

Franco-German cooperation in support of the European Green Deal: pricing of carbon in and at the border of Europe

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Abstract. The European Union (EU) has proclaimed the Green Deal as its principal growth strategy, announcing as its key target to reach carbon neutrality by 2050. In consequence, effective immediately, member states will have to increase their efforts to reduce emissions, inducing steeply rising mitigation cost. The best coordination signal in this endeavor would be a uniform price on carbon which encompasses all actors, sectors, regions, and technologies. To ascertain that all goods consumed in the EU face the same carbon price, it is sensible to credibly prepare the implementation of border carbon adjustments (BCA) applied to imported goods. To preserve the EU's self-conception of taking responsibility for the global climate it should refrain, however, from exempting exports from carbon pricing. A BCA mechanism should be considered by the EU only after having established a clear and credible uniform carbon pricing mechanism within its jurisdiction. This credibility is key to provide incentives to other countries, especially the US and China, to join a far-reaching international alliance for carbon pricing.

Uniform carbon pricing: A cornerstone of European climate policy

The European Union can become the world leader for the energy transition. Beyond our collective ambition to face our responsibilities toward future generations, it should be the explicit aim of this effort to provide the path towards an **effective global approach to climate policy**. Since the ease of reducing climate gas emissions varies highly across sectors and regions, providing the basis for a fruitful division of labor, the **European level is the right level** to organize an efficient climate policy for the region. Research and investment projects entailing high European value added, and policy instruments for setting incentives for the greening of the European economy and beyond should be coordinated and optimized at the European level.

Previous work by the French Council of Economic Analysis (CAE) and the German Council of Economic Experts (GCEE)¹, as well as the interdisciplinary work of the German national academies of science² advocated the **pricing of carbon** as the **leading instrument of European climate policy**. While the focus of these contributions was lying on outlining practical avenues towards the objective of achieving a climate-neutral Europe by 2050, European climate policy was explicitly seen as a step towards forging a global approach to mitigation, not as an end in itself.

In the diverse and decentralized economic system characterizing the EU, the best coordination signal corresponding to this principle would be a **uniform price on carbon** which encompasses all actors, sectors, regions, and technologies. Separate pricing systems for different sectors or for different countries can only be interim solutions. Correspondingly, while **separate target values for sectors and member states** can serve as important gauges of actual developments, it is not advisable to interpret them as binding restrictions.

¹ GCEE (2019), CAE and GCEE (2019).

² acatech et al. (2020).

Voluntary participation by all member states in the uniform pricing mechanism **might require financial transfers** to member states whose energy systems are still relying more heavily on fossil resources. In practical terms, these transfers could be implemented, e.g., by a disproportional – compared to the status-quo emissions – allocation of emission certificates to these states. Any such compensatory transfer of financial resources must be transparently decided by the Union when setting up the pricing mechanism.

In principle, **several pricing mechanisms** could be employed to implement a uniform European carbon price, both price (taxes or surcharges) or quantity (emission certificates) schemes. As this already provides a functional and effective system, the best strategy would be widening the scope of the **European emission trading system (EU-ETS)**. Currently, the EU-ETS only comprises the sectors industry and energy; it is pursuing a joint European reduction target in these sectors. For the **non-EU-ETS** sectors, the **burden sharing agreement** instead stipulates a set of national target values for 2030. By pursuing these targets separately, the union as a whole is foregoing any possibility to enact the principle of division of labor in emission reduction. Consequently, the EU-ETS should be enhanced to also encompass the current non-EU-ETS sectors, specifically housing and mobility, instead of pursuing them with national measures.

So far, the EU-ETS has been successful in reaching its emission reduction objectives, but expectations regarding the stability of the price level and the corresponding signal for initiating a serious transition, have been disappointed over a substantial share of the trading periods. It might thus be sensible to fortify the EU-ETS with a **minimum price floor** over an extended time horizon, and also to engage into an **extensive reform of national energy taxes and surcharges** to support the uniform carbon pricing. In those member states where they were already implemented, higher carbon taxes in the non-EU-ETS-sectors should arguably be retained.

While immediately changing the climate policy strategy to rest on a uniform price on carbon might be ideal in theory, in practice it will **take time to integrate EU-ETS and non-EU-ETS sectors**; specifically, the non-EU-ETS sectors might require an implementation upstream. The aim should be to form an integrated EU-ETS well before 2030, and, parallel to moving towards an integrated EU-ETS, to dismantle the multiple national climate policies. However, it is also clear that **the longer** the implementation of a uniform coordination signal by a fully integrated EU-ETS will take, leaving the coordination of transformation efforts in the non-EU-ETS sectors to separate (national) pricing schemes and measures of command-and-control, **the higher the overall cost** of the transition will become.

As long as carbon prices remain too low and limited in scope, the EU should regularly estimate and make public the **shadow price of carbon** that supports its climate ambition.³ It should be used in the **cost-benefit analyses** that need to be conducted on its portfolio of existing non-price climate policies, such as bans, norms, standards, and subsidies. Compared to the US EPA, Europe has so far been too hesitant in the evaluation of the environmental performances of its public policies. But, in our assessment, it is indispensable that European corporations and citizens also **receive a clear signal** about the meaning of climate policy ambitions as a basis of their own planning.

³ A shadow price associated to a collective constraint is defined as the price signal necessary to satisfy the constraint. It would have to be estimated by employing an integrated assessment model.

Moving towards an encompassing and uniform carbon pricing mechanism would ascertain an economically efficient path towards climate neutrality. Yet, a successful transition towards climate neutrality also needs convincing approaches to **three further challenges**: (i) alleviating the **regressivity** inherent in climate policy (ii) preventing a severe blow to the **competitiveness** of European companies and (iii) providing incentives to **other countries** to implement their own ambitious climate policy, preferably by implementing carbon pricing.

Regarding the first challenge, in their joint statement in summer 2019 the CAE and the GCEE clarified that ascertaining the transformation to be socially balanced is a **national prerogative and responsibility** of the member states. The revenue collected as the result of encompassing carbon pricing would enable member states to fund redistribution schemes⁴, energy price reforms and infrastructure investments, allowing them to respect their individual preferences and institutions, under the constraint of not distorting the carbon price signal.

So far, the CAE and the GCEE did not issue a joint position on the second and third challenges. Arguably, Europe will only be able to contribute to the objective of reaching global climate neutrality, if it manages to design its own transition path in a way that combines climate neutrality with **unimpeded prosperity growth**. Taking action unilaterally, by implementing an ambitious uniform carbon price in Europe, is endangering, at least in principle, the international competitiveness of energy-intensive European firms which are facing serious competition from outside the realm of European climate policy (“**carbon leakage**”).

There is ample evidence that the mechanism implementing a carbon price for the energy and industry sectors, the EU-ETS, so far has not led to serious carbon leakage problems.⁵ Energy-intensive firms facing competition from outside the EU received sufficient emission permits cost-free to compensate them for the moderate carbon prices they hitherto had to pay under the EU-ETS. It seems likely, though, that this innocuous result will change at **higher carbon prices**. And carbon prices will undoubtedly rise as the consequence of increased European ambitions under the Green Deal.

Climate Neutrality and the European Green Deal: Great Ambitions

Just before entering the new decade, in December 2019, the European Commission proclaimed the **European Green Deal** as its principal growth strategy, announcing as its key target to reach carbon neutrality for the EU by 2050.⁶ This ambitious long-term objective is not only sending a strong signal to the world community. It also has **important repercussions for the EU’s climate target for 2030**: Due to the substantial inertia characterizing the necessary complete overhaul of the energy system, the **degree of ambition** of this medium-objective needs to increase as well. In the meanwhile, Europe is set for pledging to cut emissions by some 55 % compared with their 1990 levels, a substantial and, in our assessment, **welcome accentuation** of the previous target of 40 %. These more ambitious targets will necessarily translate into higher (shadow) prices of carbon.

The Green Deal comprises a wide range of measures to cut emissions in various areas such as energy systems, mobility, heating, and agriculture. Most importantly, the EU Commission considers implementing an encompassing **carbon pricing** mechanism covering all relevant sectors,

⁴ See for example the proposals by Dominique Bureau, Fanny Henriët and Katheline Schubert in CAE (2019).

⁵ aus dem Moore et al. (2019).

⁶ European Commission (2019).

promoting an **integrated energy system** to facilitate sector coupling, developing a **carbon border tax adjustment** system for various sectors, and providing **research funding** directed at climate-friendly technologies.

To implement uniform carbon pricing, the EU Commission announced its intention to **widen the scope of the EU-ETS** by 2021, from covering only the industry and energy sectors to sectors not currently covered by this scheme.⁷ The ensuing uniform carbon price would serve as the desperately needed **principal coordination signal** for the massive public and, to an even much larger extent, private investment needed to meet the more ambitious European climate targets by 2030. Arguably, carbon prices will have to **rise steeply over time** in order to meet these targets. Moreover, their effect on incentivizing investments already today stands and falls with the credibility of their installation as an unalterable coordinating signal.

Until the implementation of a fully integrated EU-ETS, reducing emissions in the **non-EU-ETS sectors** will remain a **national affair**. France and Germany, in particular, have so far not pursued a joint strategy for the non-EU-ETS sectors. In previous years, with less ambitious transition objectives, the losses in prosperity from **disregarding possible efficiency gains** were limited. With the announcement of the European Green Deal, however, the setting has changed dramatically: Since Europe shall be carbon-neutral by 2050, member states will have to increase their efforts to reduce emissions in the non-EU-ETS sectors. To avoid that these efforts will be prohibitively costly, it is highly advisable to **speed up** the process of **integrating national pricing schemes into the EU-ETS**.

In our assessment, this increased ambition also makes it all the more necessary that the EU Commission emphasizes its determination by regularly publishing an estimation derived from integrated assessment models of the path of **future shadow prices of carbon** compatible with achieving its climate ambition. It should also underline the sincerity of its climate policy ambitions by **earmarking any revenue** from carbon pricing or carbon border adjustments for financing measures related to the energy transition, or to redistribute it to the EU citizens, instead of using it to repay the EU covid debt.

A large share of the burden of the energy transition will be borne by the private sector. But from the perspective of individual member states, high (shadow) prices of carbon which are accompanying the increased climate ambition also increase the **pressure on national budgets** to invest funds in projects of the public sector with positive net present value that reduce emissions, such as, e.g., public transportation infrastructures or the retrofitting of public buildings. Under the Green Deal, the Commission will be able to devise **innovative funding solutions** to support these measures. National governments will also be tempted to assist the private sector in its mitigation efforts.

Nevertheless, steeply increasing carbon prices will **endanger the competitiveness** of European companies vis-à-vis their competitors not falling under the realm of the ambitious EU climate policy. As the costs of those emission-intensive domestic producers who are trading on global markets increase ever further, they might relocate rising shares of their production to other production sites outside Europe. This **carbon leakage** would be harmful to European jobs and economic prosperity, but also hurt the overall cause of climate change mitigation, countervailing EU ambitions.

⁷ European Commission (2020a).

Overall, the EU is a **net importer of carbon**, since European carbon emissions and the European carbon footprint, i.e., the carbon emissions caused by the production of all goods being consumed in Europe, typically diverge substantially. The reduction of carbon emissions by the EU is a necessary but not sufficient objective to combat climate change at the global level. The issue of how to **incentivize other countries** to adopt ambitious carbon emissions reductions through carbon pricing is also of utmost importance.

Under the EU-ETS, the international competitiveness of domestic producers has so far been protected quite successfully by the **free allocation of certificates** to emission-intensive firms facing international competition in, e.g., the steel, cement and chemical industries, based on a benchmarking system. Yet, with increasing carbon prices and the corresponding decline in the number of certificates, this might change. Outsourcing decisions motivated by rising cost differentials would be **difficult to reverse** ex post, due to the long investment cycles in the industry sector. Thus, the aim should be to avoid these decisions ex ante. In the long run, this system of free allowances reduces the strength of the price signal, offers **entrenchment position for insiders** in these industries, and limits the revenue from carbon price to be redistributed.

New Challenges: Towards reducing carbon emissions from imports

A promising alternative to the cost-free allocation of certificates might be the installation of **border carbon adjustments** (BCA). The principal idea behind this mechanism would be to levy a charge on imported goods equivalent to the carbon payment of the same domestically produced good. If the carbon content of all imported goods were accurately measured, all goods consumed in the EU would face the same carbon price, irrespective of globally diverging climate policies. **Limiting the BCA** to apply only **to imports** would, however, not address the distortion caused by less stringent climate policies outside the EU to the **competitiveness** of EU companies in external markets and, accordingly, induce the **risk of carbon leakage**.

Alternatively, the EU might opt to implement a full-fledged symmetric variant of the BCA, in which exporters would receive a corresponding remuneration. Consequently, goods consumed abroad would face the carbon price determined by the country where they are consumed. In effect, the system would then be reminiscent of a **value added tax**, where imports are taxed and exports are exempt. In our assessment, this route should not be taken: By implementing a symmetric BCA the EU would **forfeit control over** the extent of **carbon emissions** generated in the region, since EU carbon pricing would only curb emissions caused by the production of goods and services actually consumed in Europe. This would not be compatible with the **political communication** framing the European Green Deal.

To preserve the **EU's self-conception** of taking **responsibility for the global climate**, it will be necessary to present the BCA not as a trade, competitiveness or industrial policy, but as an environmental policy. Its proclaimed **ultimate objective** should therefore be **reducing global carbon emissions**, not increasing the competitiveness of the European industry. Thus, it should be restricted to apply only to imported goods. This fundamental **dilemma** between climate protection and preserving competitiveness would be less prevalent, if the **international alliance for carbon pricing** were to grow, obviating the need to impose a BCA on products being imported from (and exported to) other members of this "carbon club".

Following the initiative of the French and German governments, the European Council has not only emphasized a BCA mechanism as an instrument to prevent carbon leakage, contrasting

our appraisal, but also announced in the conclusions of its meeting in July 2020 that starting from 2023, a BCA could be used as a **source of revenue** for the EU budget. We claim, however, that the explicit objective of the BCA should be to induce a reduction of carbon emissions, not to serve as an instrument to raise public revenues. Moreover, the **fiscal neutrality** of the carbon pricing mechanism in Europe is a prerequisite for its social acceptability. Specifically, we warn against the popular view that such a tax on imports would be paid by foreign producers. All the empirical evidence points to a **high passthrough of import taxes to consumers**. The objective of the BCA is to reduce the consumption of goods that induce high carbon emissions, whether they are produced in the EU or outside.

While the principal idea of a BCA is reminiscent of the well-matured concept of value-added taxes, a sizeable number of **technical, regulatory and legal challenges** would have to be mastered.⁸ Accurately **measuring the carbon content** of individual goods is far from easy⁹, since one would have to capture all of the carbon emissions caused throughout the good's entire value chain. This seems prohibitively costly, since for the same good there are many possible production processes, more or less carbon-intensive, prompting the idea to use **benchmarks** instead. It will not be possible, however, to simply apply the benchmarks employed for the cost-free allocation of emission certificates, since those only measure the direct carbon emissions caused during the production process.

Before this background, several approaches have been suggested in the literature, suggesting that the EU bases the BCA

- on the carbon content of **equivalent goods** that it itself produces, or
- on the carbon content of goods produced with the **best available technology**, or
- on the carbon content of goods produced with the **worst available technology**, unless the firm concerned can demonstrate that it uses a better technology; this would avoid discriminating *a priori* between import sources and is, thus, more likely to comply with the national treatment principle. Either way, it seems far too complicated to impose the BCA on all imported goods. At least initially, the system should rather be restricted to **very energy-intensive and very tradable goods**, such as, e.g., the steel and chemical industries.

A related issue concerns the question of possible exceptions: **Which exporting countries** will be subject to the BCA – all countries outside the regulated area, or just countries with no “equivalent” climate policy? If the EU opted to take the latter approach, it would have to make up its mind on how to **define an equivalent climate policy**. While in principle, this could be a policy inducing at least a shadow carbon price of similar magnitude as in the EU, in a real-world application it is very difficult to estimate the underlying carbon value of the wide range of implemented regulatory measures. It will therefore be difficult to prevent countries subject to the tax to **consider it as a political choice** and therefore contest it. Also, decisions might be challenged not only by countries but also by firms located in those countries, in the context of investor-to-state disputes settlement devices.

Moreover, since production processes vary across companies and countries, basing the BCA on products' carbon content will lead charges to vary across exporting countries, which might generate a **conflict with the most-favored-nation principle**. Furthermore, if the EU would not only

⁸ Mehling et al. (2019).

⁹ Droege and Fischer (2020).

be levying charges on imported goods, but also **offer rebates to exporters**, this might also endanger conformity with GATT rules and lead to protracted trade disputes. This risk would be all the more grave, the more openly the EU will be motivating the introduction of the BCA scheme as a **device to ascertain economic competitiveness**, instead of arguing that it shall serve global climate protection.¹⁰ Nevertheless a legal assessment of the compatibility with WTO and EU law suggests that there are various options to implement a carbon border adjustment mechanism that would be compatible with the existing body of law.¹¹

Irrespective of the sophistication with which any legal obstacle might be circumnavigated, EU trading partners might **interpret any unilaterally introduced BCA as a protectionist measure** anyhow.¹² The **United States**, one of the most important export markets of the EU, may be prepared to **take retaliatory action**. However, US-President Joe Biden endorsed both carbon taxes and (even though less clearly) carbon adjustment fees or quotas from countries that fail to meet climate change obligations. Hence, chances of avoiding a severe trade conflict would likely be rising substantially, if the EU instead of introducing the BCA unilaterally were to take this action in a joint effort with other trading partners, especially the United States.

Thus, the EU should confront all the design issues discussed above to credibly prepare for the implementation of a BCA. A BCA mechanism should be considered by the EU only after having established a clear and credible uniform carbon pricing mechanism within its jurisdiction. This credibility is key to provide incentives to other countries (the US and China in particular) to join **a far-reaching international alliance for carbon pricing**.¹³ Most specifically, trade partners could be invited to join the EU-ETS mechanism. **Chances for a successful courtship** are increasing steadily, as the number of countries already pricing carbon is growing, including most importantly China and several US states.

References

- acatech – German Academy of Technical Sciences, National Academy of Sciences Leopoldina, and Union of the German Academies of Sciences and the Humanities (2020), *Energy Transition 2030 – Key to Climate Protection in Europe*. Ad-hoc position paper.
- aus dem Moore, N., P. Großkurth, and M. Themann (2019), Multinational Corporations and the EU Emissions Trading System: The Spectre of Asset Erosion and Creeping Deindustrialization. *Journal of Environmental Economics & Management* **94**: 1-26.
- Bureau, Dominique, Fanny Henriët and Katheline Schubert, 2019, A Proposal for the Climate: Taxing Carbon not People. Note no 50, French Council of Economic Analysis (CAE).
- CAE – Conseil d'Analyse Économique and GCEE – German Council of Economic Experts (2019), *A uniform carbon price for Europe*. Ad-hoc position paper.
- Droege, S., H.V. Asselt, K. Das, and M. Mehling (2018), Mobilising trade policy for climate action under the Paris agreement: Options for the European Union, *SWP Research Paper 2018/RP 01*, Stiftung Wissenschaft und Politik, Berlin.

¹⁰ Droege et al. (2018). Jakob et al. (2014) argue, however, that the climate impact of a BCA mechanism is itself rather uncertain, as it depends on its difficult-to-assess effects on global production and consumption patterns.

¹¹ European Commission (2020b)

¹² GCEE (2020).

¹³ Nordhaus (2015).

Droege, S. and C. Fischer (2020), Pricing carbon at the border: Key questions for the EU, *ifo DICE Report* **18(1)**: 30–34.

European Commission (2019), The European Green Deal, COM (2019) 640 final, Brussels.

European Commission (2020a), Powering a climate-neutral economy: An EU strategy for energy system integration, COM(2020) 299 final, Brussels.

European Commission (2020b), Trade Related Aspects of a Carbon Border Adjustment Mechanism: A Legal Assessment, GD External Policies, PE 603.502, Brussels.

GCEE – German Council of Economic Experts (2019), *Setting out for a new climate policy, Special Report*, Wiesbaden.

GCEE – German Council of Economic Experts (2020), *Overcoming the Coronavirus crisis together, strengthening resilience and growth, chapter 4: Climate protection as an industrial policy opportunity*, Annual Report, Wiesbaden.

Jakob, M., J.C. Steckel, and O. Edenhofer (2014), Consumption- Versus Production-Based Emission Policies, *Annual Review of Resource Economics* **6**: 297–318.

Nordhaus, W. (2015), Climate clubs: Overcoming free-riding in international climate policy, *American Economic Review* **105(4)**: 1339–1370.

The **Franco-German Council of Economic Experts (FGCEE)** was established in 2019 as an independent council to advise the French and German governments on matters of economic policy which are of joint interest for both countries. Its **co-chairs** are Philippe Martin (Conseil d'analyse économique and Sciences Po/Paris) and Christoph M. Schmidt (RWI and Ruhr-Universität Bochum). **Members** of the FGCEE are, furthermore, Marcel Fratzscher (DIW and Humboldt-Universität zu Berlin), Nicola Fuchs-Schündeln (Goethe-Universität Frankfurt), Clemens Fuest (ifo-institut and Ludwig-Maximilians-Universität München), Christian Gollier (Toulouse School of Economics), Isabelle Méjean (CREST-Ecole Polytechnique, Département d'Economie), Xavier Ragot (Sciences Po/Paris), Katheline Schubert (Paris School of Economics), and Beatrice Weder di Mauro (CEPR).