

## The architecture of carbon adjustment at the border threatens the objective of re-industrialisation

Following the final vote of the European Parliament on 18 April, Europe has just adopted three texts that significantly reinforce the role of the “CO<sub>2</sub> price” in Europe. By driving up the cost of using fossil fuels, a carbon price of this kind is a powerful economic incentive for decarbonisation. It causes the relative cost of carbon based uses and processes to rise compared to low-carbon solutions. It is also an instrument for optimising the costs of decarbonising Europe and a means of redistributing the reduction effort between players as well as between European countries, as giving an explicit cost to CO<sub>2</sub> emissions incentivises them to reduce emissions first where the costs of decarbonisation are the lowest.

However, in this effort, the cost to European companies will rise, when their main competitors outside Europe do not have to deal with such a carbon price, raising fears that “carbon leakage” could spring. Until now, a variety of mechanisms made it possible to offset this effect on the relative competitiveness of companies exposed to international competition. However, following the recent vote, these mechanisms have to be gradually replaced by a new system known as the “carbon border adjustment” mechanism.

While the intention to protect Europe from unfair competition deemed harmful to industry and the climate is welcome, the new system’s architecture poses threats to the competitiveness of industry in Europe at a time when most European countries, including France, are announcing “green re-industrialisation” projects. These threats are all the more daunting as the economies with which Europe competes are launching aggressive strategies and the energy price differential between the EU and the rest of the world has grown significantly wider.

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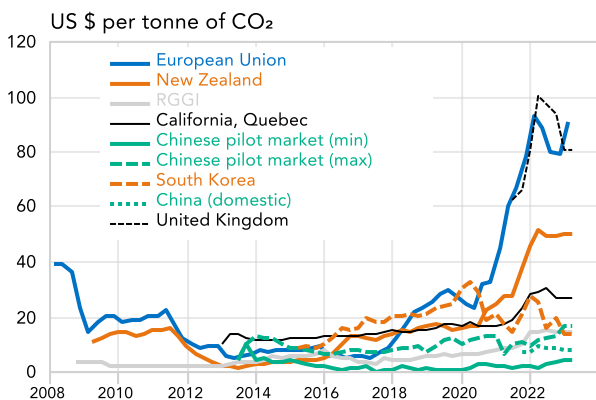
The European Union was the first region in the world to institute a system of tradeable emission permits, setting a price on industrial emissions of greenhouse gases. Since then, other countries or regions have followed suit, particularly in North America, where no federal system applies but where regional carbon markets exist, as well as in Asia in particular in China and South Korea. Europe remains today, by far, the zone where the “carbon price tag” is the highest, between €80 and €100/t of CO<sub>2</sub> for the industrial establishments covered.

### How this could impact the relative competitiveness of production in Europe

Where a cost associated with carbon emissions applies only to a single geographic zone, companies operating within the area are hurt by the increase in cost of CO<sub>2</sub>, which their competitors do not experience outside the zone. The result may be a reduction in the production of carbon-intensive goods in the zone to the benefit of imports of goods that are equally or even more carbon-intensive, from zones with lower or no carbon pricing. In this configuration, introducing or increasing the carbon price carbon for local companies generates a transfer of emissions, usually referred to as “carbon leakage”. This mechanism is doubly harmful in that, on the one hand, it contributes to weakening the competitiveness of production in the zone with high carbon prices and in particular that of industry, and on the other, to an increase in greenhouse gas emissions at the global level.

It is for this reason that Europe had set up a specific system for industries at risk of carbon leakage. Until now, they had been granted free emissions permits on an annual basis. As a result, they were able to avoid bearing all or part of the cost of purchasing permits, and therefore neutralise or minimise the impact on their competitiveness.

### Price trends in the world's major carbon markets



Source: ICAP

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This system does not deter them, at least in theory, from reducing their emissions if such reduction is economically efficient (the incentive remains as long as their reduction cost for one tonne of CO<sub>2</sub> is less than the value of a permit)<sup>1</sup>.

While the European Commission has indeed observed, in certain sectors, reductions in production, increases in imports and reductions in exports covered by the permit system, it has not been able to demonstrate a firm connection with the cost of carbon in Europe<sup>2</sup>. The system was even fairly generous over the first few years. If we compare the number of free permits received and the actual emissions of industrial sectors (excluding electricity) since 2008, we can see that the offsetting was, overall for the entire scope covered in the European Union, greater than the actual emissions.

However, this free allowance system does not appear to be tenable in the medium to long term, as the total permit ceiling in which it is set is becoming lower. The number of permits that can be distributed free of charge is also decreasing, while at the same time production levels are reportedly stable or even increasing. This is why free allocations are on the decline. For the first time in 2021, they were lower than emissions, making for a deficit for the total scope in Europe of 54 Mt CO<sub>2</sub>, i.e. -€2.9 billion at the average price of permits over the year. Given the emissions reduction targets, this deficit could become more acute in the future.

### Carbon Border Adjustment in theory

With the disappearance of free allowances and the rise in the price of permits, two types of mechanisms can

<sup>1</sup> This free permit is granted annually, using a fairly complex calculation method that takes into account the company's level of output and various benchmarks by product or based on energy consumption, in order to better offset installations offering the best carbon intensity for a given product. See the list of sectors to which this applies here: [https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1146-Carbon-Leakage-List-2021-2030\\_en](https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1146-Carbon-Leakage-List-2021-2030_en)

<sup>2</sup> See the study *Carbon Leakage Evidence Project - Factsheets for Selected Sectors*, European Commission, 2013.

<sup>3</sup> *Climate Clubs: Overcoming Free-Riding in International Climate Policy*, William Nordhaus, American Economic Review, Vol. 105, No 4, April 2015.

<sup>4</sup> The list of the 42 products or product families concerned is provided in Annex I of the text. It contains, for instance, clinker and cement, electricity, nitric acid, potassium nitrate (used in the production of fertilizers), steel tubes and plates, cables, aluminium tubes and sheets, and hydrogen.

be rolled out to mitigate a cost shock that will weigh on Europe's competitiveness.

The first would consist of imposing a tax on all products entering the Union, equal to each product's carbon content (the emissions associated with its production, which occurred outside the territory all along the production process) multiplied by the price of one tonne of CO<sub>2</sub> in Europe. Conversely, exports by European producers should also be exempted in order to do away with this cost differential for outgoing goods. The difficulty comes from the fact that such a mechanism requires an information and traceability system for all products, in all countries, and at every link in the production chain (knowing at every stage the «carbon added», and possibly the carbon price, paid or unpaid). In theory, this system would be fit-for-purpose, but raises very complex problems in its implementation.

A second mechanism is the one described by the 2018 Nobel Prize winner William Nordhaus in his article on «Climate Clubs»<sup>3</sup>. To avoid the complexity of a carbon price at the border that takes into account the greenhouse gas 'content' of each product, Nordhaus recommends instituting a uniform customs tariff, applicable to all products, carbon-intensive or not, imported from countries not belonging to a 'club of countries' that have introduced an equivalent carbon pricing system. With this approach, the border mechanism becomes a trade policy instrument that encourages countries that are not members of the «club» to introduce equivalent carbon pricing. It eliminates the need to measure the greenhouse gas content of each product.

### The European mechanism: holes in the racket

The text on which the European Parliament and Council have converged is an attempt to move closer to the first system, while remaining in line with WTO rules. The European «Carbon Border Adjustment Mechanism» (CBAM) applies to European importers of a certain number of products upon their entry into European customs territory<sup>4</sup>. It requires that the importer purchase certificates sold by the European authority, at a variable price reflecting the average price of the European CO<sub>2</sub> permit over a given period, in sufficient quantity to offset the emissions included in the imported products. It is up to the importer to demonstrate, based on information provided by the exporter, the «carbon content» of the products in question.

In the absence of specific information, a default (unfavourable) amount is applied. Where the importer is able to demonstrate that no emissions are included in the product or that an equivalent CO<sub>2</sub> price has been paid in the country of origin, no certificate needs to be purchased. In the intermediate case, a formula is used to calculate the amount payable, taking into account the estimated emissions and possibly the proportion of the price of the carbon already paid. As a counterpart to the implementation of this system, the free permit allocations, which are similar in purpose and would thus become extraneous, would be gradually phased out.

As it is difficult to accurately determine the greenhouse gas content of all products entering Europe, the European CBAM focuses on a limited number of minimally processed products such as certain steel- and aluminium- based products, cements and specific chemicals. The list appended to the text specifies the customs codes of the products concerned. In total, 571 product codes will be affected out of the 10,000 or so codes contained in the customs nomenclature. Even within a family of similar products, such as steel products, not all the products will necessarily be covered.

**While the scope of the CBAM appears limited, the effect of removing the free permits will be much more widespread**

We have analysed French customs data for 2019 and identified the products that will be affected by the mechanism. The import of French goods in 2019 amounted to €575 billion. Out of this total, €164 billion (28%) are goods belonging to one of the three families, some products of which are on the CBAM list (metal and metal works, mineral products, chemicals products). The products actually on the CBAM list amount to €27 billion in imports, i.e. 16% of the value of imports of products from the three families in question. Out of these €27 billion, 20 correspond to imports from other European countries and will thus not be covered, since they are already subject to carbon pricing. Imports to France from outside Europe of products on the CBAM list thus make for a total value of €7 billion euros, which represents a little less than 9% of the value of imports of products from the three families concerned from outside Europe, and 1.2% of the total value of imports. Out of the €7 billion concerned, slightly more than €5 billion fall within the metal and metal structures category, which are thus the central issue for France. In all cases, the theoretical rebalancing enabled by the CBAM will be limited to a relatively small number of basic products.

The same will apply in the exporting country, where the proportion of products concerned in total exports will be low.

**Value of French imports in 2019, in billions of euros, by product family**

Product Classification Chapters	Country of origin		
	EU	Non-EU	Total
<b>Basic metals and structures made of these metals</b>	<b>26.9</b>	<b>11.9</b>	<b>38.8</b>
<i>of which products on the CBAM list</i>	18.6	5.5	24.0
<i>of which other products</i>	8.3	6.4	14.7
<b>Chemicals industry products</b>	<b>38.7</b>	<b>24.2</b>	<b>62.9</b>
<i>of which products on the CBAM list</i>	0.9	0.6	1.6
<i>of which other products</i>	37.8	23.5	61.3
<b>Mineral products</b>	<b>17.6</b>	<b>44.5</b>	<b>62.1</b>
<i>of which products on the CBAM list</i>	0.8	0.7	1.5
<i>of which other products</i>	16.8	43.7	60.6
<b>Other chapters</b>	<b>225.2</b>	<b>186.4</b>	<b>411.6</b>
<b>Total of the three chapters with at least one product on the CBAM list</b>	<b>83.2</b>	<b>80.5</b>	<b>163.8</b>
<b>Total products on the CBAM list</b>	<b>20.3</b>	<b>6.9</b>	<b>27.1</b>
<b>Total imports (all products combined)</b>	<b>308.4</b>	<b>267.0</b>	<b>575.4</b>

Source: Rexecode, according to French customs.

The cost to Europe of these higher import prices is difficult to anticipate as it will depend on the quantities of products imported, the carbon content specific to each product-country pair, and the price of carbon in Europe. Nonetheless, the European Commission’s impact study shows that the total excess cost for import would be around €2 billion a year at the European level.

While the CBAM’s scope appears limited, it comes with a much more general second component. The removal of the free permit allocations will in fact extend the cost shock not only to imports but also to all domestic production in the sectors concerned. Ultimately, if all the permits currently allocated free of charge were sold by auction, this would mean, based on the price of the current CO<sub>2</sub>, a deterioration in the operating accounts of companies in the order of €45 billion per year at the European level, and €4 billion in France. The price increase stemming from the removal of the free permits is thus much greater than the effect due to the increase in the price of imports alone.

## Significant risks downstream and on export

While on paper this system may protect European producers with regard to the few products concerned, it is flawed in several major respects. Firstly, it is not the companies in the exporting countries that will pay the border tax, but the European companies that use the goods concerned for intermediate consumption. Thus it is these user sectors that will bear the brunt of the scheme as their input prices rise, when they were previously protected by the free allocation of permits to upstream industries.

By cascade effect, the system, as it increases the cost of commodity processing, is an incentive for downstream chains to relocate, as they themselves would not be included in the system. The introduction of the CBAM does not increase the cost of importing products processed outside Europe using the products covered, even if they contain high levels of carbon. There is thus a risk of profound disruption to the downstream industries, resulting, for instance, in the flight of automotive production lines or machinery manufacturers, which are encouraged to relocate to places where the metal products used as inputs and covered by the CBAM are less costly, and then import the processed products without paying any carbon adjustment at the border.

### Impact on downstream sectors: the example of steel

The intermediate consumption data by branch, provided for France by INSEE, clearly show these sectoral interdependencies and its possible cascade effects. The production of the "steel industry and primary steel processing" branch, for example, serves as intermediate consumption for 77 branches out of the 138 that represent the French economy. For 11 of these 77 branches, the value of intermediate consumption from the steel industry and the primary processing of steel represents more than 10% of the added value of the branch in question (manufacture of machinery, automotive construction, etc.), and up to 37% of the added value for the "manufacture of metal components for construction" branch.

If the steel industry were to fully pass on the cost of CO<sub>2</sub> in the price of primary steel, this would make for an increase of approximately 20% in the price of steel<sup>1</sup>. These 11 sectors would thus see the price of their inputs increase and their added value fall from 2% to 7.4%, at constant volume and in the absence of repercussions in their selling price of the cost shock suffered upstream.

<sup>1</sup> One tonne of primary steel "contains" an average of 1.8 tCO<sub>2</sub>. At €100/t CO<sub>2</sub>, this makes for a value of €180 per tonne of steel, the price of which, depending on the products, is approximately \$850/t, i.e. €770/t at the current exchange rate. The extra carbon cost would thus increase the price of one tonne of steel to €950/t, i.e. an increase of 23%.

As the third potential pitfall, the system relies on information supplied to the importer by the producer in the country of origin. The exporter is encouraged to provide as much information as possible likely to minimise these emissions. There will be ways of optimising this calculation, varying from country to country and from process to process, which raises questions about carbon accounting and the overall environmental integrity in the exporting countries. The operational implementation also risks becoming cumbersome and costly.

Last but not least, the CBAM imposes an additional cost on products entering the country, bringing their cost in line with those produced more expensively in Europe, but it makes no provision for an export compensation mechanism. Commodities produced in Europe, with a high carbon price, risk losing competitiveness on export markets that do not face the same carbon price. While the CBAM is aimed at neutralising the competitiveness effects on the domestic market, it exacerbates the competitiveness problem on the external markets. This is a shortcoming which the free allocation of permits did not have.

Another point to watch for concerns the revenues that could be associated with the introduction of this system. The Commission's impact study indicates a possible range of between €9 billion and €17 billion per year in 2030. Approximately 80% of this, or €12 billion, would actually come from the end of the free allocation of permits, which would then be auctioned, and only 20%, or just over €2 billion, from the sale of certificates at the border. Estimates of this revenue are highly uncertain for all the reasons outlined above. This is a key budgetary issue as part of this revenue contributes to the financing of the «NextGenerationEU» plan.

These various points thus deserve attention. Studies could be carried out to specify the economic effects of this measure on Europe's industrial fabric, which is unfortunately already in an unfavourable situation. In France, the cost shock for industry alone would in the long term be comparable, but in the opposite direction, to the planned reduction in the CVAE, i.e. €2 to 3 billion per year, and would therefore cancel out its effects. Furthermore, this comes at a time when most European countries, including France, are pushing for "green re-industrialization", and while the conditions for green industrial growth are being consolidated in the United States by the subsidies deployed as part of the Inflation Reduction Act.