CO_2 Abgabe e. V.

Carbon Border adjustment: From exceptions to polluter-pays

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Carbon boarder adjustment: From exceptions to polluter-pays-based and climate-friendly product prices

A carbon (CO_{2e}) border adjustment combined with differential agreements for the financing of low-greenhouse gas production processes and uniform effective CO_{2e} prices make it possible to move from a policy of exceptions towards the targeted promotion of low-greenhouse gas products.

1 Introduction

On 23 July 2020, the European Commission launched public consultations on two major initiatives in the framework of the European Green Deal. All interested parties (citizens* and institutions) were invited to comment on the revision of the Energy Taxation Directive and a new Carbon Border Adjustment Mechanism by means of an online questionnaire in two separate consultations. The EU Commission intends to present proposals for both initiatives by mid 2021.

The two initiatives, together with the reform of the European Emissions Trading Scheme (EU ETS), are closely related in terms of content and open up the possibility of ending the policy of exeptions in order to avert the risk of transferring production and emissions, e.g. to non-EU countries (carbon leakage).

Exceptions to date include the free allocation of pollution rights under the EU ETS, electricity price compensation or tax and levy relief (such as the special compensation scheme under the Renewable Energy Act in Germany). As a result, neither the imported greenhouse gas emissions of products nor large parts of the EU's industrial emissions are actually subject to a CO_2 price.

In the meantime, the EU Commission has already positioned itself to the extent that it is highlighting CO_2 pricing for the building and transport sectors as a possible solution within the framework of an expansion of the EU ETS along the lines of the German Fuel Emission Trading Act (EU 2020, EU-2020-1, EU-2020-2). However, with the national fuel emissions trading scheme for buildings and transport, Germany is taking a special path vis-à-vis all other EU states that have implemented or are planning to implement CO_2 price components through their national energy taxes.

1.1 Background Paris Climate Change Agreement and Green Deal

The EU and its member states are among the more than 190 parties to the Paris Convention (Paris Climate Convention) of 2015, which the EU formally ratified on 5 October 2016. After at least 55 countries responsible for at least 55% of global emissions ratified it, the agreement has been in force since November 4, 2016.
The international community's previous commitments to reduce emissions and create CO_2 sinks are still far from sufficient to achieve the goals of the Paris Climate Convention. This also applies to the previous targets and action plans of the European member states.
For this reason, the EU Commission is now proposing, within the framework of the European Green Deal and on the basis of the evaluation of the national energy and climate plans, that the EU member states adopt a new climate target by the end of the year 2020. The EU Commission is talking about a 55% reduction in greenhouse gases (EU 2020, EU-2020-1, EU-2020-2), and the European Parliament has spoken out in favour of 60% by 2030 instead of the previous 40% (compared to 1990 levels). In order to achieve this goal, the annual reduction factor in the EU-ETS must be significantly increased from the current 2.2% per year and the cap on the upper limit of pollution rights (certificates) must

be reduced more than it has been. As a consequence, the CO_{2e} prices in the EU ETS will increase and surpluses of certificates will be quickly reduced.
At this point at the latest, the previous measures/exceptions to protect against carbon leakage, such as the free allocation of pollution rights, electricity price compensation and exemptions from taxes and levies, will no longer be sufficient and the EU Commission will therefore propose the introduction of border adjustment in order to avoid distortions of competition and thus prevent carbon leakage.

2 European Energy Taxation Directive 2003/96

The Energy Taxation Directive 2003/96 contains the European regulations for the taxation of fuels and electricity. With its proposal, the EU Commission wanted to amend the directive as early as 2011, among other things to the effect that

- the tax burden on individual fuels, including renewable energy sources, is redistributed on the basis of energy content and CO2e emissions, and
- a framework for CO_2 taxation in the internal market is created, which puts a price on CO_2 emissions not covered by the EU ETS.

The level of the CO_2-dependent minimum tax amounts should follow the development of the market price for CO_2 emission allowances under the EU ETS. The amendment of the directive was taken off the agenda at that time, because (among other reasons) Luxembourg, Poland and also Germany would not have agreed to it.
On November 29, 2019, the Council of the European Union formally commissioned the EU Commission (Doc. No. 14608/19) to revise Directive 2003/96/EC (Energy Tax Directive).

By emphasizing the possibility of extending the EU-ETS to the building and transport sectors, as mentioned above, the EU Commission is contradicting its 2011 proposal to give CO_2 emissions not covered by the EU ETS a price based on greenhouse gases via the Energy Tax Directive. Furthermore, the proposal runs counter to the CO_2 tax regulations of twelve EU member states, which have already introduced national CO_2 prices in addition to the EU ETS (Germanwatch 2019).

Expanding the trade with pollution rights (EU ETS) to buildings and transport would lead to significantly more bureaucratic effort at the European level than a CO_2 pricing system in the context of an European energy tax and apportionment reform (CO_2 Abgabe e.V. 2020), as the German national fuel emissions trading scheme (Brennstoffemissionshandelsgesetz) with its 13 regulations shows.

Independent of the question as to how (expansion of EU ETS or tax solution) uniform CO_{2e} prices coordinated with the EU ETS are introduced also in the area of buildings and transport, the CO2e price for buildings and transport would have to be accompanied by a strong regulatory framework for them to become effective with initially lower certificate prices. After all, in addition to the CO_{2e} price signal, further measures are needed to improve the CO_2 avoidance options of those renting and commuting to work. For example, the CO_{2e} price, which is far below the avoidance costs, alone would not be a sufficient economic incentive for many car drivers to switch to alternative drives (electric, hydrogen or e-fuels). Especially if climate-damaging subsidies (false incentives) distributed indiscriminately all around, such as the commuter allowance, the company car privilege or high surcharges for renewable electricity, as in Germany, remain in place. However, by taking action in other areas (consumption, electricity, heat) they can avoid CO_2 emissions and thus reduce costs.

A revision of the Energy Taxation Directive that would lead to prices that make the true costs of fossil energy more visible in the end products than has been the case would also increase the pressure on all member states to align state-induced price components with each other in order to avoid distortions of competition as a whole, as called for by the International Monetary Fund (IMF 2019). The current energy tax rates in the EU member states vary between 33 and 61.7 eurocents per unit

for fuels, between 2.1 and 50.4 eurocents per unit for heating fuels and between 0.1 and 12.5 eurocents per kilowatt hour for electricity.

3 Border compensation as protection against carbon leakage

In the course of developing the Green Deal, the EU Commission is also proposing a fundamentally different instrument to protect against carbon leakage, which has been extensively discussed for decades. Border adjustment is primarily a mechanism to protect against carbon leakage and does not automatically lead to higher CO_2 prices or the defossilisation of basic industries.

The existing measures to protect against carbon leakage in the EU ETS (free allocation and electricity-price compensation, as well as reduced energy tax and levy rates for many companies) are not suitable for achieving a reduction in carbon emissions of up to 60 % by 2030. Moreover, exceptions to government-induced price components or a cap on industrial electricity prices do not charge the costs of the transformation to climate-neutral production processes to the actual polluters, such as the buyer of a car that contains aluminium or steel, but to the general public.

The following apply to all variants of border adjustment to solve the risk of carbon leakage:

- a change from an approach to CO2 accounting based on purely territorial emissions resulting from production to an approach that also includes non-European or and?? Consumption-based emissions (emissions footprint) in the basis for pricing or border adjustment;
- the CO2-content, or rather the greenhouse gas potential of affected goods and services must be recorded in a certain amount of detail and a decision must be made as to how strongly inputs (supply chains) are included;
- And finally the question, how should the different emissions from power generation (indirect emissions) and the risk of "resource shuffling" be dealt with? Producers abroad could declare their share of "green" electricity or recycled materials for EU goods, but continue to run the rest of their production with fossil fuels (see DIW 2020).

The idea behind the different variants and the theoretical modes of operation are not that far apart. What matters most is that the mechanism is implemented quickly and with a manageable degree of effort.

All of the mechanisms for carbon border adjustment currently under discussion, be it a tax at the border, an obligation to purchase certificates on imports of raw materials or a levy on end products, can be designed to be compatible in principle with WTO and EU law (see SWP 2018). To this end, imported products must not be treated worse than similar domestic goods. Above all, this means that the border adjustment on imports must not be higher than the tax on domestic goods.

The following basic options for border adjustment are currently under discussion:

- **Obligation to purchase EU ETS certificates on imports**: Companies that import greenhouse gas-intensive raw materials to Germany must buy EU-ETS certificates according to the same rules.
- **Border tax equalization (Carbon Border Tax)**: Tax in the amount of e.g. the EU ETS certificate price for energy-intensive raw materials when crossing the border according to the principle of VAT equalization.
- **End product tax (consumption tax or climate tax similar to DIW proposal)**: Levy on end products (such as cars) with a high share of emission-intensive raw materials. in combination with the free but "dynamic allocation" of EU ETS allowances (for greenhouse gas emissions that exceed product benchmarks and decrease over time due to higher product benchmarks and a decreasing cap on allowances) and Carbon Contract for Difference (CCFDs) (see Section 5.4) to finance climate-neutral production processes (e.g. DIW 2020).

The goal of a suitable mechanism for border adjustment should be to reflect the “true costs” of, for example, chemistry, steel or cement production in the price of the end products. The price signals should reach the user of a product so that one can make an informed purchase decision.
The most effective way to ensure that price signals reach the consumer is through the end product. At the same time, however, the incentive for producers to save greenhouse gases must be maintained. This can be achieved, for example, through the free "dynamic allocation" (see DIW 2020 p.5) of EU ETS certificates in line with increasing requirements, e.g. through product benchmarks and a decreasing cap on certificates.

Seamless accounting of CO_{2e} emissions over the entire value-added supply chain is therefore an important step in the medium to long term to make greenhouse gas emissions in products visible and reduce them. SAP has announced that it will not only provide its customers with transparency on CO_{2e} emissions across the entire value chain, but also simulate which measures lead to lower CO_{2e} emissions, especially in procurement, manufacturing and logistics. The Value Balancing Alliance (VBA), in which corporations such as BASF, Bosch, SAP, etc. participate, goes one step further and intends to develop a methodology over the next three years that will enable companies to compare not only the economic ,but also the social and ecological value contributions of their companies and make them more transparent for investors. Entrepreneurial success can thus no longer be measured solely by economic indicators.
It is already possible to determine the greenhouse gas emissions of the primary energy sources used in raw materials products today using average values for the CO_{2e} intensity of raw materials products. For a start, a border adjustment can be limited to this. The verification of greenhouse gas emissions through all production steps, as well as the transport of many intermediate and end products (life cycle assessment) for products is a sensible further development.
A functioning border adjustment is a necessary component to protect against carbon leakage, but not yet sufficient for financing leapfrogging investments in climate-neutral production processes with high CO_2 avoidance costs. This requires additional building blocks and a long-term strategy for the further development of the EU ETS, e.g. through CCFD.
Even with a functioning border adjustment, which makes the true costs reflected in the end products, and the financing of expensive emission-intensive production processes through contracts for difference, the pressure on all countries to align competition-distorting price components would grow:
Different emission intensities of imported compared to domestic goods and services should be expressed in “emission backpacks”, as science has long been calling for (Glen et al. 2010, Global Carbon Project 2019). The CO2e footprint of goods and services depends on their origin and production conditions, such as the type of local electricity and heat generation. They are not taken into account in Eurostat’s current statistics (see EU 2020).
When taking into account the different emission intensities, the 27 member states of the European Union are the world’s largest net importer of virtual CO2 emissions via imports of goods and services emitted in third countries, with around 700 million tons of CO2 (cf. Felbermayr & Peterson 2020). It is a logical step, not only from the point of view of equal competitive conditions, to burden these emissions imports with the same amount of climate damage costs as the EU’s own emissions in accordance with the territorial principle. That would also bring the relevance of international supply and value chains for climate protection more into focus.

4 Conclusion

To protect its industry, the EU should introduce CO_2 limit compensation by the end of 2021. The most effective way to do this, and to ensure that price signals reach the consumer, is through a final product levy (consumption or climate levy). The incentive for producers to save greenhouse gases must be maintained by continuously increasing product benchmarks. Border adjustment should initially apply to energy-intensive basic materials such as steel, cement and chemicals, among others, and gradually be reflected throughout the entire product and value-added or supply chain. With the

help of Carbon Contract for Difference, the conversion of industry to climate-neutral production processes must be supported.

At the same time, the state-induced price components of energy taxes and levies must be aligned with the costs of climate damage. Together with a European border adjustment, their uniform orientation is the decisive step towards an immediate reduction of the previous bureaucratic exemptions in taxes and levies.
The balancing of greenhouse gas emissions throughout the entire supply and value chain represents added value for climate protection due to the visibility of greenhouse gas emissions in the end product and is therefore justified. In contrast to the previous bureaucracy of exception and reimbursement regulations, the effort required to comply with these regulations is lower due to the ongoing digitalization.

Parallel to the introduction of border adjustment, the EU ETS must be reformed and the cap must be aligned with the Paris climate goals.

5 Explanation of terms

5.1 What does greenhouse gas potential (CO_{2e}) mean?

Countries like Switzerland measure their CO_2 price based on the carbon content of fossil fuels. CO_2 is the best known and most important, but not the only anthropogenic greenhouse gas. For example, methane and laughing gas (nitrous oxide) also heat up the climate, but do more damage per kilogram or tonne than CO_2. In order to make the various greenhouse gases comparable, they are converted into carbon dioxide equivalents (CO_{2e}) based on their harmfulness to the climate (warming potential).
In view of the discussion on upstream leakage emissions from the different sources of natural gas used, the calculations of uniform prices for greenhouse gas must now refer to factors that adequately take into account upstream emissions and the effect of greenhouse gases over time in the atmosphere (Global Warming Potential GWP).

5.2 What are externalities?

Making the "ecological truth" in prices tangible and visible remains one of the central tasks of policy makers. This applies not only to setting effective prices for greenhouse gases, but also to other externalities. Externalities are understood here as damage costs for the environment, which arise during production and consumption, but are not incurred by the polluter.
Climate damage costs in the buildings, industry and especially transport sectors are only one externality that must be considered as health and environmental damage costs. Model calculations have shown that the costs of energy system transformation with the abandonment of fossil fuels could be amortized solely through the lower health costs as a result of cleaner air (Shindell 2020).
Transport infrastructure costs, for example, are not shown separately, unlike network charges for gas or electricity networks, for example.

Different externalities in different sectors:

Current	Industry	Building	Traffic
• Fossils Fuels (climate crisis) • Eternal burdens Mining • Air Pollution	• Fossil fuels (climate crisis) • Processes • Raw materials/resources • Pollution Toxicity Raw material extraction • Social costs • extinction of species	• Fossils Fuels (climate crisis) • Insulation/ building materials (gray energy) • Competition for land	• Fossil fuels (climate change) • Pollution • Air Pollution • Accidents/health • traffic jams • extinction of species • Competition for land

The pricing of externalities, such as a CO_2 price, can lead to greater sustainability, not only in terms of production methods, but also in terms of demand, e.g. using wood instead of steel or concrete as a building material. Ideally, sooner or later all environmental externalities should be priced in so as not simply shift one environmental impact (e.g. greenhouse gases) to another (e.g. extinction of species due to dams).

5.3 What does carbon leakage mean?

Energy-intensive or greenhouse gas-intensive companies can be at a disadvantage relative to competitors in other countries due to costs incurred by non-uniform environmental and climate protection measures, such as participating in emissions trading or contributing to the Renewable Energy Act levy, if those costs cannot be passed on to customers.
They are at risk of not being able to sell their products due to higher costs, and this threatens to shift production and consequently greenhouse gas emissions to locations abroad or to companies that are not subject to the same requirements. This is known as a "carbon leakage risk". A direct impact of the carbon leakage risk is assumed if, for example, participation in the EU ETS results in higher costs that cannot be passed on to customers due to the intense competitive pressure from companies outside the EU. An indirect carbon leakage risk is assumed if companies have a particularly high electricity intensity (proportion of electricity consumption in the product) and have to pay higher electricity prices than a comparable company abroad.
The carbon leakage risk is greater a) the smaller the number of countries that have introduced effective CO_{2e} prices and the greater the differences in CO_{2e} prices between regions or countries, b) the more greenhouse gas-intensive the production of goods or services, c) the more competitive the markets are with fewer companies able to pass on higher costs to users, d) the lower the "trading costs" such as customs duties or transport costs or other regulatory obstacles (bureaucracy), e) and the more demand reacts to price changes (price elasticity) and can be replaced by other products (see also Felbermayr & Peterson 2020).

5.4 What are Carbon Contracts for Difference?

As a rule, conversions of industrial production processes involve considerable leapfrogging investments (e.g. replacement of natural gas as an energy carrier by green hydrogen). Jump investments in complete process conversions are often characterized by above-average financing volumes with high risks and external financing requirements. The underlying CO_2 avoidance costs of the conversion are significantly higher than the CO_2 prices in the EU ETS, which are expected to rise even with an increased reduction path. This leaves a financing gap for greenhouse gas-intensive companies, which can be closed e.g. through contracts between the state and the investing company (Contracts for Difference, CfD). As an incentive, the state enters into a contract with an industrial company in which it pays subsidies as long as the price of greenhouse gases is too low to allow investment in climate-neutral production facilities or to cover operating costs such as the purchase of green hydrogen. If the price of CO_2 rises, the company pays back to the state. Example: Assuming that the avoidance costs (minus saved operating costs) of a new climate-neutral chemical production process via green hydrogen are 170 € per tonne of CO_{2e}, but the price of the EU ETS is only 50 € per

tonne. That means the company is short 120 € per tonne, which it cannot earn e.g. by selling their EU-ETS certificates that are not needed. The state pays until the EU-ETS prices have reached 170 € per tonne CO_{2e}. In this way the enterprise can begin immediately with the carbon (climate) neutral production of its raw material and does not have to wait until the CO_2-price has reached the necessary level. (see also DIW 2019).

6 Further links

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The CO_2 Abgabe e.V. is a german group of over 1,000 companies, associations, municipalities and individuals who advocate an effective incentive tax on greenhouse gases (CO_2 and others) in order to realign the numerous levies and taxes on energy in Germany with climate protection. To this end, we are committed to a polluter-oriented, socially acceptable and technology-open implementation that reduces bureaucracy and promotes planning security and innovation. Among the founding members are Prof. Dr. Ernst Ulrich von Weizsäcker (Club of Rome), Ursula Sladek (co-founder of Elektrizitätswerke Schönau and German Environmental Award Winner), Thomas Jorberg (Spokesman of the Board of Management of GLS Bank) and Rudolf Kastner (Chairman of the Supervisory Board of EGT AG and member of the Board of Management of the Federal Association of the German Energy and Water Industry).

Who we are

We, the CO2-Abgabe e. V., founded in 2017, are an association of around 1000 companies, associations, municipalities and individuals who are committed to an effective incentive tax on greenhouse gases (CO2 and others) in order to align the numerous levies and taxes on energy in Germany and to climate protection. In doing so, we advocate a polluter-pays-oriented, socially acceptable and technology-open implementation that reduces bureaucracy and promotes planning reliability and innovation.

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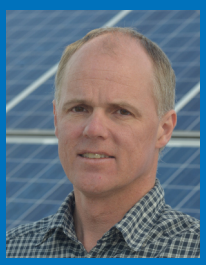

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