

# Carbon Pricing in France & Germany

## Differences, Similarities and Perspectives

Ola Hanafi, Marion Jousseume,

Martin Menner, Götz Reichert & Svenja Schwind



France and Germany have introduced carbon pricing to reduce CO<sub>2</sub> emissions by fossil fuels in the transport and building sectors. A comparative analysis reveals distinct differences and similarities:

- ▶ While CO<sub>2</sub> emissions in the transport and building sectors are priced in France by a carbon tax since 2014, in November 2019 Germany decided to establish a national emissions trading system starting in 2021.
- ▶ As a consequence of the “yellow vests” protests in France since 2018 and for fear of protests at the ballot box, the governments of both countries are reluctant to raise CO<sub>2</sub> prices for fossil fuels to levels where they would have a real impact on consumers.
- ▶ There is a striking discrepancy between the willingness of both governments and many citizens alike to support ambitious CO<sub>2</sub> emissions reduction targets on the one hand, and then to pay the resulting price for achieving these targets on the other hand.
- ▶ Interest in transborder cooperation on carbon pricing is growing in Europe – be it within a coalition of several “willing” EU Member States, or EU-wide within the framework of the EU itself. The considerations of the new European Commission outlined in its “European Green Deal” to extend the EU Emissions Trading System to further sectors such as road transport and buildings will open up this “European perspective” for transborder carbon pricing rather sooner than later.

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## 1 Introduction

In many countries of the EU, climate policy is currently the focus of intensive debate. One crucial aspect in this respect is the pricing of emissions of greenhouse gases (GHG), including CO<sub>2</sub>,<sup>1</sup> to incentivise their reduction. In France, the pricing of CO<sub>2</sub> emissions was introduced in 2014 in the form of a “carbon tax” on fossil fuels in the transport and building sectors. In autumn 2018, an increase in the carbon tax triggered the “yellow vests” movement (“gilets jaunes”). Following fierce protests, the French government decided to freeze the carbon tax rate at its 2018 level until 2022. In Germany, the debate on climate policy has gained momentum since the European parliamentary elections in May 2019 and the increase in the Fridays-for-Future protests. In September 2019, the German government adopted a comprehensive “Climate Action Programme 2030” (“Climate Package”). In November 2019, this resulted in legislation to establish a “national emissions trading system” for the pricing of CO<sub>2</sub> emissions in the transport and building sectors starting in 2021. Already on 16 December 2019, however, it was decided to revise the carbon prices just set for the future emissions trading system by substantially raising them. This cepInput takes a closer look at the policies and instruments for carbon pricing – the differences as well as the similarities – that are applied in France and Germany. To this end, we outline the relevant targets and provisions of EU climate policy which form the legal framework that both countries have to comply with (section 2). This is followed by a description of the basic approach of carbon pricing and the instruments by which it can be implemented: carbon tax or emissions trading (section 3). On this basis, we deal in detail with the provisions and instruments for carbon pricing applied in France (section 4) and Germany (section 5). In order to illustrate the consequences of the carbon pricing strategies in France and Germany, their practical effects on the price of transport and heating fuel are shown and compared (section 6). Finally, we draw conclusions from this comparative analysis and provide a brief outlook on potential developments within the EU (section 7).

## 2 EU Climate Policy in Non-EU-ETS Sectors

The climate policies of France and Germany must comply with the climate policy framework and binding provisions of the EU. Accordingly,<sup>2</sup> the EU aims to reduce EU-wide CO<sub>2</sub> emissions by 20% by 2020 and by 40% by 2030 compared to 1990 levels.<sup>3</sup> With regard to reduction measures to achieve these EU climate targets, EU climate policy distinguishes between two groups of economic sectors:

The EU Emissions Trading Scheme (EU-ETS)<sup>4</sup> limits CO<sub>2</sub> emissions from CO<sub>2</sub>-intensive industrial plants, energy producers and aviation<sup>5</sup> (“EU-ETS sectors”), regulating approximately half of all CO<sub>2</sub> emissions in the EU.<sup>6</sup> The remaining CO<sub>2</sub> emissions from sectors not covered by the EU-ETS – mainly transport<sup>7</sup>,

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<sup>1</sup> In addition to CO<sub>2</sub>, GHG regulated in the EU also include nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and perfluorinated hydrocarbons (PFC). In order to compare and aggregate GHGs, they are converted into CO<sub>2</sub> equivalents (“CO<sub>2</sub>e”) according to their global warming potential. In the following, the terms “GHGs” and “CO<sub>2</sub>” will be used synonymously.

<sup>2</sup> For the following see generally Menner, M. / Reichert, G. (2019), *Wirksame CO<sub>2</sub>-Bepreisung*, [cepStudie](#), pp. 2 et seq. [all links accessed on 5 December 2019].

<sup>3</sup> European Council (2007), Conclusions of 8-9 March 2007, 7224/1/07, recital 32; European Council (2014), Conclusions of 23-24 October 2014, EUCO 169/14, recital 2.

<sup>4</sup> Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community [“EU-ETS Directive”].

<sup>5</sup> EU-ETS Directive, Art. 3a–3g and Art. 28a (1).

<sup>6</sup> European Environment Agency (2017), *Annual European Union Greenhouse Gas Inventory 1990–2015 and inventory report 2017 – Submission to the UNFCCC Secretariat*, pp. 55–71.

<sup>7</sup> The transport sector includes CO<sub>2</sub> emissions from road vehicles and aircraft. In the case of electric vehicles – e.g. electric road vehicles and railways – CO<sub>2</sub> emissions from fossil fuels for electricity generation are attributed to the electricity producers and thus to the EU-ETS sectors.

building<sup>8</sup>, agriculture and forestry<sup>9</sup> (“non-EU-ETS sectors”) – are to be reduced by the sharing of reduction efforts between the EU Member States (“effort sharing”).<sup>10</sup> While the EU has set different targets for Member States for the reduction of CO<sub>2</sub> emissions in non-EU-ETS sectors,<sup>11</sup> it is largely left to them to decide which measures to take to achieve their respective national reduction targets. Overall, the EU aims to reduce CO<sub>2</sub> emissions in the non-EU ETS sectors by 10% by 2020 and by 30% by 2030 compared to 2005.<sup>12</sup> The national reduction targets and measures are supplemented by additional EU provisions in non-EU-ETS sectors – such as limit values for CO<sub>2</sub> emissions from cars<sup>13</sup> or energy efficiency requirements for buildings<sup>14</sup>. However, each Member State is responsible for meeting its national target.

Pursuant to EU law on “effort sharing”,<sup>15</sup> France is obliged to reduce its CO<sub>2</sub> emissions in the non-EU ETS sectors by 14% by 2020 and by 37% by 2030 compared to 2005. Germany has to reduce its CO<sub>2</sub> emissions by 14% by 2020 and by 38% by 2030. Corresponding to its national reduction target, each Member State is allocated a maximum annual “budget” of CO<sub>2</sub> emissions (“emissions allocation”). If a Member State exceeds its annual emissions allocation, it must take remedial actions.<sup>16</sup> In addition, a Member State has several options for flexibly meeting its target.<sup>17</sup> For example, it could try to purchase surplus emission reductions from other Member States to compensate for its own gap of emission reductions.<sup>18</sup> Depending on the gap and the availability of surplus emission reductions from other Member States, a Member State might, however, have to make substantial compensation payments. If the target is nevertheless missed, a Member State could be sued by the European Commission before the European Court of Justice and sentenced to make a penalty payment.<sup>19</sup>

### 3 Carbon Pricing: The Basic Approach

Member States are free to choose the measures to attain their national reduction target in non-EU-ETS sectors. In this respect, three main categories of CO<sub>2</sub> reduction measures can be distinguished:<sup>20</sup>

<sup>8</sup> The building sector includes CO<sub>2</sub> emissions particularly for the heating of buildings.

<sup>9</sup> The agricultural and forestry sector includes GHG emissions (CO<sub>2</sub>, methane etc.) from livestock farming, tillage and deforestation. The specific and often still unresolved problems in this sector – e.g. the multitude of different emission sources, the collection and monitoring of emissions, land-use changes and carbon leakage – require a separate consideration, so that this sector is not dealt with in this cepInput.

<sup>10</sup> See Bonn, M. / Reichert, G. (2018), Climate Protection Outside the EU ETS, [cepInput 04/2018](#).

<sup>11</sup> Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020 [“Effort Sharing Decision (2013–2020)”]; Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement [“Effort Sharing Regulation (2021–2030)”].

<sup>12</sup> European Council (2014), Conclusions of 23–24 October 2014, EUCO 169/14, recital 2.1.

<sup>13</sup> Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO<sub>2</sub> emission performance standards for new passenger cars and for new light commercial vehicles; see also Menner, M. / Reichert, G. (2018), CO<sub>2</sub> Limit Values for Cars and Light Commercial Vehicles, [cepPolicyBrief 02/2018](#).

<sup>14</sup> Directive (EU) 2018/844 of the European Parliament and of the Council of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency; see also Menner, M. / Reichert, G. (2017), Energy Performance of Buildings, [cepPolicyBrief 06/2017](#).

<sup>15</sup> Effort Sharing Decision (2013–2020), Art. 3 in conjunction with Annex II; Effort Sharing Regulation (2021–2030), Art. 4 in conjunction with Annex I.

<sup>16</sup> Effort-Sharing Decision (2013–2020), Art. 7; Effort-Sharing Regulation (2021–2030), Art. 8.

<sup>17</sup> See generally Bonn, M. / Reichert, G. (2018), Climate Protection Outside the EU ETS, [cepInput 04/2018](#), pp. 5 et seq.

<sup>18</sup> Effort-Sharing Decision (2013–2020), Art. 3 (4) et seq.; Effort Sharing Regulation (2021–2030), Art. 5 (4) et seq.

<sup>19</sup> Treaty on the Functioning of the European Union (TFEU), Art. 258–260.

<sup>20</sup> For the following see generally Menner, M. / Reichert, G. (2019), Wirksame CO<sub>2</sub>-Bepreisung, [cepStudie](#), pp. 4 et seq.

- (1) “Regulatory measures” by the state in the form of orders, prohibitions and standards limit or entirely prohibit CO<sub>2</sub> emissions.
- (2) “Subsidies” aim to promote alternative behaviour with less CO<sub>2</sub> emissions.
- (3) “Carbon pricing” aims to make the emitters pay for detrimental effects attributed to CO<sub>2</sub> emissions on third parties. By having to bear the respective costs in line with the polluter-pays principle<sup>21</sup>, emitters are expected to include them in the cost calculation of their emitting activity (“internalisation of external costs”).

The price for CO<sub>2</sub> emissions (“carbon price”) can either be determined directly by the state through levying a “carbon tax”, or indirectly through an emissions trading system (ETS) by which the total amount of permissible CO<sub>2</sub> emissions is limited and gradually reduced (“cap”) and a market for tradeable emission rights (“emission allowances”) is established (“trade”).<sup>22</sup> In both cases, the price signal is intended to provide CO<sub>2</sub> emitters with economic incentives to change their behaviour (“steering effect”). These changes can consist of avoiding or reducing CO<sub>2</sub>-emitting activities – such as driving a car or heating buildings with fossil fuels. Furthermore, carbon pricing can increase the demand for less CO<sub>2</sub>-intensive technologies and CO<sub>2</sub>-reducing measures – e.g. fuel-efficient combustion engines, heating by renewable energies, building insulation – and thus stimulate corresponding investments that become profitable due to the carbon price without costly subsidies.

## 4 Carbon Pricing in France

This section outlines the state of play in France regarding national emission reduction targets, reduction measures other than carbon pricing and emissions reductions, especially in the transport and building sectors (section 4.1). Against this background, the French regulations on carbon pricing in the transport and building sectors in the form of a carbon tax (section 4.2) and the related discussions and developments (section 4.3) are dealt with in detail.

### 4.1 Emission Targets, Reduction Measures and Emission Reductions

#### 4.1.1 Overview

Pursuant to EU law on “effort sharing” (section 2),<sup>23</sup> France is obliged to reduce its CO<sub>2</sub> emissions in the non-EU-ETS sectors by 14% by 2020 and by 37% by 2030, compared to 2005. Furthermore, since 2015, France has laid down its long-term climate and energy strategy<sup>24</sup> in the National Low-Carbon Strategy (SNBC)<sup>25</sup> and the Multiannual Energy Planning (PPE)<sup>26</sup>. After the election of President Emmanuel Macron in 2017, new objectives were set in the Climate Plan (2017).<sup>27</sup> The Energy and Climate Law

<sup>21</sup> TFEU, Art. 191 (2).

<sup>22</sup> See generally Bonn, M. / Reichert, G. (2018), Climate Protection by way of the EU ETS, [ceplInput 03/2018](#), p. 4.

<sup>23</sup> EU Effort Sharing Decision (2013–2020), Annex II; EU Effort Sharing Regulation (2021–2030), Annex I.

<sup>24</sup> Projet de Plan National intégré Energie-Climat de la France (2019), p. 2; European Commission (2019), Commission Staff Working Document SWD(2019) 263 of 19 June 2019, Assessment of the draft National Energy and Climate Plan of France [SWD(2019) 263], p. 4; LOI n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte [“LTECV”], [Art. 173 and 176](#).

<sup>25</sup> Ministère de la Transition écologique et solidaire (2015), Stratégie Nationale Bas-Carbone (SNBC) [“SNBC (2015)”], [https://www.ecologique-solidaire.gouv.fr/sites/default/files/SNBC\\_France\\_low\\_carbon\\_strategy\\_2015.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/SNBC_France_low_carbon_strategy_2015.pdf).

<sup>26</sup> Ministère de la Transition écologique et solidaire (2016), Programmations pluriannuelles de l’Energie (PPE), <https://www.ecologique-solidaire.gouv.fr/programmations-pluriannuelles-lenergie-ppe>.

<sup>27</sup> Ministère de la transition écologique et solidaire (2017), Plan Climat, [https://www.ecologique-solidaire.gouv.fr/sites/default/files/2017.07.06%20-%20Plan%20Climat\\_0.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/2017.07.06%20-%20Plan%20Climat_0.pdf).

(“Loi relative à l’énergie et au climat”)<sup>28</sup>, which entered into force on 10 November 2019, integrates the objectives of the Climate Plan (2017) and those of the revised SNBC (2018)<sup>29</sup> and PPE (2019)<sup>30</sup>. In addition to its national reduction target in non-EU-ETS sectors set by EU law, France has committed itself to reducing fossil fuel consumption by 40% by 2030 compared to 2012 and to reaching the long-term target of “carbon neutrality” by 2050.<sup>31</sup> Carbon neutrality is defined as “a balance, on national territory, between anthropogenic emissions by sources and anthropogenic removals by sinks of greenhouse gases”.<sup>32</sup>

Furthermore, the French government has set its emissions reduction targets by determining national CO<sub>2</sub> emission limits for five-year periods – 2024–2028 and 2029–2033 – on a sector-by-sector basis (“carbon budgets”).<sup>33</sup> Accordingly, the indicative annual shares of emission targets – in the carbon budget 2029–2033 – for 2030, compared to 2005, are set at 31% for the transport sector and 61% for the building sector.<sup>34</sup>

If France follows this trajectory towards carbon neutrality by 2050, it will, in 2030, exceed its legally binding national target for the non-EU-ETS sectors of 37% by 4 percentage points.<sup>35</sup> However, in June 2019, the European Commission estimated that with current measures France would fall short of meeting its reduction target by 11 percentage points.<sup>36</sup>

**Tab. 1: Emission targets and reductions in the non-EU-ETS sectors in France**

Sectors	Total Emissions 2018	Reduction 2005–2018	2020 target	2030 target	Predicted emissions in 2030 with current measures <sup>a)</sup>
Non-EU-ETS	343 Mt CO <sub>2</sub> e	<b>12.0%</b>	<b>14.0%</b> 342 Mt CO <sub>2</sub> e	<b>37.0%</b> 248 Mt CO <sub>2</sub> e	<b>26.0%</b> 294 Mt CO <sub>2</sub> e
Transport	137 Mt CO <sub>2</sub> e	<b>4.9%</b>	150 Mt CO <sub>2</sub> e	99 Mt CO <sub>2</sub> e	124 Mt CO <sub>2</sub> e <sup>b)</sup>
Building	83.4 Mt CO <sub>2</sub> e	<b>23.5%</b>	82 Mt CO <sub>2</sub> e	43 Mt CO <sub>2</sub> e	58 Mt CO <sub>2</sub> e <sup>b)</sup>

<sup>a)</sup> Measures implemented before 1 July 2017; planned measures are not included.

<sup>b)</sup> Emissions for the year 2033 were calculated by the authors based on data of the SNBC (2018), p. 40.

Source: CITEPA (2019); SNBC (2018); Projet de plan national intégré énergie-climat de la France (2019)<sup>37</sup>.

<sup>28</sup> LOI n° 2019-1147 du 8 novembre 2019 relative à l'énergie et au climat, <https://www.legifrance.gouv.fr/eli/loi/2019/11/8/TREX1911204L/jo/texte>.

<sup>29</sup> Ministère de la transition écologique et solidaire (2018), Projet de Stratégie Nationale Bas-Carbone: La transition écologique et solidaire vers la neutralité carbone [“SNBC (2018)”, <https://www.ecologique-solidaire.gouv.fr/sites/default/files/Projet%20strategie%20nationale%20bas%20carbone.pdf>].

<sup>30</sup> Ministère de la transition écologique et solidaire (2019), Projet pour consultation: Stratégie française pour l’énergie et le climat, programmation pluriannuelle de l’énergie, 2019-2023, 2024-2028, <https://www.ecologique-solidaire.gouv.fr/sites/default/files/Projet%20PPE%20pour%20consultation.pdf>.

<sup>31</sup> LOI n° 2019-1147 du 8 novembre 2019 relative à l'énergie et au climat, [Art. 1](#).

<sup>32</sup> Ibid.

<sup>33</sup> Code de l'environnement, Art. [L222-1 A](#) in conjunction with Art. [D222-1-A](#).

<sup>34</sup> Calculation by the authors based on the indicative annual share of emissions targets as presented in: SNBC (2018), p. 42, <https://www.ecologique-solidaire.gouv.fr/sites/default/files/Projet%20strategie%20nationale%20bas%20carbone.pdf>.

<sup>35</sup> SWD(2019) 263; SNBC (2018).

<sup>36</sup> SWD(2019) 263.

<sup>37</sup> [https://www.ecologique-solidaire.gouv.fr/sites/default/files/2019%2002%2014%20projet%20de%20PNIEC%20France\\_Version%20consolidee.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/2019%2002%2014%20projet%20de%20PNIEC%20France_Version%20consolidee.pdf)

### 4.1.2 Transport Sector

For the transport sector, the indicative annual share of emissions targets – in the carbon budget 2029–2033 – is 31% for 2030, compared to 2005.<sup>38</sup> GHG emissions from the transport sector amounted to 137 Mt CO<sub>2</sub>e in 2018 and 31% of all GHG emissions in France (Tab. 1). Emissions have to decrease from the initially targeted 150 Mt CO<sub>2</sub>e in 2020 to 99 Mt CO<sub>2</sub>e by 2030.<sup>39</sup> The 2030 French target for the transport sector is 28% lower than emissions in 2018. National objectives for reducing emissions in the transport sector include the licensing of 1.2 million electric passenger cars by 2023 in order to promote electromobility and ending the sale of fossil-fuel passenger cars in 2040.<sup>40</sup>

To achieve its emission reduction targets in the transport sector and the switch towards electromobility, France has adopted a broad range of measures.<sup>41</sup> Among them is a bonus-malus system introduced in 2008 and continuously updated that combines two complementary measures to incentivise the acquisition of less emission-intensive cars: In 2019, a malus of up to 10.500 €<sup>42</sup> has to be paid by buyers of CO<sub>2</sub>-intensive cars that emit more than 117 g CO<sub>2</sub>/km; and out of these malus revenues a bonus of up to 6.000 €<sup>43</sup> has to be paid to buyers of cars that emit 20 g CO<sub>2</sub>/km or less<sup>44</sup>. In addition, an extra bonus (“prime à la conversion”) is granted if a car which is at least 15 years old is scrapped instead of being resold.<sup>45</sup>

Despite these measures, France exceeded its carbon budget 2015–2018 for the transport sector by 47 MtCO<sub>2</sub>e in this period. This excess in emissions is explained by a delay in the development of electromobility: The share of electric and hybrid-electric vehicles reached only 2.1% in 2018<sup>46</sup> compared to the 9% envisaged in the SNBC’s scenario.<sup>47</sup> Moreover, the growth in vehicle demand neutralised the gain from energy efficiency of vehicles.<sup>48</sup> The goal of a modal shift from road to rail by 0.4% per year, set in the 2015 version of the SNBC, was not achieved. Instead, between 2015 and 2018, there was a modal shift of 0.1% per year from rail to road.<sup>49</sup>

### 4.1.3 Building Sector

For the building sector, the indicative annual share of emissions targets – in the carbon budget 2029–2033 – is 61% for 2030, compared to 2005.<sup>50</sup> GHG emissions from the building sector amounted to 83.4 Mt CO<sub>2</sub>e in 2018 and 19% of all GHG emissions in France (Tab. 1). Emissions have to decrease from the initially targeted 82 Mt CO<sub>2</sub>e by 2020 down to 43 Mt CO<sub>2</sub>e by 2030 (Tab 1).<sup>51</sup> The 2030 French

<sup>38</sup> Calculation by the authors based on the indicative annual share of emissions targets as presented in: SNBC (2018), p. 42.

<sup>39</sup> CITEPA (2019), Inventaire Secten [“CITEPA (2019)”], <https://www.citepa.org/fr/activites/inventaires-des-emissions/secten>; SNBC (2018).

<sup>40</sup> Ministère de la Transition écologique et solidaire (2018), Programmmations pluriannuelles de l’Energie, <https://www.ecologique-solidaire.gouv.fr/programmations-pluriannuelles-lenergie-ppe>; Projet de Plan National intégré Energie-Climat de la France (2019) [French Draft National Energy and Climate Plan (2019)], [https://ec.europa.eu/energy/sites/ener/files/documents/france\\_draftnecp.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/france_draftnecp.pdf).

<sup>41</sup> Projet de Plan National intégré Energie-Climat de la France (2019), pp. 97 et seq.

<sup>42</sup> Code général des impôts, [Art. 1011 bis](#).

<sup>43</sup> Code de l’énergie, [Art. D-251-7](#). This bonus targets electric vehicles.

<sup>44</sup> Code de l’énergie, [Art. D251-1](#).

<sup>45</sup> Code de l’énergie, [Art. D251-3](#).

<sup>46</sup> Haut Conseil pour le Climat (2019), Rapport juin 2019 [“Haut Conseil pour le Climat (2019)”], [https://www.hautconseilclimat.fr/wp-content/uploads/2019/09/hcc\\_rapport\\_annuel\\_2019\\_v2.pdf](https://www.hautconseilclimat.fr/wp-content/uploads/2019/09/hcc_rapport_annuel_2019_v2.pdf).

<sup>47</sup> SNBC (2015).

<sup>48</sup> Haut Conseil pour le Climat (2019), p. 32.

<sup>49</sup> Ibid., p. 38.

<sup>50</sup> Calculation by the authors based on the indicative annual share of emissions targets as presented in: SNBC (2018), p. 42.

<sup>51</sup> CITEPA (2019); Projet de Stratégie Nationale Bas-Carbone (2018), <https://www.ecologique-solidaire.gouv.fr/sites/default/files/Projet%20strategie%20nationale%20bas%20carbone.pdf>.

target for the building sector is 48% lower than emissions in 2018. National objectives for reducing emissions in the building sector include the renovation of 500 000 buildings per year<sup>52</sup> to improve energy efficiency, thereby concentrating government funds on high energy-consuming houses owned by low-income households.<sup>53</sup>

Among the measures to increase energy efficiency in the building sector is a tax credit for housing renovation.<sup>54</sup> Over the next ten years, through the implementation of the new Energy and Climate Law (2019), the government plans to eradicate all high energy-consuming houses, i.e. 7.5 million buildings with annual energy consumption exceeding 330 kilo Watt Hours per Square Meter (kWh/m<sup>2</sup>),<sup>55</sup> corresponding to an additional 250 000 renovated buildings per year.

Like the transport sector, the building sector emitted more CO<sub>2</sub> than allocated by the carbon budget 2015–2018. Emissions in this sector have decreased by 4% since 1990.<sup>56</sup> Its corresponding annual emissions reduction in the period 2015–2018 was 1.9%, compared to 2011–2014, while a reduction of 5.5% had been the target. One reason for this failure can be attributed to the fact that the energy efficiency achieved in this sector was compensated by an increase in the number of buildings.<sup>57</sup> Achieving energy efficiency in this sector will represent the largest upcoming investment in energy transition and CO<sub>2</sub> emissions reductions.<sup>58</sup>

## 4.2 Carbon Pricing by Carbon Tax

In 2014, in order to reduce CO<sub>2</sub> emissions and achieve the targets set in the transport and building sectors, France introduced the pricing of CO<sub>2</sub> emissions in the non-EU-ETS sectors. Carbon pricing was designed as a gradually increasing “carbon tax” in the form of a “carbon component” (CCE)<sup>59</sup> incorporated into existing domestic taxes on energy consumption (TIC)<sup>60</sup> proportional to CO<sub>2</sub> emissions caused by the consumption of fossil fuels. The CCE was thus included in the tax rates on the consumption of oil products (TICPE)<sup>61</sup>, natural gas (TICGN)<sup>62</sup> and coal (TICC)<sup>63</sup>. The consumption of electricity was excluded from the carbon tax<sup>64</sup> given that electricity in France is predominantly produced by nuclear power.<sup>65</sup> A carbon tax on energy consumption using the existing energy taxation was favoured over the creation of a new fiscal instrument to tax the carbon content of all products, as it was considered to be easier to implement in the short term and to cause lower administrative costs.<sup>66</sup>

<sup>52</sup> LOI n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte, [Art. 3](#).

<sup>53</sup> Ministère de la Transition écologique et solidaire et ministère de la Cohésion des territoires (2018), Plan rénovation énergétique des bâtiments, [https://www.ecologique-solidaire.gouv.fr/sites/default/files/Plan%20de%20r%C3%A9novation%20%C3%A9nerg%C3%A9tique\\_0.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/Plan%20de%20r%C3%A9novation%20%C3%A9nerg%C3%A9tique_0.pdf).

<sup>54</sup> Code général des impôts, [Art. 200 quater](#).

<sup>55</sup> Réseau action climat (2019), Loi énergie-climat : analyse du réseau action climat, <https://reseauactionclimat.org/loi-energie-climat-analyse/>.

<sup>56</sup> Haut Conseil pour le Climat (2019), p. 32.

<sup>57</sup> *Ibid.*, pp. 32 et seq.

<sup>58</sup> Observatoire Français des Conjonctures Economiques (OFCE) (2019), New Paradigm Initiative, First Paris New Paradigm Workshop: The Economics of a Green New Deal, Paris, September 16<sup>th</sup>, 2019.

<sup>59</sup> “Contribution Climat Energie” (CCE).

<sup>60</sup> “Taxes Intérieures de Consommation” (TIC).

<sup>61</sup> “Taxe Intérieure de Consommation sur les Produits Énergétiques” (TICPE).

<sup>62</sup> “Taxe Intérieure de Consommation sur le Gaz Naturel” (TICGN).

<sup>63</sup> “Taxe Intérieure de Consommation sur le Charbon” (TICC).

<sup>64</sup> Ministère de la Transition Ecologique et Solidaire (2017), Fiscalité Carbone [“Fiscalité Carbone (2017)”], <https://www.ecologique-solidaire.gouv.fr/fiscalite-carbone>.

<sup>65</sup> Réseau de Transport d’Electricité, Statistiques de l’énergie électrique en France, <https://www.rte-france.com/fr/article/statistiques-de-l-energie-electrique-en-france>.

<sup>66</sup> Sénat (2009), [Rapport d’information N° 543](#), Commission des finances, p. 46.



In 2014, the CCE was initially set at 7 €/t CO<sub>2</sub> with the aim of increasing it over time. In order to reach this tax rate, the level of the TIC on natural gas, heavy fuel and coal had to be increased. In contrast, however, the TIC on petrol, diesel, heating oil and liquefied petroleum gas (LPG), that was already deemed to be high enough to incorporate their associated external costs,<sup>67</sup> was reduced so that the carbon tax would have a neutral impact on their respective prices.<sup>68</sup> Subsequently, the CCE was set at 14.50 € for 2015 and 22 € for 2016, and its trajectory for 2017 and 2019 was determined, in the Law on Energy Transition for Green Growth<sup>69</sup>, by a fixed annual increase of 8.50 €/t CO<sub>2</sub>. This trajectory was modified in 2018 by the Law of Finance which increased the CCE by 14.10 €/t CO<sub>2</sub> in 2018 and by 10.40 €/t CO<sub>2</sub> per year between 2019 and 2022.<sup>70</sup> However, in response to the “yellow vests” protests, the French government gave up this CCE trajectory. In January 2019, it was frozen at the 2018 level, i.e. 44.60 €/t CO<sub>2</sub>, until 2022 (section 4.3).

The French carbon tax in the form of the CCE mainly impacts the transport and building sectors as CO<sub>2</sub> emissions from the agriculture sector are partially exempt<sup>71</sup> and only 8% of the CO<sub>2</sub> emissions from the industrial sector are subject to it.<sup>72</sup> Within the transport and building sectors, a full exemption from the CCE applies to air and maritime transport of passengers and goods – including fishing boats – while a CCE refund is granted to public road transport, taxis, road haulage over 7.5 tons and off-road diesel for public work machinery.<sup>73</sup>

The carbon tax is mainly paid by households, with a share of 58% of the total expected CCE revenue of 8.9 billion € in 2019. This amounts to 5.2 billion € paid by households, of which 3.1 billion € comes from heating and the rest from private fossil-fuel vehicles.<sup>74</sup> The economic impact of the carbon tax on households varies with their geographical location and the type of fossil fuel they use. Its impact is greater on households using diesel vehicles and/or domestic heating oil.<sup>75</sup> Households situated in rural areas have limited alternatives for transportation, making their fuel demand highly inelastic.<sup>76</sup>

In 2016, out of the total of 4 billion € in carbon tax revenues, 3 billion € were used to finance a “tax credit for competitiveness and employment”<sup>77</sup> and 1 billion € to finance a reduction of the Value Added

<sup>67</sup> Ibid., p. 51.

<sup>68</sup> El Beze, J. (2014), La réforme de la fiscalité de l'énergie : une extension de la tarification du carbone en France, [Policy Brief N°2014-06](#), Chaire Economie du Climat.

<sup>69</sup> LOI n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte, [Art. 1](#), as modified by LOI n° 2015-1786 du 29 décembre 2015 de finances rectificative pour 2015, [Art. 16](#).

<sup>70</sup> LOI n° 2017-1837 du 30 décembre 2017 de finances pour 2018, [Art. 16](#) in conjunction with Projet de loi de finances pour 2018, n° 235, p 45, [Art. 9](#), exposé des motifs.

<sup>71</sup> LOI n° 2013-1278 du 29 décembre 2013 de finances pour 2014, [Art. 32](#).

<sup>72</sup> The French CCE does not apply to sectors subject to the EU-ETS in order to avoid double taxation. See Callonnet, G. / Gouédard, H. / Jolivet, P. (2019), [La Contribution Climat-Solidaire](#) : Une taxe carbone pour la transition écologique et pour plus de solidarité fiscale, ADEME.

<sup>73</sup> [Code des douanes](#), Art. 265 septies and sexies, Art. 265 bis.

<sup>74</sup> Callonnet, G. / Gouédard, H. / Jolivet, P. (2019), [La Contribution Climat-Solidaire](#) : Une taxe carbone pour la transition écologique et pour plus de solidarité fiscale, ADEME, p 7.

<sup>75</sup> Since 2015, the cumulative increase of CCE in TICPE, VAT-included, has been 12.24 ct for petrol and 20.62 ct for diesel. Diesel prices were impacted by both a carbon tax and a petrol-diesel tax convergence envisaged from 2015 to 2021. The cumulative increase for diesel equals 10.93% of its 2019 price. For heating oil and natural gas the cumulative increase of CCE in TICPE since 2015, VAT-included, amounts to 11.82 ct and 8.10 ct, respectively. For a household heating a poorly isolated house with oil, the yearly extra cost due to the carbon tax was 79 € in 2015 and 202 € in 2018. See LOI n° 2014-1654 du 29 décembre 2014 de finances pour 2015, [Art. 36](#); LOI n° 2017-1837 du 30 décembre 2017 de finances pour 2018, [Art. 16](#); Gloriant, S. (2008), Une Evaluation Quantifiée De La "Taxe Carbone" Française, Information et Débats N°2018-57, Climat Economic Chaire.

<sup>76</sup> Bureau, D. / Henriot, F. / Schubert, K. (2019), Pour le climat: une taxe juste, pas juste une taxe, Les notes du conseil d'analyse économique, [n°50](#).

<sup>77</sup> This credit tax was removed in 2019 and replaced by a reduction of social contributions; see Fiscalité Carbone (2017).

Tax (VAT) for the refurbishment of buildings to improve their energy efficiency.<sup>78</sup> In 2017, revenue spending shifted towards promoting the “energy transition” by subsidising the deployment of renewable energies with 1.7 billion €. <sup>79</sup> Nevertheless, in 2018 only 20% – 6.6 billion € – of the revenue from consumption taxes on oil products (TICPE) were allocated to energy transition.<sup>80</sup>

Despite the implementation of the carbon tax on fossil fuels in non-EU-ETS sectors, CO<sub>2</sub> emissions from the transport and building sectors exceeded their respective carbon budget for the period 2015–2018.

### 4.3 Discussions and Developments

Carbon pricing in France started in 2014 without much public discussion. Its impact on consumer end prices until the end of 2017 was not felt by consumers as these prices decreased in 2015 by 9% for petrol and 10% for diesel and remained low in 2016 and 2017.<sup>81</sup> The year 2018 marks a turning point with the sharp increase in the annual TICPE due to strong increases of the carbon component (CCE) and the petrol-diesel tax convergence measure,<sup>82</sup> initially adopted in 2015.<sup>83</sup> In addition, the price of a barrel of oil almost doubled in one year.<sup>84</sup> Consequently, in 2018, the petrol price increased by 9% and the diesel price by 17%. Commuters using diesel cars in the countryside were thus particularly impacted. Dissatisfied with the price increases, they began protests in autumn 2018, wearing yellow security vests (“gilets jaunes”).<sup>85</sup> These quickly became the symbol of resistance against an increase in the carbon tax.

Furthermore, the political context in France also played a role in the uprising of the movement. The ambiguity and lack of transparency on the usage of the CCE outraged those mostly affected by the tax increase. In addition, the raise of the CCE was associated with a tax reduction measure adopted the same year. The “Solidarity Wealth Tax” (ISF)<sup>86</sup> was replaced in January 2018 by a wealth tax specifically on real estate (IFI)<sup>87</sup>.<sup>88</sup> As only households whose taxable individual assets exceeded 1.3 million € were liable to pay the ISF, its abolition was perceived as socially unfair.<sup>89</sup> In 2019, the CCE trajectory set until 2022 was cancelled<sup>90</sup> such that the carbon price is currently frozen at the 2018 level. Against this background, the debate among economists and policy experts is oriented towards finding solutions in terms of public acceptance and social equity of carbon pricing. The choice of the carbon tax as the economic instrument for carbon pricing, however, is not put into question.

<sup>78</sup> Rogissart, L.; Postic, S.; Grimault, J. (2018). La composante carbone en France : fonctionnement, revenus et exonérations. Institute For Climate Economics, [Point Climat N°56](#), p. 3.

<sup>79</sup> Fiscalité Carbone (2017).

<sup>80</sup> Conseil des prélèvements obligatoires (2019), [La fiscalité environnementale au défi de l’urgence climatique](#), p. 46.

<sup>81</sup> Calculation by the authors based on petrol and diesel prices from Statista (2019), <https://fr.statista.com/statistiques/480617/prix-moyen-gazole-france/> and Global Petrol Prices (2019), [https://fr.globalpetrolprices.com/France/gasoline\\_prices/](https://fr.globalpetrolprices.com/France/gasoline_prices/).

<sup>82</sup> LOI n° 2017-1837 du 30 décembre 2017 de finances pour 2018, [Art. 16](#).

<sup>83</sup> LOI n° 2015-1786 du 29 décembre 2015 de finances rectificative pour 2015, [Art. 16](#).

<sup>84</sup> From September 2017 to September 2018, reaching 83.14 US\$ for a barrel of Brent crude oil. Prix du baril, Le cours officiel du pétrole, <https://prixdubaril.com/>.

<sup>85</sup> Simon, F. (2018), “Yellow vests” spark EU debate about just transition to clean energy, Euractiv, <https://www.euractiv.com/section/energy/news/yellow-vests-spark-eu-debate-about-just-transition-to-clean-energy/>.

<sup>86</sup> “Impôt de Solidarité sur la Fortune”.

<sup>87</sup> “Impôt sur la Fortune Immobilière”.

<sup>88</sup> Ministère de l’action et des comptes publics (2018), Bulletin officiel des finances publiques – impôts, PAT - Suppression de l’impôt de solidarité sur la fortune (ISF); LOI n° 2017-1837 du 30 décembre 2017 de finances pour 2018, [Art. 31](#).

<sup>89</sup> IFI, le nouvel ISF version Macron, Les Echos of 30 September 2019, <https://www.lesechos.fr/economie-france/budget-fiscalite/ifi-le-nouvel-isf-version-macron-130072>.

<sup>90</sup> LOI n° 2018-1317 du 28 décembre 2018 de finances pour 2019, [Art. 64](#).

The newly created<sup>91</sup> High council on Climate (“Haut conseil pour le climat” – HCC)<sup>92</sup> qualifies the carbon tax as a “powerful economic tool” and recommends ensuring its social appropriation and effectiveness.<sup>93</sup> This is of particular importance, as the government has to react within six months on the recommendations made by the HCC.<sup>94</sup> Moreover, there is a clear consensus among French economists<sup>95</sup> to increase the actual carbon price and reduce the number of tax exemptions in order to improve the effectiveness of the CCE and achieve the French national targets for the reduction of CO<sub>2</sub> emissions.<sup>96</sup> Given that the carbon tax expenditure as a share of the total disposable income of the 10% of all households with the lowest income (“first decile”) – 1.3% for a carbon tax of 44.6 €/t CO<sub>2</sub> – is 2.6 times higher than that of those 10% of all households with the highest income (“last decile”) – 0.51% –,<sup>97</sup> a partial or full redistribution of CCE revenue is deemed necessary. Finally, transparency regarding the usage of CCE revenue seems crucial to increase the acceptance of the CCE.

## 5 Carbon Pricing in Germany

This section outlines the state of play in Germany regarding national emission reduction targets, reduction measures other than carbon pricing and emissions reduction, especially in the transport and building sectors (sections 5.1). Against this background, the German regulations on carbon pricing in the transport and building sectors in the form of an emissions trading system (section 5.2) and the related discussions and developments (section 5.3) are dealt with in detail.

### 5.1 Emission Targets, Reduction Measures and Emission Reductions

#### 5.1.1 Overview

Pursuant to EU law on “effort sharing” (section 2),<sup>98</sup> Germany is obliged to reduce its CO<sub>2</sub> emissions in the non-EU-ETS sectors by 14% by 2020 and 38% by 2030 compared to 2005. In addition to its reduction target set by the EU, Germany has committed itself to seek a reduction of CO<sub>2</sub> emissions by 40% by 2020 and by 55% by 2030 compared to 1990. According to the “Climate Action Plan 2050” from 2016, Germany’s long-term target is to reduce CO<sub>2</sub> emissions by 80 to 95% compared to 1990.<sup>99</sup> At the UN Climate Action Summit in New York on 23 September 2019, Chancellor Angela Merkel declared

<sup>91</sup> Décret n° 2019-439 du 14 mai 2019 [relatif au Haut Conseil pour le climat](#).

<sup>92</sup> The purpose of the HCC is to provide annual independent reports on the effectiveness of government measures to reduce greenhouse gas emissions and to make recommendations in line with the reduction trajectory that France committed to follow.

<sup>93</sup> Haut conseil pour le climat (2019), June 2019 Report, p. 54, [https://www.hautconseilclimat.fr/wp-content/uploads/2019/09/hcc\\_rapport\\_annuel\\_2019-english.pdf](https://www.hautconseilclimat.fr/wp-content/uploads/2019/09/hcc_rapport_annuel_2019-english.pdf).

<sup>94</sup> Décret n° 2019-439 du 14 mai 2019 relatif au Haut Conseil pour le climat, Article 1.

<sup>95</sup> Berry, A. (2019), Taxe carbone, le retour, à quelles conditions? SciencePo OFCE Working Paper n°06/2019 ; Interview of Christian de Perthuis on 11 October 2019; Bureau, D. / Henriot, F. / Schubert, K. (2019), Pour le climat: une taxe juste, pas juste une taxe, Les notes du conseil d’analyse économique, [n°50](#); Callonnec, G. / Gouédard, H. / Jolivet, P. (2019), La Contribution Climat-Solidaire : Une taxe carbone pour la transition écologique et pour plus de solidarité fiscale, ADEME ; Conseil des prélèvements obligatoires (2019), La fiscalité environnementale au défi de l’urgence climatique.

<sup>96</sup> Berry, A. (2019), Taxe carbone, le retour, à quelles conditions? SciencePo OFCE Working Paper n°06/2019; Bureau, D. / Henriot, F. / Schubert, K. (2019), Pour le climat: une taxe juste, pas juste une taxe, Les notes du conseil d’analyse économique, [n°50](#) ; De Perthuis, C., Faure, A. (2018), Loi de Finances 2018: vers une taxe carbone “à la suédoise”? Policy Brief N°2018-1, Chaire Economie du Climat.

<sup>97</sup> Berry, A. (2019), Taxe carbone, le retour, à quelles conditions? SciencePo OFCE [Working Paper n°06/2019](#)

<sup>98</sup> EU Effort Sharing Decision (2013–2020), Annex II; EU Effort Sharing Regulation (2021–2030), Annex I.

<sup>99</sup> Bundesumweltministerium (2016), Climate Action Plan 2050 – Germany’s long-term emission development strategy [“Climate Action Plan 2050”], p. 7.

that Germany has set itself the target of “carbon neutrality” by 2050.<sup>100</sup> In September 2019, the German government proposed a Climate Action Law (“Klimaschutzgesetz”, KSG) which was adopted by the parliament in November 2019.<sup>101</sup> The KSG codifies the sector targets of the Climate Action Plan 2050 as legally binding annual “emission budgets” for each sector.<sup>102</sup> Accordingly, reduction targets by 2030, compared to 1990, are set for the transport sector at 40–42%, for the building sector at 66–67% and for the agriculture sector at 31–34%.<sup>103</sup>

However, with current measures Germany will only reach an emissions reduction of 32% instead of the self-imposed national reduction target of 40% by 2020 compared to 1990. Given the current trend, Germany is not on track for 2030 either. In June 2019, the European Commission estimated that with current measures Germany would fall short of meeting its legally binding national reduction target for 2030 for the non-EU-ETS sectors of 38% by 15 percentage points.<sup>104</sup>

**Tab. 2: Emission targets and reductions in the non-ETS sectors in Germany**

Sectors	Total Emission 2018	Reduction in 2005–2018	2020 target	2030 target	Predicted emissions in 2030 with current measures <sup>a)</sup>
Non-EU-ETS	461 Mt CO <sub>2</sub> e	<b>3.6%</b>	<b>14.0%</b> 411 Mt CO <sub>2</sub> e	<b>38.0%</b> 296 Mt CO <sub>2</sub> e	<b>23.0%</b> 368 Mt CO <sub>2</sub> e
Transport	162 Mt CO <sub>2</sub> e	<b>-1.3%</b> <sup>b)</sup>	150 Mt CO <sub>2</sub> e	95 Mt CO <sub>2</sub> e	150 Mt CO <sub>2</sub> e
Building	117 Mt CO <sub>2</sub> e	<b>24.0%</b>	118 Mt CO <sub>2</sub> e	70 Mt CO <sub>2</sub> e	90 Mt CO <sub>2</sub> e

a) Planned measures – as carbon pricing by the nEHS (section 5.2) – are not included.

b) Negative values represent an increase of emissions.

Source: KSG, § 4 in conjunction with Annex 2; Bundesregierung (2019), Klimaschutzprogramm 2030; Umweltbundesamt (2019), Entwicklung der Treibhausgasemissionen in Deutschland<sup>105</sup>; Agora Energiewende / Agora Verkehrswende (2018), Die Kosten von unterlassenem Klimaschutz für den Bundeshaushalt, p. 15; European Commission (2019), Factsheet Germany – Summary of the Commission assessment of the draft National Energy and Climate Plan 2021–2030.

### 5.1.2 Transport Sector

Transport sector CO<sub>2</sub> emissions amount to 162 Mt CO<sub>2</sub>e which accounts for 19% of all CO<sub>2</sub> emissions in Germany.<sup>106</sup> Emissions shall decrease from 150 Mt CO<sub>2</sub>e in 2020 to 98 Mt CO<sub>2</sub>e by 2030.<sup>107</sup> Over the

<sup>100</sup> Speech of Chancellor Angela Merkel on the occasion of the UN Climate Action Summit on 23 September 2019 in New York, <https://www.bundestkanzlerin.de/bkin-de/aktuelles/rede-von-bundestkanzlerin-merkel-zum-un-climate-action-summit-am-23-september-2019-in-new-york-1674236>.

<sup>101</sup> Deutscher Bundestag (2019), Gesetz zur Einführung eines Bundes-Klimaschutzgesetzes und zur Änderung weiterer Vorschriften (KSG), Gesetzbeschluss des Deutschen Bundestages vom 15. November 2019, <http://dipbt.bundestag.de/dip21/brd/2019/0606-19.pdf>.

<sup>102</sup> KSG, § 4.

<sup>103</sup> Climate Action Plan 2050, p. 8.

<sup>104</sup> European Commission (2019), Factsheet Germany – Summary of the Commission assessment of the draft National Energy and Climate Plan 2021–2030.

<sup>105</sup> <https://www.bmu.de/media/entwicklung-der-treibhausgasemissionen-in-deutschland/>.

<sup>106</sup> Bundesregierung (2019), Klimaschutzprogramm 2030 der Bundesregierung zur Umsetzung des Klimaschutzplans 2050, <https://www.bundesregierung.de/resource/blob/975226/1679914/e01d6bd855f09bf05cf7498e06d0a3ff/2019-10-09-klima-massnahmen-data.pdf?download=1>, [“Klimaschutzprogramm 2030”], p. 61.

<sup>107</sup> KSG, § 4 in conjunction with Annex 2.

past decades, the steadily increasing emissions were stopped around 2000 while passenger transport and haulage were increasing. Since 2013, however, emissions have risen again.<sup>108</sup> Increasing energy efficiency of vehicles could not compensate for the growing traffic volume or the structural changes in the vehicle fleet, like the growing share of fuel-intensive SUVs.<sup>109</sup> Consequently, emissions are expected to increase further and amount to a projected peak of 170 Mt CO<sub>2</sub>e in 2020 which is 20 Mt CO<sub>2</sub>e more than the target for that year.<sup>110</sup> This projection is based on a scenario only with current and without planned measures.<sup>111</sup>

In June 2019, the Federal Ministry of Transport presented new measures aiming, e.g., at the promotion of public transportation and alternative fuels that are supposed to reduce emissions from 162 Mt CO<sub>2</sub>e in 2018 by approximately 13 Mt CO<sub>2</sub>e by 2030.<sup>112</sup> Hence, the German government predicts that emissions in the transport sector will only be reduced to approximately 150 Mt CO<sub>2</sub>e.<sup>113</sup> An additional reduction by 55 Mt CO<sub>2</sub>e must therefore be achieved to reach the 2030 target of 95 Mt CO<sub>2</sub>e in the transport sector (Tab. 2).

### 5.1.3 Building Sector

The share of emissions within the building sector amounted to 117 Mt CO<sub>2</sub>e in 2018 and accounts for 14% of all CO<sub>2</sub> emissions in Germany.<sup>114</sup> These emissions shall be reduced to 70 Mt CO<sub>2</sub>e in 2030.<sup>115</sup> The maximum emission quantity set in the Climate Action Law is 118 Mt CO<sub>2</sub>e for 2020. Hence, Germany will fulfil its target for 2020 in this sector. The largest share of emissions, which are expected to decline continuously in the coming years, is accounted to private households. Most of this reduction will be a result of the decline in the use of heating oil. However, the currently predicted emission reduction will not be sufficient to reach the respective target for 2030. CO<sub>2</sub> emissions are expected to amount to 90 Mt CO<sub>2</sub>e in 2030, which leaves a reduction gap of 20 Mt CO<sub>2</sub>e.<sup>116</sup>

To close this gap, the German government plans to apply a “mix of increased subsidy programmes, information and consulting, carbon pricing as well as regulatory law”.<sup>117</sup> Until 2050, a “climate-neutral” building stock shall be attained. This shall be achieved by the “Strategy on Energy Efficiency in Buildings” – which is already in place – and by the switch from fossil fuels to renewable energy.<sup>118</sup>

## 5.2 Carbon Pricing by Emissions Trading

Already in 1999, the price of transport and heating fuels was raised for ecological reasons when an “eco tax” was levied on the energy content of fuels. Its aims were both to incentivise energy efficiency

<sup>108</sup> Klimaschutzprogramm 2030, p. 61; Umweltbundesamt (2019), Treibhausgas-Emissionen – Emissionsübersicht Treibhausgase Entwicklung 1990–2017, <https://www.umweltbundesamt.de/themen/klima-energie/treibhausgas-emissionen>.

<sup>109</sup> Monitoring-Bericht, p. 50.

<sup>110</sup> Umweltbundesamt (2019), Projektionsbericht 2019 für Deutschland – Zusammenfassung in der Struktur des Klimaschutzplans Teilbericht des Projektes „THG-Projektion: Weiterentwicklung der Methoden und Umsetzung der EU-Effort Sharing Decision im Projektionsbericht 2019 („Politikszenerien IX“) [“Projektionsbericht 2019“], p. 21.

<sup>111</sup> Ibid., p. 17.

<sup>112</sup> Bundesverkehrsministerium (2019), Aktiver Klimaschutz in der Verkehrspolitik: Erlauben, erleichtern, ermöglichen, <https://www.bmvi.de/SharedDocs/DE/Artikel/K/aktiver-klimaschutz-in-der-verkehrspolitik.html>.

<sup>113</sup> Klimaschutzprogramm 2030, p. 62. As the predicted emission reduction and predicted emissions are derived from different sources and represent rounded values, the different values do not add up precisely to the actual emissions of 162 Mt CO<sub>2</sub>e in 2018.

<sup>114</sup> Klimaschutzprogramm 2030, pp. 49 et seq.

<sup>115</sup> KSG, § 4 in conjunction with Annex 2.

<sup>116</sup> Klimaschutzprogramm 2030, p. 49.

<sup>117</sup> Klimaschutzprogramm 2030, p. 50.

<sup>118</sup> Climate Action Plan 2050, p. 42.

and energy saving (“steering effect”) and also to generate revenues to co-finance the statutory pension system.<sup>119</sup> Although the eco tax was not based directly on the carbon content of the fuels, it mainly increased the costs of fossil fuels, especially transport fuels. Therefore, the eco tax could be viewed as an early indirect form of carbon pricing. However, the planned annual increase in the corresponding tax rate was “frozen” in 2003 due to strong political resistance, leaving the eco tax to remain on the same level ever since. Due to the low tax rate, the steering effect is almost non-existent.<sup>120</sup> For this reason, the eco tax was not present in the current debate as an example of carbon pricing.

This debate has gained momentum since the European parliamentary elections in May 2019 and the increase in the Fridays-for-Future protests. Following an intensive discussion, on 20 September 2019 the German government passed the “Climate Action Programme 2030” (“Climate Package”) which aims at implementing the “Climate Action Plan 2050” and its emission reduction targets for 2030.<sup>121</sup> The Climate Package consists of different elements such as subsidy programmes, e.g., for the promotion of electric cars and the refurbishment of buildings to improve their energy efficiency, and regulatory measures, e.g., the prohibition to install oil heating systems from 2026 onwards. With regard to carbon pricing in non-EU-ETS sectors, the German government proposed a “national Emissions Trading System” (“nationales Emissionshandelssystem”, nEHS) for the transport and building sectors, which puts a price on the CO<sub>2</sub> emissions from burning fossil fuels – notably petrol and diesel, heating oil, liquid gas, natural gas and coal.

The Law codifying the nEHS (BEHG) and setting carbon prices was passed by the German Parliament (“Bundestag”) in November 2019.<sup>122</sup> Already on 16 December 2019, however, the joint mediation committee (“Vermittlungsausschuss”) of the German Parliament and the “Bundesrat”, the second chamber of the German legislative in which the German federal states are represented, decided to revise the carbon prices just set for the future emissions trading system by substantially raising them.<sup>123</sup> In this respect, the final decisions of the conciliation committee are expected for 18 December 2019<sup>124</sup> and of the Bundestag on 20 December 2019. Accordingly, the nEHS will start in 2021 with a fix-price system where the carbon price for “emission allowances” for the emission of one ton of CO<sub>2</sub> (t CO<sub>2</sub>) will gradually increase from initially 25 € to 55 €<sup>125</sup> in 2025 (“starting phase” 2021–2025). In 2026, a “cap” on the amount of emission allowances – and thus, on the permissible quantity of CO<sub>2</sub> emissions – will be set and reduced each year. The cap will be determined pursuant to the emission budget from the German Climate Action Plan 2050 and to EU law (section 2). In 2026, the nEHS will have a “price corridor” with a maximum price of 65 €/t CO<sub>2</sub> and a minimum price of 55 €/t CO<sub>2</sub>.<sup>126</sup> In 2025, it will be

<sup>119</sup> Gesetz zum Einstieg in die Ökologische Steuerreform vom 24. März 1999, Bundesgesetzblatt 1999 Teil I Nr. 14, [www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger\\_BGBI&jumpTo=bgbl199s0378.pdf](http://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBI&jumpTo=bgbl199s0378.pdf).

<sup>120</sup> DIW – Deutsches Institut für Wirtschaftsforschung (2019), Wochenbericht 13/2019.

<sup>121</sup> Klimaschutzprogramm 2030.

<sup>122</sup> Deutscher Bundestag (2019), Gesetz über einen nationalen Zertifikatehandel für Brennstoffemissionen (Brennstoffemissionshandelsgesetz – BEHG) [“BEHG”], <http://dipbt.bundestag.de/dip21/brd/2019/0606-19.pdf>.

<sup>123</sup> Bund und Länder einigen sich im Streit über Klimapaket, Spiegel Online of 16 December 2019, <https://www.spiegel.de/wirtschaft/soziales/klimapaket-bund-und-laender-erzielen-einigung-a-1301430.html>; Bundesregierung kommt Grünen bei CO<sub>2</sub>-Preis entgegen, Tagesspiegel of 16 December 2019, <https://www.tagesspiegel.de/politik/verhandlung-ueber-klimapaket-bundesregierung-kommt-gruenen-bei-co2-preis-entgegen/25338448.html>.

<sup>124</sup> Vermittlungsausschuss vertagt Beratungen über steuerliche Maßnahmen zum Klimaschutzpaket, press statement of 9 December 2019, <https://www.vermittlungsausschuss.de/SharedDocs/pm/2019/014.html>.

<sup>125</sup> According to the BEHG codified in November 2019, it was originally planned that the carbon price for the emission of one ton of CO<sub>2</sub> would gradually increase from initially 10 € in 2021 to 35 € in 2025; BEHG, § 23(1).

<sup>126</sup> According to the BEHG codified in November 2019, it was originally planned that the nEHS would have a “price corridor” with a maximum price of 60 €/t CO<sub>2</sub> and a minimum price of 35 €/t CO<sub>2</sub>; BEHG, § 23(1).

decided whether a maximum and minimum price will be “useful and necessary” for the years 2027 onwards.<sup>127</sup>

The revenues of the nEHS shall not be spent for general purposes, but they are to be reinvested in measures for the reduction of CO<sub>2</sub> emissions and for the compensation of citizens for rising fuel prices in specific cases.<sup>128</sup> Accordingly, the Climate Action Programme 2030 foresees financial relief for citizens such as the reduction of electricity costs and the increase of commuter allowances. In this respect, between 2021 and 2023, commuters will be entitled to offset 35 ct per kilometre, instead of 30 ct, for commuting distances from 21 kilometres onwards against their tax liability. As of 2024, this commuters allowance will be further increased to 35 ct per kilometre.<sup>129</sup> This compensation aims to relieve commuters who often do not have a low-emission transport alternative such as public transport.<sup>130</sup>

### 5.3 Discussions and Developments

In the run-up to the “Climate Package”, various economic reports were published to consult the government. Most policy advisors argued that a price on CO<sub>2</sub> emissions is the “first best” option and vital for their efficient reduction. Additional actions for a smooth and socially acceptable transition to less carbon-intensive technologies should only be subsidiary.<sup>131</sup>

The Climate Package was heavily criticised because the nEHS was originally planned to start with a low fix-price of 10 €/t CO<sub>2</sub>, which shall be gradually increased and only by 2026 evolve into a true “cap and trade” system, albeit with a minimum and maximum price. Initially, this starting phase was intended by the government to combine the advantages of a carbon tax with those of an emissions trading system. This was to address concerns (1) that it would take up to three years to establish a trading platform and (2) that in the starting phase uncertainty on the price of emission allowances would be too high.<sup>132</sup> However, the five-year starting phase 2021–2025 now codified is criticised as being unnecessarily long since the establishment of a trading platform to start a true “cap and trade” system could be finalised much earlier.<sup>133</sup>

Both the fix-price and the subsequent maximum price starting in 2026 would eliminate any formal limitation of allowances (cap) since an unlimited amount of allowances can be bought at the maximum price and, therefore, the nEHS cannot guarantee the attainment of the German reduction targets pursuant to EU law.<sup>134</sup> Hence, the nEHS with a fix-price and without a strict “cap” is not a true emission trading system, but rather a “carbon tax in disguise”.<sup>135</sup> In addition, a minimum price is considered to be inefficient, as it impairs the mechanism of an emissions trading system to identify the most cost-

<sup>127</sup> BEHG, § 23(1).

<sup>128</sup> Klimaschutzprogramm 2030, p. 20.

<sup>129</sup> Bundesregierung kommt Grünen bei CO<sub>2</sub>-Preis entgegen, Tagesspiegel of 16 December 2019, <https://www.tagesspiegel.de/politik/verhandlung-ueber-klimapaket-bundesregierung-kommt-gruenen-bei-co2-preis-entgegen/25338448.html>.

<sup>130</sup> Ibid., p. 29.

<sup>131</sup> DIW – Deutsches Institut für Wirtschaftsforschung (2019), Für eine sozialverträgliche CO<sub>2</sub>-Bepreisung; SVR – Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung (2019), Aufbruch zu einer neuen Klimapolitik, Special Report of July 12 2019 [„Sachverständigenrat“]; Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Energie (2019), Energiepreis und effiziente Klimapolitik.

<sup>132</sup> Agora Energiewende / Öko-Institut (2019), Ein Emissionshandelssystem für die nicht vom EU-ETS erfassten Bereiche – Praktische Umsetzungsthemen und zeitliche Erfordernisse.

<sup>133</sup> Menner, M. / Reichert, G. (2019), Der neue deutsche Emissionshandel, [ceplInput 10/2019](https://www.ceplinput.de/2019/10/21/der-neue-deutsche-emissionshandel/), pp. 8 et seq.

<sup>134</sup> Ibid.

<sup>135</sup> Emissionshandel für mehr als 4000 Unternehmen geplant, Spiegel Online, 21 October 2019, <https://www.spiegel.de/wirtschaft/soziales/co2-preis-emissionszertifikate-schmerzen-den-verbraucher-a-1292599.html>.

effective options for the reduction of CO<sub>2</sub> emissions (“cost-efficiency”).<sup>136</sup> Furthermore, a minimum price is considered to be unnecessary to increase planning security – because prices are expected to rise in the medium and long run due to the inelastic demand for fossil fuels.<sup>137</sup>

Furthermore, the originally planned initial carbon price of 10 €/t CO<sub>2</sub> in 2021 increasing to 35 €/t CO<sub>2</sub> in 2025 was broadly viewed as too low to provide a sufficient price signal which incentivises the necessary emissions reduction (“steering effect”).<sup>138</sup> Until 2021 the price of petrol would have only increased by 3 ct per litre – less than the daily price fluctuations at the petrol stations.<sup>139</sup> The revision of the originally planned carbon pricing scheme decided on 16 December 2019 is the result of intensive cross party discussion in this respect.<sup>140</sup> The increased carbon price of initially 25 €/t CO<sub>2</sub> in 2021 will now increase the price of petrol by up to 8 ct per litre. Lacking a strict cap and sufficiently high price signals, doubts were raised whether the nEHS could actually play a significant role in the achievement of the German emissions reduction targets, especially given that the future of the price corridor after 2025 will not be decided until 2025. It was criticised that the longer the government waits to implement a “cap and trade” nEHS without a price corridor, the higher the prices will have to rise later.<sup>141</sup>

The German government opted to start with a still relatively low and slowly increasing carbon price to ensure the acceptance of carbon pricing, fearing otherwise similar resistance as experienced in France with the “yellow vests” protests.<sup>142</sup> Nevertheless, this attempt is called into question since – contrary to promises of the governing parties ahead of the Climate Package – there will still be a significant burden on many households as only a small share of revenues will be used to reduce electricity costs while most of the revenues shall be used for subsidies that benefit only parts of the population. Moreover, since low- and medium-income households spend a higher proportion of their income on energy, they are affected more by carbon pricing than high-income households. Therefore, it is criticised that the nEHS is not “socially balanced”.<sup>143</sup> An additional problem is seen in the fact that the financial relief – by reducing energy costs and increasing commuter allowances – envisaged in the Climate Package will be insufficient to compensate for increasing fuel prices in the future and thus threaten public acceptance of carbon pricing.<sup>144</sup> As alternative to the government’s strategy to ensure acceptance through low carbon prices, it has been proposed to re-channel the revenues from the auctioning of allowances of the nEHS completely or at least to a high extent to households and firms.<sup>145</sup>

<sup>136</sup> Menner, M. / Reichert, G. (2019), Der neue deutsche Emissionshandel, [ceplInput 10/2019](#), p. 8.

<sup>137</sup> Ibid.

<sup>138</sup> Kritik am Klimaschutzpaket: „Sterbehilfe für das Klima“, Frankfurter Allgemeine Zeitung, 27 September 2019, <https://www.faz.net/aktuell/politik/inland/debatte-ueber-klimaschutzpaket-sterbehilfe-fuer-das-klima-16405790.html>; Weil: Preis von vier Bier für eine Tonne CO<sub>2</sub> zu wenig, Süddeutsche Zeitung, 8 October 2019, <https://www.sueddeutsche.de/wissen/klima-hannover-weil-preis-von-vier-bier-fuer-eine-tonne-co2-zu-wenig-dpa.urn-newsml-dpa-com-20090101-191007-99-199558>.

<sup>139</sup> DIW – Deutsches Institut für Wirtschaftsforschung (2019), Wochenbericht 39/2019, Klimapakete: Der homöopathische CO<sub>2</sub>-Preis ist ein Witz: Ein Kommentar von Claudia Kemfert, p. 732.

<sup>140</sup> Bundesregierung kommt Grünen bei CO<sub>2</sub>-Preis entgegen, Tagesspiegel of 16 December 2019, <https://www.tagesspiegel.de/politik/verhandlung-ueber-klimapakete-bundesregierung-kommt-gruenen-bei-co2-preis-entgegen/25338448.html>.

<sup>141</sup> Edenhofer, O. et al. (2019), Bewertung des Klimapakets und nächste Schritte, CO<sub>2</sub>-Preis, sozialer Ausgleich, Europa, Monitoring [“Edenhofer et al. (2019)”], p. 4.

<sup>142</sup> Angst vor Gelbwesten – Markus Söder lehnt CO<sub>2</sub>-Steuer ab, Merkur.de, 12 April 2019, <https://www.merkur.de/politik/markus-soeder-csu-chef-lehnt-co2-steuer-ab-und-warnt-vor-gelbwesten-12185933.html>.

<sup>143</sup> Edenhofer et al. (2019), p. 7.

<sup>144</sup> Edenhofer et al. (2019), pp. 9 et seq.

<sup>145</sup> Menner, M. / Reichert, G. (2019), Der neue deutsche Emissionshandel, [ceplInput 10/2019](#).



The German government is already blamed for trying to achieve the emissions reduction targets basically with subsidies, which are deemed to be more expensive and inefficient than carbon pricing.<sup>146</sup> As these measures will not ensure the achievement of the emission reduction targets, the resulting reduction gap will have to be closed otherwise, e.g. by additional subsidies. Alternatively, Germany may have to buy additional surplus emission reductions from other Member States to fulfil its national reduction target through the flexibility mechanism foreseen by EU law (section 2). However, this might not be feasible since it is not sure that there will be sufficient supply of surplus emission reductions from other Member States given that most of them are struggling to achieve their own reduction targets.<sup>147</sup>

## 6 Effects of Carbon Pricing in France and Germany

In order to illustrate the consequences of the carbon pricing strategies of France and Germany, their practical effects on the prices of transport and heating fuels are shown and compared in this chapter. The carbon pricing instruments – already in place or planned – in France and Germany have a direct impact on fuel prices. The following Tab. 3 and Tab. 4 show the development of fuel prices together with the price element attributable to carbon pricing – including for France the petrol-diesel convergence measure and for Germany the eco tax.

### 6.1 Carbon Pricing and Transport Fuel Prices in France and Germany 2014–2030

To see how the stipulated carbon prices in Euro per ton of CO<sub>2</sub> relate to carbon prices per litre for the different transport fuels, Tab. 3 provides the corresponding conversion. Bold values correspond to the values in place – in France to the values of the CCE frozen to 2018 levels and in Germany until 2020 to the eco tax and from 2021 onwards to the sum of eco tax and the new values for the nEHS prices fixed on 16 December 2019 by the joint mediation committee of the two legislative chambers. Originally planned values correspond in France to the CCE values before they had been frozen to 2018 levels. In Germany they take up the nEHS prices of the Law codifying the nEHS (BEHG).

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<sup>146</sup> GroKo hat Neustart in der Klimapolitik verpasst, Portal liberal, 23 September 2019, <https://www.liberales.de/content/groko-hat-neustart-der-klimapolitik-verpasst>; Menner, M. / Reichert, G. (2019), Der neue deutsche Emissionshandel, [ceplInput 10/2019](#).

<sup>147</sup> European Commission (2018), Report to the European Parliament and the Council – EU and the Paris Climate Agreement: Taking stock of progress at Katowice COP, COM/2018/716 final, Brussel, 26 October 2018, pp. 9 et seq.

Tab. 3: Conversion Table – Carbon Pricing for Transport Fuels 2014–2030

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2030
<b>France</b>										
<b>CO<sub>2</sub> Price</b> [€/t CO <sub>2</sub> ] <sup>a)</sup>	<b>7.00</b>	<b>14.50</b>	<b>22.00</b>	<b>30.50</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	<b>?</b>
Originally planned values						55.00	65.70	75.80	86.20	100
<b>Petrol:</b> [ct/l] <sup>a)</sup>	<b>0</b>	<b>3.32</b>	<b>5.03</b>	<b>5.98</b>	<b>10.20</b>	<b>10.20</b>	<b>10.20</b>	<b>10.20</b>	<b>10.20</b>	<b>?</b>
Originally planned values						12.58	14.96	17.34	19.71	22.87
<b>Diesel:</b> [ct/l] <sup>a),b)</sup>	<b>0</b>	<b>5.84</b>	<b>6.83</b>	<b>9.08</b>	<b>14.42</b>	<b>14.42</b>	<b>14.42</b>	<b>14.42</b>	<b>14.42</b>	<b>?</b>
Originally planned values						17.18	19.94	22.69	22.85	26.51
<b>Germany</b>										
<b>CO<sub>2</sub> Price Petrol</b> [€/t CO <sub>2</sub> ] <sup>c)</sup>	<b>64.70</b>	<b>64.70</b>	<b>64.70</b>	<b>64.70</b>	<b>64.70</b>	<b>64.70</b>	<b>64.70</b>	<b>89.70</b>	<b>94.70</b>	<b>?</b>
Originally planned values <sup>d)</sup>								74.70	84.70	?
<b>Petrol:</b> [ct/l] <sup>c)</sup>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>21.27</b>	<b>22.45</b>	<b>?</b>
Originally planned values <sup>d)</sup>								17.71	20.08	?
<b>CO<sub>2</sub> Price Diesel</b> [€/t CO <sub>2</sub> ] <sup>c)</sup>	<b>57.90</b>	<b>57.90</b>	<b>57.90</b>	<b>57.90</b>	<b>57.90</b>	<b>57.90</b>	<b>57.90</b>	<b>82.90</b>	<b>87.90</b>	<b>?</b>
Originally planned values <sup>d)</sup>								67.90	77.90	?
<b>Diesel</b> [ct/l] <sup>c)</sup>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>15.34</b>	<b>21.97</b>	<b>23.29</b>	<b>?</b>
Originally planned values <sup>d)</sup>								17.99	20.64	?

a) From 2019 onwards: actual tax rates are frozen to the 2018 level. Originally planned tax rates in row below.

b) The figures include both the carbon tax (CCE) and the petrol-diesel tax convergence measure.

c) CO<sub>2</sub> prices refer to the eco tax until 2020 and to the sum of the eco tax and the nEHS allowance prices from 2021 onwards – as decided by the joint mediation committee of the Bundestag and Bundesrat on 16 December 2019.

d) Figures refer to the values of the Law codifying the nEHS (BEHG).

Source: Own calculations based on: Projet de loi de finances pour 2014, Projet de loi de finances pour 2018; Gesetz zum Einstieg in die Ökologische Steuerreform 1999<sup>148</sup>; Spiegel Online<sup>149</sup>. Carbon content in petrol and diesel: Evaluation préalable des articles du projet de loi de finances pour 2018, p. 66.

<sup>148</sup> Gesetz zum Einstieg in die Ökologische Steuerreform vom 24. März 1999, Bundesgesetzblatt 1999 Teil I Nr. 14, [www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger\\_BGBl&jumpTo=bgbl199s0378.pdf](http://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl199s0378.pdf).

<sup>149</sup> Bund und Länder einigen sich im Streit über Klimapakete, Spiegel Online of 16 December 2019, <https://www.spiegel.de/wirtschaft/soziales/klimapakete-bund-und-laender-erzielen-einigung-a-1301430.html>.

Graph. 1 below shows the petrol prices in France and Germany. Further, the respective levels of the carbon prices are illustrated – including the originally planned level of each, the CCE and nEHS, and the currently implemented price levels of carbon pricing in France and Germany.

**Graph. 1: Petrol Prices in France and Germany (including Carbon Pricing)**



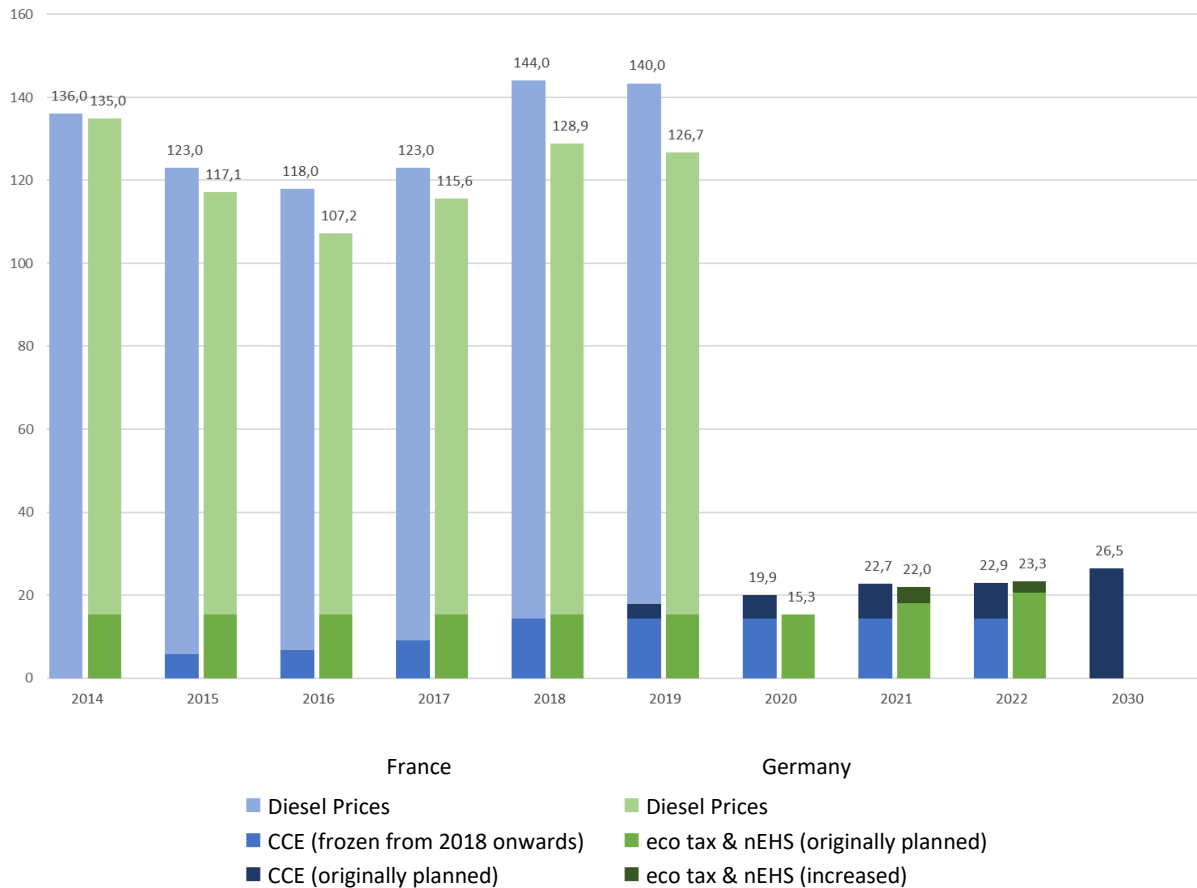
Sources: see Tab. 3 ; petrol prices: GlobalPetrol-Prices.com<sup>150</sup>; Statista.com<sup>151</sup>.

<sup>150</sup> [https://fr.globalpetrolprices.com/France/gasoline\\_prices/](https://fr.globalpetrolprices.com/France/gasoline_prices/).

<sup>151</sup> <https://de.statista.com/statistik/daten/studie/779/umfrage/durchschnittspreis-fuer-dieselmotoren-seit-dem-jahr-1950/>.

Graph. 2 below illustrates the level of Diesel prices in France and Germany. This also includes the carbon prices, as they were originally planned and as they are currently implemented.

**Graph. 2: Diesel Prices in France and Germany (including Carbon Pricing)**



Sources: see Tab. 3; diesel prices: Statista.com.<sup>152</sup>

Graph. 1 and Graph. 2 in conjunction with Tab. 3 provide a comparison of the development of carbon prices in the transport sectors of France and Germany and illustrate the relation between carbon pricing and average transport fuel prices at the pump. Graph. 1 shows that petrol prices in France started to surpass petrol prices in Germany in 2016. However, according to Tab. 3 the carbon price would have reached a value equal to the German eco tax – corresponding to an implicit carbon price of 64.7 € per ton of CO<sub>2</sub> – only by 2020. However, since France froze the carbon tax rate in 2018 implicit carbon prices in Germany are still higher than in France even before the introduction of the nEHS. Conversely, as France implemented also a petrol-diesel tax convergence measure, the price of diesel not only increased relative to petrol but is now also significantly higher than in Germany as shown in Graph. 2.

The “yellow vests” protests started in 2018 after a sharp increase in diesel prices (Graph. 2). Note that France froze its carbon tax rate in 2018 and Germany froze its eco tax rate in 2003 when for diesel the corresponding rates had reached 14.42 ct/l and 15.34 ct/l respectively – the latter being slightly higher in real terms taking account for inflation.

<sup>152</sup> <https://fr.statista.com/statistiques/480617/prix-moyen-gazole-france/>; <https://de.statista.com/statistik/daten/studie/776/umfrage/durchschnittspreis-fuer-superbenzin-seit-dem-jahr-1972/>.

## 6.2 Carbon Pricing and Heating Fuel Prices in France and Germany 2014–2030

To illustrate how the stipulated carbon prices in Euro per ton of CO<sub>2</sub> relate to carbon prices per litre for the different heating fuels, Tab. 4 provides the corresponding conversion. Bold values correspond to the values in place – in France to the values of the CCE frozen to 2018 levels and in Germany until 2020 to the eco tax and from 2021 onwards to the sum of eco tax and the new values for the nEHS prices fixed on 15 December 2019 by the joint mediation committee of the two legislative chambers. Originally planned values correspond in France to the CCE values before they had been frozen to 2018 levels. In Germany they take up the nEHS prices of the Law codifying the nEHS (BEHG).

**Tab. 4: Conversion Table – Carbon Pricing for Heating Fuels 2014–2030**

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2030
<b>CO<sub>2</sub> Price</b> [€/t CO <sub>2</sub> ] <sup>a)</sup>	<b>7.00</b>	<b>14.50</b>	<b>22.00</b>	<b>30.50</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	<b>44.60</b>	?
Originally planned values						55.00	65.70	75.80	86.20	100
<b>Heating Oil:</b> [ct/l] <sup>a)</sup>	<b>0</b>	<b>3.84</b>	<b>5.83</b>	<b>8.09</b>	<b>11.82</b>	<b>11.82</b>	<b>11.82</b>	<b>11.82</b>	<b>11.82</b>	?
Originally planned values						14.58	17.34	20.09	22.85	26.51
<b>Natural Gas:</b> [ct/kWh] <sup>a)</sup>	<b>0.13</b>	<b>0.26</b>	<b>0.40</b>	<b>0.55</b>	<b>0.81</b>	<b>0.81</b>	<b>0.81</b>	<b>0.81</b>	<b>0.81</b>	?
Originally planned values						0.99	1.19	1.38	1.57	1.82
<b>CO<sub>2</sub> Price Heating Oil</b> [€/t CO <sub>2</sub> ] <sup>c)</sup>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>6.50</b>	<b>31.50</b>	<b>36.50</b>	?
Originally planned values <sup>d)</sup>								16.50	26.50	?
<b>Heating Oil:</b> [ct/l] <sup>c)</sup>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>2.05</b>	<b>9.98</b>	<b>11.56</b>	?
Originally planned values <sup>d)</sup>								5.22	8.39	?
<b>CO<sub>2</sub> Price Natural Gas</b> [€/t CO <sub>2</sub> ] <sup>c)</sup>	<b>16.40</b>	<b>16.40</b>	<b>16.40</b>	<b>16.40</b>	<b>16.40</b>	<b>16.40</b>	<b>16.40</b>	<b>41.40</b>	<b>46.40</b>	?
Originally planned values <sup>d)</sup>								26.40	36.40	?
<b>Natural Gas</b> [ct/kWh] <sup>c)</sup>	<b>0.36</b>	<b>0.36</b>	<b>0.36</b>	<b>0.36</b>	<b>0.36</b>	<b>0.36</b>	<b>0.36</b>	<b>0.91</b>	<b>1.02</b>	?
Originally planned values <sup>d)</sup>								0.58	0.80	?

a) From 2019 onwards: actual tax rates are frozen to the 2018 level. Originally planned tax rates in row below.

c) CO<sub>2</sub> prices refer to the eco tax until 2020 and to the sum of the eco tax and the nEHS allowance prices from 2021 onwards – as decided by the joint mediation committee of the Bundestag and Bundesrat on 16 December 2019.

d) Figures refer to the values of the Law codifying the nEHS (BEHG).

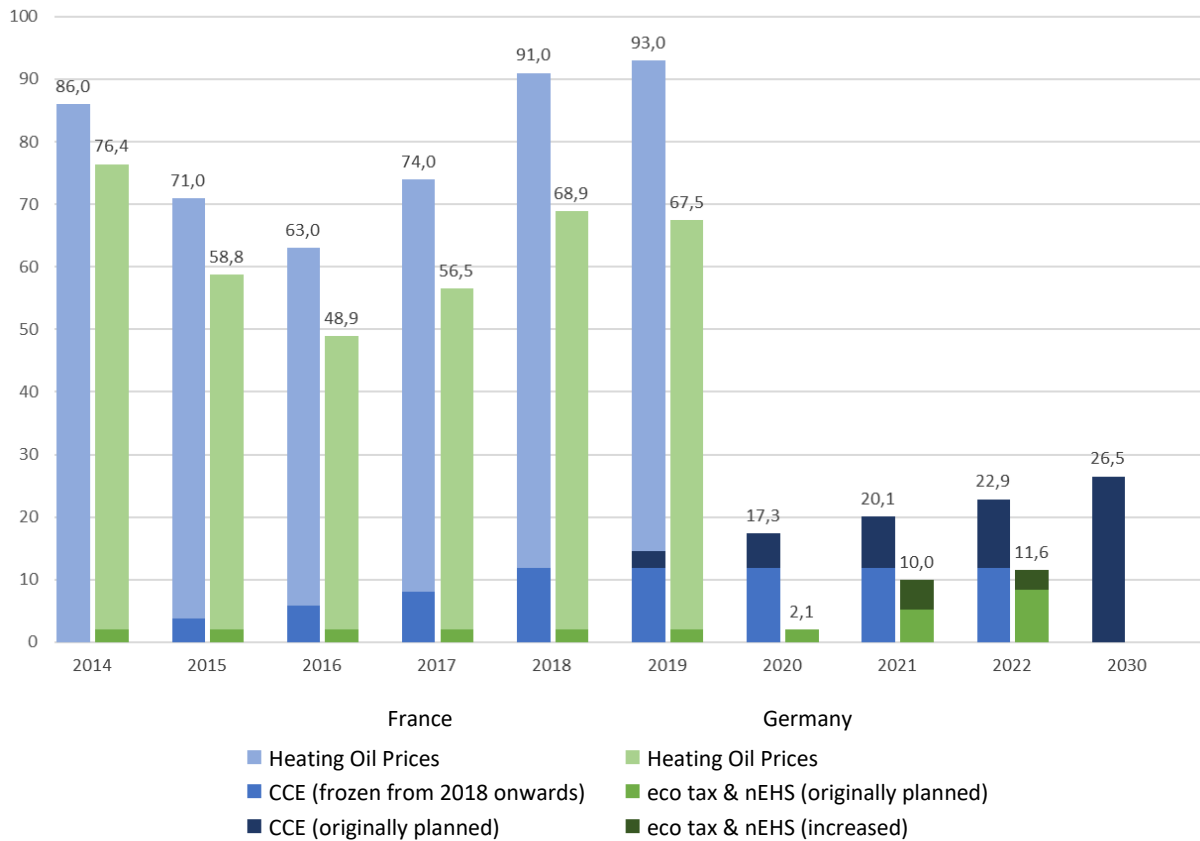
Source: Own calculations based on: *Projet de loi de finances pour 2014*, *Projet de loi de finances pour 2018*; *Gesetz zum Einstieg in die Ökologische Steuerreform 1999*<sup>153</sup>; *Spiegel Online*<sup>154</sup>. Carbon content in heating oil and natural gas: Gloriant, S. (2008), *Une Evaluation Quantifiée De La « Taxe Carbone » Française*, *Information et Débats* N°2018-57, *Climat Economic Chaire*, p. 6.

<sup>153</sup> Gesetz zum Einstieg in die Ökologische Steuerreform vom 24. März 1999, Bundesgesetzblatt 1999 Teil I Nr. 14, [www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger\\_BGBl&jumpTo=bgbl199s0378.pdf](http://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl199s0378.pdf).

<sup>154</sup> Bund und Länder einigen sich im Streit über Klimapaket, *Spiegel Online* of 16 December 2019, <https://www.spiegel.de/wirtschaft/soziales/klimapaket-bund-und-laender-erzielen-einigung-a-1301430.html>.

Graph. 3 below shows the prices of heating oil in France and Germany, including the respective level of the carbon price that is incorporated in the heating oil price. Besides it is represented how the height of the CO<sub>2</sub> price would have developed, if this would have been continued as originally planned.

**Graph. 3: Heating Oil Prices in France and Germany (including Carbon Pricing)**

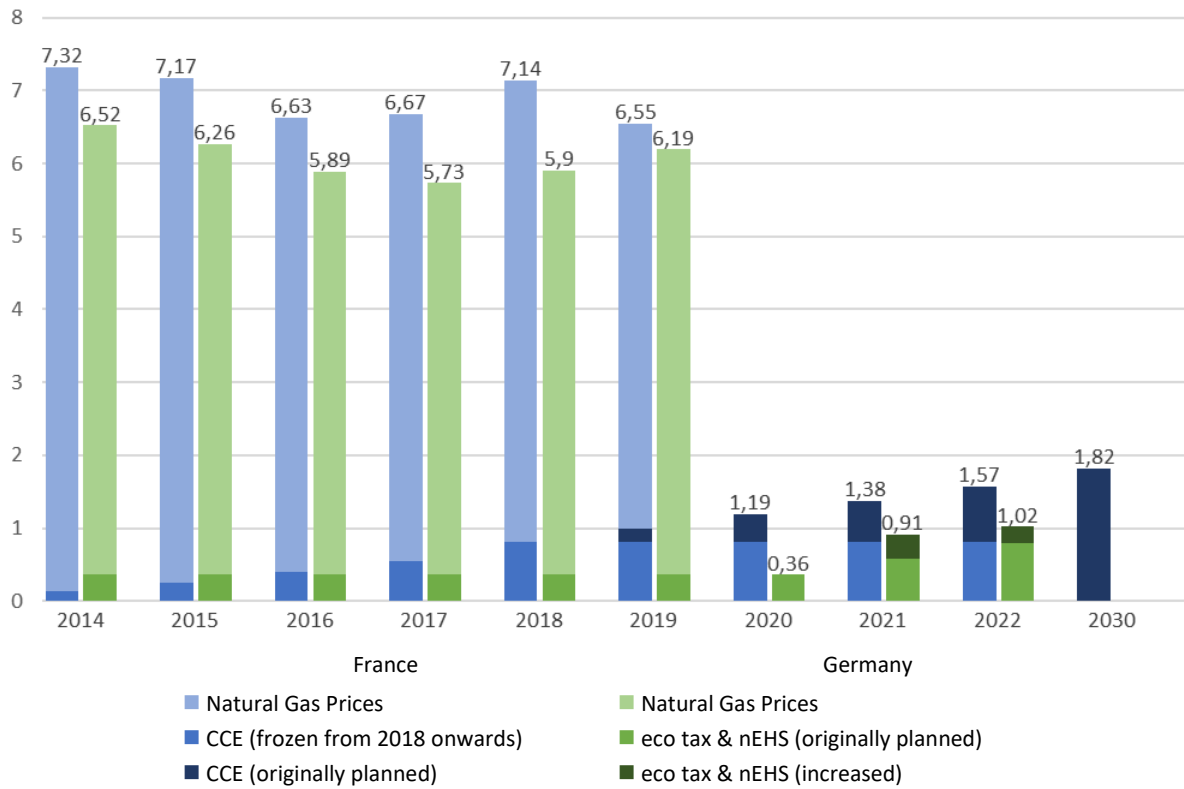


Sources: see Tab. 4, heating oil prices: Statista.com<sup>155</sup>.

<sup>155</sup> Statista.com (2019) <https://fr.statista.com/statistiques/948693/evolution-prix-energie-carburant-fioul-essence-gaz/>, <https://www.statista.com/statistics/597552/heating-oil-price-france/>, <https://de.statista.com/statistik/daten/studie/2633/umfrage/entwicklung-des-verbraucherpreises-fuer-leichtes-heizuel-seit-1960/>.

Graph. 4 below shows the price of natural gas in France and Germany, including the effects of carbon pricing. Further, it illustrates how the carbon prices developed, if they were implemented as originally planned.

**Graph. 4: Natural Gas Prices in France and Germany (including Carbon Pricing)**



Sources: see Tab. 4, natural gas prices: Eurostat<sup>156</sup>, Statista.com<sup>157</sup>, Statistisches Bundesamt<sup>158</sup>.

Graph. 3 and Graph. 4 in conjunction with Tab. 4 provide a comparison of the evolution of carbon prices in the heating sectors of France and Germany and illustrate the relation between carbon pricing and heating fuel prices. It shows that CO<sub>2</sub> prices in Germany constitute only a minor part of consumer prices for heating oil and natural gas since the eco tax rates are comparably low. This will not be substantially altered by the introduction of the nEHS since the price of emission allowances will also be low. As a consequence, the German heating sector will continue to bear less carbon costs than the French one.

<sup>156</sup> Eurostat (2019), Gas prices for household consumers – bi-annual data (from 2007 onwards), all taxes and levies included, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg\\_pc\\_202&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_pc_202&lang=en)

<sup>157</sup> Statista.com (2019), <https://fr.statista.com/statistiques/948693/evolution-prix-energie-carburant-fioul-essence-gaz/>

<sup>158</sup> Statistisches Bundesamt (2019), Daten zur Energiepreisentwicklung, S. 21, <https://www.destatis.de/DE/Themen/Wirtschaft/Preise/Publikationen/Energiepreise/energiepreisentwicklung-pdf-5619001.pdf?blob=publicationFile>.

## 7 Conclusion and Outlook

Both France and Germany are struggling to reach their national targets set by EU law for the reduction of CO<sub>2</sub> emissions in non-EU-ETS sectors. At the same time, in both countries there is growing support in the scientific community, as well as among politicians, for carbon pricing as an effective and efficient means for reducing CO<sub>2</sub> emissions. While the instruments for carbon pricing in the transport and the building sectors – a carbon tax in France and an emissions trading system in Germany – differ between both countries, distinct similarities are discernible.

Both the French and the German governments are reluctant to raise CO<sub>2</sub> prices for fossil fuels to levels where they would have a real impact on consumers. It is notable that the rates of the German eco tax and the French carbon tax have both been frozen at similar values (section 6.1, Tab. 3). The fierce resistance in France against increased fuel prices in 2018 was still fresh in the minds of German politicians during the decision-making process on the introduction of carbon pricing.<sup>159</sup> Clearly, the fix-price system of the German nEHS with still relatively low and only slowly rising CO<sub>2</sub> prices was born out of a fear of protests at least at the ballot box.

Obviously, public acceptance is a key precondition for carbon pricing. Both countries have chosen to secure the support of voters by a policy mix of low CO<sub>2</sub> prices supplemented by various subsidies, e.g. for promoting the use of less emission-intensive passenger cars (France), for improving the energy efficiency of buildings (France and Germany) and for increased commuter allowances (Germany). Whether the French and German measures will be sufficient to secure public acceptance of carbon pricing remains to be seen. It is already apparent, however, that their strategies impair the potential of carbon pricing to exert a significant steering effect towards effective and efficient emissions reduction. There is a striking discrepancy between the willingness of both governments and many citizens alike to support ambitious – but abstract – CO<sub>2</sub> emissions reduction targets on the one hand, and then to pay the resulting – very concrete – price for achieving these targets on the other hand. This, however, is doomed to result in continuous failure of governments to attain reduction targets and in frustration of citizens with the political system.

It may well be that carbon pricing has already reached a dead end in France and Germany – and that the governments of both countries are hoping for solutions beyond their national borders. Already, interest in transborder carbon pricing is growing in Europe, whether on a bilateral or multilateral basis between some EU Member States, or EU-wide within the framework of the EU itself.<sup>160</sup> In December 2018, the French government – together with the governments of Denmark, Finland, Ireland, Italy, the Netherlands, Portugal, Sweden and the United Kingdom – issued a “statement to strengthen carbon pricing in Europe”.<sup>161</sup> In spring 2019<sup>162</sup>, Chancellor Angela Merkel expressed support for a “coalition of willing EU Member States” to cooperate on carbon pricing in non-EU-ETS sectors. In July 2019, the French Council for Economic Analysis (CAE) and the German Council of Economic Experts (GCEE) jointly

<sup>159</sup> „Rekonstruktion der Klimaverhandlungen: Ab sechs Uhr waren alle wie ‚auf Speed‘“, Spiegel Online of 23 September, <https://www.spiegel.de/plus/rekonstruktion-der-klimaverhandlung-ab-sechs-uhr-frueh-waren-alle-wie-auf-speed-a-71931c54-02b0-48d9-8a32-c1575efff1bb>.

<sup>160</sup> See Menner, M. / Reichert, G. (2019), Wirksame CO<sub>2</sub>-Bepreisung, [cepStudie](#), pp. 21 and 29.

<sup>161</sup> Statement to Strengthen Carbon Pricing in Europe of 12 December 2018, <https://www.gouvernement.fr/en/statement-to-strengthen-and-extend-carbon-pricing-in-europe>.

<sup>162</sup> Clean Energy Wire of 10 May 2019, <https://www.cleanenergywire.org/news/merkel-proposes-european-coalition-willing-co2-price-transport-buildings-and-agriculture>; Deutscher Bundestag (2019), Plenary Minutes 19/106, Stenographic Report of the 106<sup>th</sup> Meeting on 26 June 2019, p. 12998.



called for “a uniform carbon price for Europe”.<sup>163</sup> Also in July 2019, Ursula von der Leyen announced that as President of the European Commission she would attempt to introduce carbon pricing for the transport and building sectors.<sup>164</sup> In December 2019, the European Commission announced its agenda for the future EU environment and climate policy (“European Green Deal”).<sup>165</sup> Accordingly, the European Commission not only announced its plan to increase the EU’s CO<sub>2</sub> emissions reductions target for 2030 from currently 40% to “at least 50%” and “towards 55%” compared with 1990 levels as well its objective to achieve “climate neutrality”<sup>166</sup> by 2050. It also declared to consider – in line with Ursula von der Leyens earlier announcement in July 2019 – the extension of the EU-ETS to additional sectors such as road transport and buildings.<sup>167</sup> Given these developments, there is a good chance that a “European perspective” on transborder carbon pricing in non-EU-ETS sectors will open up sooner rather than later.

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<sup>163</sup> Joint Statement of the “Conseil d’analyse économique” (CAE) and the “Sachverständigenrat” (GCEE) of 16 July 2019, A Uniform Carbon Price for Europe, [http://www.cae-eco.fr/IMG/pdf/joint\\_statement\\_cae\\_gcee\\_carbon\\_pricing.pdf](http://www.cae-eco.fr/IMG/pdf/joint_statement_cae_gcee_carbon_pricing.pdf).

<sup>164</sup> Von der Leyen, U. (2019), Political Guidelines for the Next European Commission 2019–2024, p. 5, [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf).

<sup>165</sup> European Commission (2019), Communication COM(2019) 640 of 11 December 2019, The European Green Deal, p. 4.

<sup>166</sup> “Climate neutrality” means that, on balance, the EU does not emit more greenhouse gases (GHGs) than are absorbed by natural “GHG sinks” – such as forests or the sea which remove and absorb GHGs from the atmosphere. See European Commission (2018), Communication COM(2018) 773 of 28 November 2018, A Clean Planet for all – a European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, p. 4; Bonn, M. / Reichert, G. (2018), Climate Vision 2050, [cepPolicyBrief No. 2019-05](#).

<sup>167</sup> Ibid., pp. 5, 9 and 11.

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**Authors:**

Ola Hanafi, Policy Analyst

Marion Jousseume, Policy Analyst

**cepFrance | Centre de politique européenne**

350, rue Lecourbe | F-75015 Paris | France

Phone +33 1 45 54 91 55 | [www.cepfrance.eu](http://www.cepfrance.eu)

Dr. Götz Reichert, LL.M., Head of Division

Dr. Martin Menner, Policy Analyst

Svenja Schwind, Policy Analyst

Division on Energy | Climate | Environment | Transport

**cepDeutschland | Centrum für Europäische Politik**

Kaiser-Joseph-Straße 266 | D-79098 Freiburg | Germany

Phone +49 761 38693-0 | [www.cep.eu](http://www.cep.eu)