level. Therefore it is important that competent authorities are responsive to citizen grievances at all levels.

Environmental policy across the world emphasises the importance of citizen involvement. The Aarhus Convention (1998) seeks to bolster such involvement through provisions on access to information, public participation and access to justice. The aim is to have a well-informed public that actively contributes to environmental protection, including through court action where citizens or NGOs feel that rules have been broken.

More generally, EU policy supports the role of citizens as complainants at EU level (2002 Communication on relations with complainants; EU pilot system) and, in some policy areas, recognises the need for means to address citizen grievances at national level (for example, consumer legislation).

There is currently no general EU framework for complaint handling at national level in the field of the environment. At EU Directive 2003/4/EC provide limited provisions that require administrative review in relation to access to information requests. These are important provisions because in their absence the Commission could be receiving many complaints on access refusals. However, this example is exceptional.

At Member State level, there may be different types and procedures of complaint handling mechanisms covering a variety of environmental issues. For example, there may be mechanisms and procedures within the competent national authorities responsible for a particular subject-area (i.e. mechanisms and procedures setting out how the competent authority should respond to a citizen complaint) and the review mechanisms by national ombudsmen and petitions committees of the national parliaments (i.e. mechanisms and procedures setting out how a citizen can complain about an act or omission of a competent authority). However, provisions are patchy and the European Ombudsman has expressed the view that, in his experience, citizens often complain to the Commission because there is a lack of effective national remedies.

With regard to the wider policy context, it is noteworthy that the Commission Annual Report on Implementation (2010) refers to new provisions for grievance mechanisms at national level in the area of consumer legislation.

As indicated, there are no general criteria at EU level for handling environmental complaints at national level. Preliminary and still incomplete findings of a study on complaint-handling covering a representative sample of 10 Member States (Denmark, Poland, Ireland, Lithuania, Greece, Austria, Slovenia, Spain, Germany and France) to be published in the coming months suggest that complaint handling mechanisms and procedures differ greatly among the competent authorities and administrations within the Member States. All the Member States follow a decentralised environmental complaint handling model and, apart from general principles on good administration conduct, there are mostly ad hoc and fragmentary procedures governing relations with

complainants.
Future outlook
<p>It is not possible to model or assess how and to what extent complaint handling mechanisms will likely evolve in future in the absence of EU measures. Historic trends in good governance suggest a tendency over recent decades to establish mechanisms that describe how relations between citizens and the public authorities are to be concluded e.g. growth in Ombudsman office and functions. The trend towards e-government also implies use of improved communication technologies to assist interaction between citizens and public authorities. However, it is difficult to extrapolate what patterns may evolve in the future.</p>
Key challenges
<p>Knowledge base</p> <p>The Commission does not have a comprehensive overview of the scope and nature of the complaint handling mechanisms at national level.</p> <p>With regard to the complaint handling mechanisms knowledge gaps are relevant in the following ways:</p> <ul style="list-style-type: none"> • From the perspective of the competent authorities there are likely to be knowledge gaps in terms of best practice in addressing environmental complaints and knowledge gaps in terms of application of EU legislation. • From the perspective of citizens these are knowledge gaps in terms of how to submit a complaint, to whom to address it and what expectations complainant may reasonably have. Knowledge gaps on the applicable EU legislation are also relevant. <p>As regards the Commission's own knowledge base of extent of national complaint-handling mechanisms, the previously mentioned study on national complaint handling mechanisms should provide more information. The preliminary and still incomplete findings of the study suggest different levels of awareness of complaint handling and mediation mechanisms and procedures among the Member States. The findings do not at this stage reveal the extent of possible knowledge gaps within the competent authorities in terms of EU law and best practices.</p> <p>Implementation</p> <p>Environmental grievances can be divided into three general categories:</p> <ol style="list-style-type: none"> 1) <i>Complaints focusing on the need for competent authority intervention.</i> Such complaints can be seen as an alert to the authorities on the possible need to intervene – for example, to address illegal waste disposal. 2) <i>Complaints focusing on claims of administrative inaction or inadequacy.</i> Such complaints may highlight shortcomings at the level of direct administrative responsibility – for example, a failure of a municipality to treat its waste-water discharges. 3) <i>Complaints for which mediation or some other form of alternative dispute resolution mechanism may be appropriate.</i> This could involve making provision for mediation or other similar alternative dispute resolution mechanisms. These might address situations where the complainant and the subject of the complaint – for example an industrial facility – see mutual advantage in an amicable resolution. <p>An absence of effective criteria for handling different categories of complaint may contribute to weak implementation and an un-level playing field in a number of ways:</p> <ul style="list-style-type: none"> • It may result in a lack of responsiveness to instances of illegal activity such as illegal land-filling, frustrating the achievement of compliance with legislative requirements. It may also

foster a culture of impunity with law-breakers taking the view that their activities will not come under effective scrutiny. Indeed, some complaints to the Commission have a competitive dimension with compliant enterprises complaining of lack of official action against non-compliant competitors,

- It may perpetuate weak governance with poor administrative practices not being reviewed and reformed.
- It may result in poor environmental outcomes with pollution and environmental degradation going unaddressed.
- It may undermine trust and confidence in EU legislation if citizens perceive that implementation gaps are ignored.

The Commission's recent Communication on Improving the delivery of benefits from EU environment measures: building confidence through better knowledge and responsiveness (COM(2012)95) proposes exploring an initiative to improve the handling by Member States of complaints. It suggests that such an initiative might involve binding general criteria or non-binding general criteria complemented by sector-specific binding provisions that would cover the main complaint categories.

Financing

Complaint-handling requires resources. However, the following should be noted in relation to the resource implications of any application of possible future EU criteria

- Criteria would not necessarily imply the creation of new administrative structures but rather the adaptation of existing ones by way of improved governance practices;
- The application of criteria might help achieve administrative stream-lining (avoiding unnecessary administrative overlaps for example);
- The application of criteria might also reduce the need for resources to tackle the long-term consequences of environmental problems that are left to fester.

The costs of complaint-handling are one of the issues being looked at by the aforementioned study on national complaint handling mechanisms. The preliminary and still incomplete findings do not cover the administrative costs of existing complaint handling and mediation mechanisms. More information will be available at the end of 2012.

Justification for the priority objective

As outlined in the Commission Communication on Improving the Delivery of Benefits from EU Environment Measures COM(2012)95, effective and timely responsiveness to environmental problems is a necessary element to ensure citizen participation and contribution to environmental protection.

Lack of mechanisms for structured exchanges between citizens and their administrations undermines the confidence in EU environmental law in two ways. First, where they perceive that there is no predictable and reassuring structure in which their grievances can be addressed, citizens can become frustrated with their own administrations – where the real level of responsibility lies. Second, when they then refer these grievances to the Commission, citizens can become frustrated with the Commission because the Commission cannot fully make up for a lack of responsiveness at the local, regional and national level. An initiative proposing consistent complaint-handling criteria for handling of complaints at national level would help avoid such frustrations and contribute to better governance.

In terms of such an initiative, the following options have been identified:

1st option – Business as usual – use of EU-Pilot and Article 258 TFEU to address alleged non-

compliance with EU environment law following registration by the Commission of complaints;

2nd option – a Commission proposal for an EU instrument on national complaint-handling based on best practices providing general safeguards on matters such as confidentiality, record-keeping and timeliness.

Preliminary and still incomplete findings of the study referred to above show wide-ranging complaint handling procedures in the different Member States and competent authorities. It is very often difficult for citizens to know where to lodge their complaints and criteria for the handling of complaints are often either absent or incomplete (for example, to address matters such as the confidentiality of the complaint). This indicates that, by setting out a clear set of complaint-handling criteria, an EU action would be very likely to enhance the effectiveness of complaint handling in the environmental field.

With regard to mediation they seem to exist in most Member States, although not specifically in the environmental field. In some Member States, even though there are examples of environmental mediation, due to the unclear legislative framework there is uncertainty in application of this mechanism. In some cases, only public authorities have competence in mediation. In this regard, it is questionable how independent this procedure is. In some cases, mediation is a tool that is generally regulated and used in specific sectors related to the environment (building, renewable energy sector) but seems not to cover the whole of the environmental sector. In light of the current very patchy arrangements for mediation within Member States, EU action could be justified in terms of providing a consistent framework and reference for the use of mediation in environmental matters and in helping to clarify the role of mediation in a wider framework that includes complaint-handling and access to the courts.

The policy initiative should have cross-cutting benefits for all environment policy sectors by helping to ensure a consistent and structured approach to exchanges between citizens and Member States on implementation grievances and concerns.

Environmental integration should have benefits for any complaint-handling criteria by improving the general level of implementation and thus reducing the extent of likely grievances. At the same time, complaint-handling criteria should contribute to integration by providing an effective feedback mechanism for problems on the ground.

It is proposed to examine the possibility of developing binding general criteria or non-binding general criteria complemented by sector-specific binding provisions that would cover the main complaint categories.

Looking beyond an initiative on such criteria, it is conceivable that such criteria could be further strengthened by the development of best practice guidance for tackling some types of grievance, e.g. grievances on illegal landfilling.

The Commission intends to propose an initiative on complaint-handling. However, its precise parameters have not yet been decided. In particular, it has not been decided whether to proceed with binding or non-binding criteria or whether to associate mediation with a separate initiative on access to justice. In the coming months the results of a first study on the subject will be published and further studies may be undertaken during 2013. These will inform any decision on the parameters of the proposed initiative.

Access to justice

Current situation

The latest state of the environment report of the European Environment Agency (EEA) called for better implementation of the EU environmental *acquis* as an important element of the future policy approach to achieve significant environmental improvements on the ground. The high number of infringements, complaints and petitions related to EU environment legislation points to a need generally to reinforce implementation monitoring and enforcement within Member States, including via access to justice.

The aim of providing effective access to justice in the environmental field is based on EU law and also international treaties as part of the EU legal order:

- The European Community signed the Aarhus Convention on 25 June 1998 and ratified it on 17 February 2005. The Convention requires access to justice in a number of specific areas covered by Article 9(1) and (2), viz. access to information and environmental impact assessment (EIA) procedures. It also allows for the possibility of more general access to justice in the field of the environment in its Article 9(3). The conditions of access are provided for in Article 9(4).
- The Community adopted various legislative acts to ensure the implementation of the Aarhus Convention at Member States¹¹⁹ and Community level¹²⁰ in relation to Article 9(1) and (2), as well as Article 9(3) as far as Community institutions are concerned.
- With respect to general access to justice at Member States level, the Commission adopted a proposal for a Directive on access to justice in environmental matters in 2003.¹²¹ This was based on Article 9(3) of the Convention. The European Parliament delivered its opinion in first reading on the proposal in March 2004.¹²² The proposal is pending before the Council.
- The Treaty on European Union (TUE) and the Treaty on the Functioning of the European Union (TFUE) strengthen access to justice in general, including via explicit reference in Article 19(1) of the TEU on sufficient remedies to ensure effective legal protection and incorporation of the Charter on Fundamental Rights (Article 47 of which covers the conditions of access, including legal aid).
- There has been an upsurge in Commission activity on access to justice, promoting human rights through the Charter and also by setting up the e-Justice portal¹²³.

CJEU case-law has moved in a direction of confirming an entitlement to access – see in particular Case C-237/07, *Janecek*, where the Court recognised a citizen's entitlement to challenge the absence of an air quality management plan (despite German law considering that the citizen had no standing to bring such a case) and Case C-240/09, *Slovak Bears*, where the Court found that Article 9(3) of Aarhus had no direct effect but that Member States courts must nevertheless facilitate access by NGOs.

If wider access to justice is equated with a quantitative target, then CJEU case-law can be argued to already require wider access than has until now been given in a significant number of Member States. In other words, wider access can be considered to have already acquired judicial endorsement. In particular C-240/09 supports the proposition that access to national courts should be provided in circumstances that go beyond the scope of existing access to justice rules under current EU environment directives.

The wider context is a general trend towards recognising the rights to effective remedies as defined

by Article 47 of the Charter of Fundamental Rights. This is demonstrated also by the fact that 1/3 of all rulings of the CJEU on this topic were delivered in 2011¹²⁴. The role of the Charter and the e-Justice portal all demonstrate the extent to which access to justice is a wider political imperative.

Future outlook

Modelling is not an appropriate term in relation to access to justice. However, studies were/are being undertaken to demonstrate under which conditions citizens and their organisations have access to national courts.

In order to obtain a comprehensive overview of the different measures adopted or in place in the Member States to implement Article 9(3) of the Aarhus Convention and related provisions, the Commission contracted a consultant to prepare a study focusing on the measures in place in Member States allowing members of the public to contest actions, decisions or omissions by public authorities. The final reports of this study have become available in September 2007¹²⁵ ().

In order to update these studies, a number of contractors were engaged from Portugal, Latvia, Italy, France, Sweden, Cyprus, Netherlands, Ireland, Spain, Slovakia, Germany, Poland, Denmark, Hungary, Czech Republic, United Kingdom, Belgium in early 2012. The aim is to mainly focus on the current factual situation in a representative sample of Member States. It is envisaged that a separate study will address the economic aspects of an access to justice legislative instrument.

Preliminary findings of the contractors suggest that there are shortcomings as regards implementation of the requirement of effective judicial protection covering the environmental acquis in general. It seems that in all seventeen Member States assessed there is some level of deficiency as regards access to justice. This means on the one hand that in some Member States there is a problem with standing for NGOs and individuals. On the other hand in the majority of Member States there is a problem with the effectiveness of the procedure, meaning that either the costs of judicial reviews can be considered prohibitively expensive, or there seem to be problems with the timeliness of procedures, or there are problems with injunctive relief.

In broad terms, evidence points to a non-level playing field and ineffective systems in terms of access to national courts in the domain of the environment. In particular citizens and NGOs have a broader access to national courts in some Member States than in others.

Key challenges

Knowledge base

There are two main aspects to knowledge base in this particular policy context:

- 1) The information available to the Commission on access to justice rules in Member States
- 2) The information available to the citizens on their access rights to national courts.

As outlined above, a number of studies are being prepared by the Commission to update the available information on access to justice rules in Member States in the area of the environment.

As already indicated, there are a limited number of explicit access to justice rights already established as part of EU environment law, mainly in the areas of access to information and impact assessment as provided for in Directives 2003/4/EC and 2003/35/EC. There are explicit requirements that citizens be informed of their access to justice rights at national level in relation to these specific areas.

The Commission is making an effort to establish a single portal (e-Justice) for all access to justice rules under EU law and environmental access to justice rules will also be provided in the future on

the portal.

Implementation

The key challenge is the current patchy framework of national provisions on access to justice rules across the EU with the result that there is not a level playing field and uncertainty for the key actors (citizens, their organisations and business).

In so far as access to justice is covered by existing specific legislative provisions (i.e. mainly access to information, environmental impact assessment), implementation problems relate to defects in national implementing legislation. More specifically, there is uneven implementation in 2 key respects: (1) the extent to which citizens and NGOs are recognised as having standing to go to court and (2) the cost burden of bringing cases to court.

In so far as concerns access to justice outside the scope of existing specific legislative provisions, the above-mentioned studies should help to indicate to what extent there is a mismatch between the extent of access signalled as necessary by the CJEU and the extent of access granted in practice. Current preliminary indications are that there is a mismatch.

Having undertaken studies on national transposing legislation for existing provisions, the Commission is systematically following up such defects by way of EU-Pilot and infringement proceedings. In addition, important questions of interpretation of existing provisions have also been referred from national courts to the CJEU.

Looking beyond existing provisions, initiatives to improve access to justice could reduce the practical difficulties relating to access, ensure a level playing field, contribute to better application and interpretation of EU environmental law in specific situations and also to strengthen the EU's democratic character as a Union based on law.

The Commission's recent Communication on Improving the delivery of benefits from EU environment measures: building confidence through better knowledge and responsiveness, COM(2012)95 examines two main possibilities to enhance access to justice. Possibilities outlined included:

- Developing guidance to take account of a significant recent body of case-law in order to improve implementation of existing access to justice provisions as well as
- Defining at EU level the conditions for efficient as well as effective access to national courts in respect of all areas of EU environment law.

The first possibility relates to existing access to justice legislative provisions and would supplement the work being done via studies, EU-Pilot and infringement proceedings mentioned above.

The second possibility relates to extending current legislative provisions on access to justice.

Financing

This aspect is being looked at by the aforementioned study on the economic implications of access to justice.¹²⁶ The study provides a comparative analysis of the different policy options, outlining arguments for and against the different options from an economic, social and administrative perspective. The overall economic, social and administrative impacts of the different options should be set out. It is expected that some of the more open systems shall be compared (Latvia, Portugal) with the ones that are considered to be applying more stringent rules (Sweden) on access to justice. The different elements shall be analysed in terms of costs for the administration, citizens, NGOs and also for business and the costs of the different Member States systems in place, along with their eventual effect on the internal market.

Preliminary findings indicate that there is a considerable risk of higher costs arising from the absence of a comprehensive set of rules at EU level on access to justice in the field of the environment. Interim cost-benefit analyses suggest that a legislative instrument would considerably

contribute to enhancing legal certainty and to reducing the costs resulting from an uneven playing field.

Justification for the priority objective

As outlined in the implementation section above, access to justice is a very important guarantee for effective application of EU environmental law.

Recent developments in the Treaties, by incorporating the effective legal protection principle and also by giving the same legal value to the Charter as that of the Treaties, are all showing that there is a strong political commitment to ensure effective remedies for citizens.

In light of recent developments in the case-law of the CJEU, legal certainty would be improved by adopting an access to justice instrument in the environmental field at EU level.

It is also important that, in addition to and as a complement to access to justice, further means of dispute resolution, notably mediation, are explored – see separate fiche on complaint-handling mechanisms.

Based on the preliminary results of studies carried out, mediation seems to exist in most Member States, although not specifically in the environmental field. In some Member States, even though there are examples of environmental mediation, due to the unclear legislative framework there is uncertainty in application of this mechanism. In some cases, only public authorities have competence in mediation. In this regard, it is questionable how independent this procedure is. In some cases, mediation is a tool that is generally regulated and used in specific sectors related to the environment (building, renewable energy sector) but does not cover the whole of the environmental sector. Preliminary conclusions indicate that there are wide-ranging practices in different Member States, which suggest that EU action would be likely to enhance the effectiveness of mediation in the environmental field.

Based on the current state-of-play, the following options have been identified for addressing the challenges of ensuring satisfactory access to justice:

- *1st option:* business-as-usual, soft-law approach, involving existing cooperation with judges, stakeholders, e-Justice and some form of commentary or guidelines explaining the significance and implications of Treaty provisions and case-law.
- *2nd option:* use of Article 258 to address any gaps in Member State provisions for ensuring access in line with ECJ case-law, notably *Janecek* and *Slovak Bears*, and the latest Treaty provisions. Under this option, Commission would use its enforcement powers to secure what the case-law already indicates as necessary.
- *3rd option:* withdraw the proposal under COM(2003)624 and make a new legislative proposal targeted more precisely on entitlement to access implied by *Janecek* and *Slovak Bears* with the conditions of access mirroring those already established for environmental impact assessment. The emerging case-law can also be used to formulate the relevant provisions.
- *4th option:* retain COM(2003)624 with possible minor modifications, deploying fresh arguments in support of it.

As outlined above, a number of studies¹²⁷ have been commissioned to explore the policy, social, economic advantages and disadvantages of each option. Preliminary indications suggest that the most effective option would be either the 3rd or 4th option, meaning adoption of a legislative instrument in the field. The 1st option does not provide legal certainty and the 2nd option could result in protracted litigation.

Improved access to justice will have synergistic benefits for all EU environmental policy areas.

As for synergies with other EU policy areas, an environmental policy initiative will fit with the wider actions of the Commission in promoting effective access to justice.

Effective legal protection is an overriding principle in itself, comparable to the principle of integration. For this reason other policy areas can be considered as also contributing to the improvement of access to justice. . In this context the above mentioned e-Justice portal, the Charter of Fundamental Rights and also the recent working document on collective redress¹²⁸ can be mentioned, as well as all Commission activities in enforcing access to justice in general.

However, it should be underlined that even though the concept of environmental access to justice can be regarded as part of the principle of effective legal protection, there are very important distinctive characteristics of access to justice rules in the environmental sector. The human rights protection element is a strong driving force, but apart from this, there is also a specific international obligation for the EU to ensure effective legal remedies in the field, by virtue of the Aarhus Convention. As it is strongly linked to environmental protection, the public interest nature of this field is also very important. Citizens are not only promoting their own interest, as for example in a private consumer protection-related area, but are also contributing to the overall public interest of high level of environmental protection. This public interest and the need to protect the environment that cannot protect itself is one of the reasons that not only individual rights and interests are taken into consideration, but also non-governmental organisations, associations and groups promoting environmental protection are guaranteed access to justice. These specificities need to be addressed through an EU environment policy initiative.

It is therefore proposed to examine how to proceed with a legislative instrument in order to enlarge the scope of the provisions of the current *acquis* on access to justice in the environmental field.

This action would involve re-stimulating the discussion on the above-mentioned pending 2003 proposal on access to justice and would mean either maintaining the current proposal (with some modifications such as possibly including mediation) or the withdrawal and proposal of a new instrument. Revisiting the 2003 proposal is justified by the need to take account of the CJEU case-law that has emerged since the proposal was made. This case-law points to the need for effective access to be provided.

The difference between a business-as-usual scenario and a scenario with such a proposal is that, without a proposal and new instrument, future access to justice could evolve in a messy and unpredictable way, with different national jurisdictions applying the CJEU case-law in different ways and business, citizens and national administrations left in a state of uncertainty for some years to come. Proceeding with a proposal would make it more likely that access to justice will be improved in a coherent, consistent and effective way across the EU.

Mediation can be regarded as an initiative similar to that of alternative dispute resolution (ADRs) in the consumer protection field. It would contribute to making procedures more effective, by reducing the length, the costs and by finding an amicable solution for the interest of all parties, without having to engage in more burdensome judicial procedures. This possibility would in principle just facilitate the amicable solution; however, it would be without prejudice to the right of citizens to effective remedies.¹²⁹

In the light of the findings of the studies mentioned, a Commission proposal could be envisaged during 2013. As opposed to non-action in the field, a legislative instrument would considerably enhance legal certainty, fill in gaps in Member States systems and is likely to be the most cost-effective solution for the majority of stakeholders, including businesses.

5) Improving the scientific evidence base for environment policy

Knowledge gaps

Current situation

Results from EU-funded research, as well as from Member States' research programmes, currently provide much of the scientific evidence which underpins EU environment policies.

The European Commission Joint Research Centre and EUROSTAT – the EC statistical arm – generate important information in support of EU environment policy, e.g. with data on waste and recycling. The European Environment Agency (EEA) covers a wide range of issues and publishes reporting on the state of the environment, as well as producing quality-assured indicators on environmental change. In addition, a range of specific public procurement contracts are regularly commissioned by public tender, to fill knowledge gaps or prepare targeted reviews of existing knowledge, in specific areas of policy.

The Seventh Framework Programme for Research and Technological Development (FP7), funds environment related research under an "Environment Theme". From 2014, it will be followed by a new Research and Innovation programme "Horizon 2020" (H2020). This new Framework Programme identifies sustainable development as a distinct cross-cutting priority. It also focuses on resource efficiency as a societal challenge and emphasises the policy support role of EU-funded research.

In some policy areas, information from international initiatives/organisations is obtained (e.g. OECD and data stocked under multilateral environmental agreements), as well as from experts in specific fields, from research centres and academia, and via scientific literature. Development of policy in each area employs its own mix of the above, to serve the various policy-development requirements.

In addition to publicly funded research, there is a considerable amount of knowledge generated by industry, which, although targeted to specific products and processes relevant for the individual company, provides important insights into the environmental impact of processes and products. In many cases the knowledge is even generated due to legislative obligations (e.g. environmental impact of chemicals, such as pesticides and biocides).

Many Member States run national research programmes, but neither these programmes, nor the EU-funded Programmes, can adequately tackle the knowledge gaps associated with today's major societal challenges, such as climate change, ensuring resource efficiency, and security of energy and food supply, which are interdisciplinary by nature. The vast bulk of these research programmes in Europe are run in an isolated way, leading to unwanted fragmentation, duplication and ineffective outcomes. Joint programming aims to remedy this situation, by pooling national research efforts in order to make better use of Europe's limited public R&D resources, in order to tackle common European challenges in a more structured manner.

Currently, the EU and its Member States are lacking flexible mechanisms to support the dynamic involvement of the scientific community in urgent policy issues, policy reviews, assessments and societal debates and to ensure development of policy tools and transfer of knowledge.

The Commission proposal for the new Research and Innovation Programme (Horizon 2020) to allocate at least 60% of its budget to sustainable development. Progress towards this goal will need to be carefully monitored.

Providing a better basis to understand the impacts of decisions

Research results also play a role in ensuring that policy decisions are informed and taken with a

clear understanding of their possible impacts. But research is by no means enough by itself: business and other stakeholders have an important role to play in generating and communicating information.

This information is more likely to be collected and properly considered in policy making when there is systematic ex-post evaluation of how policy has worked and systematic ex-ante assessment of the economic, social and environmental impacts of future policy options. Proper application of Impact Assessment regimes (which most Member States have either set up or are in the process of setting up) is important as are the proper application of the EIA Directive and SEA Directive, along with the analysis encouraged in many other parts of the acquis (e.g. sound river basin management plans).

Future outlook

n/a

Key challenges

Knowledge base

EU-funded research activities will continue to have a crucial role in achieving the significant transformations required towards sustainability, and thus a flourishing EU economy and well-being of EU citizens. Technological, social, behavioural, organisational and institutional innovations will be needed to generate the breakthroughs that will solve a range of environmental challenges, bringing solutions that respect the planet's ecological limits. We need to move towards a low-carbon and resource efficient, green economy, and to maintain a secure and healthy natural environment. Tipping points need to be identified, and a deeper understanding of long-term trends that impact on the state of the environment is required. In every policy area, there are knowledge gaps that need to be filled if policy success is to be assured. With the finite resources available, it is crucial for the gathering of that knowledge – and its dissemination, including through the development of policy tools, to those who need it to improve policy and its implementation – to be logically and systematically organised.

Examples of key policy areas where we face particular knowledge needs include:

Chemicals: Information on concentrations of chemicals in humans and the environment is collected for a multiplicity of purposes but stored in different systems with limited accessibility. Information on toxicity of chemicals is obtained through research and regulatory requirements, but there is no central repository for such information and no concerted action to extract the knowledge to enable a better understanding of chemical toxicity and reactions. The Commission's Communication on Mixtures sets out actions to overcome the two knowledge gaps. The EEA will be an important partner for the EC in the setting-up/implementation of the proposed Chemicals Database.

Biodiversity and ecosystems: Working with nature rather than against it is smart, it saves money, it saves energy and other resources and it improves the quality of our lives while at the same time preserving the health, vitality and resilience of nature and natural processes. To work with nature effectively we need to improve our understanding of the way natural systems work and the links between the structure and function of natural ecosystems and the benefits for human society. We also need to improve our understanding of the way that climate change is affecting natural systems and what we can do to promote greater resilience. A better understanding of the status of natural systems is extremely important and we should develop new techniques, including satellite technology, and indicators for monitoring, assessing, reporting and communicating this information. Research is also needed on the links between biodiversity, ecosystem function and ecosystem service. In addition, it is important to carry out integrated research on socio-ecological systems to understand different dimensions of value of biodiversity and ecosystem services and ways to integrated them in decision-making. Continuing and extending research efforts on those

ecosystems less studied yet already significantly impacted such as e.g. marine ecosystems is also necessary.

Sustainable production and consumption: There is still limited understanding of the relation between consumption, production, resource use and environmental impacts, including trade-offs between different kinds of environmental impacts. Comprehensive data on the overall environmental impact of consumption and the economic cost of this impact, as well as models predicting how environmental impacts would be affected by changes in consumption and production patterns, efficiency improvements, new business models and better performance of products – none of these are readily available. Data on harmonised methods for assessment of life-cycle impact of products, both at macro- and micro-economic level, and data on the distribution of performance of products in EU and global markets and potential for improvement are missing for many important product categories. There is also a lack of understanding on how individual and societal behaviour influences environmental impacts of consumption; and on how behavioural sciences can inform and support policy-making and its implementation.

In this context, it is important to stress the need for more in-depth socio-economic assessments (including the application of behavioural economics), to improve the understanding of how businesses and other actors use resources and where that use is inefficient, and how to ensure that production and consumption become more sustainable. For example, there is currently a lack of knowledge about the life-cycle impacts of many products and services, both on the part of the producers and the consumers. Where businesses do have this information, it is often difficult for them to share it easily and openly. Support needs also to be given to global environmental assessments and to modelling of both environmental systems themselves and of their interactions within the economy. Mainstreaming modelling and improving the co-ordination between the exercises undertaken by different international organisations would improve the tools at the disposal of policy-makers.

Implementation

Implementation of INSPIRE and of the strongly complementary Shared Environmental Information System, taken together with the Earth observation capacities coming on-stream (including the EU Global Monitoring for Environment Security initiative) and emerging enabling tools (such as Eye-on-Earth), generate a robust framework for comprehensive environmental information management in support of better implementation.

In terms of policy development, Member States are committed to the principle of integrated assessment of the economic, social and environmental impacts of different policy options. However, there is still significant scope for more systematic application of this principle in practice both in terms of ex-ante and ex-post appraisal. In the context of the EU, these policies are grouped under the term 'Smarter Regulation', and regular reports are submitted on practices.

Financing

The allocated budget for the FP7 for environmental research from 2007-2013 – including climate change – totals €1.8 billion. In addition, a similar amount has been allocated to environment objectives under FP7 themes other than environment. Horizon 2020, which addresses a range of societal challenges many of which include the need for action on environment, will run from 2014 to 2020 with an expected €80 billion budget, 60% of which to be allocated to actions that promote sustainability.

To address the current knowledge gaps, innovative flexible financial mechanisms are needed to allow the scientific community to strengthen the knowledge required by urgent policy issues (e.g. through the support of ad hoc workshops or systematic reviews, participation of experts in policy work) and to support transfer of knowledge.

Justification for the priority objective

Research – whether funded by Member States or at EU-level – will continue to be needed to support environment policy development and its cost-effective, efficient implementation and assessment. The concept is twin-track: one track concerns better use of past and future environmental knowledge by developing better environmental information management systems so that those who need quality-assured credible information get it; and the other track being better-targeted pursuit of new knowledge, through better procurement – with an enhanced science-policy interface – and an accent on improved foresight of knowledge needs (as research takes time to deliver). We also need a better strategic orientation of future research activities. Key areas include in particular resource efficiency, greening of the economy and sustainable development, all aspects of the ecosystem and its vulnerabilities. This includes modelling and foresight tools to better understand complex issues related to environmental change, such as climate change impacts, the implications of biodiversity loss for the functioning of ecosystems and delivery of ecosystem services, and environmental thresholds and ecological tipping points beyond which adverse trends start to become irreversible. In this way, environment policy will deliver fully its part of the Europe 2020 Strategy.

A better monitoring of the most vulnerable and exposed groups of people to pollution is needed to improve management of environmental threats and environment related diseases. Currently no large-scale comparable exposure data on human populations exist in Europe.

Smarter regulation, based on sound policy analysis and evaluation, offers the possibility to increase the efficiency of policy, making sure that environmental goals are achieved at lower cost, and allowing for ambitions to be increased over time.

Regarding *chemicals*, it is clear that without filling the knowledge gaps it will neither be possible to accelerate decision-making, nor to create a knowledge base to underpin the development of the chemicals *acquis* in the areas of concern; nor to stimulate and improve the development of better and green chemicals; nor to increase the development of non-animal test methods.

In the area of *sustainable consumption and production* improved knowledge will be a precondition for setting targets and developing an optimal policy mix aimed at transformation of the market and shifting consumer behaviour towards more sustainable products and pattern of consumption.

With regard to *biodiversity and the mapping and assessment of ecosystem services*, there is a need to fill the knowledge gaps to ensure optimal implementation of the EU 2020 Biodiversity Strategy and to reach the 2020 Biodiversity targets, endorsed by the EU Heads of State.

Horizon 2020 makes frequent reference to environment, such that the commitment of that programme to future support for environment policy is, in principle, already assured. However, careful management and robust monitoring methods will be crucial to its delivery for a better environment, and there is clearly a need for integrative research across environmental issues and policy sectors to support environmental integration and mainstreaming in the EU

Regarding policy development, one of the key challenges is to ensure that policy assessment is carried out systematically in all policy fields with consideration of the economic, social and environmental impacts. Integrated analyses allow for inter-linkages to be identified, and responded to.

Regarding *chemicals*, there is a long term commitment of the Commission to this activity and this initiative contributes to the overall understanding of chemicals and hence supports the entire chemicals *acquis*.

In the area of *sustainable consumption and production* research policy is closely linked with both environmental and industrial policy. Policy that stimulates sustainable products and services enabled by better knowledge, methods and data will create new growth opportunities for the

industry.

The future *Horizon 2020* programme will not only bring innovation under the same umbrella as research, but will seek actively to integrate sustainability – with a focus on resource efficiency – across the entire programme. The challenge will be to ensure that the need for further environmental research as well as the need for enhanced scientific support to policy-making – not least as an essential underpinning for stronger economic growth and increased employment – is recognised at the strategic and programme committee levels through a significant upgrade in funding for research and innovation in the field, and that the 60% budget to be allocated to sustainable development is reached.

In terms of policy development, evaluation and policy assessment is a continuous challenge. The Commission needs to continue to apply its Impact Assessment process and this must be increasingly supported by more systematic assessment: by the European Parliament of its amendments; and by the Member States of options for implementation. Systematic evaluation of what has worked and not needs to underpin such analyses.

The *Horizon 2020* proposal is currently being debated in Council and Parliament. Full agreement will be reached only after the 2014-20 Multi-Annual Financial Framework is agreed.

Regarding *Chemicals*: consideration is being given to a Commission Communication/Recommendation setting out the projects and the long-term goals.

In the area of *sustainable consumption and production*, the development of methods, data and models to support policy instruments and industry initiatives to ensure that they are based on sound science and robust data is planned, e.g. methodologies for life-cycle assessment and methods for setting regulatory requirements concerning material efficiency of products.

Emerging environmental risks

Current situation

Within our changing society and economy characterised by growing demands for resources and energy, increasing globalisation, trade and movement of goods, ideas and people, technological change is one of the most forceful catalysts for, and enabler of growth. Processes driving rapid societal and technological change can result however in diverse and sometimes conflicting interests, needs and expectations. While most fast-paced developments offer numerous and substantial benefits for communication, economic growth and societal innovation, they also harbour the potential to push environment and ecosystems beyond thresholds, increase environmental stress beyond sustainable levels, and to create new risks with impacts of a much larger scale, and sometimes over a longer time-span, than ever before. Some risks are ultimately less significant than originally feared, but others may prove worse than expected.

In particular the introduction of emerging technologies can be conducive to important potential benefits intertwined with new or re-emerging challenges. Among the challenges, cross-cutting and transboundary risks to health, air, water, land and ecosystems resilience, or the fast depletion and degradation of resources that underpin the functioning of the European and global economy and critically shape prospects for current and future quality of life, are often prevalent.

Where frameworks to identify, assess risks and resolve potential trade-offs are inadequate, arising conflicts can erode public trust in governance structures and delay or permanently obstruct informed, knowledge-based policymaking.

Risk-based approaches are a typical feature of EU environmental policies and provide a sound basis to determine optimal risk management options. Arguably, most pieces of EU environmental legislation have built-in risk-management measures.

Specific health and environmental risks call for contextual framing, preparedness (e.g. the Seveso II Directive on emergency preparedness for large chemical accidents) and response (e.g. the Environmental Liability Directive that promotes prevention but also demand remediation in case of a disaster). There are also distinct tailored risk management frameworks (e.g. the Carbon Capture and Storage Directive that aims to ensure health and environmental safety of CO₂ sequestration activities). Undoubtedly, a "one-size-fits-all" approach to tackle all emerging and existing environmental risks is neither possible, nor desirable as it would lack precision.

Potential health and environmental risks have been identified in relation to a number of emerging technologies, concerning e.g. the use of chemicals and chemical mixtures, nanomaterials, electromagnetic waves, or the extraction of unconventional fossil fuels using high-volume hydraulic fracturing practices. For instance, the latter reached commercial maturity in the USA around the mid-nineties and could possibly be deployed at significant level in Europe this decade. Stakeholders, including from the scientific community, have highlighted a number of uncertainties and health and environmental risks associated with such practices.

The question is whether the current legislative frameworks governing these practices are adequate to address potential novel risks or whether adaptation and modifications to clarify current provisions, remove unjustified barriers and manage specific environmental and health risks are needed.

Future outlook

Generally

Established modelling and comprehensive long-term scenario analysis are deployed regularly to anticipate emerging environmental risks. For instance, two recent studies commissioned by the European Commission have highlighted the need to address possible risks related to the degradation and depletion of resources. Another on-going study looks at risks arising from the demand for and the price of scarce resources (i.e. economic risks) and how these affect the supply of resources and their availability at affordable prices. However, a dedicated framework to identify and to systematically follow-up emerging risks does not exist at present.

Specifically

Given significant data gaps and technological uncertainties associated generally with emerging technologies, significant efforts are needed to identify and assess possible risks and benefits *before* conflicts take shape in the public domain. In the absence of concerted efforts to pinpoint and assess social, economic and environmental trade-offs at an early stage, it is to be expected that assessments would be initiated mainly in response to growing public concerns. Such late initiatives however are usually not conducive to optimal risk-based choices and risk management measures

Key challenges

Knowledge base

Generally

Where sectoral or macro-modelling is complemented by risk assessment, it can provide a suitable basis for determining optimal knowledge-based risk response strategies. However, where consequences of a risk are too uncertain or remote, modelling and scenario work may fail to identify that risk.

In the face of growing demand for resources and rapid technological changes introduced in their production processes, a more robust and systematic framework to anticipate, evaluate and – subject to needs – manage emerging risks is necessary. This framework ideally would involve both Member States and relevant Commission Services and could build on current mechanisms for early recognition of environmental issues (e.g. the Environmental Policy Review Group, set up under the 5th Community environmental action programme, which brings together the Commission, Member States and candidate countries). Once identified, emerging risks would be pre-scoped to determine their specific EU-significance and conclusions drawn as to whether or not a coordinated approach and further follow-up at EU level is necessary. In-depth assessments of any eventual policy proposals would be carried out via the Commission's established impact assessment procedure.

Specifically

In several areas, such as nanomaterials or unconventional fossil fuels, the European Commission has initiated data gathering and assessment work to overcome the current knowledge deficit. For instance in the case of unconventional fossil fuels an in-depth assessment will examine whether the level of human health and environment protection provided by the existing EU legislation is appropriate, and whether or not an EU-wide risk management framework is needed.

Implementation

Implementing a risk-based approach to EU environmental and climate policies entails an identification and assessment of emerging risks by the Commission in partnership with the Member States and experts, and in consultation with business and civil society. Thereafter, policy proposals detailing actions to address these risks may be developed through the usual work-stream of the Commission, accompanied by an Impact assessment.

To progress with this work, there may be a need to create a process, possibly with associated work structures, that will bring together the appropriate stakeholders and promote exchanges with regard to risk assessment and analysis of best practices to deal with them.

Financing

Implementing risk-based approaches at policy level would not require substantial financial inputs or may not entail significant financial impacts, as frequently most of the business sectors prompt to risks implement already risk-aversion practices and risk management is embedded in their operations.

Justification for the priority objective

The introduction of a systematic framework to anticipate, frame, assess, manage and eventually communicate emerging environmental risks would strengthen the Commission capacity to timely identify and to act upon emerging risks. This would ideally involve both Member States and relevant Commission Services into a systematic dialogue / mechanism for (i) early recognition, (ii) pre-scoping and (iii) determination of EU-significance of emerging risks. This work should help clarifying whether or not an identified risk requires a coordinated approach and further follow-up at EU level. In-depth assessments of any eventual policy proposals would be carried out via the Commission's established impact assessment procedure. This will result in better public trust in EU governance structures and processes.

More specifically, a better management of emerging technological risks implies maximisation of benefits from technological change, while minimising the negative consequences of the associated risks. Specific impact assessments in emerging areas will analyse the environmental risk base and the appropriateness of EU legislative frameworks to effectively manage these risks.

The in-depth assessment of the need for an EU-wide risk management framework for projects involving the use of hydraulic fracturing will seek to identify whether there is a need for introducing such a framework and, where deemed necessary, the optimal combination of measures to address identified risks.

This process of identification and in-depth assessment of emerging risks and application of EU-wide risk management frameworks will contribute to building the knowledge base, to ensuring coherent policy development across different policy fields, to share practices and to communicate with key stakeholders and the civil society.

This initiative would improve the knowledge base of new and emerging technologies, for instance in the field of non-conventional energy sources, ensuring a proper risk assessment and thus a better social acceptance. Links exist therefore with various policies, in particular with energy, research, climate change and health policies.

Streamline environmental data and information

Current situation

There is currently no EU legal instrument that comprehensively covers the streamlining and management of environmental data and information. However, the Directive on the Infrastructure for Spatial Information in Europe (INSPIRE, 2007) will gradually build a data-reference framework covering 34 specific data themes. It will come on-stream in stages, reaching full application from 2018.

The Global Monitoring for Environment and Security ('GMES') is an initiative under which a series of policy domains such as land use, atmosphere, marine and emergency responses (e.g. floods, forest fires) will benefit from Earth observation as well as terrestrially-gathered ("in situ") data. The data will be collated for use, for example, in the environmental monitoring context, which increasingly contributes to the knowledge needed for defining and implementing policy successfully. GMES satellites ('Sentinels') had been promoted as the replacement Earth observation vehicles (with a substantial extension of roles and capabilities) including the now defunct ENVISAT, which had been operational 5 years longer than expected. It is important to fill the gap either through GMES, or by buying-in of Earth observation data from other, including non-European, observation capacity. Continuity is needed, to address current and emerging knowledge needs, in parallel with future 'in-situ' work (gathering data from ground-based monitoring), which is equally essential.

A stream of information of highly uneven quality and completeness is generated by Member States in response to mandatory reporting set out under various pieces of EU environment legislation. This information is essential to enable accurate reporting on the state of the environment and thus on progress towards policy goals. Much of the information is gathered and collated by the European Environment Agency, and it is made widely available in the form of periodic reports and analyses.

The revision¹³⁰ of the Re-Use of Public Information Directive (governing access to and permission to reproduce certain data) is also important for environment, since most of the environmental data is generated in the public sector. Similarly for the envisaged revision of the Directive on Access to Environmental Information ('Aarhus Directive'). Where development of digital media in support of increased efficiency in Member State government reporting is concerned, the Digital Agenda for Europe work on *e-Government* and linked issues offers the prospect of significant cost-efficiency advantages for the future, but requires modest investment in the short to medium-term.

Specific legally-binding requirements exist under the INSPIRE Directive, requiring the achievement of the completion of data-reference work at set times. So far, work on 13 data reference themes has been completed. Work on a further 21 is scheduled to be completed around the end of 2012. Amendments to the Directive are adopted by the Commission as the various stages of implementation are reached (i.e. under comitology arrangements).

Future outlook

To date, development of the knowledge base which supplies evidence for environment policy does not fit within the general concept of "modelling" more relevant to technical policy areas of environment. However, neither is scenario modelling excluded for the future and innovative ways of modelling to enhance the acquisition and use of 'knowledge' for policy – and information management – are expected to be the subject of further research.

The Commission will attempt to estimate the impact of technological development on society for

the coming 10-25 years. Various foresight / horizon-scanning initiatives and methodologies are expected to become relevant, inter alia, to identify emerging issues which may have an impact – positive or negative – on the achievement of environment policy objectives.

A recent study on strengthening the interface between science and environment policy has highlighted the need to improve the traceability of the scientific evidence, as part of its quality-assurance. There is potential to further improve the take-up of knowledge and scientific evidence by improving in-house capacity to identify and anticipate knowledge requirements over the short, medium and long-term horizons, and also across policy domains. A number of recommendations were proposed in the above study, to strengthen the existing interface between science and environment policy, and these – as well as outcomes from certain other similar studies – would merit further exploitation.

Key challenges

Knowledge base

There are the following main areas where evidence for policy can be improved.

- The **demand** for information and data about the environment coming from policy-makers and from those in the policy implementation chain is not yet sufficiently aligned with its **supply**. Typical problems are partial data (e.g. due to gaps in MS reporting); obsolete data, not suitable for defining future policy; poor access to data sources, due to lack of inter-linkages between sources and/or questions of right of access / cost; and data provided in formats that do not facilitate comparability across the EU as a whole. The Shared Environment Information System, to be developed over the coming period, offers a robust framework within which to simplify, streamline and modernise the management and dissemination of information needed at all stages of the EU environment policy cycle.
- In a significant number of cases, environmental research effort is at least partly wasted, because the research results are not produced in a way that allows policy-makers to make use of them, i.e. it is typically presented in a way that maximises the probability of it being selected for publication in a peer-reviewed periodical, rather than in a way that presents the facts and figures needed for policy work. This issue is becoming more openly discussed as researchers perceive the market for environment policy-driven research. While some policy-makers and scientists are recognising the value of seeking closer proximity for the mutual benefit, the processes supporting this need to be more robustly promoted. Policy-makers also need to be ready to invest more time in establishing closer relations with counterparts in the science / research domains.
- Results from directly-commissioned studies represent a sizeable knowledge base, which needs a system facilitating exploitation of the results. Empirical evidence suggests that results tend to fall some way short of optimal expectations in a number of cases – another issue that needs to be addressed. Better-defined terms of reference and guidelines for contractors would also help and this is already beginning to happen. Efforts by researchers to better structure study results for policy-makers and to provide better access would help to valorise study outcomes.
- The impact on the environment of individual and societal behaviour (choices, attitudes, prejudices, drivers of change...) is rarely taken directly into account when policy is designed. This area warrants further investigation. Recent experiments suggest, for example, that the use of indirect peer pressure to reduce water use, energy use and domestic waste generation, e.g. by including information on neighbourhood performance in reducing waste / energy use etc. has yielded promising results).
- Impact assessment – which seeks to identify and justify policy options – must be based on solid scientific evidence. Within the context of streamlining the acquisition of useable information, a more structured and traceable way of gathering it should be envisaged, for example using a

common framework to identify the drivers, pressures, states, impacts and responses relevant to policy choices. Ex-ante policy assessment, integrated assessment modelling and policy trials employing behavioural sciences – to supplement the DPSIR¹³¹ approach to policy-making – would provide further important insights in support of policy definition and objectives.

Implementation

Provision of information – notably in support of policy assessment – is also dependent on Member State authorities fulfilling their environmental reporting obligations (as set out in legislation), as well as supplying further data needed to complete data-sets, e.g. when needed by the EEA. A number of initiatives address the issue of information for environment. The implementation of the Shared Environmental Information System (SEIS) and further roll-out of the INSPIRE Directive, as well as the revision of the Access to Environmental Information (Aarhus), Public Sector Re-use and Open Access Directives, and the availability of GMES services, will contribute directly to streamlining of environmental reporting. SEIS will also facilitate access to, sharing and re-use of data and information, and will help to make it freely and easily accessible for use in cross-border and cross-thematic contexts.

Implementation of INSPIRE¹³² – a particularly wide-ranging piece of legislation – will continue in stages up to 2018 before it reaches 'cruising speed'. Against the current backdrop of several infringement cases arising from bad transposition of the Directive into national law, a report on the implementation of INSPIRE will be delivered in 2014. Most Member States have made a considerable investment in INSPIRE and so far, at the level of technical delivery, the commitment to its success by all parties is impressive. Further major decisions are to be taken around the end of 2012 (through comitology).

The SEIS Implementation Plan is expected to be launched shortly. Based on the seven SEIS principles that mark out the key information/data issues, the SEIS Implementation Plan will contain a number of measures aimed at removing the barriers to the sharing of and access to environmental information. It will be a tool specifically tailored to improve environment policy implementation. Awaited for some time (it was announced in the 2008 SEIS Communication), the recent advances in IT and other developments have brought into keener focus the potential for SEIS to offer, for the first time, a comprehensive platform for the management of an extensive range of environmental information.

Financing

Both the Shared Environmental Information System and INSPIRE entail investment in and by the Member States, some of which can be supported by EU funding, while the underlying fundamentals – on *eGovernment* for example – will require a strategic shift in thinking in most Member States on the way that environmental information is gathered, stored, accessed and managed. Actual financing requirements will vary considerably, e.g. depending on state of advancement of relevant IT systems already, the levels of ambition that can reasonably be set, and the time until normal renewal / upgrade of current systems. For those reasons, reliable estimates of overall costs are not readily available. What can be shown is that early investment in efficient information management infrastructure and systems will facilitate easier (administrative burden reduced) and more cost-effective achievement of environmental objectives at Member State and local levels.

Justification for the priority objective

The need for a coherent system to manage the increasingly complex mass of environmental information and data has become evident in the last decade. In addition, not only has a whole industry of environmental data supply emerged over the period, but increasingly capable IT technologies have arrived, making the flow of data and information both far more vast, but also much faster. The challenge now is to bring a much-needed rationalisation to the supply of and

demand for environmental information, building towards a situation where all actors in the policy delivery chain – from political strategists all the way down to individuals at the local level – have access to the same high-quality, robust and credible information they need.

This rationalisation – coupled with progress towards near real-time monitoring of key aspects of the state of the environment – will generate a simpler, more cost-effective and more policy goal-oriented way of generating changes in the state of the environment: smarter, cheaper regulation.

To this end, an altered state in the relationship between environment policy-makers and researchers is required. Groups of leading scientists have expressed frustrations that are mirrored by those of policy-makers who are not getting what they need from the scientific community.

It has been evident for at least the last 15 years that environment policy goals cannot be achieved without the active inclusion of EU environment policy objectives within other EU policy initiatives – transport, agriculture, cohesion, research etc. Equally, environment policy has itself to systematically take account of other policy objectives.

The Global Monitoring for Environment and Security (GMES) initiative is often framed with SEIS and INSPIRE, as it (GMES) would normally provide an Earth Observation (EO) element to complement the traditional terrestrial information sources. Information on the future funding of GMES – and therefore its potential to contribute to the provision of EO information in support of environment, will be known in the coming months.

INSPIRE is a Directive whose development through comitology will continue through to 2014, with implementation of various elements in MSs continuing to 2018, from which time INSPIRE will become fully operational.

The Shared Environment Information System (SEIS) Implementation Plan will be a continuity of the 2008 SEIS Communication, with the plan itself to be put forward shortly.

Being transversal in the EU environment policy context, the INSPIRE and SEIS initiatives facilitate the generation and management of information that is needed to underpin the development and implementation of EU environment policy. Both SEIS and INSPIRE provide the frameworks for increasingly accurate and relevant information and data, i.e. the new knowledge needed to ensure progress towards current and future EU environment policy objectives.

6) Securing investment for environment policy and getting the prices right

Environmentally-harmful subsidies and market-based instruments

Current situation

Use of market based instruments for environmental purposes (MBI)

Market based instruments for environmental purposes have many important advantages, such as environmental effectiveness, economic efficiency, the ability to raise revenue, and transparency. Also, they have been successfully used to address a wide range of issues including waste disposal, water pollution and air emissions.

Most environmentally related market based instruments in use globally are price based instruments: taxes, charges and subsidies. Most common fiscal (tax) instruments are the easiest to identify as they are reported in national accounts. Environmental taxes (officially denoted as "environmentally related taxes") are defined as a tax whose tax base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment. Main examples of such taxes are excise duties on energy products, taxes on transport vehicles as well as pollution taxes. Environmental taxation has played an important role in policy debates, as it is considered that environmental taxes are less detrimental to growth than direct taxation, and raising them could create scope for labour tax cuts and thus deliver a double dividend in the sense of boosting employment and improving the quality of the environment at the same time.

Across the EU environmental taxation varies in importance: Member States use MBI to very different degrees both in terms of scope and rates applied. In 2010, 6.2% of total tax revenues came from environmental taxes, meaning that roughly one euro out of every sixteen in revenue is raised from environmental taxes. A big part of this revenue comes from energy taxation (including transport fuel and fuel used for industrial purposes), pollution and resource taxation make up only a very small share of environmental tax revenue, but examples of few Member States (Denmark, the Netherlands) show that this can be successfully increased. Waste and emissions are the major focus of existing instruments.

A high ratio of environmental tax revenue to total taxation as such does not necessarily represent an indication of a high priority being attributed to environmental protection. Energy taxes and transport have been used purely as revenue raising instruments, originally without environmental purposes. Furthermore, tax revenues are a product of tax rate and tax base. Hence the high level of the indicator can result not only from the high level of tax rates, but also from a high tax base in relation to GDP, which is an indication of the inefficient use of resources in a country. In this sense the indicator can give a misleading view of the success of environmental policy of the country in question.

At EU level, the energy tax directive fixes minimum tax rates by product and use. The Commission has proposed to revise it to gear the tax further towards energy use and CO₂ emissions. It is currently under discussion in Council. EU environmental legislation contains general references to using MBI; they are expressed in the packaging waste, water framework and batteries directives, but without fixing any tax rates there.

Rights- or Quantity-based MBIs are designed to control the quantity of the resource, environmental good or service to the socially desired level. The EU Emissions Trading System (EU ETS) has produced since the start of its 2nd trading period in 2008, a 10% reduction in emissions.

Reform of environmentally harmful subsidies (EHS)

EHS stimulate excessive and wasteful use of natural resources (such as fuels, water, land) by distorting their prices. They undermine EU energy, climate and environmental policies, lock in inefficient technologies and business structures, hinder investment in green technologies. Many subsidies lead to inefficient use of scarce public resources, notably in the fields where the subsidies original rationale is no longer applicable. They are also socially inefficient - poor households benefit less from, for instance, energy subsidies than rich ones.¹³³. Therefore phasing out of EHS is one of key conditions for improving resource efficiency and green growth. At the same time, EHS removal can raise public revenues and support fiscal consolidation. Any reforms however to phase out EHS should include measures to mitigate likely negative impacts upon those with the lowest incomes.

The Commission is fully committed to reform environmentally harmful subsidies, which is a significant policy challenge. Identifying and assessing the effects of subsidies is a complex task, which needs a comprehensive approach assessing not only the environmental but also economic and social effects of the reform of subsidies, in order to ensure that the benefits of reform are fully realised and equitably distributed.

Phasing out of EHS has an important place on the EU policy agenda. The Europe 2020 strategy includes, as part of its "Resource efficient Europe" flagship initiative, a call on Member States "to phase out environmentally harmful subsidies, limiting exceptions to people with social needs¹³⁴". The recent 2012 Annual Growth Survey¹³⁵ states that "Phasing out some hidden tax subsidies could help to widen the tax base. In particular, environmentally harmful subsidies should be eliminated".

Likewise, the Commission's "Roadmap to a resource efficient Europe"¹³⁶ includes a target (milestone) that "By 2020 EHS will be phased out, with due regard to the impact on people in need". The Roadmap asks Member States to identify the most significant EHS pursuant to established methodologies and to prepare plans and timetables to phase out EHS and report on these as part of their National Reform Programmes. It also asks the Commission to monitor the phasing out of EHS by the Member States via the European Semester and to promote exchange of best practices.

Some Member States made steps towards EHS removal; for instance, DE, AT and ES introduce air tickets charge; DE plans to cancel some exemptions from eco-tax and introduce tax on nuclear energy. However, many of EHS remain, both at EU and Member States level. Few Member States have foreseen EHS reform in their National Reform Programmes under the European Semester process. Furthermore, NGOs and the civil society support the reform of EHS calling for more transparency in their reporting and seeing it as an opportunity to increase budgetary revenues.

At EU level, observing the declining EU fisheries, the Commission has proposed reforms to the Common Fisheries Policy (CFP) that will reduce its possible EHS effects. These proposals supplement the good progress that has been achieved with the recent reforms in the EU Common Agriculture Policy (CAP), where support is now mostly decoupled from production.

As regards state aids, the new guidelines for aid to coal will lead to a phase out of Member States production subsidies. Within its State aid modernisation package, the Commission is reviewing the state aid guidelines and is assessing the possibility, inter alia, to reduce scope for Member States to grant EHS.

Internationally, the Commission is collaborating with the OECD and the G20 on projects relating to the analysis of fossil-fuel subsidies.

Future outlook

Modelling work was undertaken by the Commission as a basis for the proposal to reform the Energy Tax Directive (ETD). The analysis shows that beyond the environmental benefits, the economic impacts of the proposal will be positive (win-win situation) if the additional revenues from taxation were to be used to simultaneously reduce labour taxes. Businesses can benefit from

the revenue recycling possibilities. The proposal will also generate positive impacts on employment (in line with the macroeconomic results). Alternatively, as concerns distributional impacts on households, possible negative impacts can be overcome by recycling revenues from energy taxation in the form of lump-sum payments to households to compensate. Ideally such payment should be targeted to low income households, also to allow combining this form of revenue recycling with reductions in labour costs (income tax cuts don't work in the case of the lowest income households, as they would earn too little to benefit from cuts).¹³⁷

There are many external studies, partly done for the Commission, that model the use of MBI. A recent study "The role of MBI to support a resource efficient economy" concludes that policies introducing MBIs for resource efficiency usually have small positive macroeconomic effects, typically less than 0.1% of GDP. The study reckons that these policies have been by and large successful and that the level of impact on resource consumption is dependant largely on the level of the price incentive and a presence of supporting regulatory measures. This is especially true for instruments that have resource efficiency as a primary objective (not revenue raising); the positive results are bigger when revenues can be recycled to companies or consumers to achieve a double-dividend.¹³⁸

There is no one fits all approach to revenue recycling, as much depends on the policy priorities. If the priority is fostering innovation, revenue recycling should be targeted on companies, if priority is distributional impacts, revenue recycling should be targeted on low income households.

Key challenges

Knowledge base

As regards **taxation**, Member States are obliged to report on their tax structure and revenues hence the knowledge base is usually good and detailed, even though data are up to 2 years behind. The Commission is working to shorten the lag and a recent report covers data from 2010¹³⁹. A European Research Dialogue bringing together the Commission, the Member States and experts is being considered in order to promote a high-level discussion on the form and possible effects of environmental taxation on green economy and employment.

On **EHS**, although the benefits of EHS phase-out are evident for both the economy and environment, and many policy declarations were made, the actual progress on the ground in EHS phasing-out has been slow, not only at EU level, but also in Member States and in the other OECD countries. The main obstacles to remove EHS are:

- Unclear scope of subsidies: Most EHS are implicit and off-budget, hence difficult to identify and especially to quantify. The OECD, in its recent inventory of fossil fuel subsidies¹⁴⁰ underlines that the size of implicit subsidies depends on differences in each tax system, and hence cross-country comparison can lead to a misleading picture¹⁴¹. The Commission will launch a study to complement the OECD work for the EU Member States that are not members of the OECD. A previous study in 2009¹⁴² developed, based on earlier OECD work and case studies results, a methodology for identification, assessment and quantification of EHS. An on-going study will define best practices in phasing out EHS and will be finished by September 2012.
- Lack of assessment of the harmfulness of subsidies: Some subsidies, while limited in size, can cause substantial environmental harm.
- Lack of EU competence: Most of the subsidies are within Member States competence, frequently related to taxation, where EU legislation requires unanimity. This is a case of company car taxation which was broadly covered by a 2009 Commission study. Other studies exist and the OECD is also working on the subject.
- Vested interests, strong sectoral lobbies, and fears that removing subsidies will harm

competitiveness and cause job losses.

- Sectoral approach to policy making, insufficient integration of environment into it.

The fact that, currently, fiscal consolidation is a top priority in the Member States, creates an opportunity to accelerate the phasing out of EHS, which can increase public revenues, while at the same time achieving efficiency gains and environmental benefits.

In its guidance note on the National Reform Programmes sent to Member States in January, the Commission has reminded the Member States about the need to report on the plans and timetables to phase out the most significant environmentally-harmful subsidies in their National Reform Programmes.

Implementation

For market based instruments (MBIs)

Despite the increasing importance in the policy debate and the political endorsement of the use of market-based instruments in environmental policies, Member States in general refrain from introducing environmental taxes (or other market based instruments for environmental purposes).

In many sectors, external costs are still not (or only marginally) internalised through the use of market based instruments. This concerns greenhouse horticulture and agriculture, but also industry, where substantially lower rates of energy tax apply. With such reduced rates, these sectors in particular have only a reduced incentive to reduce their energy consumption.

Distributional and competitiveness concerns are the major factors withholding member states from introducing market based instruments for environmental purposes. A Commission Staff Working Document¹⁴³ analysing the replies to the Green Paper on market-based instruments for environment and related policy purposes confirmed those concerns – a number of respondents expressed worries about putting a greater burden on industry which then could become uncompetitive on the global level and re-locate resulting in job losses locally and ‘carbon leakage’ to countries outside the EU. Many respondents also argued for EU-wide solutions to deal with cross-border policy issues and to avoid distortions of the internal market and competitiveness that might otherwise arise from unilateral policies. Another significant constraint against the more widespread adoption of environmental taxes is that it is often not politically feasible to set taxes at a sufficiently high level to achieve desired environmental goals. Governments often face resistance if taxation related to environment is taken merely as a means of increasing its revenues. Such concerns can be avoided by a systemic shift of a tax burden from labour and capital to environment – leaving no net effect on tax burden to business and workers.

Another concern constraining the use of MBIs involves social issues, due to negative distributional impacts. Any new instruments should also foresee addressing negative effects on most vulnerable groups. It will be a social challenge, especially in case of water or energy prices, meaning confronting different social groups and tackling regional problems. To help those most affected we should not attempt to mitigate by derogations and exemptions because this erodes the tax base, leads to system abuse and usually benefits higher income households, but rather seek to compensate by tailored and targeted allowances for poorer entities.¹⁴⁴ Further, the successful implementation of such instruments requires a system of revenue collection, enforcement and monitoring.

Therefore, one effective method to minimise potential competitive distortions is to coordinate environmental policies across countries - push for harmonization helps in removing barriers. Coordination among EU and its Member States and potentially beyond is crucial to avoid relocation and competitiveness concerns.

Harmonized introduction of environmental taxes at the EU level is not simple since required unanimity for all taxation decisions makes it difficult to achieve the level of tax co-ordination. Moreover, an action on the EU level is not always justified, since some areas are only locally

impacted.

One of the early concepts for an environmental tax reform proposes a shift of the tax burden from labour to environmental load in general and energy sources in particular. Considering the overuse of natural resources and the underuse of human resources (i.e. high unemployment rates) in the EU, such a shift “may contribute to increased employment alongside environmental improvements”¹⁴⁵. This is commonly referred to as a ‘double dividend’.

Introducing any new measures is a political and social challenge. There is a negative relation between effectiveness of environmental taxes and their political feasibility. To get a public acceptance, their implementation should entail wide public consultations and clear indications of implementation arrangements assisted by available substitute (while introducing a plastic bag levy in IE, multi-usage bags were made available). Finally, shift from labour towards environmental taxation (or capital) should generate sufficient revenues to fund national social security systems, especially in the current situation of high unemployment. The best approach will depend on political structure, specific national challenges, and local traditions.

Exchanges of experience and best practice are a way forward. For this purpose, we have launched the MBI Forum.

In its Annual Growth Surveys in 2011 and 2012, the Commission has pointed to the phasing out of EHS as an opportunity for fiscal consolidation. However, only a handful of Member States reported on efforts in this area in their 2012 National Reform Programmes. The 2012 country specific recommendations endorsed by the Council include calls for 12 Member States to undertake some form of environmental tax reform, which would also contribute to EHS reform. For the 2013 Annual Growth survey, the Commission supports an increased emphasis on the shift from labour to other sources of taxation, including environmental taxes, in order to lay down a stronger basis to be taken up for the Country Specific Recommendations in 2013.

Justification for the priority objective

Increased use of MBI and phasing out of EHS will help to get prices right and improve resource efficiency and environmental outcomes, while contributing to fiscal consolidation efforts. At the same time, they will improve overall efficiency of the economy and its restructuring to meet the demands of a more resource-constrained global economy in the future. Dependence on energy and resource imports will be reduced as will the external environmental impact of the EU economy.

The greater use of MBI and the phasing out of EHS will contribute to the Europe 2020 objectives, such as resource efficiency and smart fiscal consolidation or innovation.

Integration of environmental concern into fiscal and taxation policies through the Energy Tax Directive (ETD), state aid review or reform of the CAP, the CFP and the Structural Funds will, through changing prices and hence incentives, improve the efficiency of other policies.

Some specific interest groups will try to resist this approach, claiming that the increased use of MBI and phasing out of EHS will reduce their competitiveness and harm employment.

The following forthcoming proposals are of interest to the reform of **EHS**, but also to greater efforts with **MBIs**:

- Energy Tax Directive (ETD) review proposal: if adopted it will change the tax structure and thus incentives, leading to more energy efficiency and reduced emissions and pollution.
- State aid modernisation: appropriate reform of guidelines, such as the Regional Aid Guidelines, should reduce possibilities for Member States to grant EHS.
- Identifying and reducing EHS in general: The proposed reforms in the context of the Multiannual Financial Framework to the CFP, if adopted, is expected to have a positive impact to the European fisheries and improve environmental outcomes, assuming they will incite

changes at Member States level.

- Increasing the uptake of MBIs and MBI Forum: Will improve knowledge about MBI and EHS reform, particularly in smaller Member States with limited administrative capacity to do own research, and thus can advance reform. The recent reform of the CAP proposed a further "greening" of its support and it is expected that the environmental friendly support will be maintained and further increased. Most of this support can be regarded a Market Based Instrument, like for instance agri-environmental measures that are seen as Payments for the provision of ecosystem services (PES).
- Member States' follow-up to country-specific recommendations within the European Semester on fiscal reform that favours a shift from the taxation of labour to environmental impacts and the phasing out of EHS from 2012: Adequate monitoring of these recommendations will take the issues in the mainstream process of economic governance.

Policy initiatives, such as proposals for the Common Fisheries Policy (CFP) reform or the review of the Energy Tax Directive (ETD) are already on the table. There could be an initiative on EHS reform in the coming years, the form and timing of which are as yet unclear. Apart from that, action could be promoted to help Member States in designing efficient market-based instruments that deliver upon different environmental objectives, and in eliminating EHS.

Recommendations on Environmental Tax Reform (ETR) or EHS under the Europe 2020 process of economic governance and follow up of their implementation in 2013 and 2014.

Private sector funding for environment and climate-related expenditure

Current situation

Private actors have been always partners and stakeholders in the implementation of EU legislation, including Funding programmes, which they have provided resources for investing in environmental and clean technologies. The accession of new Member States and their needs for upgrading their environmental infrastructures has created a need for short to medium term investments that had been calculated to €50-80 billion, for just complying with environmental standards. This obligation creates a big market for environmental technologies stimulating the necessary investments using public and private resources for finance. The enlarged Single Market is one of the largest markets in the world for applying new solutions and providing economies of scale for innovative technologies and products.

Investing in research, development and innovation, from both private and public sources, is vital for the EU economy. This has been recognised by a commitment and a target to achieve 3% of the EU budget spent on R&D by 2010 as stated in the Financial Perspective for 2007-2013, a target that has been achieved in the current financial period.

The Environmental Technologies Action Plan (ETAP) systematically advocated the take-up of environmental friendly technologies and innovative environmental solutions promoting support through dedicated funds (e.g. eco-innovation objective under the Competitiveness and Innovation Framework Programme-CIP or the "innovation" thematic priority in LIFE+) and mainstreaming under other funds. Its successor, the Eco-Innovation Action Plan, launched in December 2011, has a dedicated set of actions on finance in support to eco-innovation. In particular, the feasibility of new financial instruments (featuring equity and also smaller scale type of financing and risk-sharing conditions in order to engage companies and financial intermediaries) to promote mobilisation of private finance will be explored.

Still, despite all above efforts more can be done to attract private funding and thus to leverage and create more impact of scarce public resources. Innovation is amongst the key priorities for achieving the Europe 2020 objectives for growth and jobs; the Innovation Flagship and the Resource Efficiency Flagship create a new framework to stimulate with the help of private investment more growth and jobs. The Commission had already supported Public-Private partnerships, while in its COM(2009) 615 "Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships" it builds upon the role of these PPPs for sustainable growth. Stimulating more private investment is key and thus the new MFF Commission Proposal provides for the necessary provisions for encouraging private investments through the use of Innovative Financing. In particular, the Communication on "A framework for the next generation of innovative financial instruments - the EU equity and debt platforms" (COM(2011) 662 final) introduced the necessary elements for moving towards a new generation of Innovative Financial instruments, as the Commission proposed the EU equity and debt platforms with the support of the European Investment Bank and other International Financial Institutions. These instruments aim to make available additional financial resources for providing loans and guaranties to businesses (including SMEs) to enable them to engage in riskier investments and adopt new technologies.

The Commission supports private actors and business by taking up environmentally friendly projects and making investments in environmental and climate actions, through various funding programmes. Most the resources are available through the Structural and CAP Funds, the Social

Fund and others. Support for international actions has also been facilitated by the Development Co-operation budget, although is mostly directed to the countries and they decide on projects according to their priorities.

Financing opportunities also exist for businesses to obtain direct support for environment or climate-related innovation via funds that focus on environment or climate (i.e. LIFE+) or on innovation and competitiveness (CIP). Under LIFE+ fund, private actors and businesses can develop new solutions to environmental problems, novel environmental applications and technologies, or engage in sustainable management of soil and Natura 2000 sites and the promotion of eco-tourism. Support for Eco-Innovation in the Competitiveness and Innovation Framework Programme (CIP), is aiming at removing barriers for better market penetration of environmental solutions and facilitating access to finance for eco-innovative SMEs by providing equity financing (under High Growth and Innovative SME Facility- allowing for co-investment into Venture Capital companies) and grants (Market Replication Projects). Opportunities for investments also exist under the R&D budget (the different Research Framework Programmes – currently the FP7) but are more focused on research institutions.

Future outlook

In the EU level, the participation of private sector funding to environment and climate-related expenditure is expected to increase in the future, despite the current economic down-turn and lack of capital for investments. The proposed EU MFF for 2014-2020 offers more opportunities for businesses to engage in efforts to achieve environmental and climate objectives. These opportunities include direct support to the climate and energy agenda, through investments in renewable energy, energy efficiency, emissions reductions, as well as continued support for environmental infrastructures and projects improving the health and well-being of society. These initiatives frequently require the active involvement of business given their role as managers, for example on waste and water, as well as risk prevention. As shown above, the MFF proposals also provides ample support for innovation, for taking-up of new technologies, for improving the skills of workers and for building up the necessary capacities for managing natural resources in an efficient way.

For instance, Horizon 2020 may substantially increase resources to support eco-innovation activities and the uptake of new technologies, with a particular focus on SMEs. The new framework for Innovative Financing Instruments may increase leverage of financial resources from business by facilitating easier access of the private sector to finance investments in environment, notably biodiversity and climate change. Market Based Instruments, such as Payments for Ecosystem Services, will be used more extensively to incentivise sustainable management of natural capital and private sector involvement, and stepped up at EU and national level between now and 2020.

Internationally, the EU is promoting the agreement on goals and targets for key resources which underpin a green economy: water, the oceans, land and ecosystems, including forests, sustainable energy, and resource efficiency including waste. These goals are expected to drive the private sector, businesses and financial investors to make the right investments, spur technological innovation and create employment, as well as influence international funding structures and venture capital to move in the right direction. For instance, the Rio discussions put emphasis in the need for progressing with sustainability reporting by companies and the financial sector and commitments have been made to progress with it, even in the absence of fully agreed and harmonised methodologies. Many private companies and financial businesses have committed to include sustainability in their annual reporting, as well as to make use of risk indicators and progress with methodological work needed. This idea is supported by other institutional partners and players; for instance the World Bank is suggesting for companies to use natural accounting mechanisms in their statistics.

Furthermore the issue of long-term financing is discussed at Commission level. It is recognised that

providing a longer vision for investments and assuming the responsibility to support policy actions for longer periods is necessary for various policy areas. Environment and climate change policies are amongst the key areas in need of this longer vision in terms of financial support. The Commission will prepare an initiative on long-term finance to support the growth and competitiveness agenda of Europe 2020. Recognising that the stretched national and EU budgets cannot cover all the demand for investment needs, the initiative will focus on the specific role and functioning of financial institutions, markets and instruments in financing growth in the real economy and how they could add value to the overall EU strategy. It will explore how to engage the financial sector more efficiently and effectively in financing the priorities of Europe 2020, and maximise the contribution of the financial services to the economy. Needless to say that supply of finance should become available to match demand, and this can further be stimulated by identifying markets and opportunities and providing the right market signals for attracting private investments.

Key challenges

Knowledge base

- Explore questions related to the demand for Innovative Financing Instruments, by analysing which sectors may need or use them more, for which types of investment actions/projects they may be more suitable, what can be the potential volume of these Instruments and its time span;
- Explore which are the conditions that motivate private sector, business and venture capital to invest in environmental and climate action;
- Explore further the creation of markets for public goods, such as environmental and climate regulation services. Understanding how these markets can be designed and established and how then they can be used to design or stimulate policies is vital. An example of such markets that have been created to implement the climate change policy is the ETS (and various similar markets that are developing along the globe). Although some studies have been done to explore if similar concepts can be applied to other sectors (i.e. Habitat Banking for off-setting negative impacts on biodiversity), there may be need to explore further the applicability of Market based Instruments-MBIs (like for instance Payments for ecosystems Services PES) in other sectors (for instance water, etc.).

Research has been facilitated through FP7 while the businesses are also engaged in their own activities and exploration of different concepts. Pilot studies and projects are being facilitated, either by the Commission through research funds, or by different Member States' and business initiatives. Pilot companies reporting systems and guidelines on the best practices, that provide companies with a framework to meaningfully consider, analyse and report their sustainability issues are being developed, like for instance the UN Global Compact, the OECD Guidelines or Multinational enterprises; the protocols produced under the Global Reporting Initiative (GRI) and the Greenhouse Gas Protocol of the World Resources Institute.

Implementation

There are policy and institutional challenges. While investment on environment and climate change actions may be motivated by growing interest in the respective policy agendas and concern about the potential needs by stakeholders, both in EU and internationally, there is wide recognition that the private sector is not picking up quickly the challenges and is not responding by identifying opportunities and investing in actions that can clearly bring benefits. One of the main drivers of this problem of lack of investment and finance available for them, is that frequently businesses do not perceive environmental and climate change challenges and problems as those posing most of the risks to their operations. As a consequence, companies do not take these problems into account within their business models at an appropriate level, thus in practice these problems are not receiving attention and a solution.

We also do not see readily available business models that are tailored to address environmental

issues and climate risks like adapting to climate change, protecting operations from weather events, reducing liabilities or preventing the danger of an accident and pollution, accessing genetic and natural resources, etc. While bigger business and corporations are getting aware of these risks and they try to account for them as well as enhancing their response through reporting and better Corporate Social Responsibilities practices, SMEs are not able to catch-up. Reporting on environmental issues and on resource use and impacts may be problematic in practice for small firms.

Another problem is that environmental externalities and thus costs are not internalised in business operations. This is common with resources that lack an appropriate pricing (i.e. water, air), or that in some cases are offered or harvested for free (water). However, when the resource becomes scarce, or when property rights are changing (through possibly policy actions) then business must respond, plan and possibly invest in alternatives. So there is need for valuing environmental and climate change externalities and make business take them into account in their decisions.

Another challenge is business' capacity to take up innovation, develop new practices and create or acquire new skills for its personnel that is needed to respond to the use of new technologies and to development of novel solutions to problems related to energy, environment, water, etc.

Efforts are being made to address the issue of externalities and to make resource evaluation and pricing exercises whenever possible a must of policy design and making. Defining values will help both policy makers and business managers make the informed and most efficient decisions. Commitments have been taken and efforts will be made to do so in the fields of biodiversity (TEEB and Mapping of Ecosystems services) and water (water pricing). However, it is recognised that these efforts need to be strengthened. In the Climate change field, carbon prices exist, as there is a market, and policies that are driving them. However it is crucial to address again and examine how the price of carbon develops as well as how it is affected by the general policy and economic climate.

Efforts are also needed to address the capacities of business to address their risks and develop appropriate business models. Maybe research can help, but there is also room for actions by the business themselves and for skill building, training and share of best practices. This need for new skills that respond to the transformation of economy has been taken up by the European Social Fund proposal, which will finance actions to promote skills for green jobs under the Green Jobs initiative. Capacity also needs to be built for preparing to apply for Innovative Financing Instruments and also capacities of the financial sector to pick up the challenges.

Financing

The current economic and investment climate does not support high risk activities and investments. In addition, in some EU Member States there are significant problems of liquidity and capital availability for taking up investments. SMEs have been hit most from this difficult operating environment. They report as problems the availability of funds and capital investment, in particular when the risk of the investment is high (frequent in the introduction of innovation and for the development of new technologies).

The Commission has worked together with European Investment Bank (EIB) and other institutional partners to develop a wider approach to Innovative Financing Instruments, and made a proposal to generalise their use throughout the different EU budget lines. This approach built upon the best practice gained with pilot schemes in different EU funds during the period 2007-2013 (like the Risk Sharing Facility, the SME Guarantee Facility and the High Growth and Innovative SME Facility of CIP, the Loan Guarantee Instrument for TEN-T projects, The Marguerite Fund, as well as the JASPERS, JEREMIE and JESSICA instruments/initiatives under the Structural Funds) and the finding of their audits and evaluations. Within the social policy experimentation programme PROGRESS, calls for proposals may foster business creations and the development of new professions related to community-based renewable energy projects in rural areas or deprived city

areas.

Justification for the priority objective

Action in this area promotes a comprehensive response to the financing needs of environmental and climate change action and can play an important role in transforming the European economy to a low-carbon, sustainable and resource efficient economy. Promoting action along the lines described above and by bringing the private sector to engage in a discussion about financing and subsequent action will bring up multiple benefits. It will increase the leverage of EU spending, it will multiply the resources available for investments, it can target and prioritise investments and make them coherent with the enabling EU policy framework.

Progress in ensuring adequate (private) funding for environment and climate policies has strong inter-linkages with the Europe 2020 priorities, the approach of the Resource Efficiency and the Innovation and Competitiveness Flagships; the transition to a global green economy; the new Multiannual Financial Framework and the various programmes it includes like for instance Cohesion and Regional funds, Horizon 2020 and those including innovative financing instruments. Actions will help reaching objectives under other policy areas too like to support SMEs, promote the internal market and in particular the financial services, but also contribute to better implementation of the Eco-Innovation Action Plan and the Environmental Technology Verification (ETV) programme.

In the context of the proposed MFF, the proposal for the new LIFE Programme has also opened the possibilities for using innovative financial instruments and includes the possibility to test innovative financial initiatives. The role of the private sector is expressly recognised in the Proposal. This is expected to produce an overall bigger leverage effect in the spending of the EU budget. Provision to set up EU Debt and Equity Instruments involving the private sector and public and national banks have also been considered. These proposals are currently debated in Council and Parliament and the Commission will in parallel prepare implementing rules for the agreed proposals.

The Commission is working also to address the "Resource mobilisation for Biodiversity action" as described in the EU 2020 Biodiversity Strategy, trying to engage with the private sector on discussions about environmental, resource efficiency and climate change investments. In the framework of the Resource Efficiency Roadmap, a Financial Roundtable will address the involvement of the private sector in facilitating and taking up the needed investments identified for reaching the overall target of a Resource Efficient Europe.

Adequate finance to support environment and climate objectives

Current situation

The Commission's proposal for a Budget for Europe 2020¹⁴⁶ has mainstreamed environmental and climate-related objectives in all funding programmes, strengthening synergies and increasing the funds available for environment and climate-related actions. It has established as a target that 20% of the budget should be related to climate action. The estimated amounts available for environment represent about 16% of the EU budget (excluding Cohesion Policy).¹⁴⁷ This could imply a potential for increase in environment and climate-related expenditure (understood in broad terms) of up to 67% compared to the amounts available under the current programming period.

Despite this increase, the experience in the current financial period shows that uptake of funds for environment and climate-related activities in the early phases of the programming period is low (except for funds that have earmarked resources for the environment such as 7FP, CIP or LIFE+). As of 2010, investment for environmental programmes was below average.¹⁴⁸ This slow early uptake is problematic from the point of view of environment and climate change policy because the time-lag between the implementation of measures to address these challenges and the observation of measurable results is rarely immediate. As the EU has set numerous environment and climate-related targets for 2020 (or earlier, as in the case of the Water Framework Directive, under which good status must be achieved by 2015), a slow uptake of funds early on in the programming period could jeopardise the targets and result in further degradation of the environment and increased vulnerability to climate change impacts.

According to recent estimations, 10% of the 2007-2013 EU budget is available to target environmental problems *stricto sensu*. Applying a broader definition of environment (including renewable energies and clean transport) the amount available is about 14%. This means that between €12-14 billion is available for environment and climate objectives annually. However, evidence suggests that the budget execution has been generally below average for these objectives. For example, by the end of 2009, on average only 22% of available Cohesion Policy funding for sustainable growth¹⁴⁹ had been allocated to specific operations in favour of sustainable growth in comparison to approximately 27% on average for the overall CP in the MS. Uptake and progress varies markedly across Member States as well as across the main intervention categories and sub-categories (for example, only 6% was dedicated to Air pollution while 47% was allocated to "other measures to preserve the environment and risks"). The situation is similar regarding EAFRD.

The reasons for the low uptake of funds are generally known: competing priorities or popularity of a measure, environmental (infrastructure) projects often require long preparation, also to gain public acceptance. Furthermore, environment ministries often have a relatively weak position within governments to push their projects and their co-financing. Other factors are the impact of the financial crisis and restricted public budgets, insufficient technical knowledge, administrative bottleneck, and lack of experience in new MS.¹⁵⁰

According to a study on financing Natura 2000¹⁵¹, by the end of 2008 only up to 35% of the planned allocation of the EAFRD agri-environment stream had been paid to Member States, with a median of 15 % and only two out of 14 Member States that have allocated funding for the 2007-2013 period have spent above 10% of the direct Natura 2000 planned allocation. Data suggests a very slow uptake of funds (around 17,2%).¹⁵² As explained in the Commission Staff Working Paper Financing Natura 2000, the main reasons for this are:

- Lack of clear targeting of funds for biodiversity
- Competition between different policy goals
- Member State sectoral administrations often focus on securing the primary socio-economic objectives of the fund
- Lack of coherence & coordination in securing total funding needs
- Slow development of management plans for Natura 2000 sites
- Lack of capacity and know-how to access EU funds
- High administrative burden
- Lack of transparency & information on actual spending.

For other funds, such as the European Fisheries Fund (EFF), it is impossible to obtain reliable data on the amounts planned and actually used on environment or climate-related activities.¹⁵³

Based on the data available from the different studies, if the current execution trend continues, only 50% of the funds available would have actually been used by the end of the financial period,¹⁵⁴ although one could expect an improvement, given the Commission recommendations to accelerate implementation.¹⁵⁵ As already noted, while a slow uptake at the beginning of the programming period does not necessarily prejudice the uptake at the end of the financing period, the trend as indicated by the above studies is a concern for the reasons of time-lag discussed above and its implications for achieving environment and climate-related objectives and targets.

Future outlook

The final outcome of the negotiations on the MFF will set the framework for the available EU funding for environment and climate-related actions.

Key challenges

Knowledge base

Data about spending on environment and climate-related activities has been difficult to trace, especially in relation to biodiversity, since no coding system is available to account for such expenditure. For this reason, the 2010 data has to be taken with caution.

The Commission proposal for MFF would introduce a new coding and tracking system for climate-related and biodiversity-expenditure. The tracking system would help improve data collection regarding environmental and climate-related expenditure as well and monitor associated expenditure targets. The mechanism will also allow early identification of under-spending and adoption of corrective measures or additional incentives.

Implementation

The increased thematic concentration, especially for more developed regions, may lead to these regions reducing their uptake of funds for environmental and climate priorities that are not linked to energy efficiency and renewable energy. This would result in uneven implementation of environment and climate-related spending across Member States at national and sometimes regional level. The adequate reflection of environmental and climate priorities in the Partnership Agreements, and consequent Operational Programmes, could prove decisive in increasing the uptake of funds as well as dealing with absorption capacity problems. As such, this should become a priority objective for the next programming period.

In addition, the MFF proposal has reinforced earmarking of greening measures in the CAP (e.g., 30% of the first pillar will go to farmers complying with green measures) and Horizon 2020 (60% of funds should be allocated to sustainable development). However, there is a risk that the

Commission's proposals will be significantly modified and some of these ambitious greening measures lost in the final decisions adopted by the co-legislators.

Finally, the Commission proposal for the LIFE programme has created a new type of project, i.e. Integrated Projects (IPs), to i.a. increase Member States' capacity to implement environmental legislation in an integrative way and show the benefits of investing in the environment. Means to mobilise other EU Funds and national and private funds is also an important component of these projects. Since administrative organisation and capacity vary widely across Member States, one of the objectives of the Commission's proposal is to ensure that there are enough examples of IPs across the EU for all environmental sectors and Member States so that different experiences can be widely disseminated and Member States and regions can learn from each other. The proposal also foresees technical assistance to help Member States establish the necessary institutional structures needed to prepare and implement this type of project. The goal is that by the end of the programming period all Member States are familiar with and apply an integrative approach. This would increase the possibilities of improving current uptake of funds and achieving environment and climate-related objectives.

Moreover, the Commission Staff Working Paper on the Common Strategic Framework (CSF) requires coordination, complementarity and synergies between the CSF funds and Integrated Projects funded under LIFE, which will help making the concept operational in all Member States.

Financing

The financial crisis and related austerity measures may lead to problems to find matching funds needed in some cases.

In the Commission's proposal for the MFF, co-financing rates have been increased in most EU Funds, including LIFE (even if in this case is not a true increase in the programme's intervention rate, but only to compensate for the proposed reduction in the range of eligible costs).

Justification for the priority objective

Since 1997, the integration of environmental concerns in other policies is a principle of EU law. As a consequence environment has been mainstreamed into various EU funding sources in various multiannual financial frameworks. The Commission's proposal for a Budget for Europe 2020 has reinforced integration, ensuring that environmental and climate objectives are reflected in all main instruments, since they are essential to build a low-carbon, resource efficient, and climate resilient economy. However, although great progress has been made, especially at EU level, integration in practice remains very uneven as reflected by the use of funds available for these two priorities.

The finance-related measures proposed under the 7EAP will complement the various reform proposals put forward by the Commission by ensuring that Member States reflect environment and climate-related investments to achieve broader growth and economic objectives. This in turn would be essential to ensure that funds available are actually and effectively used. The effective use of funds will also reinforce the negotiating position of the EU in various international fora (e.g., climate change negotiations, Rio+20, etc.).

Otherwise, the evaluation of various EU programmes at the end of the period, may show again unsatisfactory execution levels as today, with environmental and climate potential for growth under developed.

During the preparation of the Multiannual Financial Framework, one of the policy options discussed to increase the mobilisation of funds for environment and climate was the creation of a large scale dedicated fund. But this would have reduced the potential for further integration of environment and climate objectives into other policies, which is much needed to ensure the shift towards a more competitive and greener economy.¹⁵⁶ In addition, possible earmarking in various funding sources was discussed as a part of the thematic concentration efforts. As shown above,

earmarking was considered appropriate for certain policy areas whereas in other cases it was considered too strict (for example in Cohesion Policy) given the differences between Member States.

Targets, as those proposed in this objective for the 7EAP provide flexible stimulus and incentives for action, especially when combined with adequate tracking mechanisms that allow stakeholders to have information on their situation in achieving the target. In addition, the political commitment will provide environmental authorities, civil society and the private sector with a robust justification to request and unblock funds or to monitor their Member State performance regarding sustainable growth objectives.

With the exception of LIFE, the management of other EU Funds is shared with the Member States and implementation is in most cases at regional level leaving a relative large but needed margin of manoeuvre that impact the execution level.

Providing incentives to increase environmental expenditure will contribute to avoiding under-spending in other policy areas, which has been very much criticised by the EP, even more so in a period of crisis when national budgets are severely cut. Ensuring effective and intelligent spending is therefore essential. In addition, increasing environmental expenditure will help achieving EU 2020 objectives and targets: contribute to more sustainable growth and greener jobs, including a more sustainable and competitive agriculture, more resource-efficient cities and more competitive and innovative industry. In addition, it will strengthen energy security and bring health benefits.¹⁵⁷

Without the mainstreaming opportunities in the Commission proposal for MFF the targets will be very difficult to achieve. LIFE's budget (€3.16 billion for 2014-2020 period), which is the only instrument specifically dedicated to environment and climate action, only represents 0.3% of the EU proposed MFF; this is clearly insufficient to address the environmental and climate challenge estimated in €650 billion per year – about 5-6% of the EU's GDP.¹⁵⁸ The only possibility for the challenge to be tackled is by mobilising the EU budget in an effective, synergetic and complementary way. The Commission proposal for the 2014-2020 MFF provides the adequate financial framework for this to happen, by incentivising and giving political relevance to environment and climate-related investments in areas where regulatory measures do not work or are not sufficient (because they need financial support to be implemented). The stimulus proposed in the 7EAP will complement the possibilities offered by the proposed MFF to maximise potentialities.

No additional legal initiative is planned at this stage. However, the target offers an improvement in relation to the limits of the shared-management system: for EU Funds managed under the shared management mode, Member States have a choice among various priorities (in some cases a broad choice, in others a limited choice). The reflection of environment and climate objectives in the Partnership Agreements will provide the political commitment at the highest level to invest in environment and climate-related activities thereby increasing the relevance of environmental and climate objectives to achieve EU 2020. In addition, the targets provide an incentive to recognise environment and climate as priorities for funding in the various Operational Programmes, and a stimulus to effectively mobilise committed funds.

- Under the next MFF, it is proposed that LIFE will develop a specific multiannual work programme that will underlie and support the policy initiatives set out in the 7EAP, including the 25% target. A similar target has also been included in the Financial Statement accompanying the Commission Proposal. **LIFE's proposed Integrated Projects** are in fact designed i.a. to increase the uptake of other EU and national and private sector Funds for the environment and climate-related activities.

Integrated Projects are intended to implement in a sustainable manner, on a large territorial scale, in particular, regional, multiregional or national scale, environmental or climate strategies or action plans required by specific environmental or climate Union legislation, pursuant to

other Union acts or developed by Member States' authorities. According to the Commission Proposal, IPs shall involve, where appropriate, stakeholders, and promote, when possible, the coordination with and mobilisation of other Union funding sources. LIFE will co-finance the measures and activities included in the LIFE project per se, but the applicant must demonstrate that the LIFE project implements an environment or climate-related sectoral programme and should indicate how other funds will be used to finance the complementary measures included therein.

Integrated Projects will test different approaches to implementation of environmental action plans, providing successful models in the complementary use of funds, as well as ideas on how to leverage new financing while ensuring durable environmental results through the development of management capacity for the specific sector. LIFE, through IPs will act as the leader that guides the implementation process providing the specific environmental focus and expertise required and ensuring funds mobilised have the greatest environmental impact.

IPs objective is therefore twofold: Build the necessary capacity to manage a particular environmental or climate sector in the long term; and to have enough examples that allow mutual learning and exchanging experiences on how the implementation of EU legislation in the sectors and themes targeted could be done in the most cost-effective way by mobilising all various funding sources and by creating collaboration platforms between the public and private sectors. IPs will therefore be used as a demonstration tool to show the benefits of investing in the environmental and climate sectors encouraging authorities to develop strategic frameworks for environmental and climate investments and building the institutional capacity to use different funds in an integrated way. Given the limitations of the LIFE budget, IPs cannot provide a comprehensive solution to the problem of financing for environment, but are expected to make a contribution in this regard, and particularly to demonstrate the potential of melding finance from multiple instruments.

- The **Common Strategic Framework** which will establish the general principles for coordination mechanisms between various EU Funds thereby providing the basis for improving the mobilisation of EU Funds for environment and climate.
- The **Partnership Agreements** signed between the Commission and the Member States as well as and Operational Programmes, Rural Development Programmes (RDP) that will translate into concrete actions the political commitments and priorities established in the Agreements, including investments in environment and climate.

These processes are coordinated within the Commission and it will be ensured that environmental and climate priorities are adequately reflected. In addition, a mid-term review is foreseen to adjust priorities. Again direct internal coordination may be required to ensure the door to mobilise funds remains open.

European Semester

Current situation

The Europe 2020 Strategy defines sustainable growth as a major priority for this decade supported by the Flagship initiative "A resource efficient Europe". A number of long-term strategies fall under this Flagship, outlining the EU policies in the fields of energy, transport, agriculture, cohesion policy, climate, biodiversity, research and development, with the objective to achieve economic growth while using fewer resources and safeguarding natural capital.

The Member States (MS) have committed to promote the decoupling of economic growth from resource use, including in the Broad Guidelines for the Economic Policies (Guideline 5 on Improving resource efficiency and reducing greenhouse gases). However, progress has been uneven in the past, and there remains a large gap in the resource productivity of the MS economies.

In order to ensure that the MS are on the right track to reach resource efficiency objectives and targets and to create an EU level playing field, resource efficiency is increasingly being integrated in the European Semester, which is the Europe 2020 governance mechanism, defining annually EU priorities, giving Country Specific Recommendations (CSRs) to the Member States and monitoring the implementation of these commitments in their National Reform Programmes.

A limited number of resource efficiency issues were included in the CSR for a few Member States in 2011, focusing on environmental taxation and water pricing. In 2012, besides the climate and energy targets, a more systematic analysis was undertaken, focusing on waste and water management, environmental taxes and the reform of environmentally harmful subsidies.

These issues are reflected to a varying degree in the Member States analysis underpinning the CSRs to the MS. A shift to environmental taxation is recommended to 12 MS, energy efficiency is also well covered, while other problematic areas such as waste, water and GHG emissions are mentioned for a very limited number of MS. As for 2013, the Commission is supportive of a stronger emphasis on the employment dimension of resource efficiency in the Annual Growth Survey, with particular reference to the shift from labour to other sources of taxation, including environmental taxes. This would constitute an important basis for the Country Specific Recommendations for 2013.

Future outlook

Key EU modelling assumptions and possible parameter variations were included in the Flagship Initiative "A resource efficient Europe" (COM(2011) 21, Annex II).

Modelling exists for waste management and is being developed for water. For environmental taxes and various types of (presumed) EHS quantitative studies exist. As concerns EHS, further studies and analysis are underway.

An increased emphasis on harnessing the job creation potential of green sectors was proposed by the Employment Package, "Towards a Job-Rich Recovery".¹⁵⁹

Key challenges

Knowledge base

There is insufficient quantified and monetised information, in particular per MS, about the economic benefits of preserving, protecting and enhancing the natural capital underpinning the economy and the economic costs of environmental degradation.

The knowledge base on waste and taxation is good; on water work is on-going to improve it. On

taxes, the data is usually 2 years behind but Eurostat is making efforts to shorten this lag to some degree. On EHS, there are still challenges to establish a comprehensive knowledge base due to difficulties in defining and scoping the EHS.

Further environmental issues with a relevant economic dimension: air pollution will be addressed in the context of the review of the thematic strategy (ongoing). On biodiversity, studies/analysis were undertaken under TEEB.

The work on resource efficiency indicators is advancing, and it will serve to complement the set of the green growth indicators used currently in the analysis of MS performance under the European Semester.

Implementation

The CSRs and underlying analyses (staff working documents) address specific problems in individual MS, and their follow up is dependent on the readiness and willingness of Member States to implement them. The Commission monitors annually their implementation and can facilitate it by promoting exchange of good practices and experience among Member States and by enhanced bilateral contacts.

Justification for the priority objective

Resource efficiency is a key factor for the sustainable revival of the EU economy: it can cut costs and improve the competitiveness of companies; it is the basis for a successful renewed industrial policy, and it can provide first mover advantages to European business taking the lead in a global shift towards green growth. Green tax reforms and the removal of environmentally harmful subsidies contribute to fiscal consolidation, a key priority for many MS. By taking care of our natural capital, resource efficiency is the EU long term growth option.

For instance, growth enhancing measures directed to the eco-industries support an expanding sector of the economy with high share of SMEs and widening international markets. Employment in the eco-industries in the EU has been increasing by around 3 % per annum over the last years. The global market for eco-industries is estimated to be at least a trillion Euros, and is generally forecast to almost double over the next 10 years. The EU is strong in many of its subsectors (a 50 % share of recycling, 35 % for energy efficiency) and so well placed to benefit from this growth in global demand.

In the waste sector employment has grown with more than 20% in the period 2000-2008. The growth in jobs in recycling is almost 80% for the same period. Full implementation of EU waste legislation would save €72 billion a year, increase the annual turnover of the EU waste management and recycling sector by €42 billion and create over 400,000 jobs by 2020 in the waste management and recycling sector.

Water supply and wastewater management constitute the other big part of the eco-industries, with waste water sector growing with 7% in the period 2000-2008. Water is an essential input for agriculture, tourism, industry, transport and energy. Reduced water availability has a critical impact on hydropower and cooling of nuclear and thermal power stations. 20% to 40% of Europe's water is wasted and water efficiency could be improved by 40% through technological improvements alone.

As regards air, next to the market in air pollution control where the EU has comparative advantage, improving air quality can prevent diseases and premature deaths and thus contribute to reduced costs for healthcare, less lost workdays because of incapacity to work and better quality of life. Studies have shown that the number of working days lost due to air pollution induced illnesses is higher than the working days required to pay for additional pollutant abatement measures. Significantly, ecosystems and agriculture also suffer damage from airborne impacts such as acidification, eutrophication and ozone damage to vegetation. The annual economic cost in 2020 has been estimated at €537 bn.

Integration of resource efficiency concerns into economic policy making of Member States is essential for achieving EU environmental policy objectives. E.g. by providing the right incentives to consumers and producers or avoiding environmentally-harmful incentives, environmental improvements can be achieved in fields where regulatory measures do not work. At the same time, they contribute to making production and consumption more resource efficient and thus improve the competitiveness of our economies.

This action is linked to policy developments in climate, energy, transport, and agricultural policy, as well as taxation and employment (green jobs), in particular their follow up in the European Semester.

Europe 2020 already sets the priority of sustainable growth, ensuring that the environmental dimension of sustainable development is covered in the Strategy. However, unless sustainability is operationalized and monitored annually, it is not likely that environmental issues would be appropriately taken into account.

In the persisting crisis urgent problems of budget deficits and unemployment are likely to focus the attention exclusively on the economic and social pillar, while integration of resource efficiency in these policies can bring additional benefits of shorter and longer-term nature, untapping sources of sustainable growth.

Further integration of resource efficiency in the Annual Growth surveys for 2013 and 2014, the respective CSR, and the mid-term review of Europe 2020.

GDP and Beyond

Current situation

There is no environmental macro indicator at the same aggregation level as there is for economic performance, where GDP provides a single indicator. The same holds true for quality of life, well-being and sustainability of societal progress – again, there is no single metric or indicator. This is a drawback for environmental policy as citizens and politicians would like to get a straightforward answer to the simple question "Overall, is it getting better or worse with the environment?"

This situation is aggravated by the fact that most environmental – and social – data and indicators are 2 to 3 years old while key economic and some social indicators - such as unemployment - are available within a few weeks. In addition, little is known on which regions, social groups and business sectors are particularly benefiting from environmental improvements/suffering from degradation and how the efforts of improving the situation are shared.

This situation hampers the integration of "environment" in policy debates as it is difficult to have a comprehensive up-to-date assessment that integrates all 3 dimensions of sustainable development. This lack of aggregated metrics for environmental issues hinders policy. Where they do exist, they allow for policies and concrete targets: for example, the availability of robust and easy to understand macro indicators for climate change (global average temperature and greenhouse gas emissions) was certainly a factor in the policy development.

For natural capital - being a part of our natural environment – the situation is not much different. Data are old and incomplete, not sufficiently coherent and there is a lack of a comprehensive headline indicator. First steps on natural capital accounting have been taken by The Economics of Ecosystems and Biodiversity (TEEB)¹⁶⁰ and the European Environment Agency (EEA) in the form of eco-system accounting.

The Commission's "**Beyond GDP initiative**"¹⁶¹ is addressing this issue since 2007. In 2009, the Communication "GDP and beyond" outlined 5 short to medium-term actions which aim to improve environmental and social indicators. The actions include: 1) producing highly aggregated environmental indicators, a composite indicator on environmental pressures is under development; 2) improving timeliness of indicators, an early estimate of greenhouse gas emission is being produced by the EEA, methods for early estimates for other indicators, e.g. on flows of natural resources, are under development; 3) statistics and indicators reporting on (in-) equalities are being improved, mainly based on existing data; 4) 'environmental sustainability thresholds' are being explored to serve as a basis for assessment of progress and target setting; 5) The 1st EU-level statistical regulation on integrated environmental economic accounting has been adopted in 2011 and will deliver first data sets in 2013. This road map for going beyond GDP was welcomed by Council, the European Parliament, the EESC and the Committee of the Regions. The Commission will report on the implementation of the Communication by end of 2012 in the form of a Staff Working Document, with a view to a public consultation and a Communication in 2013, while several actions will continue.

Several Member States and regions launched own initiatives. There is now significant buy-in from the UN, e.g. Art. 38 of Rio+20 outcome document, OECD and European Statistical System, e.g. the Sofia Declaration and the report of the Sponsorship Group on Measuring Progress, Well-being and Sustainable development.

Under the Resource Efficiency Roadmap (RERM) the Commission has committed to bring together business, scientists, NGOs, local and national authorities to examine the opportunities and the

challenges and recommend new pathways to action on sustainable resource-efficient growth and to reach broad agreement with these stakeholders on how to measure progress and to set the targets needed to meet the challenge by 2013. This process has started and will contribute to identifying indicators measuring the progress towards resource efficiency and sustainability.

The Roadmap also reconfirmed the commitment of the “GDP and beyond” road map saying that the Commission will "continue its efforts under the "GDP and beyond" road map to measure societal and economic progress more comprehensively, inter alia by continuing the development of the system of environmental accounts, further integrating environmental externalities into national accounting and developing a composite index on environmental pressures.”

Future outlook

Actions to improve indicators and underlying data have been put in motion and will continue. Based on the existing policy framework some new initiatives are likely to be taken. However, under the current budget situation, without a renewed strong political commitment no data provider will make the necessary investments to arrive at complete natural capital accounts, including eco-system services and comprehensive highly aggregated environmental indicators to answer the existing need of policy makers and citizens.

Key challenges

Knowledge base

As this activity is essentially about improving the knowledge base for policy making the challenges are described under point 1 current situation.

As all activities under this heading address issues to improve the knowledge base the on-going activities are described under point 1 current situation - *Existing policy/legislative framework.*

Implementation

There are methodological and institutional challenges. While measuring single environmental issues in physical terms is relatively straightforward, there is an on-going debate on how to aggregate this environmental data into broad summary indicators and whether and how environmental degradation, natural capital and eco-system services should and if yes can be monetised.

While traditionally the statistical system is the main data provider to support policy making, in the field of environment, natural resources and their sustainable use there are several data providers that need to be coordinated and novel data providers, such as the business sector and space agencies, need to be integrated.

To overcome the methodological issues, in particular with aggregation and monetisation, composite indicators and concise scoreboards are tested and the TEEB (The Economics of Eco-systems and Biodiversity) process has been launched, the EEA has started to elaborate monetisation approaches for eco-system capital and research projects such as EXIOPOL have been co-financed to consolidate and improve knowledge on monetisation.

Initiatives such as INSPIRE, SEIS, GMES have been important steps to develop cost-efficient methods to combine existing current and historical data from a large variety of sources with targeted data collection on essential elements to achieve the needed data sets.

Financing

Currently all government offices and agencies, such as statistical offices, environmental and natural resource agencies, are under pressure in terms of financial and human resources.

Currently all data providers streamline their activities, exploit synergies through collaboration and define negative priorities to free resources for new data requests. However, it is unlikely that the

potential of these activities are sufficient to free the resources to produce the extensive and complex data sets that are needed to answer the challenges of the 21st century, such as climate change and sustainable use of natural resources in an increasingly complex society, economy and international community.

Justification for the priority objective

Protecting and improving the environment and the well-being of citizens in the framework of sustainable development for Europe and beyond are objectives stipulated in the EU Treaty and the Europe 2020 Strategy. Appropriate indicators are necessary to measure progress towards these targets. As smart, sustainable and inclusive growth is the key objectives of the EU towards 2020, indicators complementing GDP are essential.

In addition, data and indicators covering all relevant aspects (like environmental pressures, state, impacts, responses and the links with economic prosperity, social progress and human well-being today and tomorrow) in a comprehensive way are important to support the knowledge or evidence based approach to policy making of the Commission, including the Impact assessments. This work is also of value added for policy formulation at EU member state level and private decision making.

Measuring progress beyond GDP responds also to a basic and long-term societal and political trend as improvement of quality of life or well-being – in the short as in the long term - is no longer so closely connected to economic growth alone and other factors that promote prosperity, well-being and sustainability get more and more valued by citizens and more and more a success factor for companies.

The Beyond GDP process and data that will be developed under this is expected to contribute with monitoring the 7th EAP results, in particular through the development of full sets of environmental accounts and further progress on the development of a Composite Environmental Index and of Resource Efficiency indicators.

This initiative has strong inter-linkages with Europe 2020 Strategy and its Flagships, the Sustainable Development Strategy (SDS), evidence-based policy making, impact assessments, transparency and delivering to citizens.

Links exist with international policies, debates and negotiations, as the EU will be able to report beyond GDP data to the rest of the world and play a credible role in related policy processes on OECD and UN level. The Beyond GDP concept is important for the follow-up to the Rio+20 conclusions. Article 38 directly relates to the topic and requests the UN statistical commission to build on existing initiatives. For instance the promotion of natural capital accounts and further effort to the development of full sets of environmental accounts pushes the EU to a leader position in these international *fora*.

At the centre of the initiative is to improve the support to higher transparency of policy options, better democratic control and more cost-effective business strategies and public policies. A better evidence base is needed to address the challenges of the 21st century, such as climate change and sustainable use of natural resources in an increasingly complex society, economy and international community.

Up to now environmental data collection is mainly driven by the environmental *acquis* and the related monitoring requirements. This leads to an uneven availability of data across environmental media, pressures and benefits of a clean and healthy environment. In addition, from these specific data sets only theme specific indicators are produced so that no overall picture on the environment can be communicated to policy makers and citizens. With an overall environmental indicator and the underlying data covering all essential elements of environment and natural resources and their links with social and economic progress in a timely manner, a fully informed political debate and an up-to-date and fully integrated policy analysis covering on equal footing all three dimensions of sustainable development could be achieved. This will lead to more trust in and accountability of

private and public decisions. The overall objective is to make the overall benefits of sound environmental and natural resource policies for societal progress and human well-being and its long-term sustainability transparent.

Good data are an investment that pays-off by smarter policies. In particular, better information on the distributional effects of policies – in economic, social and environmental terms – could help the design of policies that have a fair and socially preferred and ethically justified distribution of effort and benefits of policy changes and thereby help overcoming blockages and speeding up reforms and innovation. Further efforts on this may be announced in the 2013 Communication on the Beyond-GDP.

Current National Accounting does only measure the increase or loss of produced capital such as machinery. National Accounting registers the loss of natural ecological capital normally as an increase of GDP, e.g. if copper ores or timber is extracted from nature and sold on the market, but neglects the diminishing of the country's capital base. Therefore natural capital accounts, recording the stocks and flows of non-renewable resources natural resources and the resilience, capacities and services provided by eco-systems in both physical and monetary terms, are essential for a balanced and sustainable economic development.

The Commission intends to present a renewed beyond GDP road map in 2013.

7) Improving integration and policy coherence

Improving integration and coherence

Current situation

Most environmental impacts are the result of activities carried out in a wide range of sectors, including agriculture, transport, energy, fisheries, forestry, industry, construction, as well as trade and development cooperation. Food production, transport and buildings alone account for more than 80% of all environmental impacts in the EU. However, many of these same sectoral policies can, when well designed and implemented, contribute to the delivery of environmental objectives. The way we develop, manage and finance our sectoral policies at both the EU and Member State levels and integrate environmental considerations and requirements into those policies is therefore fundamental to our success in achieving environmental objectives, and in delivering wider benefits for the economy and society at large – including for many sectors which directly benefit from a healthier environment.

For instance, while certain types of agricultural management may cause environmental damage and both the intensification of production and abandonment of traditional land management practices constitute significant pressures on ecosystems, traditional farming practices in High Nature Value farming areas are necessary for habitat protection. The appropriate management of farm land in more intensive areas can also create benefits for the environment. Similarly, the sustainable management of fish stocks benefits the fisheries sector, enabling fishermen to land better catches (i.e. greater quantities of mature fish, which fetch a higher price).

For it to be effective, environmental integration efforts should therefore aim at both preventing negative impacts on the environment and providing incentives for sectors to be more environmentally sustainable.

The importance of environmental integration has been recognised at the highest political level in the EU. Although environmental integration was introduced as a legal requirement under the EC Treaty in 1997,¹⁶² the treaty does not specify how this is to be done. Despite past attempts to translate the treaty requirement into practice through a coordinated approach (notably the so-called Cardiff Process launched in 1998), there is currently no consistent approach to environmental integration across the policy spectrum, and the extent and depth of conditionality and incentives provided varies from instrument to instrument.

When it comes to prevention, specific obligations exist under EU law to screen Member State plans, programmes and projects (including those which receive EU co-financing) for potential negative impacts on the environment. The **Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)** directives, when implemented effectively, can ensure that difficult trade-offs are managed early on, including dealing with social acceptance issues, rather than in the implementation phase, and that unavoidable impacts can hence be avoided or mitigated more effectively. However, while the directives impose obligations on Member States to assess potential impacts on the environment arising from a plan, programme or project, Member States are not required to block them on the basis of identified impacts. This has resulted in inconsistent application of the directives across the EU, and therefore the existence of varying degrees of protection for the environment.

More generally, the **Commission's impact assessment process**, introduced in 2002 in response to a request from the European Council, requires an ex-ante assessment of environmental, economic and social impacts to be carried out for all Commission proposals included in its legislative work programme and/or which are expected to have significant impacts. However, while the European Parliament has recently introduced its own assessment procedures, amendments introduced by the

co-legislators to draft legislative proposals during the Ordinary Legislative Procedure are not yet subject to similar assessments.

In addition to their legal obligations with respect to EIA and SEA, most EU **Member States** have **impact assessment procedures** in place. However, they are not always carried out in practice and many focus almost exclusively on direct economic costs and administrative burdens, with little attention to environmental and social impacts. Impact Assessment requirements and procedures also vary considerably from one Member State to another.¹⁶³

The Commission's proposals for the reform of key EU policies under the 2014-2020 Multi-annual Financial Framework (MFF) also contain environmental conditionalities and encourage environmental spending. For example:

- Under the **Common Agricultural Policy (CAP)**, cross-compliance linked to direct payments, as well as to some rural development measures, already contribute to the protection of natural resources, and the Commission's reform proposals introduce new 1st pillar greening requirements for farmers in receipt of direct payments. The proposal for Rural Development foresees introducing ex-ante conditionalities which also include many environmentally-linked conditions to receive Rural Development support.
- The Common **Fisheries Policy (CFP)** reform proposal has environmental considerations at its core. The aim is to restore all fish stocks to maximum sustainable yield (MSY), reduce and regulate the size of the EU's fishing fleet through an internal trading mechanism and eliminate the wasteful practice of discarding fish.
- The reformed **Cohesion Policy** would continue to offer opportunities for Member States to invest directly in environmental priorities (e.g. water supply, waste water, waste, air, clean-up of contaminated land). The requirement to integrate environment as a cross-cutting issue in all co-financed operations derived from the Treaty would continue. An innovative new feature would be the inclusion of thematic ex-ante conditionalities for water, waste and the general ex-ante conditionality for Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) directives.¹⁶⁴

The extent to which the environmental integration elements of the Commission's policy reform proposals are actually reflected in the reforms as finally adopted by the Council and European Parliament will determine whether these policies support or hamper the achievement of many of the EU's environmental objectives.

Similarly, progress has been made at EU level to improve the sustainability of transport and energy policy. The 2011 White Paper on **Transport** recognises the need to reduce environmental impacts and includes objectives on new technologies and sustainable fuels, a switch to less environmentally-damaging transport modes (particularly for freight), and internalisation of external costs. Renewable energy and energy efficiency have become core elements of the EU's **energy** policy in response to EU efforts to reduce its reliance on fossil fuels and reduce greenhouse gas (GHG) emissions. However, the continued growth in transport use and increasing demand for energy will require that both policies are carefully managed to ensure they are coherent with environment policy objectives and avoid leading to difficult trade-offs. For instance, current evidence on indirect land use change (ILUC) associated with bioenergy crops indicate significant overall environmental impacts and points to a need to further take them into account. The Commission intends to make a proposal on this in the near future.

For the **buildings sector**, EU legislation introduces obligations for national authorities to set energy-related performance standards for buildings¹⁶⁵ and the proposed Energy Efficiency Directive¹⁶⁶ would oblige Member States to set national energy efficiency targets, refurbish 3% of the building stock in the public sector to meet at least minimum energy performance requirements, and for public authorities to procure only products, services and buildings with high energy efficiency performance. Other environmental impacts of the buildings sector are yet to be covered

by legislation.

Considerable progress has also been made in integrating environment into the EU's **external policy**. In March 2002, the European Council adopted a strategy on environmental integration in external policy, and Country Environment Profiles (CEPs) have become an integral part of development cooperation programming. A report by the Court of Auditors in 2006 recognised that progress had been made in integrating environment in EC development cooperation, but requested the Commission to increase its efforts and made specific recommendations as to how this should be done.¹⁶⁷

In EU **Trade Policy**, *ex ante* Sustainability Impact Assessments (SIAs) have been applied to all major multilateral, regional or bilateral trade negotiations since 1999 to assess economic, social and environmental implications of potential agreements. Incentives have also been provided through the EU's Generalised System of Preferences for developing countries to ratify and implement Multilateral Environmental Agreements (MEAs) by offering special tariff rate cuts on goods and services exported to the EU.

The governance structure of the Europe 2020 Strategy for Smart, Sustainable and Inclusive Growth will also help deliver improved integration and policy coherence with respect to all three pillars of sustainable development, including environment, including through the European Semester process.¹⁶⁸

Moreover, the fact that EU policies are generally implemented at national and local level also has implications for the effectiveness of environmental integration efforts. Even the best efforts to include adequate incentives in sectoral policies and funds will have little effect if these are not taken up by Member States. Earmarking can be an effective solution, but is rarely used for environment-related expenditure. For instance, despite the overall increase in funds available for environment and climate-related activities under the 2007-2013 Cohesion Policy, the uptake of funds not specifically earmarked for this purpose was generally low, and investment for environmental programmes was below average as a result.¹⁶⁹

Future outlook

Despite the integration efforts outlined above, and improvements in some aspects of the environment, the overall state of Europe's environment remains problematic.¹⁷⁰ Moreover, rising global demand for energy and other resources, including food and timber, pose increasing challenges to meeting the EU's environmental objective, and much of the response to these challenges will have to come from sectoral policies. This makes it all the more important to ensure effective integration of environment into related policies and ensure a coherent approach in the way different policies address these challenges.

The Commission's policy reform proposals for the CAP, CFP and Cohesion policies for the period 2014-2020 will, if adopted by the co-legislators as proposed, enhance environmental integration into these policies and the contribution of these sectors to the achievement of environmental objectives and targets. Analysis of expected impacts of the proposals, including environmental impacts, was carried out as part of the Commission's Impact Assessment process, and common indicators are proposed to monitoring the effectiveness of the Cohesion Policy funds (ERDF and Cohesion Fund) -and CAP funds (EAGF and EAFRD), including for environment.

Key challenges

Knowledge base

The knowledge base relating to the environmental impact of various sectors and on the progress that has been made in terms of integration varies from sector to sector. Under the EU Sustainable Development Strategy a progress report was adopted in 2009, inter alia, assessing policy progress

made at EU level in the areas covered by the Strategy. While it concluded that progress had been made, unsustainable trends still persist in a number of fields.

Some form of environmental monitoring and reporting is required in key EU sectoral policies. However, the scope and quality of these obligations varies considerably from one policy to another. For example, under the CAP, a Common Monitoring and Evaluation Framework (CMEF) is used to measure progress in Rural Development, and 'agri-environmental indicators' help monitor wider agriculture/environment relationships. Discussions are beginning on how to monitor the environmental impacts of the new CAP, going beyond 2nd pillar to include the 1st pillar, notably direct payments.

Under the CFP, a Data Collection Framework (DCF) is intended to enable the state of the marine environment to be evaluated alongside the impact of fisheries on the ecosystem. However, these ecosystem indicators have not been used until now. More information related to the environmental pressures and impact of fisheries is expected to be available through the Member States' reports under the Marine Strategy Framework Directive (MSFD), which are due on 15 October 2012.

Relevant indicator sets exist for both transport and energy: the TERM (transport and environment reporting mechanism) and EERM (Energy and environment reporting mechanisms). There are extensive inventories of energy, transport, industry and agriculture emissions of air pollutants, and greenhouse gases, which are regularly updated and used in integrated assessment modelling for the climate and air sectors. Similar inventories exist for releases to water from industry.

Improving the knowledge base underpinning the quality of environmental assessment reports under the SEA and EIA Directives is another challenge.

Implementation

Implementation of environmental requirements in sectoral legislation varies from subject to subject. Approaches such as cross compliance in the CAP are effective in ensuring respect of environmental conditions, and assist in the implementation of environmental legislation applicable to agriculture more generally. Implementation of financing provisions differs widely from Member State to Member State – some Member States and regions have extensive agri-environment schemes, whereas others have required negotiation to arrive at a reasonable environmental component of a programme.

Integration of environmental aspects into the EU 2020 process, and particularly the Member State specific programmes, will be key to ensuring future environmental progress.

Financing

The current system of EU level financing for environment is largely based upon the concept of integration. Funds specifically dedicated to the environment amount to less than 1% of total EU funding, far below real needs. Effective integration of environment into sectoral policies and programmes is therefore all the more essential. The Commission has acknowledged this in its MFF proposal and has proposed to earmark 20% of MFF financing for climate measures, and 25% of rural development money to agri-environment.

Justification for the priority objective

Environmental buttressing of economic progress lies at the heart of sustainability. Ensuring that environmental media such as water, air and soil are healthy is important not only for the environment, but also for human well-being and social progress. For example, the justification for taking action to ensure clean water is as much economic as environmental, as the activities of many sectors depend on the availability of good quality water.

Given that the EU has chosen integration as the main means of ensuring the delivery of many of its

environmental objectives, just as this Programme relies on action in many sectors to reach its priority objectives, efforts at EU and Member State level to further improve environmental integration into key sectors over the period up to 2020 is warranted – and necessary.

The priority objective differs from business as usual in that it would lead to a more balanced approach to environmental integration that, on the one hand, reduces negative impacts on the environment from sectoral activities and, on the other, supports the enhanced delivery of benefits to the environment from sectoral activities through:

- a more systematic ex-ante assessment of the environmental impacts of legislative proposals at EU and Member State level;

and

- the introduction of environmental conditionalities and incentives in sectoral policy initiatives at EU and Member State level where none currently exist, and strengthen those that do exist so as to contribute to the delivery of the EU's environmental objectives and targets

Ensuring that environmental needs are met will require, at a minimum, that the environmental elements proposed by the Commission in its policy reform proposals under the MFF are retained in the adopted texts, as well as its proposal on overall levels of funding.

A number of on-going or planned initiatives will provide further opportunities for environmental integration, including:

- A proposal for a revised EIA Directive addressing identified shortcomings in the implementation of the EIA Directive (incoherence of the screening process, insufficient quality of the EIA report and EIA process and risks of overlaps) is expected before end 2012.
- The review of the EU's Air Quality legislation will identify the scope for cost-effective action in energy, industry, transport and agriculture.
- The forthcoming Cars 2020 Communication and the Communication on post-2020 targets for GHG emissions from cars and vans.
- The renewed policy framework on renewable energy foreseen for a post 2020 horizon (2013).
- The new EU Forest Strategy planned for 2013 will provide an overall framework for forest policies and will lay the ground for a new EU Forest Action Plan which will focus, amongst other forest related policies, on environment.
- The resource efficiency agenda, as laid down in the Resource Efficiency Flagship and Roadmap, contains a strong integration component, and this should feed into its follow up actions, notably the Communications on sustainable food, buildings and on land as a resource.
- An EU strategy integrating the environment and climate change into development policy is planned, setting out actions to be taken jointly by the Commission and Member States. This strategy would, for the first time, provide the operational framework to coordinate such action. One of the aims of the strategy is to achieve better aid effectiveness (coordination and division of labour) with respect to addressing the environment and climate change in development cooperation.
- The Commission's 2nd report on the application and effectiveness of the SEA Directive is expected in 2016 and will further assess the need for amending it in light of identified shortcomings and in line with environment policy priorities.

In preparing these and other initiatives, the Commission will take fully into account environmental

impacts and include environmental conditionalities and incentives in its proposals where feasible. Member States will need to ensure the same at national level.

8) Meeting the urban environment challenge

Sustainable cities

Current situation

Nearly 75% of Europeans live in cities and urban areas, and by 2020 this is expected to rise to 80%. Over the last 50 years, European cities have seen dramatic improvements in terms of mobility, green areas and waste management, and this has contributed to a significant improvement in living standards. However, Europe's cities still face a number of environmental challenges which influence the everyday lives of millions of Europeans and these often highly political issues need to be tackled through cooperation between local, national and EU authorities and their stakeholders. While living in close proximity to our daily activities can lead to more resource efficiency and so contribute to sustainability, other factors such as air pollution can be far more acute in cities.

Quality of life in cities relies on a range of components such as social equity, income and welfare, housing, a healthy environment, social relations and education. The environmental elements of good quality of life include good air quality, low noise levels, clean and sufficient water, good urban design with sufficient and high-quality public and green spaces, an agreeable local climate or opportunities to adapt, and social equity.

Many of our cities struggle to cope with social, economic and environmental problems resulting from pressures such as overcrowding or decline, social inequity, pollution and traffic. The environmental impacts of cities also spread well beyond their physical limits as they rely heavily on outside regions to meet demand for energy and resources and to accommodate waste. A study of Greater London estimates that London has a footprint 300 times its geographical area — corresponding to nearly twice the size of the entire UK.

Climate change has the potential to influence almost all components of the urban environment and to raise new, complex challenges for the quality of urban life, health and urban biodiversity. Some cities will experience droughts and higher temperatures. Others will experience floods. Climate change will affect many aspects of urban living from air quality to consumption patterns (e.g. energy for air conditioning).

Poor urban design can aggravate the impacts of climate change. Soil sealing, for example, can increase the 'urban heat island effect'. It may also increase water run-off and lack of drainage during heavy rains leading to floods. However, urban design aimed at tackling climate change could have numerous co-benefits from improved air quality, supporting biodiversity and quality of life.

Many aspects of EU policy impact on cities and the relevant policy/legislative framework is very broad. It includes:

- initiatives which set **the framework for EU policy on the urban environment**, including the **Europe 2020 Strategy** (COM(2010) 2020 final), the **Roadmap to a Resource Efficient Europe** (COM(2011) 571 final), the **Thematic Strategy on the Urban Environment** (COM(2005) 718 final), and the **Leipzig Charter on Sustainable European Cities**.
- initiatives which contribute towards a **clean and healthy urban environment**, such as **water policy** (the Drinking Water Directive (98/8/EC), the Urban Wastewater Treatment Directive (91/271/EEC) and the Water Framework Directive (2000/60/EC)); **air policy** (the Ambient Air Quality Directive 2008/50/EC and related source control measures such as the National Emission Ceilings Directive 2001/81/EC), the Industrial Emissions Directive 2010/75/EU, and legislation on the control of transport emissions (70/220/EEC, 88/77/EEC and their associated regulations), **waste management** (the Waste Framework Directive (2008/98/EC) and its

associated legislation), and **regulation of toxic substances** (the REACH Regulation (EC/1907/2006) on control of chemicals, the Plant Protection Products Regulation (EC/1107/2009), the Biocides Directive (98/8/EC), and the Sustainable Use of Pesticides Directive (2009/128/EC).

- initiatives which contribute towards **green and pleasant urban spaces**, such as **biodiversity protection** (the Habitats (92/43/EEC) and Wild Birds (2009/147/EC) Directives), **management of noise exposure** (the Environmental Noise Directive 2002/49/EC).
- initiatives to promote **efficient and sustainable urban environments**, including, promotion of **energy efficiency** (the Energy Performance of Buildings Directive (2010/31/EC) and the proposal for an Energy Efficiency Directive (COM(2011) 370 final), the promotion of **sustainable urban mobility** (the White Paper towards a Competitive and Resource-Efficient Transport System (COM(2011) 144 final), local action on **climate change** (more than 1900 cities across Europe have committed to go beyond the EU emission reduction targets of a 20% cut in CO₂ emissions by 2020); and **technological innovation and green jobs** (the Environmental Technologies Action Plan (ETAP) and the forthcoming European Innovation Partnership on Smart Cities and Communities).
- initiatives to promote **better urban management**, such as EU guidance on **Integrated Environmental Management Systems** in urban areas, following the principles of the Environmental Management and Audit Scheme (Regulation (EC)1221/2009), **green public procurement** (the EU Public Procurement Directives 2004/17/EC and 2004/18/EC), **participatory urban planning and the assessment of environmental impacts** (the INSPIRE Directive 2007/2/EC, the Strategic Environmental Assessment Directive (2001/42/EC) (SEA) and the Environmental Impact Assessment Directive (85/337/EC) (EIA)).
- Initiatives to support **best practises exchanges and commitments** to go beyond minimum EU policy objectives, such as the "**Covenant of Mayors**", to which currently more than 3500 cities adhered and set out "Sustainable Energy Action Plans (SEAPs)" with measurable and quantifiable targets.

While quantitative targets exist in some of the sectoral policies related to the urban environment (e.g. air quality, transport), no specifically urban-related quantitative targets exist.

As a voluntary initiative, the **European Green Capital Award (EGCA)** was proposed by the Commission to recognise and reward local efforts to improve the environment, the economy and the quality of life in cities. The EGCA is given each year to a city, not necessarily a capital, which is leading the way in environmentally friendly urban living and which can thus act as a role-model to inspire other cities. Cities differ enormously and sharing concrete examples of what a European Green Capital can look like is essential if further progress is to be made.

The Award's objectives are threefold, namely to:

- a) Reward cities that have a well-established record of achieving high environmental objectives,
- b) Encourage cities to commit to ambitious future goals for further environmental improvement and sustainable development, and
- c) Provide a role model to inspire other cities and promote best practices and experiences in all other European cities.

For the EGCA 12 indicators have been agreed:

- 1 Local contribution to global climate change
- 2 Local transport
- 3 Green urban areas incorporating Sustainable Land Use

- 4 Nature and biodiversity
- 5 Quality of local ambient air
- 6 Noise pollution
- 7 Waste production and management
- 8 Water consumption
- 9 Waste water treatment
- 10 Eco-innovation and Sustainable Employment
- 11 Environmental management of the local authority
- 12 Energy Performance

Future outlook

There is modelling for some of the specific policies that impact on the urban environment (for instance in air quality or noise policy) which gives results to some extent specific to urban areas. However, there is no modelling of how the urban environment as a whole will develop in 2020; it is not clear how such modelling would be done other than by combining the results from individual policy areas.

Key challenges

Knowledge base

Again, there are knowledge-base challenges specific to the individual policy areas impacting on the urban environment which will be dealt with under those policies. The key knowledge-base issue for integrated urban policy is a mechanism to track progress in implementing sustainable development on the urban scale. The EU has developed guidelines and tools for this such as Local Evaluation 21, an online self-assessment tool for participating cities to gauge the progress of their sustainable development processes. Following a 2008 ministerial agreement, the European Commission, Member States, regions and city associations are jointly developing a common European Reference Framework for Sustainable Cities. This tool – which should be available in 2012 – will help cities to implement the Leipzig Charter (see above). It will provide local authorities and actors with a practical toolkit to help them take an integrated approach, balance their economic, social and environmental needs and interests, and ensure the overall sustainable development of cities.

Compiled from thousands of pictures from European satellites, the GMES Urban Atlas prepared by the EEA provides sufficient coverage for detailed and cost-effective mapping of larger urban zones, yielding accurate land cover and usage data.¹⁷¹ The EEA has also published in 2010 a detailed Thematic Urban Assessment in the context of the SOER 2010 report.¹⁷²

Implementation

Implementation challenges specific to the policy areas impacting on the urban environment are dealt with in the individual policy areas. Among the key cross-cutting challenges related to implementation of sustainable urban policy in the EU are:

- The need to raise the profile of the importance of urban management and the opportunities open to the responsible authorities
- The need to further improve capacity for integrated urban management across the EU
- Problems with factors outside the control of urban authorities which impact strongly on the urban environment (such as emissions from road vehicles)

These are being addressed as follows:

- In order to recognise the essential role that cities play in improving the environment and their high level of commitment to genuine progress, the EU has set up the European Green Capital Award. The award is given each year to a city, not necessarily a capital, which is leading the way in environmentally friendly urban living and which can act as a role model to inspire other cities. The European Green Capital Award recognises and rewards the efforts that can be made at local level to improve not only the environment and the economy but also the quality of life of Europe's growing urban populations.
- Capacity-building is supported through networking and exchanges between cities where deemed useful, using networks such as the Covenant of Mayors and ICLEI Local Governments for Sustainability; and instruments such as the integrated projects under the LIFE + proposal (COM(2011) 874 final) designed to twin cities to improve air quality management capacity, and the Implementation Pilot Project on Air Quality Management jointly initiated by the Commission and the European Environment Agency.
- Problems with factors outside the control of urban authorities which impact strongly on the urban environment are identified within the individual policy areas and pursued in that context (e.g. air pollution implications of the EU vehicle fleet).

Financing

The main sources of financing for urban policy are:

The LIFE+ programme, which currently supports pilot projects in cities that develop new technologies, policy approaches, methods and instruments for urban environmental management, in line with the Thematic Strategy on the urban environment. The proposal for a revised LIFE+ regulation includes provision for integrated projects twinning cities so as to improve air quality management (provisionally €150m earmarked).

Cohesion policy funding for urban areas, where promoting sustainable urban development has been at the heart of the EU's regional policy since its inception. Through its structural funds – the European Regional Development Fund, the European Social Fund and the Cohesion Fund – regional policy invests in projects that promote good local governance, ensure a sustainable urban environment, foster social inclusion and equality, regenerate urban areas and boost economic growth and jobs. The EU Cohesion Fund finances environmental infrastructure in the poorest EU countries including urban wastewater treatment plants and public transport. The European Regional Development Fund finances infrastructure as well as a range of other investments such as supporting environmental business in southern Sweden (InnoEnvi project). The European Social Fund promotes employment in the EU and helps improve citizens' skills and job prospects. An example of one such project is a training programme in the Czech Republic to support environmental job skills. Between 2007 and 2013, around €30 billion will be spent on urban projects within region policy programmes. In addition to the policy's financing for infrastructure and people-based actions, the European Territorial Cooperation objective (formerly "INTERREG") can be used by cities to develop joint cross-border or transnational projects.

The Commission also provides special support for cities to work together through the URBACT programme, which is a European exchange and learning programme promoting sustainable urban development. In the current programming period URBACT offered financial support to 289 cities participating in 44 different projects. The programme enables cities to jointly develop solutions to major urban challenges, reaffirming the key role they play in facing increasingly complex societal changes.

Financing research for innovation under the EU's Research Framework Programmes. The current 7th Framework Programme (2007-2013) provides financial support for projects related to a broad range of topics for urban areas, from research on cultural heritage to the clean-up of brownfield

areas. The EU is currently targeting funds at ‘eco-innovation projects’ as part of its Environmental Technologies Action Plan. The aim is to support innovative products, services and technologies that make efficient and sustainable use of our natural resources. The European Innovation Partnership (EIP) on Smart Cities will further catalyse progress in these areas.

The Commission’s 2014-2020 cohesion policy proposals aim to support the strategic coordination of urban policies to enhance sustainable urban development and strengthen the role of cities in the EU's main investment policy. In the context of the future policy for the urban environment the Commission has proposed:

- **Ring-fencing funding for integrated sustainable urban development:** A **minimum 5%** of resources from the European Regional Development Fund (ERDF) in each Member State shall be invested, in coordinated actions that will deliver long term, energy efficient and innovative city development. Management and implementation will be delegated to cities, to varying degrees, depending on the institutional arrangements of each Member State.
- **A single investment strategy:** EU structural funds should support urban development through strategies that tackle together the economic, environmental, climate and social challenges of urban areas. Member States are asked to combine investments from different sources to support measures related to employment, education, social inclusion and improving institutional capacity. These will be designed and implemented in line with a single investment strategy.
- **Innovative urban actions:** the Commission proposes to allocate part of the budget (0.2% of the ERDF allocation) for financing innovative actions in urban areas. The innovative urban actions shall be urban pilot projects, demonstration projects and related studies of European interest. They may be focused on any policy area as long as they deliver on one of the Europe 2020 goals.
- **Urban Development Platform:** On the basis of lists of cities proposed by Member States the Commission will establish a platform to stimulate direct dialogue between cities themselves and with the Commission. The platform is not a funding instrument but a way for cities to share feedback on the use of the new approaches.

Justification for the priority objective

The urban environment is the geographical entity where many environment and environmentally-related policies come together and where at the same time many drivers for environmentally damaging activities act. Urban policy is primarily a network of interlinkages as outlined in the above assessments.

The proximity of people, businesses and services associated with the very word ‘city’ means there are also huge opportunities and benefits associated with urban living especially in terms of sustainability and resource use. Already, population density in cities means shorter journeys to work and services, greater use of walking, cycling or public transport, and living in apartments of multi-family houses or blocks requiring less heating and less ground space per person. As a result, urban dwellers on average consume less energy and land for living per capita than rural residents.

Through rethinking urban design, architecture transport and planning, we can turn our cities and urban landscapes into ‘urban ecosystems’ at the forefront of climate change mitigation (e.g. sustainable transport, clean energy and low consumption) and adaptation (e.g. floating houses, vertical gardens). Furthermore, better urban planning will improve quality of life across the board by designing quiet, safe, clean and green urban space. It also creates new employment opportunities by enhancing the market for new technologies and green architecture.

Cities, due to their concentration of people and activities, matter for Europe. Also, the problems of cities cannot be solved at the local level alone. Better policy integration and new governance, involving closer partnership and co-ordination at local, national and European level, are required.

At the same time cities are uniquely placed to pilot new solutions as they provide a critical mass of inhabitants, economic activity, research institutions and businesses for testing and rolling-out new ideas.

Urban policy is primarily an integration issue with three aspects:

- ensuring that issues relevant to the quality of the urban environment are integrated into the various sectoral policies (water, air waste, noise, biodiversity)
- providing a policy and management support framework so as to enable integrated and sustainable management at the urban scale of the large number of factors relevant to sustainable urban living (water, waste, transport, energy, green spaces, etc.)
- providing funding and capacity support as appropriate to ensure implementation of the above.

The core of future development of urban policy should aim to improve the existing framework so as to focus efforts, highlight and share successes and develop new ways to tackle problems.

The **role of the EU** is to establish a flexible but coherent policy framework and the effective incentives to improve the quality of life in cities and make fundamental decisions that will allow moving towards a sustainable resource efficient economy. Quick fixes and temporary results that satisfy citizens' perceived needs temporarily (such as more parking places) needs to be avoided, steering behaviour into a sustainable direction (by developing for example attractive alternatives to private car use).

Future initiative in this area should aim to:

- Continue to pay special attention to the urban challenges and opportunities when developing thematic strategies or policies in the area of air pollution, water, waste, biodiversity, noise etc.
- Further promote and, where appropriate, expand initiatives aimed at supporting innovation and best practice in cities, (e.g. Smart Cities Innovation Partnership, LIFE + integrated programmes, ERDF funding)
- Strengthening the individual and common knowledge base as well as networking and exchanges between cities where deemed useful, (e.g. Covenant of Mayors, ICLEI, LIFE + integrated programmes)
- Establish minimum parameters that define what a sustainable city is, based on the set of criteria for the European Green Capital Award, with the consideration of possible aspirational targets for 2020 for sustainable cities in Europe. The EGCA will remain as the award for excellence in urban environment policy.

The development of agreed minimum parameters to define a sustainable urban environment would help to ensure a coherent and integrated approach to urban sustainability. These criteria would also help the definition of the priorities for the funding for integrated sustainable urban development through the ERDF. Europeans have a right to live in healthy urban areas, and cities would be helped with a flexible approach of minimum criteria and a possible 2020 target to strive to improve the quality of life of their citizens and reduce their impact on the global environment.

9) Confronting global environmental challenges

Implementation of Rio+20 outcomes

Current situation

Rio+20 built on previous global summits: the United Nations Conference on the Human Environment in Stockholm (1972), the Conference on Environment and Development ('Earth Summit') in Rio de Janeiro (1992), and the World Summit on Sustainable Development in Johannesburg (2002). The previous summits lead to the adoption of a range of commitments and instruments, such as the biodiversity and climate Conventions in 1992 or the Johannesburg Plan of Action in 2002. Despite success in several areas, implementation of these past commitments is far from complete. Hence, besides new challenges, Rio+20 also addressed many of the outstanding environmental, social and economic problems. As a sustainable development summit, Rio+20 also was an milestone for international development policy, following on from the United Nations Millennium Summit in 2000 and the establishment of the Millennium Development Goals (MDGs), and giving direction to the MDGs after 2015.

The past decades have witnessed a number of positive and negative trends, in environment and on the broad sustainable development agenda. On the positive side, examples are that 120 million people rose above the "dollar a day" benchmark between 2000 and 2005 and access to education, healthcare and water has also seen marked improvements. On climate, the potential of action at global level has been demonstrated and we have witnessed a major increase in scientific information and public awareness. Economically, a number of developing countries have now become major economic and political players.

However considerable challenges remain. Around 1.4 billion people still live in extreme poverty and one sixth of the world's population is undernourished. Several of the Millennium Development Goals (MDGs) are severely off-track, for instance on sanitation, and where there is progress, it is geographically very uneven.

Many environmental challenges have not been solved and have become more acute. Increasing demand for resources has led to increasing depletion and degradation, and biodiversity loss and deforestation continue at an alarming rate. Scarcities of material resources, as well as access to these resources, are also becoming issues of global concern. Global greenhouse gas emissions continue to rise, fuelled by land-use changes and growing demand for fossil fuels. Furthermore, the impacts of climate change can further multiply existing environmental problems. The depletion and pollution of water resources and the marine environment pose increasingly serious problems, and water scarcity could affect one-third of the world population by 2025. Desertification and land degradation impact a number of developing countries whose economies largely depend on agriculture and subsistence farming. Exposure to hazardous substances continues in developing countries and emerging economies, despite progress in implementing international conventions. Many of these environmental problems are not stand alone issues, but are mutually related and inter-dependent.

Future economic growth is likely to be fastest in emerging economies, and if well managed, can help lift people out of poverty. However, the continuation of current consumption and production patterns in many countries around the world will increase the use of natural resources, accelerate environmental degradation and worsen climate change. Environmental pressures and impacts will be exacerbated by an increasing population, urbanization and social changes.

The EU cannot ignore the global dimension of sustainable development. Europe's relative share of resource use and environmental impact is decreasing, as other regions of the world grow considerably faster both in terms of population and in terms of size of their economy. However

global environmental problems – climate, marine pollution, decline of biodiversity, etc – affect Europe's environment and we cannot effectively address many of these problems without addressing them also at global scale. They also influence other international objectives – ranging from climate change, sustainable fisheries, poverty eradication to peace and security, necessitating a proper integration of the environmental dimension into a range of external policies.

Future outlook

The outcome document of Rio+20 describes areas that require follow up from the EU. In each of those, the EU is already active. Rio+20 provides opportunities to take EU action a step further.

Rio+20 underlined that an inclusive green economy is an important tool for achieving sustainable development, stressing the opportunity, for those countries who want, to develop inclusive green economy policies as a common undertaking. Follow up areas for the EU include the creation of a strategy, at different levels and with all relevant stakeholders, to encourage global green economy practices; for instance through promoting corporate social responsibility; measurement of progress 'beyond GDP' and natural capital accounting.

Secondly, Rio calls for action in a number of thematic areas and cross-cutting issues:

Food Security and nutrition and sustainable agriculture: further commitments, including enhancing food security and access to adequate nutritious food, to promote sustainable agriculture, to significantly reduce post-harvest and other food losses and waste throughout the food supply chain, and to address the root causes of excessive food price volatility.

Water and sanitation. Commitments to enhance access to safe and affordable drinking water and basic sanitation for all and for integrated water resource management, reaffirmation of the human right to safe drinking water and sanitation, commitments to address floods, water scarcity and droughts, water pollution and water efficiency.

Energy and Sustainable Energy for All: the EU will give substantial financial support for this UN Secretary General (UNSG) led initiative, which was also part of the five priorities for green economy put forward by the EU.

Building on commitments to support for **sustainable transport** by defining goals and targets for sustainable transport and through the work of the possibly UN High Level Panel on Transport.

Employment, decent work and social protection: follow-up to commitments, including on action against unemployment and social protection floors, following recent ILO recommendations.

Commitments to help restore, the **health, productivity and resilience of marine ecosystems** through ecosystem based management and to take action to achieve significant **reductions in marine litter** (debris) by 2025.

Negotiation of an **Implementing Agreement under UN Convention on the Law of the Sea (UNCLOS)** for marine biodiversity of areas beyond national jurisdiction.

Follow through on commitments on **sustainable fisheries**, including restoring stocks on an urgent basis through science-based management plans, to manage by catch, discards and other ecosystem impacts, including by eliminating destructive fishing practices, to combat illegal, unreported and unregulated fishing and to address fisheries subsidies.

Support for convening an International Conference on **Small Island Developing States** in 2014.

Disaster risk reduction: accelerate the implementation of Hyogo Framework for action and elaborating on a follow up framework for disaster risk reduction after 2015.

Climate Change: Follow through of existing international commitments on mitigation and adaptation and further integration of climate change concerns in sustainable development policy.

Biodiversity and Forests: follow through and strengthening of commitments, including on

valuation and consideration of the socioeconomic benefits of biodiversity and ecosystems services, forest governance frameworks and the promotion of trade in legally harvested forest products through FLEGT, the EU Timber Regulation and possibly other instruments.

Follow through commitments for urgent action to reverse **land degradation** and to strive for a land degradation neutral world, including by amending the scope of the UNCCD to cover all lands (currently limited to dryland areas) or the adoption of a specific protocol under the FAOs Global Soil Partnership (GSP).

Chemicals and waste: further strengthening of the Strategic Approach to International Chemicals Management (SAICM) and other commitments for the management of hazardous waste.

Implementation of the **10 Year Framework of Programmes on Sustainable Production and Consumption**, including by providing support to the secretariat and implementing programmes.

Rio+20 outcomes make ample reference to the importance of the involvement of civil society in environmental governance. The Commission has to consider concrete follow-up actions in that regard.

Rio+20 again clearly recognise the limitations of GDP as a measure of economic and societal success and have established a process under the UN to look at possible measurements "Beyond GDP ". Further work is needed in the EU to deepen our analysis of that issue and to make a concrete contribution to the international discussion, notably by applying such concepts also in the EU.

The 7th EAP focuses on the environment related commitments and actions following from Rio+20. However contributions from other policy areas are needed too, in order to provide for a comprehensive Rio+20 follow up.

Thirdly, Rio decided to launch a process towards the establishment of a limited set of universally applicable Sustainable Development Goals, the possible thematic areas to be covered. Rio also set out the process that should allow the SDGs to be established in a manner coherent with the post-2015 development agenda and the review of the Millennium Development Goals and eventually to be integrated with that agenda.

Fourthly, Rio+20 agreed to establish an intergovernmental process to propose options for a resource mobilisation strategy for sustainable development.

Lastly, Rio+20 agreed to strengthen the UN Environment Programme and to establish a High Level Political Forum of the UN, to replace the existing Commission for Sustainable Development.

Many of these outcomes are in line with the priorities of the EU, even if in several cases the EU would have liked to see a stronger outcome. It will be important for the EU to engage actively in the above-mentioned areas. In many areas, going alone is neither efficient nor effective (ex: beyond GDP, climate, or fisheries). As to the institutional element in the Rio-outcome, the EU has long argued for a more efficient and effective global environmental and sustainable development governance. While some directions have been given at Rio, the final outcome of many processes will be defined over the years to come, through more detailed arrangements that will be developed in the UN. On the finance side, the EU is part of several processes that call for the mobilisation of resources (development cooperation, climate change and biodiversity policy are examples). The EU has a strong interest in ensuring the financing strategy for sustainable development is fully coherent with these other processes.

Future EU development cooperation policy, through the Agenda for Change, takes account of the environmental dimension through mainstreaming climate and biodiversity action.

Key challenges

Knowledge base

In recent years understanding of global environmental problems such as loss of biodiversity, climate change or desertification has greatly increased. Also the links between these problems and economic success and failure as well as the link with the eradication of poverty are now better understood. In addition to work with international institutions at regional and global level, the EU has also supported strongly the work on a stronger science-policy interface. On green economy, one of the challenges ahead is to translate global 'recipes' for green growth into regional and country-level strategies that more precisely act as guidance for policy makers and investors.

Implementation

- Financing will remain a central concern for the implementation of commitments taken at Rio+20 and its predecessors Summits. A financing strategy for sustainable development will be drawn up at UN level, for which the EU requires a position consistent with finance-related discussions on climate, biodiversity, but also on with EU positions on wider development cooperation, trade, and economic policy instruments.
- Governance for environment and sustainable development needs to be improved to deliver Rio commitments effectively and efficiently. While gradual improvements are made to environmental governance (strengthened UNEP, some streamlining of Multilateral Environmental Agreements) the bulk of the work still needs to be done. On sustainable development governance the outlook is less positive. The EU objective should be to create a successor institution to the Commission for Sustainable Development, the High Level Political Forum that delivers where CSD largely failed: in monitoring and steering implementation of sustainable development commitments.
- Successful formulation and implementation of green economy policy and actions will be needed, and "talking about" green economy will need to be translated into "doing" green economy. This can be done through increased exchanges, pilot projects, spreading it beyond think tanks and public sector banks to all key international partners and demonstrate practical added value on the social, economic and environmental dimension. A particularly important group of countries to engage with as regards green economy are the emerging economies.

In these areas the EU is already a major player, taking an active role in the UN-based Rio+20 follow up on financing, governance and goals for sustainable development. The EU will also need to review carefully a range of existing policies, to take account of the outcome of Rio and to initiate action as appropriate.

Financing

Finance has been an essential for any sustainable development summit thus far. At Rio+20, developing countries clearly linked commitments to implementation to the availability of finance or rather means of implementation in the broad sense. The work on a strategy for financing sustainable development, as agreed in Rio, will therefore need to be followed closely. A credible strategy will be instrumental in achieving success in many other Rio areas.

The EU is already committed to sustainable development objectives through its development cooperation policy. However it will be important for the EU to demonstrate it can live up to its own vision propagated at Rio, of broadening the range of means of implementation involving trade, leveraging private sector investments, creating innovative sources of finance and first and foremost stimulating the use of countries own resources. The Commission plans to address financing for sustainable development, as part of the regular Communication on financing for development / accountability mid-2013.

Justification for the priority objective

Rio+20 brought a number of new elements to the international agenda. This includes the sustainable development goals, but also the creation of a new High Level Political Forum to oversee sustainable development policy globally and a strengthening of UNEP. Rio also made progress compared to business as usual in areas such as marine (marine litter and marine biodiversity), water, sustainable production and consumption, food security and nutrition and land degradation. Rio also brought about greater acceptance of green economy as a valuable tool for sustainable development policy.

The EU has taken a high profile during preparations for Rio+20, with elaborate, outspoken positions taken on most elements in the final outcome document, a document the EU and its Member States agreed to at the level of heads of state. It is in the EU's interest to have a strong global sustainable development policy with full consideration of all three sustainable development dimensions in all its policies with an external dimension. The EU already has the EU 2020 strategy on smart sustainable growth, many aspects of which can also guide approaches to external policies.

One of the milestones of the Roadmap to a resource efficient Europe, which is the EU agenda contributing to a global move towards green growth and sustainability, is that by 2020 resource efficiency will be a shared objective of the international community, and progress will have been made towards it based on the approaches agreed in Rio. Rio+20 follow up has a link with a number of policy areas: post 2015 development cooperation, marine and fisheries, agriculture, disaster risk reduction but also a number of environment policies such as biodiversity, water, desertification and soils, as well as climate mitigation and adaptation, as well as economic policies, employment, and inclusion.

The Commission intends to present a Communication on the follow up to Rio+20 during the first semester 2013. This will be done in conjunction with a Communication on the post-2105 development agenda.

Engagement in international environment and climate change negotiations

Current situation

United Nations Framework Convention on Climate Change (UNFCCC)

International negotiations progressed considerably in the UN framework Convention on Climate Change in 2011 when, in the Durban conference parties agreed on a roadmap towards a new legal framework for all by 2015 for application from 2020 onwards, combined with a work plan on ambition for the period before 2020. At the same Conference it was also agreed that the Kyoto Protocol will have a second commitment period after 2012.

On mitigation, the Durban Platform clearly and urgently requires Parties to address the pre 2020 mitigation gap with a view to keeping the 2°C objective within sight.

The EU is willing to raise its pledge to 30% in the context of others being similarly ambitious. But the political conditions for raising 2020 pledges this year are not there – so we need to look at ways to enhance them. Before Doha, all Parties must submit the essential information on their existing mitigation commitments, as this information is lacking.

Developed countries must show leadership: clarifying their existing pledges in full, and describing the accounting approaches and practices they are using to measure and enable their mitigation efforts.

Major developing countries must also share further information on their valuable experience with their nationally appropriate mitigation actions, and how much they expect to reduce emissions. We need to learn from each other to replicate low-emission development winning strategies.

Countries that have not yet done so should come forward with pledges – they account for approximately a quarter of global emissions and that share is rising

Complementary initiatives are also needed to supplement the existing pledges.

UNEP ought to be tasked to update its "Bridging the gap" report with an estimate of the mitigation potential captured by existing pledges and the remaining mitigation potential by sectors, sources, or activities.

United Nations Convention on Biological Diversity (CBD)

The 10th Conference of the Parties to the CBD (COP10), held in Nagoya, Japan in 2010, reached agreement on a global Strategic Plan for Biodiversity 2011-2020, including the adoption of 20 targets (so-called 'Aichi Targets') to be met by all Parties. Parties to the CBD also agreed on a 2020 mission to: *"take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach."*

As part of the Strategic Plan, CBD parties agreed that that by 2020 at the latest, financial resources from all sources should have increased substantially from current levels, in accordance with a process set out in the separate but related decision on the Strategy for Resource Mobilization, which

will culminate in the adoption of quantified funding targets by the next Conference of the Parties (COP-11) in 2012. The EU was instrumental in securing this overall package.

COP10 also adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation Protocol on Access and Benefit-Sharing (Nagoya Protocol) and a Strategy for Resource Mobilisation.

The EU has translated the Aichi targets into 6 targets and corresponding actions set out in the EU Biodiversity Strategy to 2020, and the Commission is preparing a legislative proposal that will enable EU ratification of the Nagoya Protocol as soon as possible.

Future outlook

Climate change

According to the UNEP's Emission gap report if the highest ambitions of all countries associated with the Copenhagen Accord are implemented and supported, annual emissions of greenhouse gases could be cut by around 6 gigatons (Gt) of CO₂ equivalent by 2020.

Without this action, it is likely that a business-as-usual scenario would see emissions rise to an average of around 56 Gt of CO₂e by 2020. Depending how strictly the current pledges may be implemented, the world could face an ambition gap of around 6 to 11 GtCO₂e compared with where we need to be.

Emissions need to be around 44 GtCO₂e by 2020 to have a likely chance of keeping temperature increase below +2° C, the common global goal agreed in Cancun

Moreover, in order to keep the 2° C objective within reach, global greenhouse gases emissions need to peak by 2020 at the latest and be reduced by at least 50% by 2050 compared to 1990 levels and continue to decline thereafter. Annual emission reduction rates needs to be considerably raised compared to business-as-usual to secure our chances to stay below 2° C temperature increase.

Biodiversity loss

The target agreed by the world's Governments in 2002 “to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on Earth”, was not met.

According to the 3rd edition of the Global Biodiversity Outlook (2010), the overall status of the world's biodiversity is worsening. Nearly a quarter of plant species are estimated to be threatened with extinction. The abundance of assessed vertebrate species fell by nearly a third on average between 1970 and 2006, with the sharpest declines occurring in the tropics.

Urgent action is needed to tackle the main drivers of biodiversity loss and eventually reverse these trends.

Key challenges

Knowledge base

Climate change

There is a significant need to further clarify the current mitigation pledges. The gases, sectors, activities covered by mitigation efforts are still not clearly described. The countries have not yet clarified in full the global warming potential values, the base year, rules to account for credits or emissions in land-use sectors, and other assumptions attached to their mitigation commitments, so the estimates of the mitigation outcome of the commitments already taken are highly uncertain. A number of countries have yet to submit information about their domestic mitigation actions and they represent around 20% of global emissions now, possibly growing to 30% by 2020.

All parties have to further contribute to the UNFCCC process to clarify mitigation pledges and to further develop measurement, reporting and verification schemes and robust accounting framework. The EU has to keep on providing support to developing measurement, reporting and verification schemes in developing countries in line with their capacities and capabilities. UNEP and scientific experts have to keep on updating their estimate of the mitigation potential captured by existing pledges and the remaining mitigation potential by sectors, sources, or activities.

Biodiversity loss

While there is a wealth of information about biodiversity and enough knowledge to know that the status of species, ecosystems and genetic diversity is generally worsening across the globe, there are still many gaps in knowledge. For instance, scientific monitoring of species populations or habitat changes, which is crucial to understand and track their status and eventually develop adequate response measures, is often inconsistent and short-term or missing altogether. The global biodiversity science-policy interface will be strengthened through the establishment of the Inter-governmental Platform on Biodiversity and Ecosystem Services (ipBes).

Implementation

Climate change

The scale of the global mitigation challenge beyond 2020 is strongly dependent on successful pre-2020 mitigation. The feasible emission pathways and future mitigation costs beyond 2020 depend to a large extent on the ability to transform investment patterns within the next few years.

Developed countries have to show leadership, and all countries have to make progress with defining and implementing efficient policy frameworks conducive to private investments reducing emissions, decoupling their emissions and their economic development and seizing low-emission development opportunities.

Biodiversity loss

Successfully tackling biodiversity loss will require the effective implementation of policies and measures designed to reach the 20 Aichi Targets. This in turn requires translating the targets into the policies and activities of many different sectors which impact on biodiversity, including agriculture, fisheries, etc., and reflecting the value of natural capital in decision-making at all levels.

Financing

Climate change

Delivering emission reductions by 2020 in line with securing our chances to stay below 2°C temperature increase requires all sectors of the economy (energy, transport, agriculture and forestry, households and services, industry) to seize cost-effective emission reduction opportunities. Actually, with available technologies, it is feasible to cut by 17 Gt CO₂ emissions by 2020 below business-as-usual at low costs and avoiding higher costs beyond 2020 to reduce emissions or to adapt to dangerous levels of climate change, and generating sizeable co-benefits (in terms of air pollution reduction, protection of the environment, improved productivity, jobs and innovation). Nonetheless to realise this mitigation potential that is distributed among the world regions and across sectors, private investments must be mobilised. A smart regulatory environment can be a key enabler of decisions to invest in low-emission development opportunities.

The EU financial instruments can act as powerful levers to invest in low-emission development as needed at global level: with the Commission proposal to mainstream climate action in EU spending under the 2014-2020 Multiannual Financial Framework the Commission, the EU instruments for external action, as well as the 'Horizon 2020 - the Framework Programme for Research and Innovation', the LIFE programme allowing international cooperation, will make a major contribution to foster low-emission investments at global level. Notably, no less than 25 % of the "Programme for global public good and challenges" within the EU development cooperation

instrument will be spent on climate change and environment objectives while ensuring coherence with the poverty reduction objective of the EU development cooperation. And at least 20% of the budget of the EU new Partnership Instrument will advance and promote EU and emerging economies mutual interest to fighting climate change.

Biodiversity loss

The actions and measures needed to reach the 20 Aichi Targets will need to be supported by adequate investments. The 11th Conference of the Parties to the CBD (October 2012) will further flesh out Aichi Target 20, which relates to the mobilisation of financial resources from all sources for effectively implementing the Strategic Plan, on the basis of resource needs assessments provided by Parties.

The EU is already a major contributor to global financing for biodiversity. According to the 2012 EU accountability report on finance for development, the EU's collective biodiversity-related Official Development Assistance (ODA) stood at EUR 3 billion in 2010. It increased by over 140% during the period 2006-2010 in real terms, from EUR 1.3 billion in 2006, although only 26% had biodiversity as a principal objective. During this period, the EU committed on average EUR 1.7 billion per year for biodiversity-related aid, representing 53% of total ODA for biodiversity from all bilateral donors and multilateral organisations reporting to the OECD Development Assistance Committee (DAC).

The Nagoya commitment to resource mobilisation was recalled in the EU Biodiversity Strategy to 2020, which includes in its headline target to 'step up the EU contribution to global biodiversity loss', and in the action 18 foresees that 'the Commission and Member States will contribute their fair share to international efforts to significantly increase resources for global biodiversity as part of the international process aimed at estimating biodiversity funding needs and adopting resource mobilisation targets for biodiversity at CBD COP-11 in 2012'.

As a response, the Commission committed in its communication 'A budget for Europe 2020' to mainstreaming biodiversity in all relevant programmes in the area of development cooperation. This is matched with the Development Cooperation Instrument proposal to spend no less than 50% of the programme for Global Public Goods and Challenges on climate change and environmental objectives, highlighting that biodiversity will be -- especially when also contributing to climate resilience -- one of the key areas under the food security and sustainable agriculture programme. In geographical programmes, the protection and enhancement of biodiversity and ecosystem service is explicitly recognised as a priority for Latin America, Asia, and South Africa. This will require substantial outreach to these countries, given the traditional low recognition of biodiversity benefits, with a significant role for EU delegations.

Justification for the priority objective

United Nations Framework Convention on Climate Change (UNFCCC)

In order to achieve the necessary emission reductions to keep climate change below 2°C additional mitigation efforts are needed both at domestic and global level. An international, legally binding agreement remains the best way to make sure all Countries contribute to the global effort, but such negotiations needs to be complemented by pre-2020 additional mitigation actions.

International and EU aspects of Climate Change policy are closely linked. Action on climate change is also linked to various other EU policies including energy, transport, industry, trade, agriculture and rural development, consumers and health policy, employment, research and innovation, maritime and fisheries and regional policy. Integrating climate objectives into other EU policies becomes more and more important, also in the context of climate mainstreaming in the next EU budget.

In order to keep climate change below 2°C, concrete initiatives are needed. These include increase

of existing pledges and new pledges by parties that did not submit any but also complementary actions such as:

- Reducing HFCs emissions, fugitive emissions from natural gas production, black carbon emissions from diesel engines, methane from waste;
- Supporting work under other *fora* that can deliver additional emission reductions and low-emission development benefits (promoting and proposing reinforced action on bunker fuel emissions in ICAO/IMO; promoting further collaboration on sustainable energy; phase out inefficient fossil fuel subsidies; and sharing green growth policy experiences);
- Supporting the set-up of measurement, verification and reporting schemes under the UNFCCC fit to report consistently the mitigation benefits of pledges and initiatives complementing pledges;
- Engaging with experts and stakeholders on their experiences with delivering genuinely additional mitigation efforts to pledges (e.g. pioneer low-emission goals by local authorities or sectors, and monitoring arrangements securing their environmental effects).
- Some actions are already taking place elsewhere, but the UNFCCC has a special role in relation to supporting and promoting them, as well as in relation to Monitoring, Reporting and Verification (MRV).
- Continue engaging constructively as a driving force in international negotiations to achieve a legally binding agreement by 2015 (with entry into force by 2020).

At the same time the EU should promote additional mitigation efforts before 2020 and participate to new initiatives such as the recently launched Climate and Clean Air Coalition to Reduce Short-lived Climate Pollutants. An agreement on global emission reductions in the international maritime and aviation sectors should also be actively pursued.

United Nations Convention on Biological Diversity (CBD)

In order to contribute effectively to ensuring the 20 Aichi targets set out in the global Strategic Plan are reached and the 2020 mission of the Strategic Plan is accomplished:

- Member States will need to ensure the Strategic Plan is implemented at national level.
- The EU will need to fulfil commitments related to resource mobilisation under the Strategic Plan to support implementation in developing countries.
- The EU will ratify the ABS Protocol as soon as possible and by 2015 at the latest, as per Aichi target 15.

These efforts will complement the full implementation of the EU Biodiversity Strategy to 2020.¹⁷³

Ratifying Multilateral Environmental Agreements (MEAs)

Current situation

The EU generally has a good track-record when it comes to membership in Multilateral Environmental Agreements (MEAs). It is a member of over twenty regional and global agreements and related protocols, covering a broad range of environmental areas, including nature conservation, biodiversity, air pollution, chemicals, waste, soil and marine and water issues. Some ratification processes are on-going or about to be initiated. In other cases, the EU has not yet become a party to an MEAs because this would require changes in the MEA's constitution to allow for the participation of a regional organization.

At the same time, the full participation of all Member States has not yet been achieved for all key MEAs, including e.g. the Stockholm Convention on persistent organic pollutants or important protocols to the Convention against long-range trans-boundary air-pollution.

Future outlook

There is no modelling evidence of how the situation will develop, but when it comes to effective EU participation in international processes, there are indications that the processes of preparing and negotiating common EU positions in the most effective way possible still needs to be further improved and will remain more difficult as long as full participation of the EU and its Member States in the respective agreements has not been achieved.

Key challenges

Knowledge base

In general, when the EU plans to ratify a MEA or participate in an international process it has already a good knowledge base of the area at stake, notably through existing EU legislation

Implementation

Several factors may influence the implementation of this action such as the attitude of our third country partners in international forums and/or the cooperative spirit of all actors involved in developing an effective EU participation in international agreements and processes.

For key agreements where the EU is so far not a member, it has already approached third country partners to prepare the ground for future EU membership or participation but further diplomatic activity will be required to gain support and understanding for the added value of EU membership in MEAs.

For a variety of different reasons, some Member States have not yet signed and/or ratified a number of important MEAs. As these reasons can be linked to domestic politics, addressing the situation at a European level can be challenging.

Financing

The impact of this action on financing should remain limited. It will basically consist in contributing to MEAs/processes and ensuring EU participation in international meetings and processes.

Justification for the priority objective

This action is needed because it aims at preserving the EU interests and ensuring the appropriate representation of the EU on the international stage. Full participation of all Member States is crucial to ensure the credibility of the EU in related negotiations and a necessary consequence of the close link between these agreements and the EU environmental legislation. It is a matter of ensuring coherence between internal and external action for the EU and a level international playing field in environmental protection and the transformation towards a green economy.

This action is closely linked to the broader issue of external representation of the EU in international organisations and forums and to its efforts to contribute to sustainable development globally.

The Commission is continuing its efforts to ensure that the EU joins the remaining key environmental agreements and will soon be presenting several proposals for Council decisions which would authorize the EU's accession to certain agreements.

In order to ensure full participation of Member States in key MEAs/international processes the Commission would take a stronger position than previously where action was limited to letters to Member States that have not yet ratified key MEAs and would, if necessary, launch an infringement procedure in case of persistent situations.

Where results concerning the participation in MEAs and other international processes cannot be reached under this Commission, the Commission will at least pave the ground by continuous cooperation with Member States and third countries.

Cooperation with third countries

Current situation

Many environmental challenges are global in nature, and the EU's success in protecting its own environment will depend in part on how well the same challenges are addressed by other countries, and the effectiveness of action taken at regional and global level. Climate change, biodiversity loss and the ozone layer are obvious examples of truly global challenges, but most environmental challenges have some external dimension, and many of the drivers of Europe's environmental problems are caused by broad, systemic changes that Europe alone cannot control. The EU also has a moral responsibility to assist other countries in addressing the environmental challenges they face, which may threaten their future development prospects and poverty alleviation objectives.

The EU cooperates with many partner countries to address environmental issues and challenges. At present, however, there is no agreed strategic EU approach to this cooperation, which is preventing the EU from supporting national, regional and international efforts to tackle environment and climate-related challenges as effectively as it could.

The EU's **Strategic Partners** – i.e. Canada, China, Brazil, India, Japan, Mexico, Russia, South Africa, South Korea and the United States, and other G20 countries (i.e. Argentina, Australia, Indonesia, Saudi Arabia and Turkey¹⁷⁴) currently make up 57 % of the global population (the EU makes up 7.3%). Together they account for a very significant share of global biodiversity and GHG emissions, and rising living standards in many of these countries is adding further to pressures on ecosystems and natural resource depletion. The decisions they make and their effectiveness in addressing environmental problems at home therefore have important implications for the global environment. At the same time, the EU sources many of its own imports of natural resources from these same countries, and the economic ties between the EU and its Strategic Partners are strong. At present, however, our strong bilateral economic and trade relations with these countries is not matched by strong and effective bilateral relations on environment.

The main instrument for addressing bilateral relations on environment with the Strategic Partners is the regular environment and climate change policy dialogues that the EU has established with many of these countries. These dialogues vary in terms of their scope, form and timing. While the EU has sought to foster exchange of best practice and encourage policy and legislative convergence with its Strategic Partners in the fields of vehicle emissions, take-back requirements in waste management, bans on harmful substances in electrical and electronic equipment, and certain elements of the EU policy on safe management of chemicals etc., this has not been done as part of a systematic approach.

The state of the environment in Europe's **European Neighbourhood Policy (ENP) partner countries** has implications for the sustainable development and political stability of the countries themselves and the health and wellbeing of their citizens, and can have a direct impact on the health and well-being of EU citizens and can compromise the attainment of the EU's own environmental objectives, such as for air, water, marine and nature protection. The EU also shares responsibility with many of its neighbours in protecting common water bodies (rivers, seas, lakes).

The environment in most ENP partner countries faces heavy pressures, mostly related to uncontrolled and rapid development. Untreated wastewater and toxic substances are still discharged into the Mediterranean sea, and across the region there are stocks of obsolete pesticides and other hazardous waste which pose threats to the environment. At the same time, the Mediterranean region is a biodiversity hotspot, which needs to be protected and managed effectively. However, most ENP East countries still lack modern environmental management approaches, and even where basic

legal and policy frameworks are in place, implementation and enforcement remain problematic, particularly at the regional or municipal level. Financial needs for environmental protection also far outweigh the available resources. Efforts are being made through initiatives such as the longstanding EU funded Mediterranean Horizon 2020 de-pollution initiative to improve coordination with International Financial Institutions (IFIs) and achieve better alignment between IFI project financing and identified regional environmental problems. Assistance under the forthcoming European Neighbourhood Instrument will increasingly move towards budget support, and environmental concerns and conditionality will need to be given specific attention.

EU cooperation on environment with other **developing countries** has largely focused on the provision of development assistance. Combined EU Official Development Assistance (ODA) goes to more than 100 developing countries worldwide and amounts to over €43 billion a year. However, the level of funding for environment-related projects and programmes does not reflect the key role that the environmental and climate actions have in addressing poverty alleviation and supporting sustainable development, and despite the fact that the overall objective of EU development cooperation is the "eradication of poverty in the context of sustainable development". Studies show that when the environment is degraded it is the poorest sectors of society that suffer a resulting loss in income, health and living standards. They are also among the most vulnerable to the effects of climate change. Furthermore, because development strategies, plans and programs can cause environmental impacts which, in some extreme cases, may even undermine development efforts, the EU has committed to integrating environmental concerns into its development policy and to preparing an ambitious EU-wide environment integration strategy, including climate change challenges. At present, environmental and climate changes issues are not assessed in a systematic way at an early stage in the programming, but rather on a country-by-country basis.

Future outlook

There is ample scientific evidence showing that while progress has been made in some areas (such as protection of the ozone layer and reducing acid precipitation), all assessments and outlooks show that the prevailing trend up to 2020 is one of a worsening state of the global environment, including increased global warming and depletion of natural resources.

Many, if not most, of the existing targets set in the framework of multilateral environmental agreements are currently not on track to be met by 2020. Environmental problems are growing in many countries throughout the world. This will have an impact on the EU, and at the same time the EU shares responsibility for this situation with others – in particular its Strategic Partners and other G20 countries.

Key challenges

Implementation

The successful implementation of the EU's external environment and climate priorities is hindered by the lack of a consistent, coordinated EU approach to cooperation with partner countries. There is scope for working more closely together (e.g. between the Commission and the Member States, and between the Member States themselves) towards commonly agreed policy priorities. This would enhance the effectiveness and impact of EU environment and climate change policy dialogues and development assistance.

Financing

To make further progress in this area, there is a need for additional technical exchanges and co-operation, which has certain financial implications for both partners. On the one hand, the multilateral framework for Means of Implementation for environmental policy needs to be strengthened, modernised and more diversified.

In the context of the Rio+20 (UNCSD 2012) follow-up, the EU stands ready to improve the multilateral framework for resource mobilisation for all aspects of sustainable development. The new Partnership Instrument proposed by the European Commission for the period 2014-20 offers opportunities for reinforcing resources for environmental dialogue and co-operation with the Strategic Partners. Until then an Environmental Technical Assistance and Information Exchange Facility is being developed, using the existing EU programmes.

Justification for the priority objective

This action is an important contribution to promoting environment protection and sustainable development as set out in article 191 of the Treaty and further integrating EU environment policy objectives into the EU's external policy. It will involve a number of actions targeted at each of the three groups of countries identified above.

With regard to the **Strategic Partners**, action will focus on:

- ensuring that in its international work on environment, the EU (i.e. European Commission in close cooperation with the EEAS, the EU Delegations and EU Member States) places additional emphasis on its relations with the Strategic Partners (and to a lesser extent with other G20 countries¹⁷⁵) and be more focused by clearly identifying key policies for dialogue with the Strategic Partners, which may differ from country to country. Regular environment and climate change policy dialogues would be strengthened and revitalised. This would include intensified cooperation and exchanges at expert level. Complementarity and consistency between EU level relations and the wealth of bilateral relations between the Strategic Partners and individual Member States will also be ensured;
- additional efforts to build alliances with the Strategic Partners and promote convergence of positions taken in multilateral environmental negotiations, based on mutual interest, and to link the progress in this area to the overall bilateral relations between the EU and the Strategic Partners. To this end, progress (or lack of progress) would be more systematically monitored;
- putting in place a new facility for environmental technical assistance and information exchange modelled on the successful example of technical co-operation in the area of EU policies and legislation for candidate countries and European Neighbourhood Policy countries (TAIEX). This facility would draw on EU Member States' experiences in implementing EU environment policy, thereby fostering closer cooperation between the European Commission and EU Member States in this area;
- Ensuring the EU plays a more active and coherent role in G20 discussions on environment, climate change and sustainable development aiming to ensure that these issues remain on the agenda of G20 and that the G20 cooperation leads to tangible results by 2020.

With regard to the **ENP Partners**, action will focus on:

- actively developing and implementing the environmental arm of the European Neighbourhood Policy. Cooperation will be better focussed by targeting ENPI assistance at the environmental priorities outlined in the joint ENP Action Plans. In this way the assistance the Commission provides will clearly address the expressed needs of the beneficiary government. Gradual approximation with the EU acquis (a cornerstone of the ENP) will be guided by the express inclusion of the most relevant EU environment directives in the framework of the new agreements/action plans with partner countries and then monitoring of their implementation.
- using the regional frameworks of the Union for the Mediterranean and the Eastern Partnership to strengthen cooperation to address regional environmental challenges. These initiatives will enable the Commission, together with the Member States, to reach out beyond the environment ministries in partner countries and engage with other key players in partner country

governments.

With regard to **developing country partners**, action will focus on:

- developing a strategy for integrating the environment and climate change into EU development policy, setting out actions to be taken jointly by the Commission and Member States and providing the operational framework to coordinate such action. This strategy will ensure more effective aid delivery with respect to environmental issues, and more effective integration of environment in projects and programmes, based on more systematic and coordinated environmental assessments. Through addressing environment and sustainable natural resource management in a more rigorous and systematic way and taking the climate change dimension fully into account, the EU will ensure that its development actions become more sustainable, and contribute to the response to the current economic and financial crisis by promoting a "greener" global economy.

In general terms, the following impacts of these initiatives can be expected:

Environmental impacts: Considering that the EU's Strategic Partners account for a highly significant share of global pollution, biodiversity loss and natural resource depletion, and that broadly speaking their environmental performance is inferior to that of the EU and its Member States, this action has the potential to bring about significant improvements in terms of environmental impacts, both within and beyond the borders of the EU.

Social impacts: The proposed action is expected to result in a faster transition to an inclusive green economy in the EU's Strategic Partners and other G20 countries with associated public health and quality of life benefits, new jobs in the green sector, but also some lost jobs in polluting and resource depleting sectors in these countries, whereas within the European Union a positive impact on employment is expected.

Economic impacts: Further convergence in environmental policy and standards between the EU and its Strategic Partners would facilitate trade and create stronger demand for environmental goods and services, where the position of European industry is a strong one (its share is currently around 1/3 of the global market). Moreover, it would result in a more level playing field for European businesses competing with players whose main activities are based in countries that have a more lenient approach to environmental standards and performance. Successful action in this area could therefore make a positive contribution to growth and employment in the European Union.

Reducing the external impact of EU consumption

Current situation

Deforestation continues to undermine the achievement of many internationally agreed environmental goals and targets, including climate change and biodiversity. Deforestation is principally caused by the conversion of forests into other land uses, mainly for agricultural production of remunerative crops (especially for food or energy), infrastructure development (urban and industrial) and mining. Illegal logging can also be a driver of deforestation as it leads to forest degradation due to unsustainable timber extraction.

At EU level, reducing and halting deforestation is recognised as a political priority and addressed in a number of multilateral and bilateral instruments. COM (2008) 645 defines the objectives for the EU to halt global forest cover loss by 2030 at the latest and to reduce gross tropical deforestation by at least 50 % by 2020 compared to current levels. These targets are pursued within the on-going REDD + negotiations (under the UNFCCC) but the drivers of deforestation generated by the demand side (e.g. the global demand for commodities associated to forest land conversion) is not treated. In 2010 under the UN Convention on Biological Diversity (CBD), the EU signed up to an international commitment to ensure that: "by 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced." This global commitment reflects the previously quoted deforestation target by 2020.

In relation to illegal logging, which can be related to illegal timber trade and contribute to deforestation, the EU has developed a framework for action under the Forest Law Enforcement Governance and Trade (FLEGT) Action Plan (2003). To date, this has led to the conclusion of six bilateral FLEGT Voluntary Partnership agreements with third countries as of May 2012. Within this Action Plan, in 2010 the EU adopted a Regulation on timber and timber products. The Regulation introduces new obligations for operators and makes it illegal to commerce illegal timber on the EU market. CITES also contributes to addressing depletion of global forest resources, being the framework to regulate trade in commercially traded endangered timber species. However, the number of species covered is limited.

Despite the above mentioned political commitments and existing frameworks, deforestation is still rampant in tropical regions and closely related to land conversion to respond to market demand for commodities. The main drivers of deforestation are generated outside the forest sector and are often associated with the production and export of raw commodities, such as soy beans and palm kernels, or semi-processed or processed products (e.g. meat, palm oil). Both demand and supply-side actions are needed to address this phenomenon.

Future outlook

For non-timber commodities, baselines scenarios for forest land conversion, linked to the global demand for these commodities, are either non-existing or with a very limited geographical scope. An on-going EC study on the impacts of EU consumption of food and non-food imports on deforestation will produce for the first time a quantitative assessment at global level. Additional modelling and data refinement will be needed to support any new policy initiatives that may be considered in this area.

For timber, recent work on FLEGT VPAs impact monitoring will allow to develop quantitative indicators on the progress made in forest governance as well as timber tracking at national level.

<p>There are a number of studies of global timber trade as well as of trade in other commodities that could be used as a baseline scenario, all of which highlight the increasing importance at global level of sustainable consumption and related policies.</p> <p>Quantification and modelling of illegal logging as a driver, or contributor, to deforestation is difficult due to its illegal and non-transparent nature. Indications are that in some countries effective national and international action is yielding results in lowering levels of illegal logging while in others the progress has been minimal.</p>
<p>Key challenges</p>
<p>Knowledge base</p> <p>The main challenges in terms of the knowledge base are (i) quantifying the type and magnitude of EU consumption on deforestation globally and refine/integrate existing data and models; (ii) quantifying the extent of illegal logging and related economic losses (iii) identifying the most effective policy tools to address the demand side factors that drive deforestation.</p> <p>Implementation</p> <p>In relation to achieving the global deforestation targets, it is important to act on the external dimension of the Resource Efficiency Roadmap, identifying and implementing measures to address the consumption side and the drivers of deforestation linked to the main commodities (e.g. for food, feed, fibre and energy). For non-timber commodities, in fact, the most relevant element is to address the market failure in recognising the economic values of forest land use as opposed to alternative land use for commodities (cash crops) production. This challenge is partially addressed in REDD+ multilateral negotiations (with the exception of the demand side) and in the Resource Efficiency Roadmap. However, in the latter, this is limited to the sustainable food production and consumption milestone, and to the development of a <i>methodology</i> for sustainability criteria for key food commodities by 2014.</p> <p>To implement actions against illegal logging and its related trade, it is important to maintain momentum and political commitment on FLEGT VPAs. In addition, a challenge for implementation of the EU Timber Regulation within the EU is ensuring that correct and clear communication on the new provisions introduced by the Regulation reach all MS stakeholders in due time.</p> <p>Financing</p> <p>The REDD + negotiations should, in the coming years, produce a financial mechanism, and related national commitments, to address the market failure in recognising the value of forest land conservation, and introduce economic incentives to halt deforestation.</p> <p>For timber trade and the EU contribution against illegal logging, the main challenge of VPAs is maintaining a sufficient level of financing for the negotiation process and the implementation of the agreements, in a context of increasing donors' concentration on fewer countries. Development cooperation resources for implementation at national level have been made available so far by the Commission and EU Member States.</p>
<p>Justification for the priority objective</p>
<p>In order to achieve the EU objectives of halving, by 2020 and then halting, by 2030, deforestation at global level (COM(2008) 645) some further action is needed:</p> <ul style="list-style-type: none"> • For commodities and processed goods (e.g. soy, palm oil, meat, leather) that can drive degradation and deforestation processes in the countries of origin, additional work is needed to consider options to promote, from the demand side, sustainable consumption at EU level and discourage unsustainable practices at consumer level in the EU as well as in producer

countries.

- The possible extension of legal and/or sustainability standards to other commodities than timber, in the context of resource efficiency policies and Rio+20 follow up should be explored to address some of the main deforestation drivers at the global scale, linked to external demand and consumption. The FLEGT Action Plan provides a valid framework of reference to explore if all or some of its actions can be transferred to other commodities than timber. As an example, support to governance and stakeholders dialogue in partner countries and adoption of public procurement policies targeting specific commodities or products could be proposed in other commodity sector than timber. The different policy options, be them regulatory or voluntary measures, market based instruments or consumer level awareness and information activities, would need to be subject to an Impact Assessment.
- In addition to this, the implementation of the already signed FLEGT VPAs will result in FLEGT licenses appearing for the first time on timber and timber products sold on the EU market. This is now expected for the second half of 2013. Moreover, an increased number of FLEGT VPAs, the entry into effects of the EU Timber Regulation in March 2013 and intensified bilateral policy dialogue with emerging economies, particularly in Asia, will all contribute towards the objectives of fighting illegal logging and reduce worldwide deforestation.

New approaches need to be identified to work with global supply chains of commodities/products other than timber if global deforestation is to be halted and COM (2008) objectives achieved. Looking at 2020, the EU may be a relatively less influential market at global level so it needs to engage more intensively in bilateral dialogues with emerging and developed economies, which also play a relevant role on the market and can drive depletion of natural resources internationally (e.g. China, India, Japan).

The continuation and implementation of the FLEGT Action Plan has wide scale support from many stakeholders, due to its voluntary approach and emphasis on a participatory process. It could inspire the development of new approaches for other commodities/products than timber which are associated to deforestation processes in the country of origin.

Market-based solutions such as labelling schemes continue to have a role to play as well consumer awareness actions. The action well complement and potentially build synergies with the Resource Efficiency Roadmap and can be part of the Rio+ 2- follow up process.

Action in this policy area has clear linkages with the implementation Resource efficiency Roadmap, green economy and SCP concepts, the EU biodiversity strategy as well as with the EU Agenda for Change development policy and EU Climate and Energy policies.

The EU will continue to promote sustainable development through the negotiation and implementation of dedicated provisions in its bilateral and multilateral trade agreements and will consider other policy options to reduce the impacts of EU consumption on the environment in third countries, with specific targets on deforestation. This includes, beyond the implementation of the FLEGT Action Plan, measures to reduce the impacts caused by the import and consumption of other commodities than timber as part of its strategy towards the Resource Efficiency targets and RIO+20 follow up. The Communication on sustainable food planned for 2013, as well as other measures foreseen in the Resource Efficiency Roadmap, can substantially contribute to the latter. REDD + negotiations are the multilateral forum to discuss and agree on policy option to address global deforestation. The work undertaken on sustainability standards for solid biomass and the new CAP reform are other relevant policy initiatives where interaction should be sought.

OVERVIEW OF THE EVALUATION OF THE 6TH EAP

This annex provides an overview of the evaluation of the priority areas of the 6th EAP – nature and biodiversity, environment and health, natural resources and waste, climate change, and international issues and the strategic approaches – in terms of their contribution, the achievements and shortfalls of environment policy during the period, and lessons learned.

1. NATURE AND BIODIVERSITY

Contribution: For nature and biodiversity, the 6th EAP instigated the development of the thematic strategies on soil protection and on the protection and conservation of the marine environment. It pointed to the need to build a stronger knowledge base, to improve financing, and to step up current activities. It sought to raise political awareness of nature and biodiversity to a level similar to other environmental issues, in particular climate change, and highlighted the need to increase recognition of the economic value of biodiversity and ecosystem services in the policy process.

Achievements: The Natura 2000 network of protected sites has been extended to cover some 17% of the EU's total land area, while the Thematic Strategy on Soil Protection has highlighted the importance of soil as a key resource and in biodiversity protection. The Thematic Strategy on the Protection and Conservation of the Marine Environment laid the foundations for the protection of marine biodiversity, while nitrate and phosphorus pollution of rivers and lakes has declined. Moreover, building the knowledge base has been a key driving force, e.g. the TEEB initiative (*The Economics of Ecosystems and Biodiversity*)¹ has boosted the ongoing process of putting a monetary value on natural capital and ecosystem services. The EU 2010 Biodiversity baseline will serve as a benchmark and the updated SEBI 2010 (*Streamlining European 2010 Biodiversity Indicators*)² will be key to measuring future progress. Finally, a new ten-year strategy to protect biodiversity has recently been adopted.

Shortfalls: The overall target of the 6th EAP to halt biodiversity decline by 2010 was not reached and the general trend of most indicators relevant to biodiversity has been negative, albeit with significant regional variations, e.g. land abandonment, habitat fragmentation resulting from developments in transport infrastructures, urban sprawl, and inappropriate agricultural practices. A substantial proportion of Europe's freshwaters are at risk of not achieving a good status by 2015. Out of more than 10,000 non-native species in the EU, it is estimated that 10-15% have negative impacts on nature and biodiversity. Detailed biogeographical evaluations of the species and European habitat types listed in the EU Habitats Directive³ indicate that only 17% of habitat types and species have a "favourable conservation status"⁴. Development of a network of marine protected areas has been slow, designated sites accounting for approximately 6% of species and 10% of habitats to date. Despite having

¹ <http://www.teebweb.org/>

² <http://biodiversity.europa.eu/topics/sebi-indicators>

³ Council Directive 92/43/EEC, OJ L 206 , 22.07.1992

⁴ <http://www.eea.europa.eu/publications/eu-2010-biodiversity-baseline/>

highlighted the sustainable use of soil as a priority in the 6th EAP, the Council has not been able to make progress on this issue, in particular by adopting the proposed Soil Framework Directive⁵. This has to date limited the ability to reach the 6th EAP objective on *soil management* practices in the EU.

Lessons learned: More progress could have been made towards the goal of halting the decline of biodiversity by 2010 had it been matched by the necessary political attention and financial commitments from both EU and Member States.

2. ENVIRONMENT AND HEALTH

Contribution: The 6th EAP prompted a useful stock-taking exercise of existing commitments and planned actions and brought greater focus to the linkages between environmental factors and human health. It helped to push forward action which otherwise might not have happened, e.g. on the urban environment, or which may have taken longer or been less comprehensive without the impetus of the Programme, e.g. in relation to pesticides. The 2005 Thematic Strategy on Air Pollution set up a comprehensive and holistic methodological framework built on a solid knowledge base which continues to provide the basis for integrated policy on air quality.

Achievements: While protecting human health has been an objective of many environment policies, e.g. on air, water and chemicals, the 2004-2010 Environment and Health Action Plan⁶ helped to increase awareness and information on the linkages between environment and health. Comprehensive legislation was adopted in the areas of chemicals, pesticides and water, although long implementation times mean it may take time to have an impact. Levels of SO₂, NO_x and lead in air have declined over the last nine years. In addition, new measures have been taken which were not in the 6th EAP, reflecting changes in policy priorities due to increased risks of water scarcity and forest fires.

Shortfalls: The 6th EAP target that, within one generation, chemicals would be produced and used only in ways that did not lead to a significant negative impact on health and the environment is unlikely to be fully met. In addition, data is still scarce on the concentrations of chemicals in the environment and in humans, and on the effects of exposure to complex cocktails of chemicals. The Thematic Strategy on the Urban Environment does not appear to have had a significant impact with respect to the 6th EAP objective of improving the quality of the urban environment. Particulate matter and ozone remain major concerns, in particular, PM₁₀ concentrations in many EU urban areas continue to make a significant contribution to earlier deaths and disability from respiratory diseases, cardiovascular diseases and cancer. An estimated 40% of the EU's population live in urban areas with levels of noise at night above the recommended WHO levels. Access to water of satisfactory quality is insufficient and represents a risk to health in a number of rural areas.

There are also a number of gaps in legislation - not exclusively environmental - for example in relation to indoor air (given that European citizens spend an estimated 90% of their time indoors), and on emissions from domestic and commercial appliances. In addition, national emission ceilings have yet to be revised and excess atmospheric nitrogen deposition is still an issue across the EU.

Lessons learned: More attention is needed to support implementation at both national and regional levels. Research findings and information on the impacts of environmental quality on

⁵ COM(2006)232

⁶ COM(2004)416

health should be better integrated into the broader policy objective of improving public health. The urban environment needs to be better reflected in policy development, given that nearly 75% of the EU population reside in urban areas.

3. NATURAL RESOURCES AND WASTE

Contribution: The 6th EAP strengthened the link between waste policy and resource policy, and helped to reinforce waste management and move towards policy based on sustainable consumption and production. The Thematic Strategy on the Sustainable Use of Natural Resources inspired further research, led to the creation of new forums⁷ and formed the nucleus of the current work on resource efficiency. The Thematic Strategy on Waste Prevention and Recycling provided a common strategic framework for EU legislation on waste.

Achievements: Resource use is no longer increasing at the same rate as economic growth. The SCP-SIP Action Plan set out an integrated series of measures to green European manufactured products, among them the creation of a multi-stakeholder platform - the Retail Forum - designed to influence more sustainable consumption. Recently adopted measures such as the Eco-design Directive⁸, the revised Ecolabel Regulation and the Green Public Procurement initiative are designed to have positive impacts on resource use in the future.

Waste legislation has also been significantly modernised and simplified in order to better meet the overarching objectives set in the 6th EAP. Waste management legislation has been made more comprehensive by incorporating life-cycle analysis, by establishing re-use, recycling, and recovery targets and by reducing the hazardousness of certain wastes. The amount of potentially harmful substances in electronics placed on the EU market has already been substantially reduced as a result of the Directive on Restrictions on the Hazardous Use of Substances⁹.

Shortfalls: In absolute terms resource use is still increasing which is not compatible with the goal of respecting the carrying capacity of the environment in the longer term. Substantial differences in resource productivity among Member States persist. There is also an increasing reliance on imports which now account for 20% of all resources consumed and for which the impact is largely unknown.

In contrast to the 6th EAP objective of reducing the overall volume of waste generated in the EU, it appears that waste generation has at best stabilised, and is perhaps increasing. Although the Waste Framework Directive places greater emphasis on waste prevention than previously, the absence of a sufficiently robust knowledge base and different circumstances at national level did not permit more tangible measures or target-setting.

Lessons learned: Food and drink, private transport and housing are considered to account for 70% to 80% of the EU environmental impact on consumption¹⁰. Moreover, it is estimated that over 80% of all product-related environmental impacts are determined during the design phase of a product. More focus is needed on these sectors and on eco-design in order to tackle the environmental impacts of human activities and behaviour. The implementation of waste legislation continues to present a challenge, especially as trade in waste is increasing.

⁷ The ESTAT Data Centre on Natural Resources and the UNEP International Resource Panel

⁸ Directive 2009/125/EC, OJ L285/10, 31.10.2009

⁹ Directive 2002/95/EC, OJ L37/19, 13.2.2003

¹⁰ http://ec.europa.eu/environment/ipp/pdf/eipro_report.pdf

4. CLIMATE CHANGE

Contribution: Although the 6th EAP helped in the climate change area, mostly through priority-setting and by mobilising broader institutional support, other external drivers were more forceful, e.g. international developments, public awareness, the Stern review on the economics of climate change and the costs of inaction, the IPCC Fourth Assessment Report which provided a sound scientific basis for climate action, geopolitical concerns regarding fossil fuel dependency, energy prices and energy security, and increasing evidence of the effects of climate change across the globe and their associated costs, due notably to more numerous extreme weather events in many parts of the world.

Achievements: Although ambitions in relation to action by the international community were not achieved, the objectives and ambitions of the 6th EAP in relation to targets and progress at EU level were exceeded. The 2007 Climate and Energy Package set 2020 targets for greenhouse gas emissions reduction, share of renewable energy and energy efficiency. The 2005 EU Emissions Trading Scheme¹¹ put a price on carbon, and the Nitrates and Landfill Directives¹² succeeded in reducing greenhouse gas (GHG) emissions. Adaptation emerged as a new area of policy-making. The Carbon Capture and Storage Directive¹³ was adopted, although not included in the 6th EAP. Overall, binding quantifiable targets, such as the Kyoto Protocol target of reducing emissions by 8% by 2012, will be exceeded.

Shortfalls: Quantifiable targets, such as the renewable energy target of 12% of total energy use by 2010¹⁴, were more aspirational in nature and were more difficult to achieve. In addition, the increases in GHG emissions in the transport sector continue to be closely linked to economic growth. Emissions from hydro-fluorocarbons also increased between 1990 and 2008 but remain unregulated internationally.

Lessons learned: The 6EAP contributed to increased public interest in the issue. However, what proved to be more important was the ability to make a clear cost and benefits case for action, as well as political commitment at EU Heads of State level to key policy objectives.

5. INTERNATIONAL ISSUES

Contribution: The 6th EAP reiterated EU commitments (a) to integrate environmental considerations into all EU external relations and (b) to the external dimension of the EU Sustainable Development Strategy.

Achievements: The EU's international commitments under the Convention on Biological Diversity and the 2010 Nagoya agreement on biodiversity targets recently helped to push forward action on biodiversity at the international level, and some other Multilateral Environmental Agreements, such as the PIC Rotterdam Convention¹⁵ and the POPs Stockholm Convention¹⁶, have had notable success. The EU has also actively promoted coordination between climate change and biodiversity at international level. Sustainable development chapters have been included in free trade agreements and lower barriers to trade in environmental goods and services have been pursued. Last but not least, the EU has had a

¹¹ Directive 2004/101/EC amending Directive 2003/87/EC, OJ L 338, 13.11.2004, p. 18–23

¹² Council Directive 91/676/EEC, OJ L 375 , 31/12/1991 and Council Directive 1999/31/EEC, OJ L 182 , 16/07/1999

¹³ Directive 2009/31/EC, OJ L140/114, 5.6.2009

¹⁴ Directive 2001/77EC OJ L 283, 27.10.2001

¹⁵ Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Council Decision on conclusion OJ L 063, 6.3.2003

¹⁶ Convention on Persistent Organic Pollutants (POPs), Council Decision on conclusion, 14.10.2004

strong global impact via its environmental legislation, as countries exporting to the EU have had to adopt EU product standards.

Shortfalls: Despite the EU's efforts to strengthen multi-lateral cooperation and demonstrate its commitment to international conventions and agreements, little progress was made towards improved global environmental governance. Although environmental concerns were promoted in the EU's trade relations policies, they could have been better integrated into core issues such as access to markets in trade agreements. Integrating the environmental dimension into development aid was too dependent on the priority attributed to it by beneficiary countries.

Lessons learned: Environmental challenges, which are increasingly global, require a more cohesive and focused effort within the EU so that it can play its role more effectively in shaping international policy and continuing to strive for better global environmental governance. An agreed vision setting out key objectives should be the starting point for future EU action to tackle global and regional environmental problems. This would help to mobilise limited financial resources in the optimum way. The EU's growing external footprint¹⁷ must be considered along with the effectiveness of the environmental dimension in aid policies. More could and should be done to raise awareness of the economic costs and benefits of environmental issues, and the costs of inaction. The EU should also promote the "green economy" at global level, integrating environmental, social and economic aspects such as poverty alleviation.

6. STRATEGIC APPROACHES AND INSTRUMENTS

In addition to the priority areas above, the 6th EAP refers to a range of policy-making approaches and instruments including coherence and integration, finance and implementation and enforcement. These are assessed below.

Contribution: The 6th EAP complemented the Lisbon Strategy¹⁸ and the Sustainable Development Strategy¹⁹ and focused in particular on integrating environmental concerns in all policy areas, notably through the Thematic Strategies. It highlighted the need for mainstreaming environmental expenditure and financing the Natura 2000 network. Sixteen percent of the Union's multi-annual budget for 2007–2013²⁰, which covers the second half of the 6th EAP, is nominally allocated to supporting environmental objectives including the dedicated LIFE programme²¹.

The 6th EAP strongly encouraged and promoted principles and instruments for better policy-making, in particular integrated impact assessments and increased use of market-based instruments. It also highlighted the importance of solid scientific foundations for policy making.

Achievements: The 6th EAP aimed for coherence throughout the EU environment policy cycle itself, addressing objectives, instruments, implementation and - though difficult to measure - outcomes. The Thematic Strategies in particular contributed significantly to coherence within the Programme's priority areas, either by closing important gaps such as for the marine and

¹⁷ A comparison between human demand and the Earth's ecological capacity to regenerate, e.g. the water footprint measures the total amount of water used to produce goods and services consumed.

¹⁸ COM (2005) 24

¹⁹ COM (2005) 97

²⁰ COM (2004) 487

²¹ OJ L 149 9.6.2007

urban environments, soil and resources, or by addressing smaller, more specific lacunae in existing measures, e.g. air, pesticides, waste prevention and recycling.

With regard to integration, the 6th EAP helped to guide the ongoing process of environmental integration in reforms of the CAP, CFP and CP. Forestry actions were also pursued, culminating in the 2010 Green Paper on forest protection and information.

To improve the implementation of environmental legislation the Commission deployed efforts ranging from greater emphasis on *prevention* of breaches to more strategic enforcement activities, such as focusing on fundamental or systemic infringements. The Environmental Liability Directive encourages the provision of financial security to remedy environmental damage.

More substantial funding was made available from Cohesion Policy funds²² for various investments into the environment such as sustainable energy, biodiversity and nature protection or waste and water infrastructure, and from agricultural funds for better environmental performance. The 6th and 7th RTD Framework Programmes²³ also increasingly addressed sustainable development and the environment. The LIFE programme, despite its limited size, has had a visible impact on supporting implementation of the 6th EAP and has enabled targeted efforts in support of environment policy. The Environmental Compliance Assistance Programme (ECAP) offers specific help to small and medium-sized enterprises. Internationally, the Commission dedicated funds from a development aid instrument²⁴ for the 2007–2013 period, and from geographic cooperation programmes. Some progress, albeit limited, was also made on removing Environmentally Harmful Subsidies during reviews of the CFP and in the transport sector and more recently in the coal sector.

Different sets of indicators have been developed over time to strengthen the knowledge base. The five-yearly SOER Reports from the EEA have provided essential stock-taking while the Commission's Annual Environment Policy Reviews²⁵ also give regular information. In addition, the implementation of INSPIRE²⁶ and the further development of SEIS will improve environment information systems in coming years.

Shortfalls: Although it was also flagged at the end of the 5th EAP, and despite some progress, more needs to be done to improve coherence between the different strands of EU policy. Over-exploitation of the marine environment and in particular fisheries remains a problem. Transport continues to impose a significant environmental burden and environmental pressures from unsustainable consumption and production continue to grow.

Member States could still considerably improve their implementation record. The 6th EAP provided predictability on forthcoming initiatives in order for Member States and those involved in implementing legislation to be better prepared. However, this did not seem to happen: environmental infringement procedures still account for approximately one fifth of all open cases for non-communication, non-conformity or bad application of EU legislation. Implementation has been particularly problematic in the nature conservation, waste and water areas which accounted for approximately two-thirds of EU environmental infringement cases in 2010.

²² In the 2007-13 programming period approximately one-third (€ 105 billion) of the total Cohesion Policy funds will be directly or indirectly invested into the environment

²³ Decisions 1513/2002/EC and 1982/2006/EC

²⁴ CEC (2007) Thematic Strategy for the Environment and Sustainable Management of Natural Resources (ENRTP)

²⁵ COM (2009) 304

²⁶ OJ L 108 25.4.2007

The political debate on the 6th EAP in co-decision took place in the aftermath of the financial framework debate. This had already established the broad lines of the mainstream budget for the first half of the programme until 2006, which was not optimal. The effective translation of development aid and geographic cooperation programme funds into environmental programmes/projects in beneficiary countries has yet to be assessed.

Despite recent positive developments, environmental information, in particular official data and statistics, is still incomplete and not always available on time. Measures to phase out environmentally harmful subsidies did not proceed as far as had been initially hoped for and the potential to orient taxation to promote better sustainability has not been exploited. While market-based instruments have been exploited in some sectors, notably through the greenhouse gas emission trading system, their full potential remains to be tapped.

Lessons learned: The changing nature of environmental challenges requires better coherence from policy formulation to delivery, including at Member State level, both between priority areas, e.g. climate change and air policy, and in other environmentally important sectors. Trade-offs implicit in policy development could have been made more visible, e.g. the effects of bio-energy production, or the negative impacts of renewable hydropower on many water bodies.

Poor implementation of environmental legislation undermines the achievement of objectives and the credibility of environment policy, and does not help to secure the commitment of other sectors to better performance. Commission experience points to weaknesses in the EU-wide environmental governance structure, and inadequacies in the information-related provisions of environmental legislation and other EU legislation, in monitoring and in inspections.

Maximising the effectiveness of financing from programmes whose primary objective is not environmental protection requires constant scrutiny. Given the pressure on public budgets, the possibility to mobilise private sector capital needs to be addressed adequately and sufficiently early in EU environment policy development. Moreover, those policies with a clear added value in creating a green economy and that can be delivered in the short/medium term should be prioritised, e.g. Green Public Procurement. Further steps towards reform of environmental harmful subsidies are also needed.

A more extensive environmental knowledge base is required together with a better understanding of the drivers and barriers to improvements and implementation of legislation.

Efforts to support eco-innovation in Europe should be reinforced to address barriers to market uptake of promising research results.

OVERVIEW OF THE MAIN STUDIES USED FOR THE IA

This annex provides an overview of the main studies used for the Impact Assessment of the proposal for a new General Environment Action Programme.

BIO Intelligence Service (November 2011) "Implementing EU waste legislation for green growth". Available at:

<http://www.ec.europa.eu/environment/waste/studies/pdf/study%2012%20FINAL%20REPORT.pdf>

BIO Intelligent Service (2011) "Implementing EU waste legislation for green growth". Available at:

<http://ec.europa.eu/environment/waste/studies/pdf/study%2012%20FINAL%20REPORT.pdf>

BIO-Intelligence Service (June 2012) "Assessment of resource efficiency indicators and targets". Available at:

http://www.ec.europa.eu/environment/enveco/resource_efficiency/pdf/report.pdf

Cambridge Econometrics and ECORYS (September 2011) "Assessing the implementation of green recovery measures in the EU". Available at:

http://www.ec.europa.eu/environment/enveco/memberstate_policy/pdf/green_recovery_plans.pdf

Cambridge Econometrics, Wuppertal Institute and SERI (November 2011) "Sustainability Scenarios for a Resource Efficient Europe". Available at:

http://www.ec.europa.eu/environment/enveco/studies_modelling/pdf/SustScen_Report_Final.pdf

COWI (August 2009) "Scoping study on cost-effectiveness of EU environmental policy". Available at:

http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/scoping_study2009.pdf

COWI, (August 2011) "Economic Analysis of Resource Efficiency Policies". Available at:

http://www.ec.europa.eu/environment/enveco/resource_efficiency/pdf/economic_analysis.pdf

Supporting Case studies are available at:

http://www.ec.europa.eu/environment/enveco/resource_efficiency/pdf/case_studies.pdf

COWI, ECORYS and Cambridge Econometrics (September 2011) "The costs of not implementing the environmental acquis". Available at:

http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/report_sept2011.pdf

EC, Water modelling and assessments. Analysis completed for the Blueprint for Europe and the Water Fitness check. The full set of studies is to be found at:

http://www.ec.europa.eu/environment/water/blueprint/index_en.htm

http://www.ec.europa.eu/environment/water/blueprint/ia_en.htm

http://www.ec.europa.eu/environment/water/blueprint/fitness_en.htm

Eco-innovation Observatory, (March 2011) "Closing the innovation gap – An economic opportunity for business", 2012. Available at:

http://www.eco-innovation.eu/index.php?option=com_content&view=article&id=420&Itemid=210

Flash Eurobarometer 315. Attitudes of European Entrepreneurs towards eco-innovation. Available at: http://www.ec.europa.eu/public_opinion/flash/fl_315_en.pdf

ECOLOGIC, IEEP and CEU, (February 2011) "Assessment of the sixth community environment action programme and the way forward: Towards a 7th EU environment action programme". Available at:

http://www.ec.europa.eu/environment/newprg/pdf/Ecologic_6EAP_Report.pdf

ECORYS (June 2010) "Green Jobs - Programmes to promote environmental skills". Available at:

http://ec.europa.eu/environment/enveco/industry_employment/pdf/environmental_skills_report.pdf

ECORYS, (March 2011) "Lags in the EU Economy's response to change". Study for DG Environment under framework contract: DG ENV.G.1.FRA/2006/0073. Available at:

http://www.ec.europa.eu/environment/enveco/resource_efficiency/pdf/lags_study.pdf

ECORYS, Cambridge Econometrics and COWI (October 2011) "The role of market based instruments in achieving a resource efficient economy". Available at:

http://www.ec.europa.eu/environment/enveco/taxation/pdf/role_marketbased.pdf

EEA (2010) Country assessments for the SOER. Available at:

<http://www.eea.europa.eu/soer/countries>

<http://www.cc.cec/dgintranet/env/i/f1/countryrep.htm>

EEA (2010) State of the Environment Report (SOER). A Synthesis report. EEA N°1/2010.

Available at: <http://www.eea.europa.eu/soer/synthesis>

EEA (November 2010) "Assessment of Global Megatrends". Available at:

<http://www.eea.europa.eu/soer/europe-and-the-world>

EEA (October 2011) "Greenhouse gas emission trends and projections in Europe 2011 – Tracking progress towards Kyoto and 2020 targets". Available at:

<http://www.eea.europa.eu/publications/ghg-trends-and-projections-2011>

Eftec (March 2012) Innovative Use of Financial Instruments and Approaches to Enhance Private Sector Finance of Biodiversity". Available at:

<http://www.ec.europa.eu/environment/enveco/taxation/pdf/Harmful%20Subsidies%20Report.pdf>

Eunomia and ECOTEC (2002) Financing and Incentive Schemes for Municipal Waste Management". Available at:

http://www.ec.europa.eu/environment/waste/studies/pdf/financingmunicipalwaste_management.pdf

GHK, (March 2011) "Transition Costs". Available at:

http://www.acceptance.ec.europa.eu/environment/enveco/resource_efficiency/pdf/transition_costs.pdf

GWS mbH (November 2011) "Macroeconomic modelling of sustainable development and the links between the economy and the environment". Available at:

http://www.ec.europa.eu/environment/enveco/studies_modelling/pdf/report_macroeconomic.pdf

IEEP, Ecologic and IVM (November 2009) Environmentally Harmful Subsidies: Identification and Assessments. Available at:

<http://www.ec.europa.eu/environment/enveco/taxation/pdf/Harmful%20Subsidies%20Report.pdf>

IEEP-Institute for European Environmental Policy (February 2011) "Costing the environmental needs related to rural land management" Available at:

http://www.ec.europa.eu/environment/enveco/biodiversity/pdf/costing_env_needs.pdf

IEEP-Institute for European Environmental Policy (March 2011) "Assessment of the Natura 2000 co-financing arrangements of the EU financing instrument" Available at:

http://www.ec.europa.eu/environment/enveco/biodiversity/pdf/assessment_natura2000.pdf

IEFE – Università Bocconi, Wuppertal Institute, Adelphi Consult, FFU Berlin and IEEP (2009) "The links between the environment and Competitiveness". Available at:

http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/exec_summary_comp.pdf

International Energy Agency - IEA, (2011) "Energy for All – financing access for the poor". Available at: http://www.iea.org/Papers/2011/weo2011_energy_for_all.pdf

JRC (2011) "Implementation of the CAP Policy Options with the Land Use Modelling Platform - A first indicator-based analysis". Available at:

http://ec.europa.eu/environment/enveco/impact_studies/pdf/Final%20CAP_report.pdf

JRC, (2011) "Marine Litter Technical Recommendations for the Implementation of the MSFD Requirements". Available at:

<http://publications.jrc.ec.europa.eu/repository/handle/11111111/22826>

Member States' environmental policy developments on resource efficiency and environment. See info and information for developments in all EU-27 Member States at the link:

http://www.ec.europa.eu/environment/ms_policydev.htm

OECD, (2012) "Environmental Outlook to 2050. The consequences of Inaction". Available at: <http://www.oecd.org/env/environmentalindicatorsmodellingandoutlooks/oecdenvironmentaloutlookto2050theconsequencesofinaction.htm>

PBL, Netherlands Environment Assessment Agency "Global integrated assessment to support EU future environment policies (GLIMP)" Available at:

http://www.ec.europa.eu/environment/enveco/studies_modelling/pdf/glimp.pdf

Rayment, M., E.Pirgmaier, G. De Ceuster, F. Hinterberger, O. Kuik, H. Leveson Gower, C. Polzin, and A. Varma (November 2009) "The economic benefits of environmental policy". Available at: http://www.ec.europa.eu/environment/enveco/economics_policy/pdf/report_economic_benefits.pdf

SERI and Cambridge Econometrics (July 2010) "A Scoping Study on the Macroeconomic View of Sustainability". Available at: http://www.ec.europa.eu/environment/enveco/studies_modelling/pdf/sustainability_macroconomic.pdf

UNEP (2011) "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication." Available at: <http://www.unep.org/greeneconomy/GreenEconomyReport/tabid/29846/language/en-US/Default.aspx>

UNEP, (June 2012) "Global Environmental Outlook 5 – GEO5". Available at: <http://www.unep.org/geo/geo5.asp>

United Nations – UN, High level panel on Sustainability (2012) "Resilient People, Resilient Planet: A future worth choosing". Available at: <http://www.un.org/gsp/report>

WHO - Europe, (2008) "Protecting Health in Europe from Climate Change". Available at: http://www.euro.who.int/_data/assets/pdf_file/0016/74401/E91865.pdf

WHO, "Ecosystems and Human Well-being", Millennium Ecosystem Assessment Health synthesis. Available at: <http://www.who.int/globalchange/ecosystems/ecosys.pdf>

World Business Council for Sustainable Development (WBCSD 2010) "Vision 2050: The new agenda for business". Available at: <http://www.wbcsd.org/pages/edocument/edocumentdetails.aspx?id=219&nosearchcontextkey=true>

World Business Council for Sustainable Development (WBCSD 2012) "Changing Pace". Available at: <http://www.wbcsd.org/changingpace.aspx>

GLOSSARY

(A)EPR	(Annual) Environment Policy Review
AAR	Annual Activity Report
ABB	Activity-Based Budgeting
ABM	Activity-Based Management
ABS	Access and Benefit Sharing
ACEA	European Automobile Manufacturers Association
AMP	Annual Management Plans
APS	Annual Policy Strategy
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BFR	brominated flame retardant
BINGOs	Business and industrial NGOs
BREF	Best available techniques reference document
BRICs	Brazil, Russia, India and China
BSAP	Baltic Sea Action Plan
BSC	Black Sea Commission.
CAFÉ	Clean Air For Europe
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CBSS	Council of the Baltic Sea States
CCA	Climate Change Agreement
CCL	Climate Change Levy
CCS	carbon capture and storage
CDM	Clean Development Mechanism
CEECs	Central and Eastern European Countries
CEP	Committee on Environmental Policy
CEWEP	Confederation of European Waste to Energy Plants
CFP	Common Fisheries Policy
CFSP	Common Foreign & Security Policy
CHM	Clearing House Mechanism
CHP	Combined heat and power (cogeneration)
CIS	Common Implementation Strategy (for the Water Framework Directive)
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CITL	Community Independent Transaction Log
CLRTAP	Convention on Long-Range Transboundary Air Pollution (UN ECE)
CLWP	Commission Legislative and Work Programme
CMP	Conference of the Parties to the UNFCCC serving as the Meeting of the Parties to the Kyoto Protocol
CMR	Carcinogenic, Mutagenic or toxic to Reproduction
CMS	(Bonn) Convention on Migratory Species
COP	Conference of the Parties
CoR	Committee of the Regions

CoRePer	Committee of Permanent Representatives
CPB	Cartagena Protocol on Biosafety
CSD	Commission for Sustainable Development
CSP	Country Strategy Paper
CSR	Corporate Social Responsibility
CSTEE	Committee on toxicity, ecotoxicity and the environment
CTE	Committee on Trade and Environment
CTP	Common Transport Policy
DABLAS	Danube-Black Sea
DEFRA	UK Department for Environment, Food and Rural Affairs
EAGGF	European Agricultural Guidance and Guarantee Fund
EAP	Environment Action Programme
ECBS EC	Biodiversity Strategy
ECCP	European Climate Change Programme
ECHA	European Chemicals Agency.
ECJ	European Court of Justice
ECMT	European Conference of Ministers of Transport
ECNC	European Centre for Nature Conservation
ECVAM	European Centre for the Validation of Alternative Methods
EDF	European Development Fund
EEA	European Environment Agency
EEA	European Economic Area
EfE	Environment for Europe
EFSA	European Food Safety Authority
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ELV	Emission Limit Value
ELV	End-of-Life Vehicle
EMAS	Eco-Management and Audit Scheme
EMSA	European Maritime Safety Agency
ENP	European Neighbourhood Policy
ENRTP	Strategic Thematic Programme for Environment and Sustainable Management of Natural Resources
ENVAC	Environment Advisory Committee (for procurement and contracts)
EP	European Parliament
EPA	Environmental Protection Agency (USA)
EPER	European Pollutant Emission Register
EPOC	Environment Policy Committee (OECD)
EPR	Environment Policy Review
EQS	Environmental Quality Standard
ERDF	European Regional Development Fund
ESF	European Social Fund
ETAP	Environmental Technologies Action Plan
ETR	Environmental Tax Reform
ETS	Emissions Trading Scheme
EU EI	European Energy Initiative
EUWI	EU Water Initiative
FAO	Food and Agriculture Organisation (UN)
FCPF	Forest Carbon Partnership Facility
FFH	Fauna, Flora and Habitats Directive

f-gases	Fluorinated gases (HFCs, PFCs and SF6)
FLEGT	Forest Law Enforcement Governance and Trade
FP6	Sixth Framework Programme (research)
GEEREF	Global Energy Efficiency and Renewable Energy Fund
GHG	Greenhouse Gases
GMES	Global Monitoring for Environment and Security
GMO	Genetically Modified Organism
HELCOM	Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area
HERMES	Hotspot Ecosystem Research on the Margins of European Seas
HTS	Humane Trapping Standards
IA	Impact Assessment
IAS	invasive alien species
IBA	Important Bird Area
ICAO	International Civil Aviation Organization
ICZM	Integrated Coastal Zone Management
IGO	Intergovernmental Organisation
IMO	International Maritime Organization.
IMPEL	Implementation and Enforcement of Environmental Law
INSPIRE	Infrastructure for Spatial Information in Europe
IPBES	International Science Policy Platform for Biodiversity and Ecosystems
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
IPF	Infrastructure Projects Facility
IPM	Integrated Pest Management
IPP	Integrated Product Policy
IPPC	Integrated Pollution Prevention and Control
ISC	Interservice Consultation
ITL	International Transaction Log
IUCN	International Union for the Conservation of Nature
IWRM	Integrated Water Resources Management
JAMA	Japanese car industry association
JRC	Joint Research Centre
KAMA	Korean car industry association
LCA	Life-Cycle Assessment
LCP	Large Combustion Plant
LD50	Dose of a substance lethal to 50% of test animals exposed
LFA	Less Favoured Areas
LIFE	Financial Instrument for the Environment
LIFE+	New Financial Instrument for the Environment
LRTAP	Long-Range Transboundary Air Pollution (see CLRTAP)
LULUCF	Land Use, Land Use Change and Forestry
Mac	Mobile air conditioning system
MAP	Mediterranean Action Plan
MARPOL	Marine Pollution (Convention)
MBI	Market-Based Instruments
MDG	Millennium Development Goal
MEDPOL	Programme for Assessment and Control of Pollution in the Mediterranean
MIC	Monitoring and Information Centre
MOP	Meeting of the Parties

NAP	National Allocation Plan (emissions trading)
NATURA 2000	EU's network of nature conservation sites under the Habitats Directive
NEAP	National Environmental Action Plan
NEAR	Network for Environmental Authorities at Regional level in Europe
NEC	National Emission Ceilings
NIF	Neighbourhood Investment Facility
NIP	National Indicative Programme
NIS	Newly Independent States
NOx	Nitrogen oxides
ODS	Ozone-Depleting Substances
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PBT	Persistent, Bio-accumulative and Toxic
PM	Particulate matter
PM10, PM2.5	Particulate matter in ambient air with diameter less than 10 or 2.5 μ
POP(s)	Persistent Organic Pollutant(s)
Ppm	Parts Per Million: a unit of concentration
PPP	Plant Protection Product
RBMP	River Basin Management Plans
REACH	Registration, Evaluation and Authorisation of Chemicals
REDD	Reducing emissions from deforestation and forest degradation
Reeep	Renewable energy and energy efficiency partnership
RoHs	Restriction of the use of certain Hazardous substances
SAC	Special Areas of Conservation (habitats)
SAICM	Strategic Approach to International Chemicals Management
SCALE	Children's health initiative (Science, Children, Awareness, Legal instruments, Evaluation).
SDS	Sustainable Development Strategy
SEA	Strategic Environmental Assessment
SEIS	Shared Environmental Information System
SMEs	Small and Medium size Enterprises
SOx	Sulphur oxides
SPA	Special Protection Area
TEEB	The Economics of Ecosystems and Biodiversity
TEN	Trans-European Network (for Transport)
TS	Thematic Strategy
UNCBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNCED	UN Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNDP	UN Development Programme
UNECE	United Nations Economic Commission for Europe
UNEO	UN Environment Organisation
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICE	EU industry association
UWWT	Urban Waste-Water Treatment (Directive)
VOC	Volatile Organic Compounds
WEEE	Waste from Electrical and Electronic Equipment (Directive)

WFD	Waste Framework Directive
WFD	Water Framework Directive
WHO	World Health Organisation
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund for Nature
YOLL	Years of life lost