



EUROPEAN COMMISSION

Brussels, 25.7.2012  
SWD(2012) 234 final

**COMMISSION STAFF WORKING DOCUMENT**  
**Information provided on the functioning of the EU Emissions Trading System, the**  
**volumes of greenhouse gas emission allowances auctioned and freely allocated and the**  
**impact on the surplus of allowances in the period up to 2020**

{COM(2012) 416 final}  
{SEC(2012) 481 draft}

## TABLE OF CONTENTS

1.	Introduction .....	4
2.	Forthcoming improvements in the regulatory environment of the EU ETS .....	4
3.	Functioning of the carbon market in the period 2008-2011 .....	5
3.1.	A liquid market .....	5
3.2.	Issued allowances, international credits and verified emissions in the period 2008-2011 .....	6
3.2.1.	Issued allowances .....	6
3.2.2.	Supply of international credits and use for compliance .....	6
3.2.3.	EU ETS emissions .....	8
3.3.	Imbalance of supply and demand in the period 2008 to 2011 .....	8
3.4.	Other factors affecting supply and demand on the market .....	9
3.4.1.	Method of issuing of allowances: free allocation versus auctioning .....	9
3.4.2.	Market demand: short term compliance and hedging needs .....	10
3.4.3.	Market demand: long term compliance buyers .....	12
3.4.4.	Market demand: speculative buying .....	12
3.5.	The price pattern in 2008 to 2011 .....	12
4.	Functioning of the carbon market in phase 3 (2013-2020) .....	14
4.1.	Outlook for the rest of 2012 and early 2013 .....	14
4.2.	The first two years in phase 3 .....	15
4.3.	Market fundamentals in the medium-term .....	16
5.	phase 3 profile of auctioning, free allocation and use of international credits .....	18
6.	Annexes .....	25
6.1.	Finalisation of the phase 3 regulatory infrastructure .....	25
6.1.1.	Cap-setting .....	25
6.1.2.	Auctioning .....	25
6.1.3.	Free allocation .....	26
6.1.4.	Exclusion of small installations subject to equivalent measures .....	28
6.1.5.	Allowances for the NER300 programme .....	28
6.1.6.	Changes in the EU ETS registry system .....	28
6.1.7.	Changes to combat VAT fraud .....	29
6.1.8.	Oversight of the spot market .....	29
6.1.9.	Use of international credits .....	30
6.1.10.	Monitoring, reporting and verification .....	30

- 6.2. List of implementing acts applying the changes in the regulatory environment ..... 32
- 6.3. Data including Norway ..... 36
- 6.4. Estimate of the total amount of auctioning ..... 36
  - 6.4.1. Estimate of the total amount of auctioning for the period 2008-2011 ..... 36
  - 6.4.2. Estimate of the total amount of auctioning for the period 2013-2020 ..... 37
- 6.5. Profile of annual issuance of allowances, international credit use and surplus development ..... 38

## List of figures

Figure 1: Daily volumes of trade in allowances in the EU ETS .....	6
Figure 2: Issuance of CERs per quarter .....	7
Figure 3: Carbon price evolution .....	13
Figure 4: 2010 Baseline and reference projections of the EU ETS .....	17
Figure 5: Possible profile of annual issuance of allowances and use of international credits .	19
Figure 6: Example of a possible profile of annual issuance of allowances, use of international credits and surplus development .....	20
Figure 7: Example of a possible profile with large change in the auction profile .....	22
Figure 8: Example of a possible profile with medium change in the auction profile .....	23
Figure 9: Example of a possible profile with small change in the auction profile.....	23

## List of tables

Table 1: Issued allowances for Phase 2, EU (all figures in million allowances) .....	6
Table 2: International credits used for compliance 2008-2011, EU (all figures in million credits).....	7
Table 3: Issued allowances for Phase 2 and international credits used for compliance 2008-2011, EU (all figures in million allowances / credits .....	8
Table 4: Verified emissions, EU (figures in million tonnes CO <sub>2</sub> equivalents) .....	8
Table 5: Build-up of a surplus of unused allowances 2008-2011, EU.....	9
Table 6: Short term GDP growth forecasts 2011-2012.....	13
Table 7: Options to revise auction time profile (all figures in million allowances).....	21
Table 8: Issued allowances and international credits used for compliance 2008-2011, EU + Norway .....	36
Table 9: Verified emissions, EU + Norway .....	36
Table 10: Build-up of surplus allowances 2008-2011, EU + Norway .....	36
Table 11: Estimate of the total amount of auctioning in the period 2008-2011.....	36
Table 12: Estimate of the total allowed emissions for the ETS (other than aviation) over the period 2013-2020 .....	37
Table 13: Estimate of the total amount of auctioning, free allocation and allowances available for the New Entrants Reserve in the ETS (other than aviation) over the period 2013-2020 ...	38
Table 14: Estimates of the annual volume of auctioned allowances in the period 2013-2020 other than aviation (figures in million allowances).....	38

## 1. INTRODUCTION

This staff working document has the objective to inform about the state of implementation of the provisions of the comprehensive review of the EU Emission Trading System (ETS) as agreed under the Climate and Energy Package<sup>1</sup>. This information includes an analysis of the imbalance between the supply of and demand for allowances that materialised in phase 2 and how the transition from phase 2 to phase 3 is expected to impact this imbalance<sup>2</sup>.

The Climate Change Committee is invited by the Commission to consider and indicate its views on a draft for a future amendment to the Auctioning Regulation<sup>3</sup> to address this imbalance.

**Carbon price figures mentioned in the staff working document do not represent an explicit or implicit price target pursued by the Commission.**

## 2. FORTHCOMING IMPROVEMENTS IN THE REGULATORY ENVIRONMENT OF THE EU ETS

While the regulatory framework has been largely unchanged for the first eight years of operation of the European carbon market, with the start of phase 3 a significant number of architectural and regulatory changes kick in as of 2013. The aim of these changes is to improve the regulatory system. The most fundamental changes concern the cap setting and allocation of allowances.

In phase 3 the cap is set directly in European legislation and no longer the result of a bottom-up process of national decision-making. In addition, the introduction of a linear factor provides a default cap beyond 2020, which will apply pending any change to the ETS Directive, thereby providing much greater regulatory foresight and stability with regard to one of the most crucial regulatory parameters.

When it comes to allocation of allowances, auctioning becomes the default rule in phase 3. This contrasts with an auctioning ceiling of 10% of total allowances in phase 2. From 2013 onwards the principle is to have no free allocation for electricity production. A number of Member States can temporarily derogate from this and continue to give some free allocation for electricity production, but this will also gradually reduce to zero by 2020. For the other sectors the allocation of allowances for free will significantly change compared to the two previous trading periods (2005-2012).

Firstly, allowances will be distributed for free according to EU-wide harmonised rules, meaning that the same rules will apply to installations of a certain type across the internal market.

Secondly, free allocation rules will largely be based on ex-ante performance benchmarks so as to ensure that they strengthen the incentives for reductions in greenhouse gas emissions and reward the efficient installations.

Thirdly, the amount of free allocation will be phased out over time. In 2013 only 80% of the quantity determined according to the ex-ante performance benchmarks will be allocated for

---

<sup>1</sup> Directive 2009/29/EC, amending Directive 2003/87/EC

<sup>2</sup> The first trading period or phase 1 refers to the period 2005 to 2007, the second trading period or phase 2 to the period 2008 to 2012, the third trading period or phase 3 to the period 2013 to 2020 and the fourth trading period or phase 4 to the period 2021 to 2028

<sup>3</sup> Commission Regulation (EU) No 1031/2010

free, gradually reducing to only 30% by 2020 with a view to reaching no free allocation in 2027. Sectors deemed exposed to a significant risk of carbon leakage will continue to receive up to 2020 100% allowances for free based on ex-ante performance benchmarks.

Fourthly, an EU wide new entrants reserve is foreseen equivalent to 5% of the total amount of allowances for phase 3. 300 million allowances in this reserve will be made available to stimulate the construction and operation of large-scale demonstration carbon capture and storage (CCS) projects as well as innovative renewable energy technologies.

These regulatory changes as regards the allocation of allowances have profound impacts on the functioning of the carbon market and the infrastructure underpinning it. Auctioning rules and platforms need to be set up in time, benchmarks need to be determined at sectoral level and applied at installation level, rules for new entrants defined, etc.

Another major architectural change are the rules and conditions for recognising international carbon credits in the EU ETS. The legislator has inter alia created the possibility to restrict the use of certain types of credits by means of secondary legislation. This new feature was applied the first time with a regulation adopted in early 2011 to restrict the use of certain types of industrial gas credits from the start of phase 3.

Finally, other changes concern the move to a single registry system and an expansion of the scope in phase 3 beyond the inclusion of aviation applying as of 2012.

All these changes required the build-up of a comprehensive infrastructure before the start of phase 3 to ensure the smooth transition into the third trading period. Annex 6.1 addresses in more detail the state of play of the implementation of the regulatory changes, while annex 6.2 lists the implementing acts applying these changes.

### **3. FUNCTIONING OF THE CARBON MARKET IN THE PERIOD 2008-2011**

#### **3.1. A liquid market**

The European carbon market has seen increasing liquidity since 2005. This is reflected in the average daily volume of trade in contracts in allowances, which more than doubled from 10 million allowances in 2008 to 23 million in 2011 (see Figure 1) and a narrow bid-offer spread, which has decreased from around €0.15 to €0.03<sup>4</sup>.

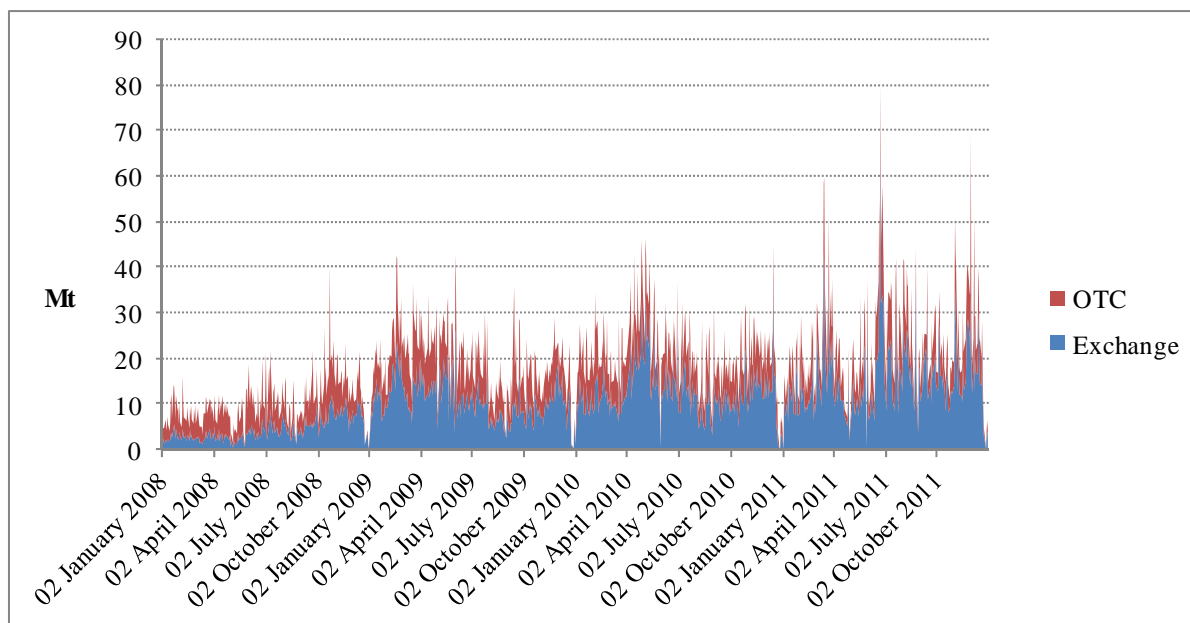
In terms of market structure, in 2008, trading was still to a large extent conducted over-the-counter (OTC). However, since the economic crisis, and the associated increased sensitivity to risk of counterparty default, there has been a marked movement of transactions to regulated (and cleared) trading venues to the point where the great majority of transactions are now on exchanges. Moreover, exchanges have been attractive to companies that need a simple way to trade standardised contracts. An OTC transaction can fall into two classes: transactions originating OTC, with the two counterparties agreeing to clear it through a central counterparty (CCP), and transactions originating OTC, without clearing through a CCP<sup>5</sup>.

---

<sup>4</sup> Intercontinental Exchange. The spread is determined based on a sample of the best bids and the best offers at the hour, through the same representative trading week (2<sup>nd</sup> trading week) in every year.

<sup>5</sup> Typically, the OTC transactions involve an intermediary to broker the deal. The data represented in the figure account only for this brokered volume.

**Figure 1: Daily volumes of trade in allowances in the EU ETS**



Source: Bloomberg New Energy Finance and London Energy Brokers Association. Data from six exchanges are used in this assessment: Bluenext, Climex, European Energy Exchange, Green Exchange, Intercontinental Exchange and Nord Pool

### 3.2. Issued allowances, international credits and verified emissions in the period 2008-2011

#### 3.2.1. Issued allowances

During phase 2 some 96% of total allowances put in circulation up to the end of 2011 have been allocated for free. Annual volumes of free allocation increased slightly over time, in part driven by the use of national new entrants reserves. In 2011 free allocation was 47 million higher than in 2008. Auctioned volumes started at rather low levels in 2008, with 44 million allowances, but almost doubled to 87 million allowances in 2011 (see Table 1). Overall issuance of allowances in 2009, 2010 and 2011 was respectively 30, 76 and 90 million higher than in 2008.

**Table 1: Issued allowances for Phase 2, EU (all figures in million allowances)**

	2008	2009	2010	2011	Total 2008-2011
<b>Phase 2 allowances issued</b>	<b>1994</b>	<b>2024</b>	<b>2070</b>	<b>2084</b>	<b>8171</b>
Free allocation	1950	1958	1984	1997	7888
Auctioning	44	66	86	87	283

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission. For data including Norway see annex 6.3. For more detail on the auctioning data see annex 6.4.1.

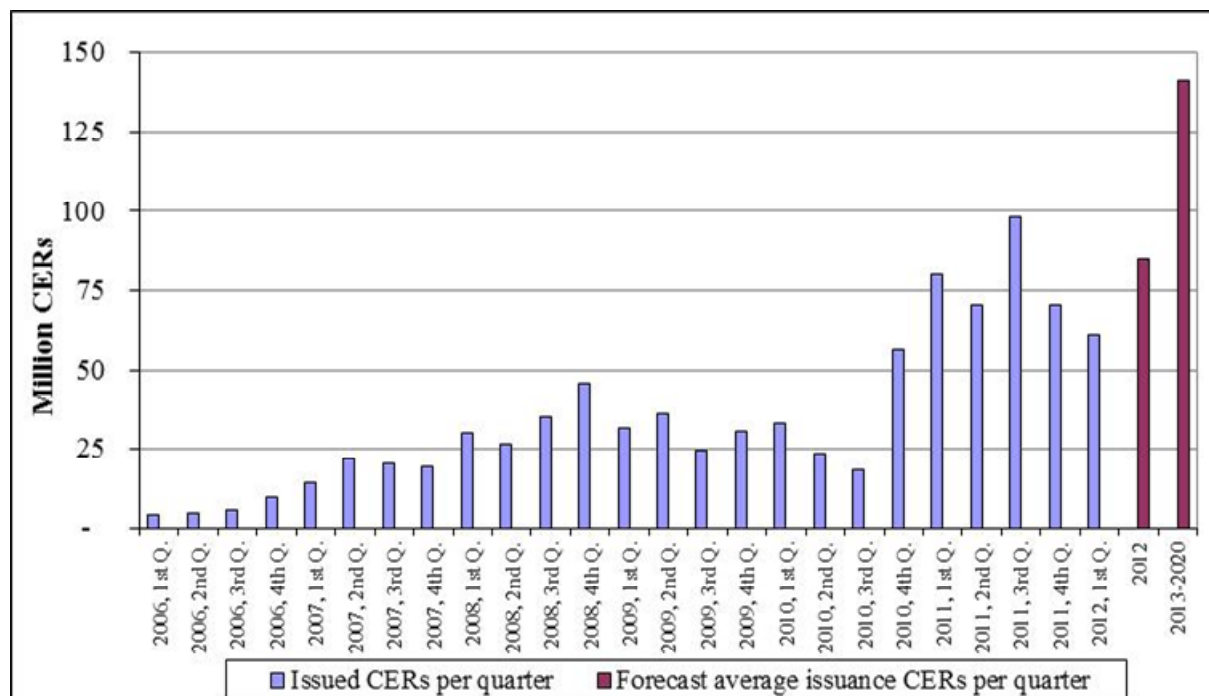
#### 3.2.2. Supply of international credits and use for compliance

The supply of international credits depends in the first place on the amount of projects that come online and the amount of Certified Emission Reduction (CER) and Emission Reduction Unit (ERU) credits<sup>6</sup> that are effectively issued. This supply has increased over time. For instance, whereas in 2008, 2009 and 2010 issuance of CERs, as the major type of credits, was

<sup>6</sup> CERs are the type of unit from the CDM projects, while ERUs are from the JI projects.

within a range of 123 to 132 million, this has increased to 320 million in 2011. In 2012 a similar amount is expected to be issued and this is projected to further increase to potentially more than 500 million per year on average in the period 2013-2020 (see figure below)<sup>7</sup>. Similarly issuance of ERUs increased rapidly over time: from 5 million in 2009 to 88 million ERUs in 2011.<sup>8</sup>

**Figure 2: Issuance of CERs per quarter**



Source: [http://www.iges.or.jp/en/cdm/report\\_cdm.html](http://www.iges.or.jp/en/cdm/report_cdm.html)

Not all of this issuance will translate into supply on the European carbon market. Some volume will have been reserved for EU governments use to comply with Kyoto Protocol targets or for parties outside the EU. Project developers or EU ETS operators that have invested in projects or acquired credits through the secondary market may want to hold on to these for later. But certainly a significant part is offered on the European carbon market for compliance use, thus affecting the supply and demand balance in it. There has been a strong correlation between volumes of issued CERs and volumes used for compliance in the EU ETS so far. By the first quarter of 2012 877 million CERs had been issued. Out of this 450 million CERs had been used for compliance in the EU ETS. As such, the EU ETS by early 2012 used for compliance purposes a bit more than 50% of all CERs issued.

**Table 2: International credits used for compliance 2008-2011, EU (all figures in million credits)**

	2008	2009	2010	2011	Total 2008-2011
<b>International credits used for compliance*</b>	<b>82</b>	<b>81</b>	<b>134</b>	<b>252</b>	<b>549</b>
CERs	82	78	114	177	450
ERUs	0,05	3	20	75	98

\*Amount of international credits surrendered in the registry by 30 April year x+1

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission. For data including Norway see annex 6.3.

<sup>7</sup> Source for the projections of issuance of CERs: [http://www.iges.or.jp/en/cdm/report\\_cdm.html](http://www.iges.or.jp/en/cdm/report_cdm.html)

<sup>8</sup> Source for estimate of issuance of ERUs: <http://www.uneprisoe.org/>



Similarly to the amount issued, the annual use of carbon credits from CDM and JI projects in the EU ETS was not uniform either. In 2008 only around 82 million international credits were used for compliance whereas this increased significantly to 177 million CDM credits in addition to 75 million JI credits in 2011.

Furthermore, the decision to improve the environmental integrity by not allowing international credits from certain projects from 2013 onwards in the ETS increases the economic incentive to bring existing credits from these projects to market for compliance before the compliance cycle for phase 2 ends in April 2013, certainly for projects that have not secured any alternative sources of demand.

In summary, the table below gives an overview of the total issued allowances plus the international credits used for compliance.

**Table 3: Issued allowances for Phase 2 and international credits used for compliance 2008-2011, EU (all figures in million allowances / credits)**

	2008	2009	2010	2011	Total 2008-2011
<b>Phase 2 allowances issued</b>	<b>1994</b>	<b>2024</b>	<b>2070</b>	<b>2084</b>	<b>8171</b>
<b>International credits used for compliance*</b>	<b>82</b>	<b>81</b>	<b>134</b>	<b>252</b>	<b>549</b>
<b>Total issued allowances and used international credits</b>	<b>2076</b>	<b>2105</b>	<b>2204</b>	<b>2336</b>	<b>8720</b>

\*Amount of international credits surrendered in the registry by 30 April year x+1

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission. For data including Norway see annex 6.3. For more detail on the auctioning data see annex 6.4.1.

### 3.2.3. EU ETS emissions

Verified emissions in the EU ETS experienced a very large drop in 2009, of more than 10% compared to the year before, with the economic crisis having a significant impact on industrial production and electricity consumption. Major sectors covered by the EU ETS, such as steel, saw a much stronger reduction in output patterns in 2009 than the economy at large. In 2010 with the economy recovering, emissions in the ETS increased, but by a limited 3%. 2011 saw emissions decrease again by around 2.5% against the backdrop of economic growth stagnating towards the end of the year.

**Table 4: Verified emissions, EU (figures in million tonnes CO<sub>2</sub> equivalents)**

	2008	2009	2010	2011	Total
<b>Verified emissions (in Mt)</b>	<b>2100</b>	<b>1860</b>	<b>1919</b>	<b>1886</b>	<b>7765</b>
<b>Change to year x-1</b>		-11,4%	3,2%	-1,8%	
<b>GDP (real growth rate EU27)</b>	<b>0.3%</b>	-4.3%	2.0%	1.5%	

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission, for data including Norway see annex 6.3. GDP data as reported on <http://epp.eurostat.ec.europa.eu> on 06/05/2012.

### 3.3. Imbalance of supply and demand in the period 2008 to 2011

The EU ETS has largely been characterised by oversupply in most of phase 2 (see Table 5).

In 2008, the amount of allowances and international credits available for compliance with emissions was lower than the verified emissions<sup>9</sup>. But 2008 was the only year where this was the case.

In all following years of phase 2, the amount of units available for compliance was significantly higher than reported emissions. From 2009 onwards a surplus of allowances has therefore been building up. By end 2011 8171 million allowances had been put into circulation and 549 million international credits had been used for compliance with emissions up to 2011, in total adding up to 8720 million units that were available for compliance with emissions over the period 2008-2011<sup>10</sup>. In contrast, the emissions in the period 2008-2011 were only 7765 million ton CO<sub>2</sub>-eq. Thus by the beginning of 2012 a surplus of 955 million allowances has been accumulated. Excluding the part of the surplus due to the use of international credits for compliance, the surplus would still have been 406 million allowances.

**Table 5: Build-up of a surplus of unused allowances 2008-2011, EU**

(in Mt)	2008	2009	2010	2011	Total
<b>Issued allowances and used international credits</b>	<b>2076</b>	<b>2105</b>	<b>2204</b>	<b>2336</b>	<b>8720</b>
<b>Reported emissions</b>	<b>2100</b>	<b>1860</b>	<b>1919</b>	<b>1886</b>	<b>7765</b>
<b>Annual change of surplus allowances</b>	<b>-24</b>	<b>244</b>	<b>285</b>	<b>450</b>	<b>955</b>

Source: Community Independent Transaction Log (CITL), compliance data 2011 as published on 2 May 2012, European Commission, for data including Norway see annex 6.3.

### 3.4. Other factors affecting supply and demand on the market

It is daily supply and demand on the market that determines prices. To understand day to day price formation one needs to take a close look at what constitutes and drives daily supply and demand. It is important to underline that these are different concepts than annual aggregates of supply and demand as presented in section 3.3 above.

The following sections describe in more detail important elements which drive daily supply and demand.

#### 3.4.1. Method of issuing of allowances: free allocation versus auctioning

Allowances allocated for free do not automatically and directly translate into supply to the secondary market. The timing of supply to the market from allowances allocated for free depends on whether the operator that received them has a surplus or not and is willing to bring them to market. An operator with a surplus might decide to hold on to the allowances for compliance purposes for later years or because it expects prices to increase over time.

Only when allowances are auctioned or sold via other means by governments this directly impacts the day to day supply available to the market. Table 1 gives information on the estimated amount of phase 2 allowances auctioned or sold by governments so far. It is made up of auctions specifically foreseen under the National Allocation Plans for Phase 2 (NAP2), with Germany and the UK dominating the total auction/sales supply, and unused allowances in national new entrants reserves already brought to market. This issuance through auctioning is expected to further increase towards the end of phase 2 and into early 2013 when the

<sup>9</sup> This means that in order to comply with 2008 emissions in April 2009, some 24 million allowances were used that were issued in early 2009, notably those allocated for free in February 2009 with a view to complying with emissions in 2009.

<sup>10</sup> Technically this amount is higher, because one could also use for 2011 compliance purposes the free allocation for 2012 that was issued by February 2012. This amount of free allocation is excluded from the surplus estimate given that it will in part be used in early 2013 to comply with 2012 emissions.

remaining foreseen auctioning and unused allowances in new entrants reserves for phase 2 will be put on the market.

#### *3.4.2. Market demand: short term compliance and hedging needs*

Market demand is firstly driven by any shortage of free allowances by EU ETS companies. Even when the market at large is oversupplied, some operators have a deficit of allowances in relation to verified emissions in phase 2 (typically power producers, but also expected for some aircraft operators as of 2012).

Secondly, market demand is driven by hedging needs for future sales. The power generating sector typically hedges part of their forward sales, which can go up to 3 years ahead. Airlines can also be expected to be active in terms of hedging, as they are also for kerosene.

Hedging is a technique that is widely used by companies in various sectors and markets for instance in sectors heavily dependent on oil prices or exposed to foreign currency risks. Power sector carbon hedging has existed since the start of the EU ETS and is thought to be more or less pronounced depending on the power market a company operates in. Typically power companies need to cover at least to some extent their forward sales of electricity with allowances. However, as long as free allocation dominated, this hedging demand did not translate into actual market demand.

Due to the step change from free allocation to auctioning next year, carbon hedging demand has begun to translate in the second half of phase 2 into actual market demand. From 2011 onwards companies started selling more and more electricity for delivery in phase 3. The need to hedge some or all of these forward sales, for which no free allocation exists, triggered increased demand. This demand in phase 2 is additional and cannot be met by free allocation for electricity production up to 2012. Intrinsically, increasing hedging demand had to be met by other sources of market supply.

With the information in the public domain, it is not possible to quantify with a high degree of certainty the total magnitude and build-up in time of this demand. But it is likely that this additional market demand is expected to attain levels well in the hundreds of millions of allowances by end 2012. Because of this phenomenon, it was the power sector strongly advocating the introduction of early auctioning of phase 3 allowances to meet this demand and mitigate the risk of temporary price increases for reasons of regulatory change.

From 2013 onwards hedging demand and the resulting need to buy allowances or international credits on the market will level off. The big difference compared to phase 2 will be that this demand can largely be met by auctioning supply. As such, this demand beyond volumes supplied through auctioning will potentially decrease in early phase 3. For a stylised example see Box 1.

What is important to note is that the build-up of this additional demand up to 2012 stemming from carbon hedging, and the potential levelling off of this demand from 2013 onwards, is purely regulatory in nature. It is there because of the shift from free allocation towards auctioning.

**Box 1: Stylised example of hedging demand**

The table below summarises a stylised example of the specific impact of hedging on demand in the later part of phase 2. The following illustrative assumptions are applied:

- The electricity producer receives 99 free allowances annually in phase 2. From 2013 onwards this free allocation drops to 0 and instead 99 allowances are auctioned.
- The electricity producer emits yearly 100 ton CO<sub>2</sub>
- The electricity producer hedges 100 % of its forward sale, i.e. it acquires the required amount of allowances associated with its forward sale at the moment of the sale
- The electricity producer sells 25% of its electricity two years ahead and an additional 25% a year ahead. In total 50% of the electricity is thus sold before the actual year.

In 2008, 2009 and 2010 the producer sells a part of electricity forward, for which it needs to ensure allowances in its books to cover the associated emissions. But because the electricity producer knows for sure that it will receive 99 allowances a year for free up to 2012, this hedging need is already covered, and thus there is no need to acquire allowances on the market.

Therefore, up to 2010 the producer will only need to buy on the market the difference between what it emits and what it receives for free, i.e. only 1 ton a year.

But from 2011 the operator sells electricity for 2013 with an equivalent amount of emissions of 25 ton. It has no free allocation that covers these emissions in 2013. Therefore it needs to acquire 25 allowances on the market in 2011 purely for hedging his 2013 forward sales. This together with the shortfall in free allocation in 2011 compared to emissions results in the need to buy 26 allowances on the market. In 2012 this increases even to 51 allowances because of hedging needs for forward electricity sales in 2013 and 2014. This demand is not met by the issuance of allowances through free allocation for electricity production or auctioning!

Finally, in 2013 the producer's own market demand driven by its shortage of allowances in relation to emissions increases to 100 allowances. It receives no free allocation anymore. It has already 50 allowances that it bought in 2011 and 2012 to hedge for sales in 2013. It thus needs only to acquire further 50 allowances to be compliant with the 2013 emissions. But it also needs to hedge for the forward sales in 2014 and 2015, each time equivalent to 25 ton emissions. This in total brings its own demand to buy on the market for 2013 to 100 allowances. At the same time, auctioning will supply 99 allowances to the market in that year. So only the demand for 1 allowance in 2013 is not met by the issuance of allowances through auctioning.

	Phase 2					Phase 3	
	2008	2009	2010	2011	2012	2013	2014
Free allocation	99	99	99	99	99	0	0
Auctioning	0	0	0	0	0	99	99
Emissions	100	100	100	100	100	100	100
Demand hedging sales year $x+1$	0	0	0	0	25	25	25
Demand hedging sales year $x+2$	0	0	0	25	25	25	25
Already hedged for emissions that year	0	0	0	0	0	50	50
Demand to buy	1	1	1	26	51	100	100
Supply from auctioning	0	0	0	0	0	99	99
Market demand not met through auctioning	1	1	1	26	51	1	1

### 3.4.3. *Market demand: long term compliance buyers*

Demand is driven also by mid to longer term expectations of compliance needs, beyond short term hedging for forward sales. However, many market analysts consider it rather unlikely that under the given economic circumstances industrial operators and power companies will make significant financial resources available to engage in large scale buying for long term compliance purposes, even if prices are seen as low at present.

### 3.4.4. *Market demand: speculative buying*

Financial institutions also take positions in the market, trading carbon products for their own account and often buying allowances in the spot market and selling them as futures to ETS companies. Recent developments in global financial markets have certainly increased the risk averseness and reduced the willingness of professional traders to trade for speculative reasons for their own account.

## **3.5. The price pattern in 2008 to 2011**

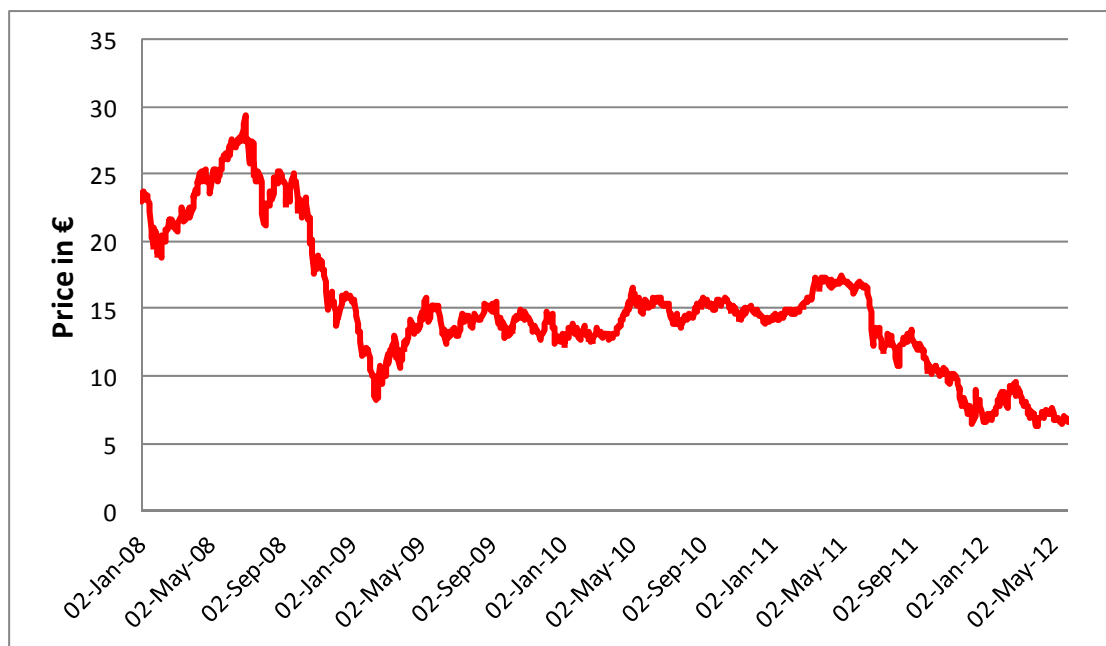
In the first half of 2008 the carbon price was higher than €20. But the carbon price has fallen considerably with the start of the economic crisis that has affected the EU economy since autumn 2008 (see Figure 3).

If the market was acting purely in a short term manner, the surplus would have resulted in very low carbon prices. But, from early 2009 up to mid-2011, the carbon market experienced a relatively stable period, with the carbon price being lower than before but moving within a € 12-16 range.

This suggests that the market does take into account longer term scarcity from the continuously decreasing cap. The possibility to bank surplus allowance constitutes an important element in the longer term market considerations that ensured prices did not drop to the near zero levels seen during phase 1 despite the surplus built up during the economic crisis.

Since autumn 2011 prices have decreased to levels below € 10. This coincided with the largest annual increase in the build-up of surplus allowances, which increased by 450 million allowances in 2011.

**Figure 3: Carbon price evolution**



Source: Intercontinental Exchange. Data for front-year futures contracts with delivery in December.

It is not possible to determine the extent to which individual supply and demand drivers described in sections 3.2 and 3.4 are responsible for the price evolution in Figure 3. Many companies that were short of allowances for 2008 compliance saw emissions decrease from 2009 onwards because of the economic crisis. This had a sustained and substantial impact on demand for compliance purposes.

Long term considerations certainly continued to support prices to some extent as otherwise prices would have dropped even more due to the accumulating and expected surplus of allowances.

Growing carbon hedging demand arising from 2011 onwards due to the regulatory changes in 2013 (see also section 3.4.2 and Box 1) should have contributed considerably to increasing demand and thus prices. This was the very reason to decide in 2011 on early auctioning of 120 million phase 3 allowances in an amendment of the Auctioning Regulation<sup>11</sup> in 2011. Carbon prices at that point were around €15 and continued economic growth was projected for 2011 and 2012 (see Table 6). Many market analysts and participants expressed concerns of a material likelihood of a rapid price increase in demand and price, if no early auctioning had been introduced. It was therefore at the time considered as prudent to decide on a limited amount of auctioning to come already to market in 2012, on top of the 200 million of phase 3 allowances that will be monetised for certain in 2012 from the NER300 (see section 6.1.5). In deciding on the amount of the early auctioning to satisfy the hedging demand, the growing supply of international credits and the accumulating surplus of phase 2 allowances were also taken into account.

**Table 6: Short term GDP growth forecasts 2011-2012**

DG ECFIN Economic forecasts	GDP growth projections	
	2011	2012

<sup>11</sup> Commission Regulation (EU) No 1031/2010

European economic forecast – spring 2011 <sup>12</sup>	1.8%	1.9%
European economic forecast - autumn 2011 <sup>13</sup>	1.6%	0.6%
Interim forecast - February 2012 <sup>14</sup>	1.5%	0.0%

A number of counterbalancing elements materialised since late 2011 that seem to have shifted prices actually in the reverse direction. Most notable for 2011 was that the use of international credits for compliance purposes increased by 119 million units compared to 2010. At the same time the economy stagnated and emissions in 2011 decreased by 34 million ton. This resulted in the single largest annual increase - by 450 million allowances (58% higher increase than in 2010, see Table 5) - in the surplus of phase 2 allowances. This is the equivalent of around a quarter of annual emissions in the ETS. Furthermore, renewed macroeconomic uncertainties might have increased the secondary market supply from companies holding surplus allowances by reducing their willingness to retain allowances on their balance sheets.

#### 4. FUNCTIONING OF THE CARBON MARKET IN PHASE 3 (2013-2020)

The 2010 Communication 'Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage'<sup>15</sup> estimated the build-up of a surplus of allowances, excluding the use of international credits, over the period 2008-2012 of around 5 to 8% of the total allowances, i.e. 550 to 900 million allowances. This range is confirmed looking at the actual data. By 2011 the surplus, excluding the use of international credits had already grown to 406 million allowances<sup>16</sup>. Including the use of international credits, the surplus of unused allowances amounted to 955 million allowances.

##### 4.1. Outlook for the rest of 2012 and early 2013

If 2012 would see a similar level of surplus increase as in 2011, the total surplus at the end of phase 2 would amount to some 1.4 billion allowances. An even higher build-up of surpluses in 2012 is likely for the following reasons.

*Issuance of allowances is expected to increase*

Total issuance of allowances is expected to increase given remaining new entrants reserves from phase 2 that will be put to the market by those Member States that have opted to do so. At present, this is estimated to be over 100 million million allowances<sup>17</sup>.

Furthermore, since late 2011 the European Investment Bank has been selling phase 3 allowances to generate funds for the NER300 programme<sup>18</sup>. By early October 2012, 200

<sup>12</sup> [http://ec.europa.eu/economy\\_finance/publications/european\\_economy/2011/pdf/ec-forecast-spring2011.pdf](http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/ec-forecast-spring2011.pdf)

<sup>13</sup> [http://ec.europa.eu/economy\\_finance/publications/european\\_economy/2011/pdf/ee-2011-6\\_en.pdf](http://ec.europa.eu/economy_finance/publications/european_economy/2011/pdf/ee-2011-6_en.pdf)

<sup>14</sup> [http://ec.europa.eu/economy\\_finance/articles/eu\\_economic\\_situation/pdf/2011-03-01-interim\\_forecast\\_en.pdf](http://ec.europa.eu/economy_finance/articles/eu_economic_situation/pdf/2011-03-01-interim_forecast_en.pdf)

<sup>15</sup> COM(2010) 265 final

<sup>16</sup> For coverage including Norway this is equal to 385 million.

<sup>17</sup> For a number of Member States some issuance of allowances for phase 2 is still unknown, where for instance it is not certain that unused allowances in new entrants reserves for phase 2 will be put to the market. The Commission Staff Working Document 'Preparing the EU's Quantified Emission Limitation or Reduction Objective (QELRO) based on the EU Climate and Energy Package' estimated this unknown potential adjustment of the emission budget over period 2008-2012 to be annually within a range of 35 to 45 million ton CO<sub>2</sub>-eq., or 175 to 225 million allowances over the full 5 year period.

<sup>18</sup> <http://www.eib.org/about/news/ner-300.htm>

million phase 3 allowances are foreseen to be sold (see also section 6.1.5). A further 100 million allowances are to be monetised in the context of the NER300 before the end of 2013.

By end 2012, an additional 120 million phase 3 allowances are to be put in circulation through early auctioning to meet hedging demand for allowances building up during phase 2 for phase 3 compliance.

*Supply and use of international credits is likely to remain high, and possibly increase further*

Similarly, the supply of CERs and ERUs is expected to remain stable or increase in the final year of phase 2, again in part due to the continuing increase in issuance of international credits but also due to the incentive to use those credits that are not eligible for the EU ETS from 2013 onwards for compliance with 2012 emissions.

*Demand for compliance is expected to remain low*

Emissions and likewise demand for compliance are not expected to increase significantly in 2012 given the renewed economic stagnation. Aviation adds demand in 2012, but this remains limited compared to the build-up of the surplus, in particular if taking into account the allowed use of international credits by the aviation sector<sup>19</sup>.

In conclusion, in 2012 and early 2013 the surplus of allowances is likely to continue to grow rapidly. This trend is not only linked to changing fundamentals after the recession, but further aggravated by the specificities in the regulatory regime in the run-up to phase 3.

#### **4.2. The first two years in phase 3**

For 2013, the issuance of allowances for sectors other than aviation is expected to be up to 1918 million allowances<sup>20</sup>. This can increase further by up to 100 million allowances that will be monetised in the context of the NER300 before the end of 2013, bringing total issuance in 2013 for sectors other than aviation potentially to up to 2018 million allowances. Compared to emissions levels in 2011 this would generate a surplus of 132 million allowances.

This surplus will be offset in part as a result of the demand from a number of additional installations entering the EU ETS in 2013 due to the extension of the scope. Therefore, the surplus of issued allowances compared to emissions may shrink in 2013, depending on the economic outlook. Aviation will also continue to create demand for allowances, but at fairly limited quantities.

At the same time, the potential supply of international credits for compliance use with 2013 emissions will likely decrease after April 2013. By early 2012, 45% of all issued CERs were stemming from HFC-23 reduction projects, which will no longer be recognised for EU ETS

---

<sup>19</sup> In 2012 aviation may use international credits for compliance equivalent to 15% of its emissions. For the period 2013–2020 this decreases to 1.5% of its emissions.

<sup>20</sup> The Commission Decision of 22 October 2010 (2010/634/EU) defined the total absolute Union-wide quantity of allowances for 2013 at 2039 million allowances. This is based on the already known total amount of allowances to be issued in the period 2008–2012 and data submitted for installations carrying out activities only included in the EU ETS from 2013 onwards. But some issuance of allowances is still unknown, including for a number of Member States where it is for instance not certain that unused new entrants reserves will come to market. The Commission Staff Working Document 'Preparing the EU's Quantified Emission Limitation or Reduction Objective (QELRO) based on the EU Climate and Energy Package' estimated that this could increase issuance in 2013 by up to 43 million to a total of 2082 million allowances. Five per cent of this total cap will be channelled into the EU-wide new entrants reserve resulting in an estimate for 2013 issuance of 1978 million allowances. Finally this is decreased by 60 million allowances because of the early auctioning of 120 million phase 3 allowances in 2012 that is compensated in 2013 and 2014. This estimate does not take into account how much additional issuance from the new entrants reserve there could be to new entrants in 2013.



compliance in phase 3. Similarly, 22% of the CERs were coming from N<sub>2</sub>O decomposition projects, of which part will be disallowed. In parallel, an increasing number of operators will have exhausted their entitlement to use international credits for compliance<sup>21</sup>.

Overall, including the impact of the use of international credits, 2013 is again expected to see an increase in the surplus of unused allowances, albeit at more limited levels than the rapid increase in surplus of 450 million in 2011 and the expected increase in 2012.

In 2011 and 2012, the regulatory changes from free allocation to auctioning for power producers drove increasing hedging demand into the market, but this increase will level off in 2013<sup>22</sup>. Furthermore, such hedging demand can in principle be met by auctioned volumes from 2013 onwards. This will reverse the real demand for the acquisition of surplus allowances for hedging purposes as experienced in 2011 and 2012 (for a stylised example see Box 1). Furthermore this demand drop may already take place in January to April 2013 when also still some of the surpluses from 2012 will need to be absorbed, such as the continued potential high inflow of international credits and release to the market of unused phase 2 new entrants reserves allowances.

In 2014, issuance of allowances will decrease, as a result of the annual reduction of the cap, but also because there will be no more selling of NER300 phase 3 allowances. In total this might decrease issuance by as much as 138 million in 2014 compared to 2013. In 2015 issuance will instead increase again, by a bit more than 20 million allowances, given that there is no subtraction anymore of the 60 million for compensation for the early auctioning in 2012. From 2015, onwards the issuance would mimic the gradually declining annual cap.

Given the drop in allocation in 2014, the sustained period of surplus accumulation starting in 2009 may come to an end. But the overall surplus of unused units could continue to grow, depending on the amount of international credits used for compliance.

#### **4.3. Market fundamentals in the medium-term**

The 2008 Climate and Energy Package established the decreasing target pathway for GHG emissions in ETS sectors (excluding aviation) in 2013 to 2020 and beyond. With the linear reduction factor, the ETS cap (excluding aviation) in 2020 will be around 21% below 2005 levels further decreasing to 70% below 2005 by 2050.

When the Package was proposed, the price projection for 2020, taking into account access to international credits and the achievement of the target for renewable energy, was estimated to be around €30 (in 2008 prices) with emission reductions in the order of 16% below 2005 emission levels. This projection required additional renewables policies on top of the carbon price and assumed full use of international credits for compliance by 2020<sup>23</sup>.

In 2010, in the light of the on-going economic crisis, the Commission revisited the assessment of the Package<sup>24</sup>, and concluded that the carbon price signal required to deliver the phase 3 ETS cap had reduced substantially. This was due to a number of reasons. Firstly, lower economic growth has effectively reduced the stringency of the 20% target. Secondly, the

---

<sup>21</sup> Entitlements to use international credits to operators are regulated according to Article 11a(8).

<sup>22</sup> Continued increases in real demand over the period 2013-2020 due to regulatory changes can occur for those producers in Member States that will continue to benefit from gradually decreasing free allocation under the exceptions foreseen under Article 10(c). But this quantity is limited. Furthermore the gradual shift from free allocation to full auctioning in 2020 for these operators will not cause a rapid, large increase in real demand for allowances due to hedging as was seen during the 2<sup>nd</sup> half of phase 2.

<sup>23</sup> SEC(2008) 85/3:

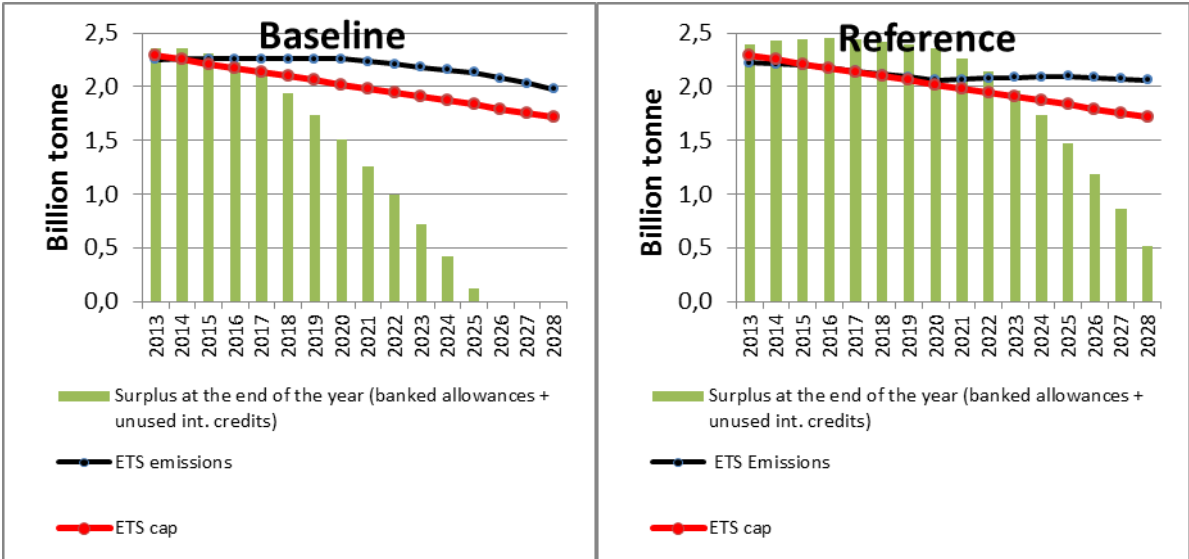
<sup>24</sup> SEC(2010) 650

increase in oil and energy prices in general improved energy efficiency and reduced energy demand more than expected. Thirdly, allowances not used in the recession are carried forward into the future.

With full implementation of the renewables targets through dedicated renewables policies (the so-called "reference" scenario), ETS emissions are projected to decrease more or less in line with the ETS cap by 2020. This was projected to result in a carbon price of €16.5 in 2020, but would require significant incentives for renewables through other policies. The continued decrease in emissions in line with the ETS cap would largely preserve the accumulating surplus of unused allowances up to 2020 (see Figure 4).

In the absence of additional renewables policies beyond those implemented in 2009 to ensure full compliance with the renewables targets, projected ETS emissions remain flat with actually increasing carbon prices towards 2020 at €25 (the so-called "baseline" scenario). With flat emissions the surplus will need to be consumed to ensure compliance. But this use is limited at first, still resulting in a surplus that is larger than 1.5 billion allowances in 2020.

Figure 4: 2010 Baseline and reference projections of the EU ETS



Source: PRIMES, GAINS<sup>25</sup>

Both scenarios seem at first sight to have a large remaining surplus in 2020. Figure 4 illustrates that after 2020 and with the continuation of the linear factor as decided in the ETS Directive both scenarios see emissions exceed the cap, decreasing the surplus over time. In the baseline scenario the consumption of the surplus is already pronounced before 2020 and exhausted by 2025. This indicates the need for more reduction over the period up to 2030 already in order to be in line with the existing legislation<sup>26</sup>. In the reference case, the emissions decrease up to 2020 but then start to flatten out, with a subsequent rapid consumption of the surplus by 2030.

Any analysis that takes into account the build-up of the surplus thus needs to look beyond 2020 for its longer term impact. A certain level of such a buffer promotes the proper

<sup>25</sup> The graph is based on the projections as included in SEC(2010) 650 which in turn are based on ENER (2010), but adapted to include incoming flights. The resulting buffer of unused allowances at the end of 2012 assumed to be the equivalent of 2325 million allowances of which 1600 million is due to potential maximum use of international credits.

<sup>26</sup> ENER (2010) actually assumed in baseline a limited additional use of international credits after 2020.

functioning of the market by producing a more stable price signal. Without a buffer the market cannot absorb annual variations in market fundamentals affecting demand and supply and may therefore be prone to a more volatile pricing pattern.

Both the baseline and reference scenarios take into account fundamentals that will drive the carbon market in phase 4 beyond 2020. Based on these 2010 projections that take into account the impacts of both the severe economic crisis in 2009 and higher expected energy prices, carbon prices are projected to be in the range of €16.5 to 25 (2008 prices) at the end of the decade.

Since the analysis undertaken in 2010, the world has changed again and price expectations for 2020 that reflect updated fundamentals would probably be lower today. The recent economic slowdown is likely to further reduce GDP growth projections and emissions up to 2020, even though the magnitude is expected to be smaller than the impact of the crisis in 2009.

Furthermore, the potential impacts of energy efficiency measures as foreseen under the agreed Energy Efficiency Directive have not been incorporated in the 2010 projections. As the impact assessment of the proposed Energy Efficiency Directive underlined, full implementation of the Directive may reduce the carbon price<sup>27</sup>. Therefore when the Commission made the proposal, it also recognised that there is a need to monitor the impact of new measures under the Energy Efficiency Directive on the ETS.

Spot prices in 2012 have been consistently below €10 and reached a level as low as €6 (nominal prices)<sup>28</sup>. Starting from a carbon price of €7 in early 2012, going to €16.5 to 25 by 2020 (2008 prices<sup>29</sup>) would require annual average price increases (excluding inflation) substantially higher than 10%. Futures markets project expected rates of return (excluding inflation)<sup>30</sup> of around 6 to 7%<sup>31</sup>. This level of returns is more in line with the cost of carry<sup>32</sup>.

This indicates a discrepancy between short term price expectations and long term market fundamentals. If markets expected prices prevailing in early 2012 to continue to evolve at the cost of carry, prices would not increase much above €10 (2008 prices) by the end of the decade.

Finally, reduced carbon prices mean significantly lower auction revenue for Member States. Given the considerable number of allowances to be auctioned, a carbon price drop of €1 means a loss of total auction revenue for the entire phase 3 of around € billion or an annual loss of more than €1 billion (for estimate of the auction volumes see 6.4.2).

## **5. PHASE 3 PROFILE OF AUCTIONING, FREE ALLOCATION AND USE OF INTERNATIONAL CREDITS**

Regulatory changes starting in phase 3 have as explained above an important impact on supply of allowances and international credits. The figure below gives an overview of the issuance profile of allowances and the use of international credits in the coming years. Whereas this profile is naturally subject to simplifications and uncertainty<sup>33</sup> it is evident that

<sup>27</sup> See also SEC(2011) 779 final for further information on the potential impact on the ETS.

<sup>28</sup> Source: Intercontinental Exchange.

<sup>29</sup> Assuming an inflation rate of 2% this would be equal to a range of nominal prices of €21 to 32.

<sup>30</sup> Applying an inflation rate of 2%.

<sup>31</sup> Source: Intercontinental Exchange, 25 May 2012. Future contracts for delivery in December (nominal prices): 2012 €6.91, 2013 €7.36, 2014 €7.89, 2015 €8.33.

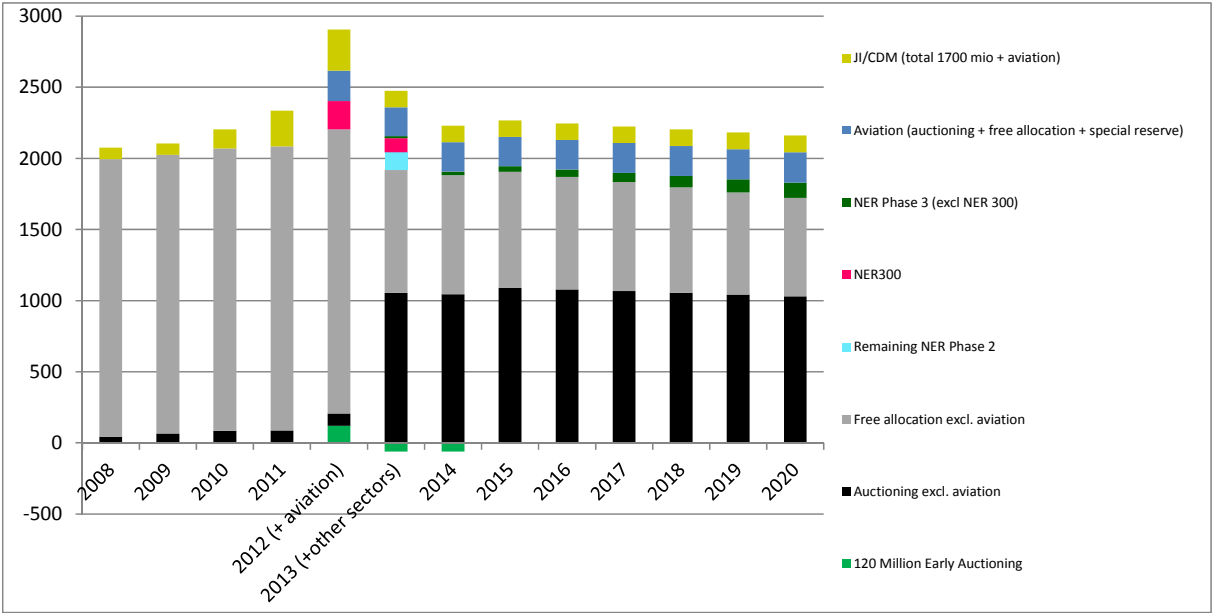
<sup>32</sup> The cost of carry is the cost of holding a position in a particular security. The futures price is a function of the spot price and the cost of carry.

<sup>33</sup> For more information on the assumptions applied in the above figure, see annex 6.4.2 and annex 6.5.

total supply increases significantly in the period around the transition from phase 2 to phase 3, in part because of the inclusion of aviation and other sectors and gases in the ETS, but mainly because of other regulatory provisions such as the NER300, the early auctioning to accommodate real hedging demand, the remaining allowances under the phase 2 NER that still will be sold and the incoming restrictions on certain types of international credits for compliance use in phase 3.

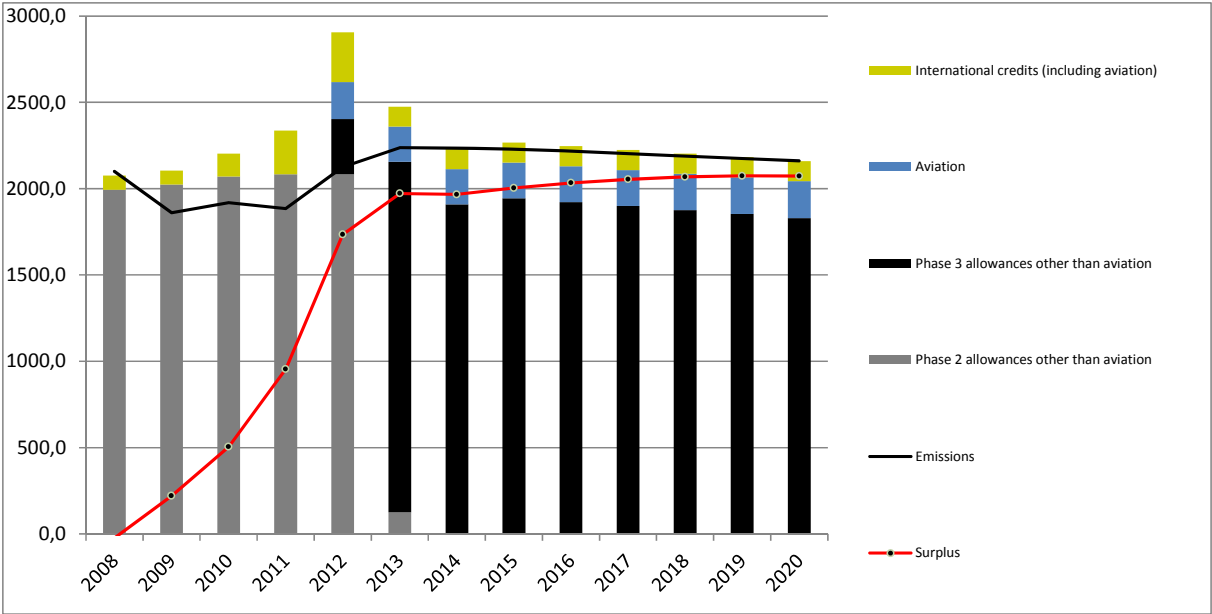
In 2014, this supply then decreases and from 2015 onwards the total issuance decreases in a linear manner mimicking the evolution of the cap.

**Figure 5: Possible profile of annual issuance of allowances and use of international credits**



Together with the decrease in emissions over phase 2 the profile of free allocation and auctioning foreseen under the current implementation provisions would result in a rapid build-up of the surplus of allowances in the period around the transition into phase 3 and level off from 2014 onwards. The figure below gives a representation of a possible build-up of the surplus, based on the issuance profile as given in Figure 5, and assuming an emission profile between baseline and reference projections (see section 4.3).

**Figure 6: Example of a possible profile of annual issuance of allowances, use of international credits and surplus development**



According to Article 10(4) of the ETS Directive, the Commission is empowered to decide on the timing and other aspects of auctioning in the implementing rules. The current Auctioning Regulation (AR) was adopted in 2010 and provides, on the basis of stakeholder feedback at the time of preparing the initial Regulation, for a rather simple time profile. The annual volumes to be auctioned mirror the difference between the total amount of allowances under the cap (which declines in a linear manner) and the amount of allowances handed out for free in that year (in line with the benchmarks)<sup>34</sup>, i.e. cap minus free allocation for each year.

While the current time profile was decided in the Auctioning Regulation already back in 2010, in the meantime two deviations have been decided since with the effect of "front-loading" the issuance of phase 3 allowances. Firstly, for the NER300, 200 million of phase 3 allowances are sold by October 2012 and another 100 million by the end of 2013. Secondly, an amendment to the Regulation has been adopted in July 2011 regarding early auctions to accommodate real hedging demand. This foresees the auctioning of 120 million allowances before 2013, with corresponding reductions in the 2013 and 2014 volumes by 60 million allowances each.

But the combination of all these factors is expected to result in a continued rapid increase of the surplus into early phase 3 that will increasingly affect the proper functioning of the market in the coming years.

Therefore it could be considered appropriate to revise the auction profile to ensure an orderly functioning of the market.

Table 7 below represents three options for such a revision of the auction time profile. The option with the largest change would see the auctioned amount reduce by 1.2 billion allowances in the first 3 years of phase 3, whereas the options with a medium and small change would only see back-loading of 900 and 400 million allowances, respectively.

<sup>34</sup> Article 10 of the Auctioning Regulation

All three options would reduce auctioned amounts more in 2013 than in 2014 or 2015 compared to the existing profile and increase auctioning by equal amounts in the period 2016 to 2020.

This takes account of the fact that the supply-demand imbalance is expected to peak in 2013 and therefore sees the highest reduction in auctioning in 2013 and more limited changes in 2014 and 2015 to smoothen out the adjustment.

Different alternatives could be contemplated for the time profile as regards bringing the volumes back before the end of phase 3. The options outlined in the table below assume that the allowances would be returned in the period 2016-2020 with equal amounts in each year.

**Table 7: Options to revise auction time profile (all figures in million allowances)**

<b>Change in auction time profile</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total 2013–2020</b>
Large change	-550	-400	-250	240	240	240	240	240	0
Medium change	-400	-300	-200	180	180	180	180	180	0
Small change	-200	-150	-50	80	80	80	80	80	0
<b>Resulting time profile</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>Total 2013–2020</b>
Existing auction profile*	1056	1044	1092	1080	1067	1055	1043	1031	8468
Large change	506	644	842	1320	1307	1295	1283	1271	8468
Medium change	656	744	892	1260	1247	1235	1223	1211	8468
Small change	856	894	1042	1160	1147	1135	1123	1111	8468

\* See annex 6.4.2 for estimates of the existing auction profile. Allowances auctioned in 2013 and 2014 in this table are decreased by 60 million compared to the values included in Table 13 to compensate for the early auctioning of 120 million phase 3 allowances already in 2012.

Figure 7, Figure 8 and Figure 9 give a representation of the three options. Simplifications had to be made about the total amount of allowances auctioned and freely allocated, international credits used for compliance and emissions<sup>35</sup>. The overview has the aim to give an indication on the potential impacts, without being conclusive on how the market would react.

### **Option with a large change of auction profile**

Figure 7 represents the option with the largest degree of back-loading, i.e. a reduction by 1.2 billion in the first three years of phase 3. This would result in a large reduction in the surplus in 2013. Nevertheless the reduction in the surplus remains significantly below the increase experienced in 2011 and expected over 2012. By 2015 the surplus would be below 1 billion unused allowances compared to a case where no changes in the auction time profile were implemented. After 2015 the auctioned amounts would actually increase significantly, resulting in an issuance of allowances well above future emission levels. This would drive a re-emergence of the surplus. Total annual issuance in the period 2016 to 2019 would be higher than in any year in phase 2 bar 2012. The decrease in auctioned volumes early in phase 3 would require drawing on the existing surpluses to make available the necessary allowances to the market to comply with emissions. This type of change of the auction time profile is thus likely to give strong temporary support to prices in 2013 to 2015, but would put downward pressure on prices in the second half of phase 3.

<sup>35</sup> For more information on the assumptions applied, see annex 6.4.2 and annex 6.5.

As such, it does not seem to be able to bring sustained stability of the issuance of allowances and scarcity on the market.

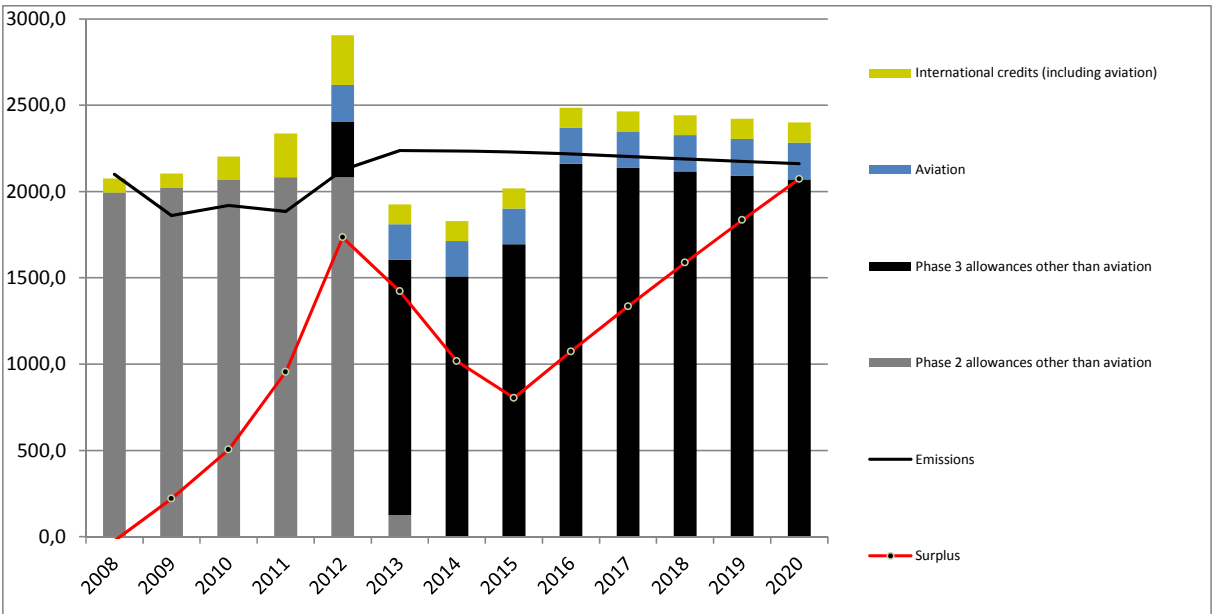
**Option with a medium change of auction profile**

Figure 8 represents a medium degree of back-loading, i.e. a reduction by 900 million in the first three years of phase 3. The surplus would still be larger than a billion by 2015. The annual decrease of the surplus in the years 2013 to 2015 would be much slower than the build-up in 2011 and 2012 and some of the existing surplus will need to be used for compliance purposes. As such it is expected to support prices but less than the option with a large degree of back-loading. Again, given that this is only a temporary reduction, after 2015 the auctioned amounts actually start increasing compared to a case where no changes in the auction time profile were implemented. Even though the auctioned volumes increase by less than under the option with a large degree of back-loading, total issuance of allowances potentially remains above future emissions, even taking into account the emissions of aviation and new sectors and gases in phase 3. Compared to a large degree of back-loading, a medium back-loading pattern is likely to give lesser support to prices in 2013 to 2015, while it would put lower downward pressure on prices in the second half of phase 3.

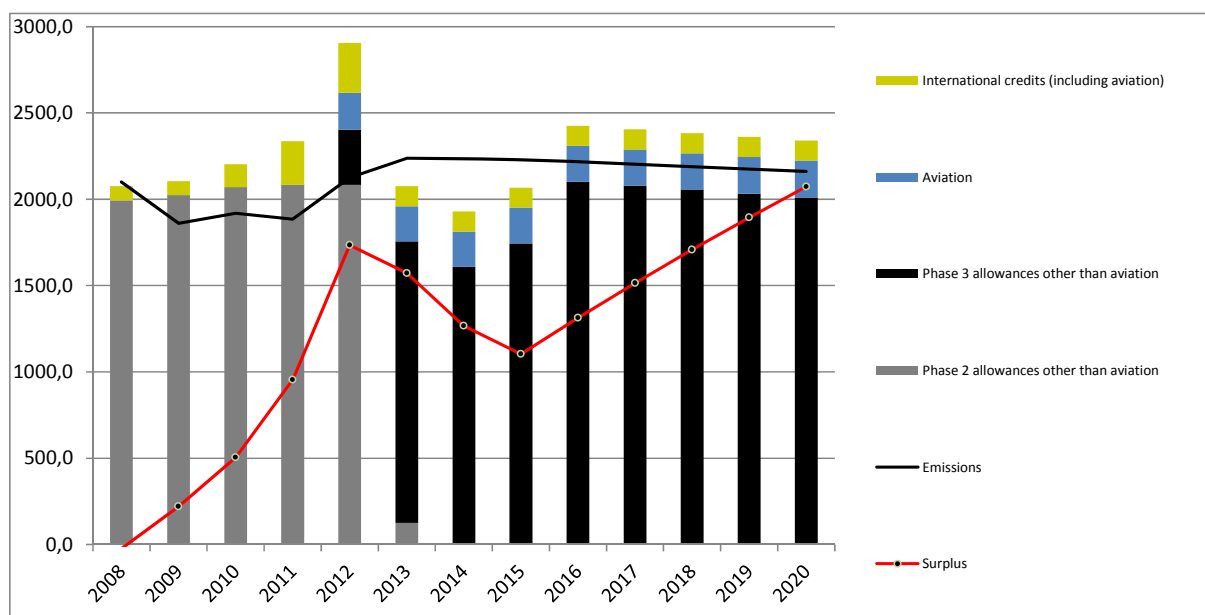
**Option with a small change of auction profile**

Figure 9 represents the option of a small degree of back-loading, i.e. a reduction by 400 million in the first three years of phase 3. This option would result in a continued but much more limited increase in the surplus in 2013. Reductions of the surplus in 2014 and 2015 remain limited, with the surplus in 2015 still at levels similar to 2012. After 2015 the auctioned amounts increase considerably less than in the two other options with issuance of allowances potentially at a level close to total emissions, at least supporting prices at that point in time.

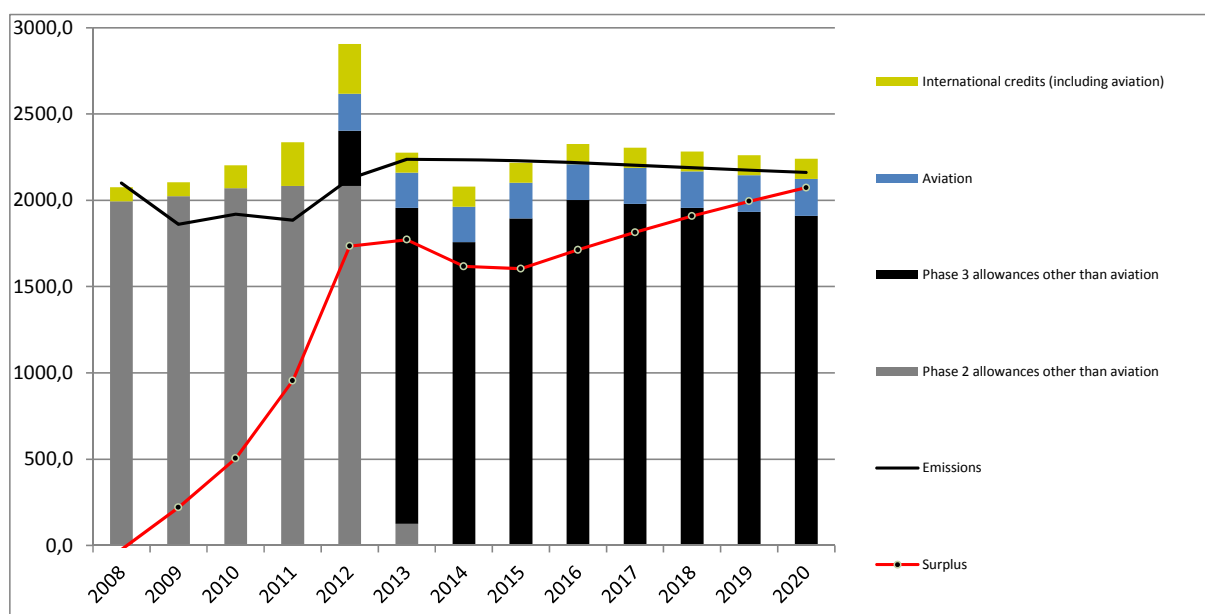
**Figure 7: Example of a possible profile with large change in the auction profile**



**Figure 8: Example of a possible profile with medium change in the auction profile**



**Figure 9: Example of a possible profile with small change in the auction profile**



While other back-loading profiles are conceivable, the three options assessed indicate the main choices of small, medium and large back-loading profiles and their principal effects on issuance volumes, the size and evolution of the surplus and the related price pattern over phase 3.

Finally it should be indicated that Member States that opt to use transitional free allocation for the modernisation of electricity generation might have an insufficient amount of remaining auction rights early in phase 3 to accommodate a large degree of back-loading based on the distribution of the initial auction rights. Various straightforward solutions are available to address this issue and one of them is outlined in Box 2. It is unlikely that this situation would arise for many Member States.



**Box 2: Example of possible temporary adjustments to auction volumes to accommodate transitional free allocation for the power sector and a large degree of back-loading**

The below table shows an illustrative example based on a large degree of back-loading. It assumes that Member State X has a 1% share of the auctioning rights. Without back-loading it normally would have had 11.5 million allowances for auctioning in 2013, but due to back-loading it would only be able to auction 5 million allowances.

At the same time it is assumed that the Member State had foreseen 6 million allowances to be allocated for free in 2013 to its electricity sector as a transitional measure.

Without back-loading this would have posed no problem, but due to the back-loading Member State X would in principle have only 5 million allowances to auction and thus lack 1 million allowances to allocate freely as a transitional measure.

(all figures in million allowances)	2013	2014	2015	Total
EU auction volume based on initial distribution	1150	1100	1050	3300
MS X auction volume according to initial distribution (assumes MS X has 1% share of the total auction volume)	11.5	11	10.5	33
EU auction volume taking into account back-loading of 650, 300 and 50 million allowances in 2013, 2014 and 2015	500	800	1000	2300
MS X auction volume taking into account back-loading, before transitional free allocation	5	8	10	23
Transitional free allocation for electricity by MS X	6	5	4	15
Final amount of real auction volume for MS X	0	2	6	8
Final amount of auction rights for MS X (including amount used for transitional free allocation by MS X)	6	7	10	23
Final amount of auction volume at EU level (including auctioning rights used for transitional free allocation)	501	799	1000	2300

To resolve this, the back-loading for MS X in 2013 would be decreased by 1 million, thus resulting in an allocation of 6 million allowances for auctioning that can be fully used for free allocation as a transitional measure. But at the same time the back-loading for MS X in the next year would be increased by 1 million, reducing the amount of auction rights it gets in 2014 from 8 million to 7 million, to ensure there is no impact on the total amounts of allowances made available.

Also at the EU level the foreseen EU amount to be auctioned, after back-loading, is increased in 2013 by one million to 501 million and decreased in 2014 by 1 million to 799 million.

This approach would accommodate for the transitional free allocation in all Member States even in case of a large degree of back-loading and at the same ensure that the total EU amounts to be auctioned, as well as the cumulative share for each Member State remain the same. Furthermore it is estimated to apply only for a very limited amount of the total back-loading, thus not impacting the order of magnitude of the back-loading itself.

## 6. ANNEXES

### 6.1. Finalisation of the phase 3 regulatory infrastructure

#### 6.1.1. Cap-setting

The EU ETS cap is the absolute quantity of allowances over a multi-year trading period. For the first and second trading period, the Member States determined the total quantity of allowances in their National Allocation Plans (NAPs). As from the third trading period, there will be a single EU-wide cap.

The ETS Directive requires the Commission to publish the absolute EU-wide quantity of allowances for 2013 based on the total quantities of allowances issued or to be issued by the Member States in accordance with the Commission Decisions on the national allocation plans for the period 2008-2012. It also requires the Commission to publish the adjusted quantities in respect of installations that were opted into the system during the period 2008-2012, and those carrying activities which were only included from 2013 onwards. The Commission adopted a first Decision<sup>36</sup> in July 2010 and the second<sup>37</sup> in October 2010 with respect to the quantity of allowances to be issued for 2013. Further technical adjustments to this are possible, for instance to take into account the unknown amount of additional issuance of phase 2 allowances from the national new entrants reserves.

#### 6.1.2. Auctioning

The ETS Directive requires the Commission to adopt a regulation on timing, administration and other aspects of auctioning to ensure that it is conducted in an open, transparent, harmonised and non-discriminatory manner. The Commission published the Auctioning Regulation on 12 November 2010. The regulation was amended in 2011<sup>38</sup> in order to auction 120 million allowances for phase 3 already in 2012 in order to ensure the smooth functioning of the market that was expected to be confronted with a build-up of hedging demand already before 2013 due to the regulatory change that sees increased auctioning from 2013 onwards.

The regulation foresees a common auction platform, while it allows Member States to opt out. Germany, Poland and the UK have decided to opt out of the planned common platform and instead appoint their own auction platform.

The Commission is in the process - jointly with the Member States – of implementing the provisions of the Auctioning Regulation. A joint procurement agreement, between the Commission and Member States, for an auction monitor that will survey the auctions conducted on all auction platforms has already entered into force. Another joint procurement agreement, this one for the common auction platform, has also entered into force between the Commission and the Member States that did not opt-out.

Regarding the common auction platform, a call for tender was published in March 2012 in the Official Journal of the EU<sup>39</sup> for a transitional common auction platform. The transitional common auction platform is to conduct auctions on a provisional basis, with the aim to allow auctioning to start in the second half of 2012 with the early auctioning of 120 million phase 3 allowances this year, in addition to some 30 million aviation allowances.

---

<sup>36</sup> Commission Decision 2010/384/EU:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0384:EN:NOT>

<sup>37</sup> Commission Decision 2010/634/EU:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0634:EN:NOT>

<sup>38</sup> Commission Regulation (EU) 1031/2010 (consolidated version):  
[http://ec.europa.eu/clima/policies/ets/auctioning/third/docs/draft\\_consolidated\\_en.pdf](http://ec.europa.eu/clima/policies/ets/auctioning/third/docs/draft_consolidated_en.pdf)

<sup>39</sup> OJ 2012/S 59-095297, Contract notice 2012/S 59-095297

Member States that decided to opt-out of the common auction platform have to notify the Commission of the auction platform they intend to use. Such opt-out auction platforms can start auctions after the Auctioning Regulation has been amended for the listing of that auction platform. Both Germany and the UK have notified the auction platforms they intend to appoint and these procedures are on-going. Regarding timing, the common auction platform shall conduct its auctions at least on a weekly basis<sup>40</sup>. The actual frequency is expected to be twice a week. The opt-out platforms to be appointed by Germany, Poland and the United Kingdom will have a lower frequency. All auction platforms will distribute their respective annual volume of allowances evenly over the auctions conducted in the course of the year.

Each auction platform has to determine and publish the exact times and dates of each individual auction (the so-called auction calendar), well before the beginning of each calendar year<sup>41</sup>. However, the Auctioning Regulation allows for subsequent changes to a published auction calendar in a number of prescribed situations, most of which are technical in nature<sup>42</sup>. One of the situations mentioned in this provision is the case of an amendment to the Auctioning Regulation.

### 6.1.3. Free allocation

#### *Free allocation for industry*

Article 10a(1) of the ETS Directive requires the Commission to adopt fully harmonised implementing measures for free allocation. On 27 April 2011, the Commission adopted the Benchmarking Decision<sup>43</sup> setting out the rules for free allocation. The decision foresees free allocation to industry based on 52 product benchmarks and 'fall back' approaches for production processes not covered by a benchmark. The rules apply both for existing installations as well as for new entrants.

The rules are to be used by the Member States to calculate the annual number of allowances to be allocated free of charge to ETS installations in their territories from 2013 onwards. The preliminary amounts of allowances have to be submitted to the Commission for assessment. By beginning of July 2012, 26 Member States have notified to the Commission the preliminary amounts of allowances to be allocated for free to the existing installations via their so-called National Implementation Measures (NIMs) to the Commission.

Article 10a(13) requires the Commission to determine, every five years after 31 December 2009, a list of sectors and subsectors deemed to be exposed to a significant risk of carbon leakage. Every year the Commission may, on its own initiative or at a request of a Member State, add a sector or subsector to the list. The Commission adopted the decision determining the first so-called carbon leakage list for 2013-2014 on 24 December 2009<sup>44</sup>. In 2011, the decision was amended<sup>45</sup> adding certain sectors and subsectors to the list. Another annual

---

<sup>40</sup> Article 8 of the Auctioning Regulation

<sup>41</sup> Article 13 of the Auctioning Regulation

<sup>42</sup> Article 14 of the Auctioning Regulation

<sup>43</sup> Commission Decision 2011/278/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:130:0001:0045:EN:PDF>

<sup>44</sup> Commission Decision 2010/2/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0002:EN:NOT>

<sup>45</sup> Commission Decision 2011/745/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0745:EN:NOT>

amendment<sup>46</sup> may be expected in the course of 2012, subject to the scrutiny of the Council and the Parliament.

According to Article 10a(6) of the ETS Directive, Member States may also adopt financial measures in favour of sectors and subsectors determined to be exposed to a significant risk of carbon leakage due to costs relating to greenhouse gas emissions passed on in electricity prices, in order to compensate for those costs and where such financial measures are in accordance with state aid rules applicable and to be adopted in this area. In 2011, the Commission conducted public consultations on a new set of State aid rules in this context<sup>47</sup>. It published the guidelines on 22 May 2012<sup>48</sup>.

#### *Transitional free allocation for the modernisation of electricity generation*

Power plants will in principle have to buy all needed allowances as of 2013. According to Article 10c of the ETS Directive only certain Member States may transitionally give free allocation to installations for electricity production in operation by 31 December 2008 or to installations for electricity production for which the investment process was physically initiated by the same date, provided that one of the conditions in Article 10c(1) is met. Whereas in total 10 Member States<sup>49</sup> meet one of these conditions, only eight Member States, i.e. Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland and Romania, applied for the derogation by September 2011..

On 29 March 2011, the Commission adopted the so-called "derogation package" which consists of a Commission decision setting how to allocate free allowances to eligible installations under the derogation; and a Communication from the Commission on how it will assess all issues relevant for the application. The Commission is currently in the process of assessing the submitted information and has by 5 July 2012 concluded the assessment for Bulgaria, Cyprus, Czech Republic, Estonia, Lithuania and Romania. .

#### *Free allocation for aviation*

Since 2012, emissions from all domestic and international flights that arrive at or depart from an EU airport are covered under the EU ETS.

The total quantity of allowances to be allocated for the aviation sector (cap) in 2012 will be equal to 97% of the historical aviation emissions (defined as the average emissions from aviation over the period 2004 to 2006). In the period 2013-2020 this percentage will be reduced to 95%.

On 30 June 2011 the Commission adopted a Decision<sup>50</sup> on the quantity of allowances to be allocated free of charge, to be auctioned and the number of allowances in the special reserve for flights within and from and to the EU. The decision covers two trading periods: 2012 and 2013-2020.

---

<sup>46</sup>

<http://ec.europa.eu/transparency/regcomitology/index.cfm?do=search.documentdetail&BzJkBNlru8k7CoY5NtbZXE7fxrb2qZ5AM1Q+SuK3vtKUyRNldL7I/SVpCmnySTSZ>

<sup>47</sup>

[http://ec.europa.eu/competition/consultations/2011\\_questionnaire\\_emissions\\_trading/index\\_en.html](http://ec.europa.eu/competition/consultations/2011_questionnaire_emissions_trading/index_en.html)

and [http://ec.europa.eu/competition/consultations/2012\\_emissions\\_trading/index\\_en.html](http://ec.europa.eu/competition/consultations/2012_emissions_trading/index_en.html)

<sup>48</sup>

[http://ec.europa.eu/competition/sectors/energy/ets\\_guidelines\\_en.pdf](http://ec.europa.eu/competition/sectors/energy/ets_guidelines_en.pdf)

<sup>49</sup>

Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland and Romania

<sup>50</sup>

Commission Decision 2011/389/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0389:EN:NOT>

It has since been complemented by an EEA Joint Committee Decision 93/2011 of 20 July 2011 which has determined the EEA-wide amount of allowances<sup>51</sup>. 85% of the EEA-wide amount will be allocated for free in 2012. In the period 2013-2020 this percentage will be reduced to 82%, as 3% will go to the special reserve.

In order to apply for free allowances, airlines have been required to monitor their tonne kilometre data for 2010 and later to report their independently verified tonne-kilometre activity data for 2012 by 31 March 2011.

Allocation of free allowances to each aircraft operators is based on the verified tonne-kilometre in 2010, multiplied by the EEA-wide benchmark values to be used for year 2012 and for the period 2013-2020. The benchmark for each period was calculated by dividing the total annual amount of free allowances applicable to the 2012 and 2013-2020 trading periods by the sum of tonne-kilometre data included in applications by aircraft operators submitted to the Commission. These benchmark values were published on 26 September 2011<sup>52</sup>.

#### *6.1.4. Exclusion of small installations subject to equivalent measures*

Article 27 of the ETS Directive contains an option for Member States to exclude from the EU ETS, under certain conditions, installations falling within the scope of the EU ETS but emitting less than 25,000 tonnes of CO<sub>2</sub> equivalent, and hospitals. In total seven Member States, i.e. France, Germany, Italy, the Netherlands, Slovenia, Spain and the UK, have notified such measures. The Member States concerned have notified only a limited number of eligible installations for exclusion. The assessment of these notifications is ongoing.

#### *6.1.5. Allowances for the NER300 programme*

The NER 300 is one of the EU's flagship initiatives to promote low-carbon innovation and green growth. It is established by Article 10a(8) of the ETS Directive and further implemented through the NER300 Decision<sup>53</sup>. The programme covers 300 million allowances from the phase 3 EU-wide new entrants reserve of the EU ETS for the co-financing of commercial demonstration projects of CCS and innovative renewable energy technologies.

On 2 December 2011, the Commission delivered to the European Investment Bank (EIB) the 300 million allowances to be monetised. The first call for proposals under the NER300 programme is well on track to allow the Commission to adopt award decisions for successful bidders before the end of 2012. First, the EIB concluded the financial and technical due diligence assessment of the project proposals submitted, and provided a list of projects ranked by increasing cost-per-unit performance to the Commission. On 12 July 2012, the Commission published the results of the selection process<sup>54</sup>. Once the monetisation of 200 million allowances for the first round of calls for proposals is completed in early October 2012, the final list of projects to be awarded funding will be determined.

#### *6.1.6. Changes in the EU ETS registry system*

The EU ETS registry system, which records the holding of allowances and the transaction concerning those allowances, originally consisted of national registries hosted by the Member

---

<sup>51</sup> Decision of the EEA Joint Committee No 93/2011:

[http://ec.europa.eu/clima/policies/transport/aviation/allowances/docs/eea\\_20072011\\_en.pdf](http://ec.europa.eu/clima/policies/transport/aviation/allowances/docs/eea_20072011_en.pdf)

<sup>52</sup> Commission Decision 2011/638/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0638:EN:NOT>

<sup>53</sup> Commission Decision 2010/670/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0670:EN:NOT>

<sup>54</sup> Commission Staff Working Document SWD(2012) 224 final:

[http://ec.europa.eu/clima/news/docs/2012071201\\_swd\\_ner300.pdf](http://ec.europa.eu/clima/news/docs/2012071201_swd_ner300.pdf)

States. The revised ETS Directive provides for the centralisation of these operations into a single European Union registry.

Following a partial activation of the single registry in January 2012 for aircraft operators, the full activation of the single registry, including the migration of almost 18,000 open EU ETS accounts from national registries, took place in June 2012.

To prepare for the switch from the national registries and the inclusion of aviation into the EU ETS, an overhauled Registries Regulation was adopted in 2010<sup>55</sup>. In 2011, additional new provisions were included in a new Registries Regulation<sup>56</sup> setting up the infrastructure for phase 3, in particular with regard to auctioning and free allocation of allowances, following the adoption of the respective implementing acts. At the same time enhanced registry security measures were introduced in the wake of the cyber-attacks witnessed earlier in 2011 and to give a stronger legal basis for measures to protect the integrity of the carbon market. New security features include: state of the art IT measures (e.g. 2-factor authentication, transaction signing), strengthened know-your-customer checks (inspired by practices from the bank sector), delay in delivery of allowances (to enable cancellation of the transaction in the case of fraud), plus more certainty on the ownership of allowances combined with full fungibility of allowances (facilitated by non-display of serial numbers). A further amendment of the Registries Regulation is planned in 2012 in order to finalise the preparation of phase 3<sup>57</sup>.

#### *6.1.7. Changes to combat VAT fraud*

In order to limit the threat of so-called carousel fraud in the context of allowance trading, whereby VAT and allowances are passed around between companies and across border to exploit the way VAT is treated within multi-jurisdictional trading, the Commission responded quickly to the reports of alleged fraud in spring 2009, and adopted a proposal for an optional and temporary application of the reverse charge mechanism to the supplies of certain goods and services – notably the allowances and credits from the CDM and JI projects. In 2010, the Council adopted the part of the proposal that concerned the EU ETS. This allows the Member States to implement safeguards combating carousel fraud in a consistent manner across the EU. The aim is to reverse VAT liability for the allowances and make it payable by the buyer. Most Member States have already chosen to apply this reverse-charge mechanism and notified the Commission thereof. However, only if all Member States fight the criminal networks involved to stop these fraudulent activities, by adopting the corresponding legislation, such action will be fully effective.

#### *6.1.8. Oversight of the spot market*

A clear need for regulatory action has also been identified as regards the oversight of the spot segment of the carbon market. A vast majority of the carbon trading is conducted in derivatives which are classified as financial instruments and hence already regulated and supervised on the basis of the financial markets legislation. However, the spot trading (allowances for immediate delivery) is not.

To address this regulatory gap for the spot segment of the carbon market the Commission proposed in October 2011 the financial markets legislation (proposals for the Markets in

---

<sup>55</sup> Commission Regulation (EU) No 920/2010:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010R0920:EN:NOT>

<sup>56</sup> Commission Regulation (EU) No 1193/2011:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011R1193:EN:NOT>

<sup>57</sup> See section 6.1.9 below.

Financial Instruments Directive<sup>58</sup> and Regulation<sup>59</sup>, and Market Abuse Regulation<sup>60</sup> and Criminal Sanctions for Market Abuse Directive<sup>61</sup>) to apply also to the spot segment. This is the appropriate regime, as it is a proven and well-known framework that offers efficiency gains both for market participants required to comply as well as authorities responsible for the implementation, and ensures coherence with the rules for derivatives in allowances. The proposals are currently being discussed by the European Parliament and the Council in view of their adoption through a co-decision procedure.

#### 6.1.9. *Use of international credits*

As regards the JI and CDM credits, the revised ETS Directive allows for those held by companies with compliance obligations under the EU ETS to be exchanged into allowances for phase 3 up to the limit defined for the use of these units<sup>62</sup>. The EU was also the first to ensure continued demand for international credits after 2012. The exact limit on the use of international credits pursuant to Article 11a(8) of the ETS Directive will be established by a separate Commission Regulation.

At the same time, it is becoming more selective in the type of credits it allows into the system. Internationally, the EU is advocating the swift operationalisation of new market mechanisms defined in Durban in 2011 that offer a more comprehensive price signal and stimulate domestic action in developing countries.

Some quality provisions for credit use in phase 3 support this position e.g. by prohibiting access to CDM credits from new projects in all but least developed countries and by restricting the use of certain project types (HFC-23 and N<sub>2</sub>O). On the use of certain project types, no further restrictions are envisaged at present but the possibility remains to do so in the future.

The ETS also provides access to credits through bilateral agreement. If acted upon, these will focus on testing new market mechanism and in this way advance the international negotiations. No concrete plans exist for this, but the Commission is an active participant in the World Bank Partnership for Market Readiness, which could be instrumental for progress in designing a new market mechanism.

#### 6.1.10. *Monitoring, reporting and verification*

In order to make the monitoring and reporting requirements for operators and aircraft operators clearer, more transparent, as well as easier to use and implement, a Commission Regulation on monitoring and reporting of greenhouse gas emissions<sup>63</sup> was approved by the Climate Change Committee in December 2011. Also, a Commission Regulation for verification of greenhouse gas emission reports and tonne-kilometre data and accreditation of

---

<sup>58</sup> Commission proposal COM(2011) 656 final:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0656:FIN:EN:PDF>

<sup>59</sup> Commission proposal COM(2011) 652 final:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0652:FIN:EN:PDF>

<sup>60</sup> Commission proposal COM(2011) 651 final:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0651:FIN:EN:PDF>

<sup>61</sup> Commission proposal COM(2011) 654 final:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0654:FIN:EN:PDF>

<sup>62</sup> The exchange process will be defined in the upcoming amendment of the Registries Regulation mentioned in section 6.1.6.

<sup>63</sup> [http://ec.europa.eu/clima/news/docs/regulation\\_mr\\_en.pdf](http://ec.europa.eu/clima/news/docs/regulation_mr_en.pdf)

verifiers<sup>64</sup> was approved. The draft Regulations have been submitted to and completed scrutiny by the European Parliament and Council under the comitology process.

---

<sup>64</sup> [http://ec.europa.eu/clima/news/docs/regulation\\_va\\_en.pdf](http://ec.europa.eu/clima/news/docs/regulation_va_en.pdf)



## 6.2. List of implementing acts applying the changes in the regulatory environment

Short title	Full title and link to the document
Cap Decisions	<p>Commission Decision 2010/384/EU on the Community-wide quantity of allowances to be issued under the Union Scheme for 2013 (first decision)</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0384:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0384:EN:NOT</a></p> <p>Commission Decision 2010/634/EU adjusting the Union-wide quantity of allowances to be issued under the Union Scheme for 2013 (second decision)</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0634:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0634:EN:NOT</a></p>
Auctioning Regulation	<p>Commission Regulation (EU) No 1031/2010 on the timing, administration and other aspects of auctioning of greenhouse gas allowances pursuant to Directive 2003/87/EC of the European Parliament and the Council establishing a scheme for greenhouse gas allowances trading within the Community</p> <p>Commission Regulation (EU) No 1210/2011 of 23 November 2011 amending Regulation (EU) No 1031/2010 in particular to determine the volume of greenhouse gas allowances to be auctioned prior to 2013</p> <p>Draft consolidated regulation: <a href="http://ec.europa.eu/clima/policies/ets/auctioning/third/docs/draft_consolidated_en.pdf">http://ec.europa.eu/clima/policies/ets/auctioning/third/docs/draft_consolidated_en.pdf</a></p>
Benchmarking Decision	<p>Commission Decision 2011/278/EU determining transitional Union-wide rules for harmonised free allocation of allowances pursuant to Article 10a of Directive 2003/87/EC</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0278:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0278:EN:NOT</a></p> <p>* Amended by Commission Decision 2011/745/EU as regards the sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0745:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0745:EN:NOT</a></p>
Carbon Leakage Decision	<p>Commission Decision 2010/2/EU determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0002:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0002:EN:NOT</a></p>

	<p>* Amended by Commission Decision 2011/475/EU as regards the sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0745:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0745:EN:NOT</a></p>
Transitional free allocation derogation package	<p>Commission Decision C(2011) 1983 on guidance on the methodology to transitionally allocate free emission allowances to installations in respect of electricity production pursuant to Article 10c(3) of Directive 2003/87/EC</p> <p>Link: <a href="http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/c_2011_1983_en.pdf">http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/c_2011_1983_en.pdf</a></p> <p>Communication from the Commission 2011/C 99/03: Guidance document on the optional application of Article 10c of Directive 2003/87/EC</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011XC0331(01):EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52011XC0331(01):EN:NOT</a></p>
Transitional free allocation decisions	<p>Commission Decision C(2012) 3260 concerning the application pursuant to Article 10c (5) of Directive 2003/87/EC to give transitional free allocation for the modernisation of electricity generation notified by Cyprus</p> <p>Link: <a href="http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3260_en.pdf">http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3260_en.pdf</a></p> <p>Commission Decision C(2012) 3271 concerning the application pursuant to Article 10c (5) of Directive 2003/87/EC to give transitional free allocation for the modernisation of electricity generation notified by Estonia</p> <p>Link: <a href="http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3271_en.pdf">http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3271_en.pdf</a></p> <p>Commission Decision C(2012) 3237 concerning the application pursuant to Article 10c (5) of Directive 2003/87/EC to give transitional free allocation for the modernisation of electricity generation notified by Lithuania</p> <p>Link: <a href="http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3237_en.pdf">http://ec.europa.eu/clima/policies/ets/auctioning/derogation/docs/comm_dec_2012_3237_en.pdf</a></p>
Registry Regulation	<p>Commission Regulation (EC) 920/2010 establishing a Union Registry for the periods ending 31 December 2012 of the Union emissions trading scheme pursuant to Directive 2003/87/EC of the European Parliament and of the Council and Decision No 280/2004/EC of the European Parliament and of the Council</p> <p>Link to consolidated version of 30 November 2011:</p> <p><a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2010R0920:20111130:EN:PDF">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2010R0920:20111130:EN:PDF</a></p> <p>Commission Regulation (EC) No 1193/2011 establishing a Union Registry for the period commencing on 1 January 2013, and</p>

	<p>subsequent trading periods, of the Union emissions trading scheme pursuant to Directive 2003/87/EC of the European Parliament and of the Council and amending Regulations (EC) No 2216/2004 and EU No 920/2010</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011R1193:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011R1193:EN:NOT</a></p>
Regulation on certain restrictions for international credits	<p>Commission Regulation (EU) No 550/2011 on determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, certain restrictions applicable to the use of international credits from projects involving industrial gases</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011R0550:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011R0550:EN:NOT</a></p>
Monitoring and Reporting, and Verification and Accreditation Regulations	<p>Commission Regulation on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC</p> <p>Link: <a href="http://ec.europa.eu/clima/news/docs/regulation_mr_en.pdf">http://ec.europa.eu/clima/news/docs/regulation_mr_en.pdf</a></p> <p>Commission Regulation on the verification of greenhouse gas emission reports and tonne-kilometre reports and the accreditation of verifiers pursuant to Directive 2003/87/EC</p> <p>Link: <a href="http://ec.europa.eu/clima/news/docs/regulation_va_en.pdf">http://ec.europa.eu/clima/news/docs/regulation_va_en.pdf</a></p>
Decision on the interpretation of aviation activities	<p>Commission Decision 2009/450/EC on detailed interpretation of the aviation activities listed in the Annex I to Directive 2003/87/EC</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009D0450:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009D0450:EN:NOT</a></p>
Decision on historical aviation emissions	<p>Commission Decision 2011/149/EU on historical aviation emissions pursuant to Article 3c(4) of Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas allowance trading within the Community</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0149:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0149:EN:NOT</a></p>
List of aircraft operators	<p>Commission Regulation (EU) No 100/2012 amending Regulation (EC) No 748/2009 on the list of aircraft operators that performed an aviation activity listed in Annex I to Directive 2003/87/EC of the European Parliament and of the Council on or after 1 January 2006 specifying the administering Member State for each aircraft operator as regards the expansion of the Union emission trading scheme to EEA-EFTA countries</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32012R0100:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32012R0100:EN:NOT</a></p>
Decision on the	<p>Commission Decision 2011/389/EU on the Union-wide quantity of allowances referred to in Article 3e(3)(a) to (d) of</p>

quantity of aviation allowances	<p>Directive 2003/87/EC of the European Parliament and of the Council establishing a scheme for greenhouse gas allowances trading within the Community</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0389:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0389:EN:NOT</a></p>
Aviation benchmarks decision	<p>Commission Decision 2011/638/EU on benchmarks to allocate greenhouse gas allowances free of charge to aircraft operators pursuant to Article 3e of Directive 2003/87/EC of the European Parliament and of the Council</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0638:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0638:EN:NOT</a></p>
NER300 Decision	<p>Commission Decision 2010/670/EU laying down criteria and measures for the financing of commercial demonstration projects that aim at the environmentally safe capture and geological storage of CO<sub>2</sub> as well as demonstration projects of innovative renewable energy technologies under the scheme for greenhouse gas allowance trading within the Community established by Directive 2003/87/EC of the European Parliament and of the Council</p> <p>Link: <a href="http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0670:EN:NOT">http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010D0670:EN:NOT</a></p>

### 6.3. Data including Norway

**Table 8: Issued allowances and international credits used for compliance 2008-2011, EU + Norway**

Mt	2008	2009	2010	2011	Total 2008-2011
<b>Total allowances issued in year x</b>	<b>2007</b>	<b>2038</b>	<b>2084</b>	<b>2098</b>	<b>8227</b>
Free allocation	1957	1966	1992	2005	7920
Auctioning	50	72	92	93	307
<b>International credits used for compliance with emissions in year x<sup>1</sup></b>	<b>83</b>	<b>81</b>	<b>137</b>	<b>255</b>	<b>555</b>
CERs <sup>2</sup>	82	78	117	179	456
ERUs <sup>3</sup>	0,05	3	20	76	99
<b>Total issued allowances + international credits used for compliance</b>	<b>2090</b>	<b>2119</b>	<b>2221</b>	<b>2353</b>	<b>8783</b>

<sup>1</sup> Amount of international credits surrendered in the registry by 30 April year x+1  
<sup>2</sup> Credits from CDM projects are called Certified Emission Reductions (CERs).  
<sup>3</sup> Credits from JI projects are called Emission Reduction Units (ERUs).

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission. For more detail on the auctioning data see annex 6.4.1. Auctioning estimates for Norway are based on average annual amount foreseen in the National Allocation Plan Table Decision 2008-2012.

**Table 9: Verified emissions, EU + Norway**

(in Mt)	2008	2009	2010	2011	Total
<b>Verified emissions</b>	<b>2120</b>	<b>1880</b>	<b>1939</b>	<b>1905</b>	<b>7843</b>
<b>Yearly change</b>		-11,3%	3,1%	-1,7%	

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission

**Table 10: Build-up of surplus allowances 2008-2011, EU + Norway**

(in Mt)	2008	2009	2010	2011	Total
<b>Total issued allowances + international credits used for compliance</b>	<b>2090</b>	<b>2119</b>	<b>2221</b>	<b>2353</b>	<b>8783</b>
<b>Verified emissions year x</b>	<b>2120</b>	<b>1880</b>	<b>1939</b>	<b>1905</b>	<b>7843</b>
<b>Net supply of unused allowances</b>	<b>-30</b>	<b>240</b>	<b>283</b>	<b>448</b>	<b>940</b>

Source: Community Independent Transaction Log (CITL), Compliance data 2011 as published on 02/05/2012, European Commission

### 6.4. Estimate of the total amount of auctioning

#### 6.4.1. Estimate of the total amount of auctioning for the period 2008-2011

**Table 11: Estimate of the total amount of auctioning in the period 2008-2011**

(in allowances)	2008	2009	2010	2011
<b>AT<sup>a</sup></b>	0	500,000	500,000	500,000
<b>DE<sup>b</sup></b>	40,000,000	40,000,000	41,142,500	40,675,500
<b>EL<sup>c</sup></b>	0	0	0	10,000,000
<b>IE</b>	0	185,000	185,000	187,065
<b>LT</b>	0	0	0	820,000
<b>NL<sup>d</sup></b>	0	0	8,000,000	4,000,000
<b>UK<sup>e</sup></b>	4,000,000	25,000,000	35,800,000	30,700,000
<b>Total</b>	<b>44,000,000</b>	<b>65,685,000</b>	<b>85,627,500</b>	<b>86,912,565</b>

Source: European Commission (data also include allowances sold in non-competitive procedures):  
[http://ec.europa.eu/clima/policies/ets/auctioning/second/index\\_en.htm](http://ec.europa.eu/clima/policies/ets/auctioning/second/index_en.htm)

<sup>a</sup> For more detail see Austrian Ministry of Agriculture, Forestry, Environment and Water Management: <http://www.lebensministerium.at/umwelt/klimaschutz/eu-emissionshandel/allokationsplan.html> and Austrian National Registry: [http://www.emissionshandelsregister.at/emission\\_trading/auction/](http://www.emissionshandelsregister.at/emission_trading/auction/)

<sup>b</sup> In 2008-2009, the same annual volumes of allowances were sold (without auctioning) on exchanges. Since 2010, allowances have been auctioned on the European Energy Exchange. For more details see: <http://www.eex.com/en/Download/Market%20Data/EU%20Emission%20Allowances%20-%20EEX>

<sup>c</sup> For more detail see Hellenic Exchanges: [http://www.helex.gr/index2.php?option=com\\_content&task=view&id=2239&pop=1&page=0&Itemid=10554](http://www.helex.gr/index2.php?option=com_content&task=view&id=2239&pop=1&page=0&Itemid=10554)

<sup>d</sup> In 2010 allowances were sold on Climex exchange. Since 2011, allowances have been auctioned on the European Energy Exchange. For more detail see: <http://www.eex.com/en/Download/Market%20Data/EU%20Emission%20Allowances%20-%20EEX>

<sup>e</sup> For more detail see UK Debt Management Office: <http://www.dmo.gov.uk/index.aspx?page=ETS/AuctionInfo>

#### 6.4.2. Estimate of the total amount of auctioning for the period 2013-2020

The total amount of allowances to be issued in the period 2013-2020 for sectors other than aviation depends on the total amount of allowances issued in the period 2008–2012. This 2008-2012 issuance is not yet fully known, for instance due to uncertainties related to the treatment of unused allowances in the national new entrants reserves for the period 2008-2012. But an estimate for the total potential issuance in the period 2013-2020 was made in the Staff Working Document 'Preparing the EU's Quantified Emission Limitation or Reduction Objective (QELRO) based on the EU Climate and Energy Package'<sup>65</sup>.

**Table 12: Estimate of the total allowed emissions for the ETS (other than aviation) over the period 2013-2020**

Year	2013	2014	2015	2016	2017	2018	2019	2020
Mio ton CO <sub>2</sub> -eq	2082	2044	2005	1967	1929	1891	1853	1814

The above table is based on the higher range estimate as given in the Staff Working Document 'Preparing the EU's Quantified Emission Limitation or Reduction Objective (QELRO) based on the EU Climate and Energy Package.

A maximum share of these allowances, can be foreseen for allocation to sectors other than electricity generators. This is determined by their historic average shares in the period 2005-2007. This maximum share is not yet fully determined but for the Staff Working Document 'Analysis of options beyond 20% GHG emission reductions: Member State results'<sup>66</sup> it was assumed to be 41.3% of the total allocated allowances in the period 2013-2020. More recent information seems to suggest this share will rather be lower. The actual amount of free allocation for sectors other than electricity generators might be below this maximum and will depend on the outcome of the further implementation of the free allocation rules based on ex-ante benchmarks in the concerned sectors<sup>67</sup>.

On the other hand, some free allocation will also be foreseen for electricity producers for their production of heat. Estimates of total free allocation for this assessment have been adapted accordingly, with total amount of free allocation, including for heat to electricity producers, around 40% of total allowances.

<sup>65</sup> SWD(2012) 18 final, Tables 4 and 5:

[http://ec.europa.eu/clima/policies/international/negotiations/docs/swd\\_13022012\\_en.pdf](http://ec.europa.eu/clima/policies/international/negotiations/docs/swd_13022012_en.pdf)

<sup>66</sup> SWD(2012) 5 final: [http://ec.europa.eu/clima/policies/package/docs/swd\\_2012\\_5\\_en.pdf](http://ec.europa.eu/clima/policies/package/docs/swd_2012_5_en.pdf)

<sup>67</sup> Decision 2011/78/EU:

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011D0278:EN:NOT>

**Table 13: Estimate of the total amount of auctioning, free allocation and allowances available for the New Entrants Reserve in the ETS (other than aviation) over the period 2013-2020**

Year (Mio ton CO <sub>2</sub> -eq)	2013	2014	2015	2016	2017	2018	2019	2020	2013-2020
Auctioning	1116	1104	1092	1080	1067	1055	1043	1031	55%
Free allocation	862	837	813	789	765	741	717	693	40%
NER	104	102	100	98	96	95	93	91	5%
Total	2082	2044	2005	1967	1929	1891	1852	1814	100%

Note: Estimated amounts show total amounts and do not take into account a deduction of allowances for early auctioned in 2012 and the NER300.

Table 13 does not include the impact on annual auctioning volumes of the NER300 nor the early auctioning of 120 million phase 3 allowances in 2012. These estimated auctioning amounts will further be reduced due to the transitional free allocation for electricity production for those Member States that are eligible and have requested it. An estimate of these potential further reductions in auctioned volumes based on the requested amounts is included in the table below.

**Table 14: Estimates of the annual volume of auctioned allowances in the period 2013-2020 other than aviation (figures in million allowances)**

Year	2013	2014	2015	2016	2017	2018	2019	2020
Estimated auctioning reduction due to transitional free allocation for electricity	-153	-136	-120	-103	-85	-65	-43	0

Note: Estimated volumes of transitional free allocation for electricity production are based on the volumes requested by the Member States and are still subject to assessment.

## **6.5. Profile of annual issuance of allowances, international credit use and surplus development**

In order to construct a potential profile up to 2020 for the issuance of allowances and the use of international credits a number of assumptions needs to be made. The following gives a list of the main assumptions. It should be underlined that uncertainties remain and thus this can only be seen as a rough approximation.

- 2012 free allocation = free allocation for 2011 as given in Table 3.
- 2012 auctioning (excluding auctioning of leftovers from new entrants reserves for phase 2 or early auctioning) = auctioning for 2011 as given in Table 3.
- Leftovers from new entrants reserves for phase 2 that will still come to market before end of compliance cycle 2012 = 125 million allowances to be auctioned in 2013.
- Early auctioning of phase 3 allowances in 2012 = 120 million.
- Use of international credits for compliance in 2012 = use of international credits for compliance in 2011 as given in Table 3.
- Total cap for phase 3 is based on total Table 12.
- Auctioning for sectors other than aviation is based on Table 13 but lowered by 60 million in the years 2013 and 2014 to compensate for early auctioning in 2012.
- Free allocation for sectors other than aviation is based on is based on Table 13.

- NER300: 200 and 100 million allowances of phase 3 brought to market in 2012 and 2013 respectively, they lower the remaining free allocation in all years of phase 3.
- The total allowances for the NER phase 3 is based on the quantities in Table 13 but reduced by 300 million allowances for the NER300. It is assumed that this total amount is gradually consumed over the period 2013-2020.
- Use of international credits for compliance, in sectors other than aviation, in the period 2008-2020 = 1700, The remaining international credits in sectors other than aviation that can be used after 2012 will be used at an equal rate over the period 2013–2020.
- Aviation cap 2012 = 212.9 million allowances.
- Annual aviation cap 2013-2020 = 208.5 million allowances but special reserve for aviation is gradually consumed over the period 2013-2020.
- Use of international credits for compliance by aviation is equal to 15% of emissions in 2012 and 1.5% of emissions in the years 2013-2020.

An emission profile needs to be assumed in order to estimate the build-up of the surplus profile. For the period 2008-2011 the emissions are used as given in Table 4. For the period 2012-2020 an extrapolation is made based on the average of the projections of the baseline and reference scenarios as used in Staff Working Document (SEC(2010) 650), an expanded to include incoming flights.

Total issuance of allowances and use of international credits minus emissions results in a build-up of the surplus. For representation of a profile based on the above assumptions, see Figure 6 in section 5.