

# FIT FOR 55: RENEWABLE ENERGIES

**Proposal COM(2021) 557** of 14 July 2021 for a **Directive** of the European Parliament and of the Council **amending Directive (EU) 2018/2001**, Regulation EU 2018/1999 and Directive 98/70/EC **as regards the promotion of energy from renewable sources**, and repealing Directive (EU) 2015/652

cepPolicyBrief 1/2022

LONG VERSION

## Background | Objective | Affected Parties

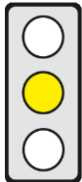
**Background:** The EU wants to reduce its greenhouse gas (GHG) emissions by 2050 to net zero (“climate neutrality”) and by 2030 to 55% compared to 1990 levels (EU 2030 climate target). To achieve this EU 2030 climate target, the Commission has proposed to overhaul the EU climate and energy legislation (“Fit for 55” climate package), including the Renewable Energy Directive [(EU) 2018/2001, RED II].

**Objective:** The share of renewable energy (“renewables”) in overall EU energy consumption shall increase to 40% by 2030 (EU renewables 2030 target). Furthermore, renewable targets for specific sectors – e.g. energy, buildings, transport and industry – shall be set.

**Affected Parties:** Energy, fuel and industry sectors.

### Brief Assessment

#### Pro



- ▶ To achieve the deployment of renewables at the lowest possible cost, the predominantly national focus of Member States needs to be abandoned. The Commission rightly wants to strengthen cross-border cooperation between Member States.
- ▶ The selling of guarantees of origins (GOs) can reduce the need for support schemes as producers of renewables have an additional market-based income. The obligation of Member States to issue GOs will support the further market integration of renewables.

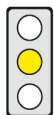
#### Contra

- ▶ Energy demand and costs of switching to renewables of the industry varies between the Member States. Therefore, an EU-wide uniform renewables target should be avoided. A transformation pathway, e.g. for green hydrogen, can nevertheless reduce the intertemporal switching costs.
- ▶ Setting general targets – e.g. the use of 50% green hydrogen – can lead to cost disadvantages for the EU industry. For ramping-up green hydrogen, targeted quotas for end uses can be an alternative.

## EU and National 2030 Renewables Targets [Long Version A. 2, D. 1.1]

**Commission proposal:** The revised Renewable Energy Directive (RED III) provides:

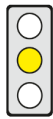
- for a tightened collectively binding EU 2030 renewables target of at least 40% [RED III, amended Art. 3 (1)];
- that the Member States increase their indicative national 2030 renewables target in line with their respective renewables potential to reach collectively the EU 2030 renewables target [RED III, Art. 3 (2)].



**cep Assessment:** The renewables share in the EU and its Member States should not be determined predominantly by political decision but by competition through the EU emissions trading system (EU ETS) and other instruments of climate and energy policy. The fact that the 2030 renewables target is only binding at EU level and that Member States specify their national renewables targets avoids the imposition of disproportionately high economic and political costs on Member States with low renewables development potential.

## Reducing Regulatory Barriers [Long Version A. 3, D. 1.2]

**Commission proposal:** The Commission detects barriers to the deployment of renewables by “overly complex and excessively long” administrative procedures of Member States, e.g. for the granting of permits. It will, therefore, review them and, where appropriate, propose “modifications” [RED III, recital 10 and Art. 15 new paragraph (9)].



**cep Assessment:** The increased deployment of renewables is hampered by regulatory barriers. The Commission’s plan to review national permitting procedures can give an incentive for Member States to simplify them. However, this process will take time before results can be achieved. For short-term improvements, the Commission could support the simplification of authorisation procedures by issuing non-binding guidelines, e.g., regarding species protection.

## Guarantees of Origin [Long Version A. 3, D. 1.3]

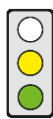
**Commission proposal:** “Guarantees of origin” (GOs) are tradeable certificates that certify to final energy consumers that a given quantity of energy was produced from renewable sources [RED II, Art. 2 No. 12]. In the future, GOs are to be issued upon request to renewables producers, regardless of whether they receive financial support from a national support scheme or not. Currently Member States can decide not to issue GOs to renewables producers who benefit from a national support scheme [RED III, amended Art. 19 (2)].



**cep Assessment:** The option to sell GOs can reduce the need for support schemes as renewables producers have an additional market-based source of income. Furthermore, GOs enable companies to decrease their individual GHG emissions cost-efficiently. The proposed obligation of Member States to issue GOs upon request – regardless of whether renewables producers benefit from their national support scheme – facilitates the further market integration of renewables and provides incentives for their increased deployment.

## Strengthening of Cross-Border Cooperation [Long Version A. 3, D. 1.4]

**Commission proposal:** Member States can cooperate with other Member States to achieve their national 2030 renewables targets. By 31 December 2025, Member States must oblige themselves to cooperate on at least one renewables project with at least one other Member State [RED III, Art. 9 new paragraph 1a].



**cep Assessment:** To achieve the increased deployment of renewables at the lowest possible cost, the predominantly national focus of Member States needs to be abandoned. Cross-border cooperation mechanisms between Member States on joint renewables projects should be used to enable Member States to achieve their renewables targets in a more cost-efficient way. Rather than making cross-border cooperation mandatory, it should be ensured that it can be realised in an unbureaucratic way.

## Sector-Specific Targets in the Industry Sector [Long Version A. 6, D. 1.6]

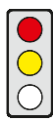
**Commission proposal:** By 2030, Member States must “endeavour” to increase the renewables share in the industry sector used for final energy and non-energy purposes – such as the use as feedstock, e.g. green hydrogen for producing steel – by an “indicative average minimum increase” of at least 1.1 percentage points per year [RED III, new Art. 22a (1) subparagraph 1].



**cep Assessment:** The energy demand of the industry and hence the costs of switching to renewables varies between the Member States. A uniform renewables target for all Member States can prevent companies from pursuing the most cost-effective GHG reduction options induced by the carbon price. Therefore, the proposed target of an EU-wide uniform increase of the renewables share per year should be avoided. A coordinated transformation path, e.g. for green hydrogen, can nevertheless reduce the intertemporal switching costs.

## Use of Green Hydrogen in the Industry Sector [Long Version A. 6, D. 1.7]

**Commission proposal:** By 2030, Member States must “ensure” that 50% of the hydrogen used for final energy and non-energy purposes is produced by renewable sources [“green hydrogen”; RED III, new Art. 22a (1) subparagraph 3].



**cep Assessment:** Since the capability to pass additional costs to customers differs significantly across economic sectors, an industry-wide target is to be seen critically. Setting general targets – e.g. that 50% of the hydrogen used should be produced by renewable sources by 2030 – can lead to cost disadvantages for the European industry. To achieve the envisaged market ramp-up of green hydrogen cost-efficiently, targeted quotas for end uses with greater willingness to pay for green hydrogen could be a better alternative.

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## **“FIT FOR 55”: RENEWABLE ENERGIES**

**cepPolicyBrief 1/2022**

**LONG VERSION**

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## A. Core Aspects of the Commission Proposal

### 1 Background: “Fit for 55” Legislative Proposals and Renewable Energies

- ▶ With its “European Climate Law” [Regulation (EU) 2021/1119; see [cepPolicyBrief 03/2020](#)] the EU has committed itself to the goal of “climate neutrality” by 2050 and has tightened its target for the reduction of greenhouse gas (GHG) emissions by 2030 by 55% compared to 1990 levels (“EU 2030 climate target”).
- ▶ To achieve the EU 2030 climate target and overhaul the EU climate and energy legislation accordingly, the Commission published on 14 July 2021 its “Fit for 55” legislative package. For the promotion of renewable energies, the following proposal are of special relevance:
  - the proposal COM(2021) 557 for amending the directive on the promotion of renewable energies [Renewable Energies Directive (EU) 2018/2001 – RED III];
  - the proposal COM(2021) 551 for amending the directive on the EU emissions trading system (EU-ETS) [EU-ETS Directive 2003/87/EC].
- ▶ The current Renewable Energies Directive [(EU) 2018/2021 – RED II, see [cepInput 01/2019](#)]
  - sets for 2030 an EU-wide target of at least 32% for the share of energy from renewable sources – sun, wind, biomass etc. (“renewables”) – in the EU’s overall gross final energy consumption (“EU 2030 renewables target”) which is “collectively” binding for all Member States [RED II, Art. 3 (1)];
  - stipulates that Member States must specify in their “integrated national energy and climate plans” (INECPs) their respective non-obligatory – “indicative” – “national contribution” towards reaching the EU 2030 renewables target [“national 2030 renewables target”, RED II, Art. 3 (2); Governance Regulation (EU) 2018/1999; see [cepInput 02/2019](#), p. 5 et seq.];
  - gives Member States leeway in the design of instruments for their financial support for renewable energy [“support schemes”; RED II, Art. 4–6];
  - shall be amended according to the Commission proposal COM(2021) 557 of 14 July 2021.
- ▶ The current EU-ETS Directive [2003/87/EC, see [cepInput 03/2018](#)]
  - regulates the existing EU emission trading system (EU-ETS I) which sets an upper limit on the maximum amount of permitted GHG emissions of the covered sectors – electricity production, energy-intensive industries, intra-EU aviation – by limiting the annually issued quantity of tradeable emission rights (“allowances”) and reducing it by a yearly rate [“cap & trade”; EU-ETS Directive, Art. 12];
  - shall be amended according to the Commission proposal COM(2021) 551 of 14 July 2021 in order to set up a separate “cap & trade” system for GHG emissions caused by the combustion of fuels in the road transport and building sectors (EU-ETS II) [amended EU-ETS Directive, new Chapter IV].

### 2 EU and National 2030 Renewables Targets

- ▶ The revised Renewable Energy Directive (RED III) provides
  - for a tightened collectively binding EU 2030 renewables target of at least 40% [RED III, amended Art. 3 (1)];
  - that the Member States increase their indicative national 2030 renewables targets in line with their respective renewables potential to reach collectively the EU 2030 renewables target [RED III, Art. 3 (2)].
- ▶ To avoid double-counting in calculating the renewables share in the final energy consumption of a Member State, “renewable fuels of non-biological origin” such as “green hydrogen” (RFNBOs, “renewable synthetic fuels”) must be accounted in the sector – electricity, heating and cooling or transport – in which they are consumed. Consequently, the renewable energy used to produce the renewable synthetic fuels is not factored in the final consumption of renewable electricity. [RED III, amended Art. 7 (1) subparagraph 2]

### 3 General Measures of Member States

- ▶ The Commission detects barriers to the deployment of renewables by “overly complex and excessively long” administrative procedures of Member States, e.g. for the granting of permits. It will, therefore, review them and, where appropriate, propose “modifications” [RED III, recital 10 and Art. 15 new paragraph (9)].
- ▶ To create and foster a market for long-term renewables power purchase agreements (PPAs), Member States must promote their uptake [Art. 15 amended paragraph 8]
  - by defining supporting “policies and measures” in their INECs;
  - by removing “regulatory and administrative barriers” and minimising the financial risks associated with PPAs, e.g. by using credit guarantees.
- ▶ Member States must ensure that “guarantees of origin” (GOs) are issued upon request to producers of renewable energy, regardless of whether the producers receive financial support from a national support scheme or not [RED III, amended Art. 19 (2)]. Currently, Member States can decide not to issue GOs to producers who benefit from their national support scheme [RED II, Art. 19 (2) subparagraph 1].
  - GOs are tradeable certificates with the sole function of providing evidence to final energy consumers that a given share or quantity of energy was produced from renewable sources [RED II, Art. 2 No. 12]. GOs are tradeable and can be transferred with or without the physical transfer of energy [RED II, Art. 19 (2) subparagraph 6].
  - A GO refers to 1 MWh [RED III, amended Art. 19 (2)].
- ▶ Member States can cooperate with other Member States to achieve their national 2030 renewables targets [“joint projects”; RED III, Art. 9(1) and Art. 10(3); see [cepInput 01/2019](#), p. 5].
  - By 31 December 2025, Member States must agree to cooperate on at least one joint project with at least one Member State [RED III, Art. 9 new paragraph 1a].
  - Member States bordering a sea basin have to define a certain amount of offshore renewable energy which is to be produced jointly by 2030, 2040 and 2050 [RED III, Art. 9 new paragraph 7a; see also Communication COM(2020) 741 on Offshore Renewable Energy, [cepPolicyBrief 18/2021](#)].

### 4 Building Sector

- ▶ By 2030, EU-wide renewables “should” have a share of at least 49% of the final energy consumption – electricity, heating and cooling – in the building sector [“indicative EU 2030 renewables target for the building sector”; RED III, new Art. 15a (1)].
- ▶ Member States must set in their INECs an indicative national 2030 renewables target for their building sectors which must be “consistent” with the indicative EU 2030 renewables target for the building sector [RED III, new Art. 15a (1) in conjunction with Art. 7].

### 5 Transport Sector

- ▶ By 2030, the Member States must set an obligation on fuel suppliers to ensure that in the amount of all energy supplied to their transport sectors
  - renewable fuels – e.g. biogas, biodiesel, methanol [RED III, Annex III] – and renewable electricity lead to an average reduction of GHG emissions per energy unit (“GHG intensity”) compared to fossil fuels of at least 13% in the transport sector [RED III, new Art. 25 (1) (a), new Art. 27 (1) and Annex V];
  - renewable synthetic fuels – including hydrogen – achieve a share of at least 2.6% [RED III, new Art. 25 (1) (b)];
  - “advanced biofuels and biogas”, which are obtained from raw materials with a low economic value – such as algae, straw or bio-waste [RED III, Annex IX Part A] –, achieve a share of at least 2.2% [RED III, new Art. 25 (1) (b)].

## 6 Industry Sector

- ▶ By 2030, Member States must
  - “endeavour” to increase the renewables share used for final energy and non-energy purposes – such as the use as feedstock, e.g. “green hydrogen” produced with renewables for producing steel [see [cepPolicyBrief 14/2020](#)] – in the industry sector by an “indicative average minimum increase” of at least 1.1 percentage points per year [RED III, new Art. 22a (1) subparagraph 1].
  - “ensure” that 50% of the hydrogen used for final energy and non-energy purposes is produced by renewable sources – excluding “hydrogen used as intermediate products for the production of conventional transport fuels” [RED III, new Art. 22a (1) subparagraph 3].

## 7 Bioenergy

- ▶ To ensure that the production of energy from biomass (bioenergy) does not harm the environment, Member States must take the “cascading principle” into account. It aims to prioritise – “wherever possible” – the use of biomass material for the production of goods over its use for energy production. [RED III, recital 4 and Art. 3 new paragraph 3]
  - The Commission will adapt a delegated act on applying the cascading principle to subsidies for biomass by national support schemes [RED III, amended Art. 3 (3) (b)].
  - Member States must not support the use of saw logs, veneer logs, stumps and roots to produce energy [RED III, amended Art. 3 (3) (a) (i)].
- ▶ The savings of GHG emissions for the production of electricity, heating and cooling from biomass fuels used must be [RED III, amended Art. 29 (10) (d)]
  - at least 70% until 31 December 2025; and
  - at least 80% from 1 January 2026.

Currently, the requirement of a 70% saving of GHG emissions only applies to installations which started operation not earlier than 1 January 2021 [RED II, Art. 29 (10) (d)].

## B. Legal and Political Context

### 1 Legislative Procedure

14 July 2021	Adoption by the Commission
Open	Adoption by the European Parliament and the Council, publication in the Official Journal of the European Union, entry into force

### 2 Options for Influencing the Political Process

Directorates General:	DG Energy
Committees of the European Parliament:	Industry, Research and Energy, Rapporteur: Markus Pieper (EPP, DE)
Federal Germany Ministries:	Economy and Climate (leading)
Decision-making mode in the Council:	Qualified majority (acceptance by 55% of Member States which make up 65% of the EU population)

### 3 Formalities

Competence:	Art. 194 TFEU (Energy), Art. 114 TFEU (Internal Market)
Type of Legislative Competence:	Shared competence (Art. 4 (2) TFEU)
Procedure:	Art. 294 TFEU (ordinary legislative procedure)

## C. Member States’ Perspectives

### 1 Share of Renewable Energy in the EU

The EU-wide renewables target for 2020 amounts to the share of at least 20% renewables used in overall EU energy consumption [“2020-target”, RED II, Art. 3 (1)]. While the EU as a whole achieve the collective target and some Member States are overfulfilling their national 2020-targets – e.g. Italy –, others missed it – e.g. France (see Tab. 1; newest available data: 2020).

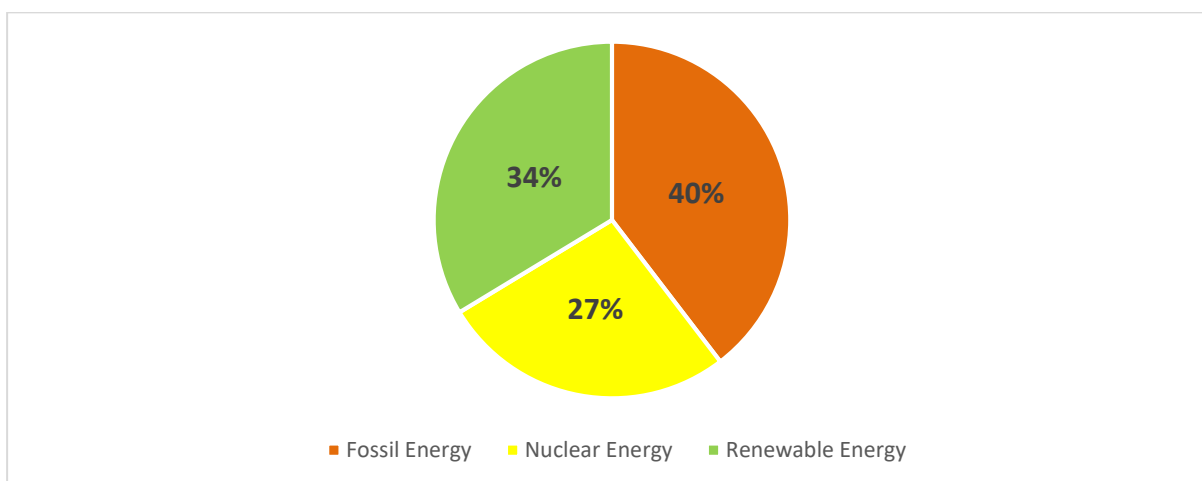
**Tab. 1: Share of renewable energy in gross final energy consumption (2016–2020)**

Member States	2016	2017	2018	2019	2020	2020-Target
France	15.5%	15.8%	16.4%	17.3%	19.3%	23.0%
Germany	14.9%	15.5%	16.7%	17.3%	19.1%	18.0%
Italy	17.4%	18.3%	17.8%	18.2%	20.4%	17.0%
<b>EU-27</b>	<b>18.0%</b>	<b>18.4%</b>	<b>19.0%</b>	<b>19.9%</b>	<b>22.1%</b>	<b>20.0%</b>

Source: Eurostat (2021), [Share of renewable energy in gross final energy consumption](#)

While in 2019 the EU-wide share of renewables in the overall energy consumption remained slightly below 20%, the share of renewables in the electricity sector reached 34% (see Graph. 1).

**Graph. 1: Energy Mix in the Electricity Sector – EU-27 (2019)**



Source: Ember (2021), [Europe’s Power Sector in 2020](#)

## 2 Guarantees of Origin

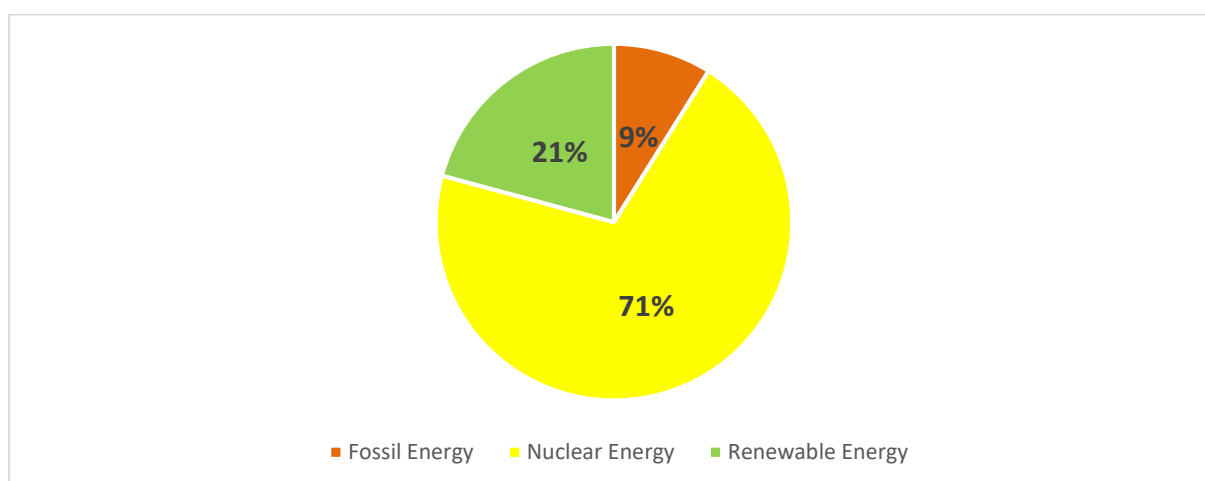
“Guarantees of origin” (GOs) which certify that a given share or quantity of energy was produced from renewable sources and which can be transferred with or without the physical transfer of energy have a market value and are an additional source of income for producers of renewable energy. Currently, Member States can decide not to issue GOs to producers receiving financial support through a national support scheme (option 1: see section D. 1.4; e.g., Germany: § 12 Herkunfts- und Regionalnachweis-Durchführungsverordnung, HkRNDV). The reasons are the interest of Member States to keep “the market value of the GOs” and avoid double financing of renewables both by public money and the sale of GOs.<sup>1</sup> If a Member State decides to issue GOs to a producer receiving financial support it has different options to ensure that the market value of the GOs is taken into account [Art. 19 (2) (a)–(c) RED III]:

- the financial support can be granted by way of a tendering procedure or a tradable green certificate system (option 2);
- the market value of the GOs is administratively taken into account in the level of financial support (option 3);
- the GOs are not issued directly to the producer, but the Member State auctions them to the consumers (option 4; e.g., France: Art. L.314–14 Code de l’énergie, paragraph 4).

## 3 French Perspectives

France has a renewable share of 17.2% in the overall energy consumption and also in the electricity sector, its renewable share is with 21% comparably low – Germany and Italy have a renewable share of 40% in the electricity sector. The French electricity sector is dominated by nuclear power with a share of 71% (see Graph. 2). France plans to decrease the share of nuclear power in its power generation to 50% in 2035.<sup>2</sup> However, President Emanuel Macron announced in November 2021 – only a few months before the national presidential elections in April 2022 –, that “for the first time in decades”, the construction of nuclear reactors will be restarted in order “to guarantee France’s energy independence, to ensure our country’s electricity supply and to achieve [...] carbon neutrality by 2050”.<sup>3</sup> This announcement came shortly after the publication of a report by the French electricity grid operator RTE that analyses six scenarios for the energy mix of France by 2050. Among the six scenarios, only one considers a phasing-out of nuclear energy, whereas three consider its further development.<sup>4</sup>

**Graph. 2: Energy Mix in the Electricity Sector – France (2019)**



Source: Ember (2021), [Europe’s Power Sector in 2020](#)

<sup>1</sup> Council of the EU (2021), [Progress Report](#) of 19 November 2021, p. 6.

<sup>2</sup> Code de l’énergie, [Art. L.100-4 \(I\), No 5](#). Initially set for 2025, this objective has been pushed back to 2035 in 2019.

<sup>3</sup> President Emmanuel Macron, [Allocution du 9 Novembre 2021](#), p. 6.

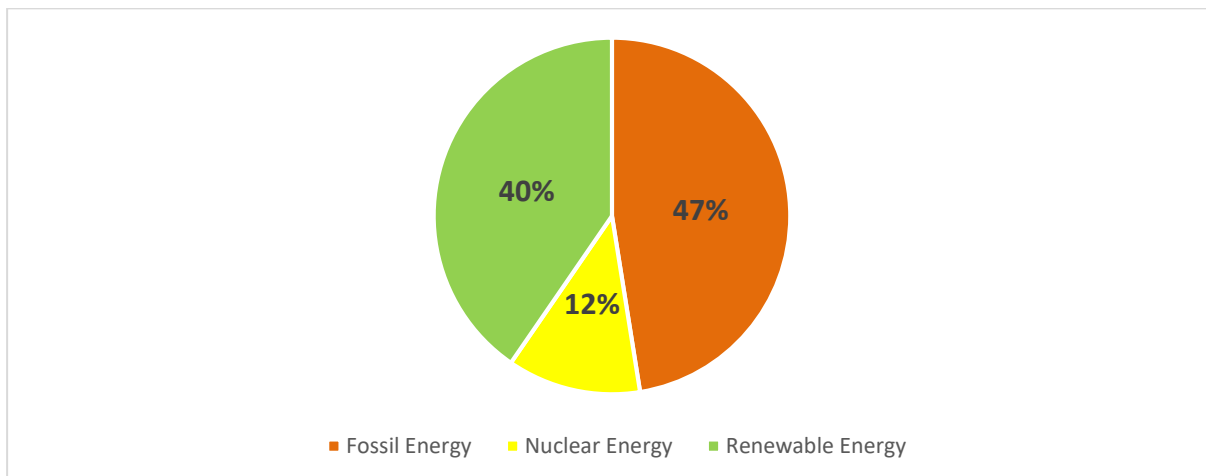
<sup>4</sup> Réseau de transport d’électricité [RTE] (2021), [Futurs énergétiques 2050](#), [Résumé exécutif](#), p. 17.



## 4 German Perspectives

Germany’s 2020-target for the share of renewables in the overall energy consumption was 18% and in 2020 it reached a renewable share of 19.1%. Furthermore, it did achieve a share of 40% renewables in the electricity sector (see Graph. 3). However, GHG emissions in Germany’s energy mix are still high since the share of fossil energy accounts for 47%. In particular, GHG-intensive coal has a high share in the German electricity mix.<sup>5</sup>

**Graph. 3: Energy Mix in the Electricity Sector – Germany (2019)**



Source: Ember (2021), [Europe’s Power Sector in 2020](#)

Germany’s new Government – formed by a coalition of the Social Democrats (SPD), the Green Party (BÜNDNIS 90 / DIE GRÜNEN), and the liberal party (FDP) – has announced as part of its coalition agreement of 24 November 2021 to aim for an share of 80% renewables in the electricity sector by 2030. Furthermore, the overall electricity demand is expected to increase.<sup>6</sup> The increase in renewable energy should be supported by an increasing carbon price. In this respect, the new German Government supports the “Fit for 55” proposals of the Commission for revising the existing EU-ETS I for the GHG emissions of electricity producers and the industry and for establishing a temporarily separate EU-ETS II for the GHG emissions in the building and transport sector.<sup>7</sup>

The usage of coal in power production should be phased-out not in 2038, as currently planned (“Kohleausstieg”),<sup>8</sup> but “ideally” already by 2030.<sup>9</sup> In the transition period, gas “is indispensable”. Therefore, gas power plants – with gas having a share of 14.8% in 2019 in the electricity sector<sup>10</sup> – should be built to ensure the basic supply is always met.<sup>11</sup> However, the newly built gas power plants must be able to process also climate neutral gases – e.g. green hydrogen – (“H<sub>2</sub>-ready”).<sup>12</sup> Nuclear energy will remain to be excluded from the German energy mix.<sup>13</sup>

The new Government wants to speed up administrative procedures for granting permits for the production of renewables “significantly”, inter alia, by setting uniform valuation methods in Germany for assessing the protection of species regarding the installation of wind energy.<sup>14</sup>

The increase in offshore renewable energy should be fostered by cooperation with other Member States and cross-border projects in the North Sea and Baltic Sea.<sup>15</sup>

<sup>5</sup> Umweltbundesamt (2021), [Erneuerbare und konventionelle Stromerzeugung](#).

<sup>6</sup> Koalitionsvertrag 2021–2025 zwischen der Sozialdemokratischen Partei Deutschlands (SPD), BÜNDNIS 90 / DIE GRÜNEN und den Freien Demokraten (FDP), Mehr Fortschritt wagen, Bündnis für Freiheit, Gerechtigkeit und Nachhaltigkeit 2021 [hereinafter “Koalitionsvertrag 2021–2025”], p. 55, lines 1797–1799.

<sup>7</sup> Id., p. 62, lines 2031–2037.

<sup>8</sup> Kommission „Wachstum, Strukturwandel und Beschäftigung“, Final Report of 26 January 2019, p. 75; see [cepAdhoc](#) of 29 January 2019.

<sup>9</sup> Koalitionsvertrag 2021–2025, p. 58, lines 1890–1891.

<sup>10</sup> BMWI, [Unser Strommarkt für die Energiewende](#).

<sup>11</sup> Koalitionsvertrag 2021–2025, p. 59, lines 1926–1930.

<sup>12</sup> Id., p. 58, lines 1899–1902.

<sup>13</sup> Id., p. 60, line 1946.

<sup>14</sup> Id., p. 56, lines 1811–1818.

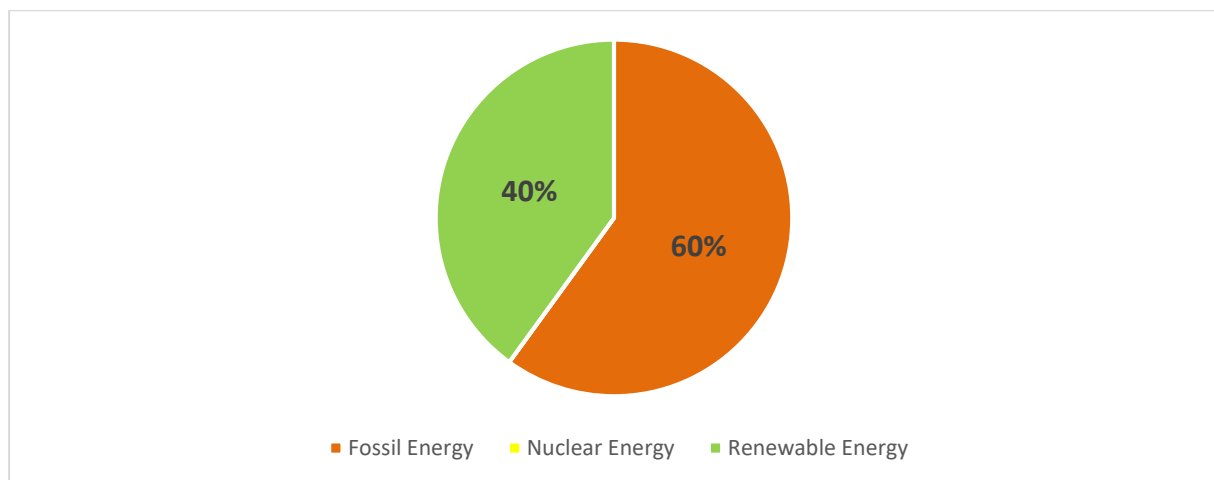
<sup>15</sup> Id., p. 57, lines 1853–1858.

To ensure access to green hydrogen, production in Germany should have “top priority”.<sup>16</sup> The use of green hydrogen should not be limited to specific fields of application. Nevertheless, it should be primarily used in sectors where climate neutrality cannot be achieved by direct electrification.<sup>17</sup>

## 5 Italian Perspective

Italy’s 2020-target for the share of renewables in the overall energy consumption was 17%. The country overfulfilled it already in 2014.<sup>18</sup> However, in 2019 the share of 60% of fossil energy in its electricity sector remained high (see Graph. 4).

**Graph. 4: Energy Mix in the Electricity Sector – Italy (2019)**



Source: Ember (2021), [Europe’s Power Sector in 2020](#)

## D. Assessment

### 1 Economic Assessment

#### 1.1 EU and National 2030 Renewables Targets

The energy production is the biggest single emitter of greenhouse gases (GHGs). Substituting fossil energy – e.g. coal, gas, oil – in energy production with renewable energy (“decarbonisation”) will directly also decarbonise the sectors consuming the respective energy – such as buildings, transport and industry. However, the renewables share in the EU and its Member States should not be determined predominantly by political decision but by competition taking account of the “cap & trade” system of the EU-ETS and other instruments of climate and energy policy.

Since 2005, GHG emissions caused by electricity production and industrial processes are already regulated by the EU-ETS I.<sup>19</sup> In the EU-ETS I, the total amount of permitted GHG emissions – irrespective of the renewables share – is fixed by way of a “cap” on emission allowances which is reduced annually in accordance by a yearly rate with a fixed long-term reduction plan. Hence, the pursued reduction of GHG emissions is effectively achieved by the cap. As the allowances are tradable the participating companies can decide for themselves where and how they reduce GHG emissions. Since companies will choose the cheapest options for reducing GHG emissions, e.g. by investing in new technology or by buying tradeable allowances, it will also be in general cost-efficient.

<sup>16</sup> Id., p. 59, lines 1932–1933.

<sup>17</sup> Id., p. 26, lines 780–783.

<sup>18</sup> Eurostat (2021), [Share of renewable energy in gross final energy consumption](#)

<sup>19</sup> Bonn, M. / Reichert, G. (2018), Climate Protection by way of the EU ETS, [ceplinput 03/2018](#).

Nonetheless, regarding the dynamic efficiency<sup>20</sup>, emissions trading alone cannot always trigger the anticipated cost reductions, e.g. when technological realignments are involved, like the manufacturing of green hydrogen. Government measures such as the support of complementary infrastructure or the ramp-up of green hydrogen can support technological change and the establishment of new business models and therefore reduce the costs of the energy transition. However, regarding the ecologically effectiveness and economically efficiency the Commission is rightfully proposing to include the emissions of the building and transport sector in a temporarily separate EU-ETS II.<sup>21</sup> In the EU-ETS II the distributing companies of fuels need to obtain allowances. As the allowances would be limited and reduced as well, the EU-ETS II will create a widespread incentive for distributing companies of fuels to commercialise renewable fuels or blend them with fossil fuels. The reduction of fossil fuels consumption will be triggered by the increase of fossil fuel prices due to the allowance costs (“passthrough”). This may take place in numerous ways, such as the increased use of renewables. However, other measures as energy renovation of buildings are also an option to avoid GHG emissions.<sup>22</sup> Consequently, an increase in the deployment of renewables prescribed by the Member States does not inevitably result in the most cost-efficient GHG emission reductions when cheaper methods of GHG reduction are prevented.

If the renewables targets are not correlated with the renewables potential of the Member States, some Member States face high costs for reaching their targets, while others can easily overfulfil theirs.<sup>23</sup> However, targets can create a verification mechanism against which Member States’ achievement of targets can be measured. The fact that the renewables target for 2030 is only binding at EU level and Member States must specify their national contributions in their “integrated national energy and climate plans”, avoids the imposition of disproportionately high economic and political costs on Member States with low renewables development potential. In order to balance the different potentials, a functioning EU internal energy market is indispensable. It can increase security of supply by reducing national imbalances between energy production and energy demand. Thus, it will be easier to manage the growing proportion of energy production derived from renewable energy, which is dependent on weather and the time of day.<sup>24</sup>

## 1.2 General Measures of the Member States: Reducing Regulatory Barriers

The increased deployment of renewables is hampered by regulatory barriers especially for wind energy – which had the highest share in the renewables production on EU-level in 2019.<sup>25</sup> Such regulatory barriers are e.g. complex and lengthy procedures for the issuing of permits.<sup>26</sup> Each regulatory barrier is a constraint for the ramp-up of renewables and thus also for all the resulting products, such as green hydrogen<sup>27</sup>. The Commission’s plan to review administrative procedures can give an incentive for Member States to simplify those. However, this process will take time before results can be achieved. For short-term improvements, the Commission could support simplifying the authorisation procedures by giving guidance on regulations, e.g. regarding species protection. Currently, criteria in administrative procedures are often only laid down in an abstract way – which is especially the case for regulations relating to species protection – and are therefore prone to error.<sup>28</sup> Clear indicative EU-wide criteria could help to decrease uncertainties for investors and authorities, e.g. planning uncertainties for investors caused by lawsuits which delay the realisation significantly. A uniform application of the law can therefore support the accelerated deployment of renewables.

## 1.3 General Measures of the Member States: Guarantees of Origin

“Guarantees of origin” (GOs) – which can be transferred with or without the physical transfer of energy – enable energy consumers to pay for and consequently also support the deployment of renewables. This applies also if

<sup>20</sup> In contrast to static efficiency – which describes a cost-efficient improvement of existing initial conditions, e.g. CO<sub>2</sub>-abatement with given technologies – dynamic efficiency also focuses on the efficient achievement of new processes, e.g. CO<sub>2</sub>-abatement with technologies still to be developed. See Ghemawat, P. / Ricart Costa, J. E. (1993), The organizational tension between static and dynamic efficiency, *Strategic Management Journal*, 14 (S2), p. 59–73.

<sup>21</sup> European Commission, Proposal COM(2021) 551 of 14 July 2021 amending the EU-ETS Directive 2003/87/EC and the MSR Decision (EU) 2015/1814.

<sup>22</sup> Menner, M. / Reichert, G. (2021), Renovation Wave, [cepPolicyBrief 04/2021](#). For more details see Menner, M. / Reichert, G. (2019), Wirksame CO<sub>2</sub>-Bepreisung, [cepStudy](#).

<sup>23</sup> Caldés, N. / del Río, P. / Lechón, Y. / Gerbeti, A. (2018), Renewable Energy Cooperation in Europe: What Next? Drivers and Barriers to the Use of Cooperation Mechanisms, *Energies* 2019, 12, 70, p. 2.

<sup>24</sup> Bonn, M. / Reichert, G. (2019), The EU Internal Electricity Market, [cepInput 04/2019](#), p. 5.

<sup>25</sup> Ember (2021), [Europe’s Power Sector in 2020](#).

<sup>26</sup> European Court of Auditors (2019), [Wind and solar power for electricity generation: significant action needed if EU targets to be met](#), pp. 30 et seq., recital 60.

<sup>27</sup> Menner, M. / Reichert, G. (2020), EU Hydrogen Strategy, [cepPolicyBrief 14/2020](#).

<sup>28</sup> Sachverständigenrat für Umweltfragen (2021), Klimaschutz braucht Rückenwind: Für einen konsequenten Ausbau der Windenergie an Land, Impulspapier Oktober 2021, p. 4.

the share or quantity of renewables in the energy physically supplied to the consumer, e.g. electricity purchased from the grid, cannot be determined. Consequently, companies which manufacture their products with electricity purchased from the grid can obtain the equivalent amount of GOs, thereby pay for the deployment of renewables in electricity production and label their product as being produced with renewables. Therefore, GOs enable companies to decrease their individual GHG emissions cost-efficiently. The proposed obligation for Member States to issue GOs upon request regardless of whether the producers benefit from their national support scheme will further support the supply of renewables on the market. The option to sell GOs can reduce the need for support schemes as producers of renewables have an additional market-based source of income. In this way, GOs are an effective instrument to support the further market integration of renewables and provide incentives for the expansion of renewables.<sup>29</sup>

#### 1.4 General Measures of the Member States: Cross-Border Cooperation

To achieve the increased deployment of renewables at the lowest possible cost, the predominantly national focus of Member States needs to be abandoned. The deployment of renewables is unnecessarily expensive if it is not pursued in areas with the best possible “energy yield”. Already in 2011, the Commission criticised that Member States only focus on expanding renewables in their own country, while estimations state that cooperation on the deployment of renewables can save up to 10 billion Euro per year.<sup>30</sup> Therefore, cross-border cooperation mechanisms between Member States on joint projects should be used in order that Member States achieve their targets in a more cost-effective way. Renewables would be rolled-out in locations where the geographical and climatic conditions are more favourable for their deployment.<sup>31</sup> Regarding the cooperation of Member States bordering a sea basin, given the scarcity of maritime space, jointly produced renewable offshore energy facilitates the use of the best sites for offshore renewables projects and contributes to complete the internal energy market.<sup>32</sup> The setting of a certain amount of jointly produced offshore renewable energy can support the uptake of cross-border cooperation. However, a major barrier identified for not making use of the cooperation mechanisms is the uncertainty about the distribution of costs and benefits between the participating Member States.<sup>33</sup> Rather than making cross-border cooperation mandatory, it should be ensured that cross-border projects can be realised in an unbureaucratic way.

#### 1.5 Industry Sector: General Aspects

Reducing GHG emissions of the industry sector is “one of the toughest challenges”<sup>34</sup>, especially regarding combustion and process emissions from cement manufacturing, iron- and steelmaking, and chemical production. The use of renewables for process heating and cooling as well as of green hydrogen, e.g. for producing steel, can support the decarbonisation of the industry sector.<sup>35</sup>

#### 1.6 Industry Sector: Sector-Specific Targets

Currently, EU’s industry heating and cooling demand is supplied by fossil fuels at 91%.<sup>36</sup> To increase the renewable share used for final energy and non-energy purposes the Commission is proposing an EU-wide uniform annual increase of at least 1.1 percentage points. However, sector-specific targets do not necessarily ensure the cheapest way to avoid GHG emissions. The energy demand of the industry varies between the Member States, and hence the costs of switching to renewables. For example, the Commission states that 50% of process heating and cooling demand in the industry sector is low-temperature, i.e. less than 200°C. These low-temperature processes can be replaced by “cost-efficient renewable options”, e.g. through electrification.<sup>37</sup> The increasing prices of the EU ETS I in particular make the

<sup>29</sup> Maaß, C. / Claas-Reuther, J. / Purkus, A. (2020), *Herkunftsnachweise für Strom aus neuen EEG-finanzierten Anlagen*, Hamburg Institut, pp. 3 et seq.

<sup>30</sup> European Commission (2011), *Communication COM(2011) 31 of 1 February 2011, Renewable Energy: Progressing towards the 2020 target*, p. 11.

<sup>31</sup> Bonn, M. / Heitmann, N. / Nader, N. / Reichert, G. / Voßwinkel, J. S. (2014), *Die Klima- und Energiepolitik der EU – Stand und Perspektiven*, [cepKompas](#), p. 95.

<sup>32</sup> Schwind, S. / Reichert, G. (2021), *Offshore Renewable Energy*, [cepPolicyBrief 18/2021](#).

<sup>33</sup> Caldes, N. / del Río, P. / Lechón, Y. / Gerbeti, A. (2018), *Renewable Energy Cooperation in Europe: What Next? Drivers and Barriers to the Use of Cooperation Mechanisms*, *Energies* 2019, 12, 70, p. 13.

<sup>34</sup> Philibert, C. (2017), [Renewable energy for industry](#). Paris: International Energy Agency.

<sup>35</sup> Leippand, A. (2021), *Auf dem Weg zur klimaneutralen Industrie – Herausforderungen und Strategien*, in: *Jahrestagung 2020 des Forschungsverbunds Erneuerbare Energien*, pp. 16 et seq.

<sup>36</sup> European Commission (2021), *Proposal COM(2021) 555 of 14 July 2021 amending the Renewable Energy Directive EU 2018/2001*, recital 21.

<sup>37</sup> Id., recital 21.

switch to renewable alternatives more attractive compared to fossil ones – especially if, as the Commission emphasises, the alternatives are already cost-efficient today. However, the demand differs significantly between the Member States. In Germany 74% of process heating and cooling demand is above 500°C.<sup>38</sup> Yet, for these temperatures no competitive renewable-based technology is market-ready yet.<sup>39</sup> Consequently, the costs of increasing the renewable share of the industry sector differs strongly among the Member States. Hence, a uniform target for all Member States can prevent companies from pursuing the most cost-effective greenhouse gas emission reduction options induced by the carbon price under EU ETS I and EU ETS II. The uniform increase of the renewable share by at least 1.1 percentage points per year should be avoided. For processes that require higher temperatures and no renewable-based technology is market-ready, targeted quotas, e.g. for the usage of green hydrogen, can support the EU-ETS I. A coordinated transformation pathway for industry supports the reduction of the intertemporal costs for industry to switch to renewables.

### 1.7 Industry Sector: Green Hydrogen

Targets – such as the stipulation that 50% of the hydrogen used should be produced by renewable sources by 2030 – can stimulate the market ramp-up and accelerate large-scale production. Such “support” can help green hydrogen to achieve a breakthrough because, in the foreseeable future, emissions trading alone will not trigger the anticipated cost reductions – arising from the expansion of production (“economies of scale”) and the resulting learning opportunities – in the manufacturing of green hydrogen. It can also provide an incentive for the Member States to invest in the expansion of production capacities and thus increase the supply of green hydrogen, as it is the responsibility of the Member States to ensure that the target is met in the respective state.

However, green hydrogen is currently not available in sufficient quantities and it is questionable if the necessary production and import capacities can be established by 2030. Moreover, requirements to use a certain amount of green hydrogen in the industry sector could lead to regulatory duplication in certain sectors – such as steel production – and could reduce the efficiency of the EU-ETS I, which incentivises energy producers and industrial plants to reduce GHG emissions in general and use renewables in particular. As costs for green hydrogen will remain high for a considerable period of time, setting broad targets can lead to cost disadvantages for the European industry in world markets. Since the willingness to pay for green hydrogen and the capability to pass additional costs to customers differs significantly across various economic sectors, an industry-wide target is to be seen critically.

To achieve the envisaged market ramp-up in a cost-efficient manner, targeted quotas for end uses with greater willingness to pay for green hydrogen – e.g. in aviation or refineries – and thus where the economic gap is smallest could be a better alternative. These targeted quotas can close the gap between production costs and the willingness of potential customers to pay.<sup>40</sup>

As the focus on green hydrogen violates the principle of technological neutrality, the Commission should also consider the use of “low-carbon” alternatives – such as “blue hydrogen”. It is produced from natural gas combined with “carbon capture” and keeps up to 90% of GHG emissions out of the atmosphere –. The initially more cost-effective production of blue hydrogen can currently save more GHG emissions than green hydrogen using renewable electricity from the current energy mix and therefore also contribute to a cost-efficient GHG reduction.<sup>41</sup>

### 1.8 Bioenergy

Bioenergy is contributing 12% to the overall energy mix, with wood-based bioenergy being with 60% the main source of the renewables consumption in the EU.<sup>42</sup> Unlike other renewables – e.g. wind and solar energy – bioenergy is not volatile and a storable energy carrier. It can therefore contribute to the base load.<sup>43</sup> However, the “highest risks” of bioenergy lie in their land-use: Soil is subject to scarcity and with a growing demand for bioenergy it will be harder to minimise the negative impacts on the environment.<sup>44</sup> An intensification or

<sup>38</sup> Frisch, S. / Pehnt, M. / Otter, P. / Nast, M. (2010), Prozesswärme im Marktanreizprogramm, Institut für Energie- und Umweltforschung Heidelberg, Deutsches Zentrum für Luft- und Raumfahrt, S. 6.

<sup>39</sup> Leipprand, A. (2021), Auf dem Weg zur klimaneutralen Industrie – Herausforderungen und Strategien, in: Jahrestagung 2020 des Forschungsverbunds Erneuerbare Energien, p. 17.

<sup>40</sup> Menner, M. / Reichert, G. (2020), EU Hydrogen Strategy, [cepPolicyBrief 14/2020](#).

<sup>41</sup> Id.

<sup>42</sup> Eurostat (2021), [Complete energy balances](#) and European Commission, Communication COM(2021) 572 of 16 July 2021, New EU Forest Strategy for 2030, p. 7.

<sup>43</sup> Leopoldina, acatech, Union der deutschen Akademie der Wissenschaften e.V. (2019), Biomasse im Spannungsfeld zwischen Energie- und Klimapolitik: Strategien für eine nachhaltige Bioenergienutzung, p. 58.

<sup>44</sup> Id., p. 59.

expansion of land-use for the production of bioenergy may lead to an increase in GHG emissions and the extinction of animal and plant species.<sup>45</sup> Forests are the habitat of many different and animal species and contribute to carbon storage. The removal of biomass is an intervention in the ecosystem by which the variety and extent of animal and plant species (“biodiversity”) can be impaired.<sup>46</sup> Using residual and waste materials can decrease the risks of land-use changes.<sup>47</sup> Support schemes which take into account the cascading principle can enhance the usage of biomass as it prioritises a material use of biomass over burning it for energy production and thus enlarges its lifespan due to multiple uses. Therefore, those support schemes help avoid conflicts of use, decrease negative environmental effects and increase sustainability as biomass is used as long and often as possible.

The retrospective inclusion of existing plants in the GHG reductions requirements counteracts investment security. Since the criteria were already strengthened in 2018, reliable framework conditions should be ensured in order to provide planning security. The EU could therefore establish a transitional period for existing plants.

## 2 Legal Assessment

Unproblematic. The EU is allowed to take measures to support renewable energy [Art. 194 (1) (c) TFEU].

## E. Conclusion

The increased deployment of renewables is hampered by regulatory barriers. The Commission’s plan to review administrative procedures can give an incentive for Member States to simplify those. Guarantees of origin (GOs) enable companies to decrease their individual GHG emissions cost-efficiently. The proposed obligation for Member States to issue GOs can reduce the need for support schemes as producers of renewables have an additional market-based source of income. In this way, GOs are an effective instrument to support the further market integration of renewables. To achieve the increased deployment of renewables at the lowest possible cost, the predominantly national focus of Member States needs to be abandoned. Therefore, cross-border cooperation mechanisms between Member States on joint projects should be used in order that Member States achieve their targets in a more cost-effective way. Jointly produced renewable offshore energy facilitates the use of the best sites for offshore renewables projects and contributes to complete the internal energy market. Sector-specific targets do not necessarily ensure the cheapest way to avoid GHG emissions. As costs for green hydrogen will remain high for a considerable period of time, setting broad targets can lead to cost disadvantages for the European industry in world markets. To achieve the envisaged market ramp-up in a cost-efficient manner, targeted quotas for end uses with greater willingness to pay for green hydrogen – e.g. in aviation or refineries – and thus where the economic gap is smallest could be a better alternative. Bioenergy is not volatile and a storable energy carrier. Support schemes which take into account the cascading principle help avoid conflicts of use, decrease negative environmental effects and increase sustainability.

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<sup>45</sup> Voßwinkel, J. S. / Reichert, G. (2013), Biofuels and Indirect Land-Use Changes, [cepPolicyBrief 01/2013](#).

<sup>46</sup> Leopoldina, acatech, Union der deutschen Akademie der Wissenschaften e.V. (2019), Biomasse im Spannungsfeld zwischen Energie- und Klimapolitik: Strategien für eine nachhaltige Bioenergienutzung, p. 16.

<sup>47</sup> Id., p. 59.