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Adjustment Mechanism: for a European
Union Global Strategy**

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Carbon Pricing and Carbon Border Adjustment Mechanism: for a European Union Global Strategy

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1. Introduction

In 2019, the European Commission launched the European Green Deal and outlined its developing model to combat climate change, particularly focused on accelerating the pace of reducing CO₂ emissions. Emissions in Europe have thus far been reduced by 20% compared to 1990 values, while now the goal, as the "Fit for 55" package suggests, is to achieve a 55% reduction by 2030 and to reach climate neutrality by 2050. With these commitments, the EU intends to comply with the Paris Agreement by keeping "the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change" (Art. 2(1)(a) of the Agreement).

To reduce the risks of human activity to the planet, the EU, a key player in global climate policy, would have to strengthen its domestic carbon pricing system. Furthermore, the challenge of climate change, which is global by

nature, must be addressed through the efforts of all countries: it is clear that even if the EU achieves its domestic target, the problem will not be solved until other states, especially the most polluting ones, adopt similar mitigation measures.

The Commission has proposed to supplement the existing European Union Emission Trading System (EU ETS), which, through a cap-and-trade system, applies a "price on carbon" to domestic installations and companies with a Carbon Border Adjustment Mechanism (CBAM), to make domestic carbon pricing more effective and at the same time incentivise less ambitious countries to adopt similar measures. The decision on the CBAM will require careful reflection, by domestic institutions, about environmental diplomacy relations, at a time of energy crisis, price increases and risks of recrimination and retaliation.

2. Different ambitions on carbon pricing

Carbon pricing is a cost-effective instrument for reducing emissions, as it provides incentives to abandon traditional fossil fuels by paying a cost proportional to the carbon content.

There are currently 65 different carbon pricing systems in the world, in the form of taxation (carbon tax) or a market instrument (cap and trade or ETS); some are already operational, others under implementation¹. As regards the ETS, in addition to the EU, other countries have also set up emission markets: following Canada, California, South Korea, and New Zealand, Washington, the United Kingdom, Mexico,

Kazakhstan, and above all China are starting domestic ETS systems, in some cases also accompanied by taxation instruments². However, the various forms of carbon pricing around the world cover a limited share of global emissions (21.5%), although this has increased from the 2020 level. Moreover, in many cases the price on carbon is well below the level needed to meet the Paris Agreement target: only 3.76% of global emissions are covered by appropriate carbon pricing, that is, in the range of \$40-80/tCO₂³. Furthermore, this measure becomes effective only if it is accompanied by additional actions, such as regulations, incentives, and standards aimed at investments in clean energy.

The fundamental problem with climate policy is political fragmentation at the global level. The climate is a global public good; however, as mitigation costs are (should be) high, countries have a strong incentive to take advantage of the efforts of others (free riding) because climate change does not depend on where emissions originate. This behaviour frustrates the efforts of the most willing and disregards the principle enshrined in the Paris Agreement of "common but differentiated responsibilities", which would imply greater efforts by the major emitters.

The EU is aware of its responsibility towards climate change⁴. Although it emits around 8% of global emissions per year, it is still a historic polluter: in cumulative terms, Europe's share of emissions is 22%, second only to the United States (24%), but greater than China (13%), whose emissions have rapidly increased in the last few decades.

3. Carbon leakage: low risk, so far

In July 2021, the Commission launched a proposal for a regulation on the CBAM⁵, with a two-fold objective: to fulfil meet the EU's emissions targets ambitions while at the same time solving the problem of carbon leakage that such a commitment could entail.

Carbon leakage is the relocation of emissions to jurisdictions with no or little environmental protection. If there is carbon pricing in Europe, carbon leakage can occur through two main channels: 1) if European products become more expensive than those produced where there is no such measure, firms, especially those in energy-intensive sectors, will first move production abroad and then import the same goods into the EU; 2) if the demand for fossil fuels in Europe decreases (due to carbon pricing), international demand will decline accordingly; however, lower global demand will lead to a reduction in the global price which stimulates greater demand elsewhere.

In both cases, the EU's abatement efforts are partly offset by an increase in emissions generated outside its borders. In some cases, domestic carbon prices could lead to so called "pollution havens", that is, poor countries to which wealthy countries tend to offshore their polluting industries because of weaker environmental regulations. The approach to be followed is therefore that of the carbon footprint, which measures the carbon content embedded in goods and services that satisfy internal demand in the EU, regardless of where they are produced. According to this view, the EU is the largest importer of emissions

globally, due to its manufacturing processes having low emissions compared to its trading partners, while China is the world's largest exporter of emissions.

Despite fears of a leakage, however, studies find that in the case of the EU ETS, which has been in place since 2005, there is little evidence of carbon leakage. According to the studies, a portion (between 10% and 25%) of the emission savings achieved through domestic carbon pricing is neutralised by increased emissions abroad if no other measures are in place⁶. If anything, the (desired) outcome of environmental policies is to push innovation towards sustainable solutions so that companies are not liable for the cost of carbon. This is also because relocating abroad could entail higher costs, such as those associated with a weak presence on the foreign market or less bargaining power with policy makers.

However, the poor evidence of carbon leakage can be attributed to two facts that have characterised the EU ETS so far: a low carbon price and the way the system currently attempts to prevent carbon leakage, that is, through free allocation of permits.

4. Higher carbon pricing increases risks of carbon leakage

Carbon pricing in the EU ETS has historically been very low, especially after the 2009 recession: between 2012 and 2018, permits were sold at a price below €10/tCO₂, due to a surplus of emission allowances. However, 2021 onwards saw a rapid increase in the carbon price (linked

to the dynamics between supply and demand) for several reasons. Firstly, the introduction of the Market Stability Reserve (MSR)⁷ as part of the system reform process has made it possible to absorb the surplus of allowances on the market, thus supporting the carbon price. A second inflationary effect is linked to the prospect of a more stringent European environmental regulatory framework, which is fuelling demand for permits from operators who have begun to set aside permits in advance.

Besides structural factors, there are also contingent elements linked to the dynamics of the energy market (electricity, natural gas and coal). The recovery after the pandemic has led to an increase in energy demand, but supply has not adjusted as quickly. Moreover, with the Russian aggression against Ukraine, EU countries have decided to phase out their dependence on Russian gas imports and ensure the security of their energy supply⁸. The rise in gas prices and the strategy adopted by the EU have produced different effects.

In the immediate term, the demand for energy has inevitably turned to coal as an alternative source to gas. While this slows down the decarbonisation process, it also contributes (for the same reason, namely that coal is the most carbon-intensive fossil source), to keeping permit prices high. The growth trend of carbon pricing in the EU ETS (to date the permit price is 88 €/tCO₂) is in line with the European long-term strategy: from an energy point of view, the war in Ukraine can be seen as an opportunity for the

EU to become independent of gas imported from Russia and, above all, to accelerate the transition to renewables.

The second issue concerns the permits that are allocated free of charge to industries with a higher risk of carbon leakage (such as cement, aluminium, iron, steel, fertilizer, and electricity), in order not to affect their competitiveness abroad and prevent carbon leakage. However, as climate policy tightens (the 4th phase of the EU ETS - 2021-2030), caps on emissions will steadily decrease and, consequently, so will permits, including those allocated for free. With less coverage for the most exposed companies, the risk of carbon leakage will increase, exacerbated by the continued rise in carbon pricing.

To mitigate the expected risk of carbon leakage, the CBAM will serve as a tool to protect the competitiveness of the most exposed companies. It will allow for equal treatment for emissions produced in the EU and those produced abroad: certain imported goods will be burdened with carbon pricing to the same extent as similar goods produced domestically. This equal treatment will ensure that the CBAM is compatible with international trade rules under the WTO⁹.

In theory, the CBAM could take two main forms. The first hypothesis is a carbon tax on imports, paid by the importer when the products enter the EU, and collected by customs authorities at the border. The second option is to replicate what is already happening with the EU ETS on domestic activities: importers will have to acquire permits

to pollute (CBAM certificates) based on the content of emissions embedded in the imported goods, at a price reflecting domestic goods¹⁰. The Commission is oriented toward the second option, with the idea of phasing in the CBAM from 2026, accompanied by the phasing out over 10 years the domestic allowances allocated for free.

In the literature It has been observed that free allowances and the CBAM are two equivalent measures from the point of view of environmental effectiveness¹¹. However, this result does not consider the new high carbon price scenario, which increases the risk of carbon leakage. Moreover, the CBAM would have a two-fold advantage over free allowances: first, to push (potentially) other countries towards similar environmental protection measures; second, to generate revenue for the European budget. These two crucial aspects were also raised by the Council of the EU, which voted in favour of the CBAM last March, though it acknowledged that some relevant issues still needed careful discussion, namely the issue of greater international cooperation and the use of resources from the sale of CBAM certificates.

5. Stronger international cooperation on climate

To overcome the problem of free riding in global climate policy, Nobel laureate William Nordhaus proposed the idea of the "Climate Club," that is, an agreement among member countries to introduce an "international target carbon price" accompanied by a system of incentives and penalties for non-participants, such as to make it worthwhile to

join the Club¹². In practice, the group would charge non-participating countries a uniform import tariff, independent of the carbon content of the imported good. Although easy to implement, this solution would be discriminatory in the WTO; in contrast, an import tariff based on carbon content, although more complex to implement, would be compatible with international rules.

A Climate Club in which domestic carbon pricing is accompanied by an import tariff commensurate with the carbon content of the good (the CBAM, in fact) would be a technically feasible solution¹³. Thus, the EU is proceeding as a frontrunner, and the CBAM proposed by the Commission is the incentive that the Climate Club formed by the EU alone, offered to other countries to join. Indeed, if partners joined the Club by adopting their own domestic carbon pricing to the same extent as the CBAM, they could keep revenues within their borders, thus internalising not only the cost of pollution but also the revenues from emissions.

There are no other cases in history (except California's ETS) where a domestic carbon pricing is accompanied by a border measure. This is also due to the low level of domestic pricing present in the various jurisdictions, which reduces leakage. A political assessment shows that a CBAM would be accepted by countries that have already adopted carbon pricing measures and with trade agreements with the EU, so states such as Canada, Chile, Iceland, Japan, Norway, South Korea, Switzerland and New Zealand¹⁴.

The CBAM would be an effective tool for reducing both domestic and imported emissions in the EU. But the coverage provided by European carbon pricing, domestic and at the border, would still be too limited compared to global emissions, or only 11.8%. Of course, if the world's two biggest polluters – the United States and China – also participate in the European Climate Club, the problems of free riding and differential responsibility would be overcome. "A carbon tax on imports to the world's three biggest economic blocks could catalyse tough climate action globally [...] With the United States, EU and China making up 61% of global gross domestic product and 43% of goods imports, there's a powerful incentive for other countries to join"¹⁵.

Although the United States has launched a "Plan for a Clean Energy Revolution and Environmental Justice," it has no plans, at least for now, to introduce carbon pricing at the federal level. However, it has come out in favour of its own CBAM. More problematic is the participation of China, which has set a goal for climate neutrality in 2060, as it claims that its emissions will peak in 2030 and only after that will they start decreasing. The introduction of a nationwide ETS (however, with a carbon price of about \$7/CO₂) is a good sign from China, but it could be an expedient to restrict demands for greater effort and to portray China as having sufficiently adopted other measures and incentives for energy transition. As the President of the Chinese Chamber of Commerce to the EU, Xu Haifeng, said, "I think it's important to have communication and coordination with the multilateral conventions. There should be more

dialogue with China and other trade parties to get better methods of dealing with these issues [...] China embraced a stricter policy and more incentives for the green transition. China will also coordinate with the Europeans to reinforce the fight for carbon neutrality. The CBAM is not the only measure we can take, I think we have many ways"¹⁶.

To make the CBAM more politically acceptable, it will be crucial to maintain open discussions with the United States and especially China, something that seems to have been lacking before the EU provided more details on the CBAM proposal¹⁷. Among other things, an important point will be to develop methods to obtain the implicit carbon pricing, that is, the monetary equivalent value per tonne of carbon associated with a given environmental policy instrument, even if there is no or very low domestic carbon pricing. In addition, transparent and uniform criteria will be needed to measure the actual carbon content of goods, especially in the case of products that have undergone several stages of processing giving rise to indirect emissions, which at a later stage could be included in the CBAM. On these aspects, the EU can provide its expertise: an example of EU-China collaboration concerns the assistance the European Commission has provided to the Chinese Ministry of Ecology and Environment to develop its carbon market.

6. Use of CBAM resources for poor countries

In addition to the participation of major polluters, another critical aspect of the CBAM concerns the impact it might have on poorer countries that export to the EU. A

relevant question is whether the CBAM can be compatible with the Paris Agreement, according to which poorer countries would be subject to lower climate targets for being less responsible for emissions. The CBAM could be also accused of being a form of green protectionism.

Poor and emerging countries often cite the European legislation on palm oil to raise their concerns about the risk of green protectionism. The 2018/2001 Directive on the promotion of energy from renewable sources introduced a gradual ban on counting palm oil in the EU's target for a share of renewables in 2030 (and related market subsidies), in order to safeguard nature, which is threatened by unrestrained deforestation. This is seen as a form of protectionism that favours alternative crops grown in Europe, such as rapeseed and soybeans. Furthermore, the EU's argument of deforestation is disputed as illegitimate given the past practice of large-scale deforestation by advanced countries.

One of the consequences of the CBAM would be the redefinition of international trade patterns: on the one hand, it would harm exports to the EU from emerging countries, which, despite having a small share of emissions on a global scale, have high-carbon production; on the other hand, it would favour exports from the relatively more efficient countries, a result favoured by the adoption of environmental legislation. According to UNCTAD, the countries whose exports would be most exposed to CBAM are, in order, Russia, China, Turkey, the United Kingdom and Ukraine; the United States ranks ninth, after Korea, India

and Brazil¹⁸. But while it would be relatively easy for advanced countries to adapt to CBAM, poorer or emerging countries would incur greater risks. Rich countries would be able to respond to the CBAM by diversifying their exports, calculating the actual carbon content embedded in their products or, even better, embarking on a decarbonisation pathway. Moreover, economies such as China, India, and Brazil, in addition to being less vulnerable, may be able to negotiate political agreements. In contrast, many countries, particularly from the Global South and non-EU Eastern Europe, would not have the same capacity to adapt¹⁹. For example, some African countries that produce low emissions are at high risk from the CBAM because their statistical offices are unable to calculate accurately the actual carbon content of their exports: in the absence of data, a standard coefficient would be applied that could reflect a higher than actual amount of emissions.

Providing conditional financing for clean energy production²⁰. Part of the CBAM's resources, estimated by the Commission at between €14 billion and €28 billion a year, could for example go to the Green Climate Fund, created in 2010 with the (so far unfulfilled) goal of allocating \$100 billion a year to the poorest countries²¹. The CBAM will need to be complemented by additional resilience measures, such as technology transfers in renewables, as well as assistance with calculating actual emissions.

The equity aspect of a global emissions reduction plan is important. An alternative proposal to carbon pricing is the one proposed by Indian economist, Rajan, for a Global

Carbon Incentive²², through which every country, rich or poor, would have the same incentives to reduce its emissions. He suggests creating a fund whereby if a country emits more (in per capita terms) than the global average, it would contribute a predetermined amount to the fund; conversely, if it emits less than the average, it will benefit from a proportionate transfer. Under this scheme "every country would face an effective loss of \$10 per capita for every additional ton that it emits per capita," which would drive the push towards energy efficiency and the replacement of fossil fuels with clean energy. The proposal is interesting, especially if we consider emissions from the point of view of consumption, not production. It is also a simple proposal to a complex problem. However, some relevant aspects remain to be defined, for example it is not clear who (government, companies?) would be required to pay into the fund for excess emissions. Another question is how this scheme would coordinate with the numerous carbon pricing schemes already in existence around the world.

7. Conclusions

European carbon pricing is set to become one of the most important climate policies of the EU and is the most effective tool for climate neutrality, a goal that the world's leading countries, with more or less binding commitments, have set for the long term. The legislative proposal on CBAM is ongoing, and there are many technical issues to be resolved. For example, while the Commission initially proposed to consider only certain sectors and only direct

emissions, the European Parliament has proposed to extend the measure to indirect emissions. Another key issue is how the carbon content of imported goods will be calculated: by reference to a benchmark or based on actual content, which, however, requires extensive monitoring and reporting?

Beyond the details, which are nonetheless relevant, the decision-making process for the introduction of the CBAM requires an extensive involvement of the most affected global actors, both in terms of responsibilities and repercussions. Furthermore, it is necessary for all trading partners to ensure and maintain alignment with WTO rules. Dialogue, especially with the United States and China, must remain open and transparent, so that the decision on the CBAM is not perceived as unilateral, and therefore carrying the potential for retaliation in a protectionist sense. The need to maintain coordination and cooperation among the major powers and to create solidarity with the countries most affected (but least responsible) by global warming, is even stronger today, in the context of the war in Ukraine.

Notes

- 1 Cap and trade refers to a system in which a limit is placed on the amount of pollution that installations and companies can produce; operators can then buy and sell the rights to release harmful gases into the air (permits), which means that a company that reduces its pollution is rewarded financially. For an updated overview of carbon pricing in the world see <https://carbonpricingdashboard.worldbank.org/>
- 2 ETS schemes also exist at the regional level, such as the Regional Greenhouse Gas Initiative scheme, implemented by 11 states in the US; at local levels, in cities like Tokyo; or in parallel with existing schemes, such as Germany, which has introduced a national ETS for sectors not covered by the EU ETS (World Bank (2021) *State and Trends of Carbon Pricing 2021*), <https://openknowledge.worldbank.org/handle/10986/35620>)
- 3 Level calculated by the 2017 High Level Commission on Carbon Prices, https://static1.squarespace.com/static/54ff9c5ce4b0a53deccfb4c/t/59b7f2409f8dce5316811916/1505227332748/CarbonPricing_FullReport.pdf. As for ETS carbon prices, in 2021 only the EU price was at an adequate level (\$50), unlike New Zealand (\$26), California (\$18), South Korea (\$16) and China (less than \$7).
- 4 See OWD data on accumulated emissions at <https://our-worldindata.org/grapher/cumulative-co-emissions?time=2020>
- 5 European Commission (2021), *Proposal for a Regulation of the European Parliament and of the Council establishing*

a carbon border adjustment mechanism, https://eur-lex.europa.eu/resource.html?uri=cellar:a95a4441-e558-11eb-a1a5-01aa75ed71a1.0001.02/DOC_1&format=PDF

- 6 Felbermayr G. e Peterson S. (2020), *Economic assessment of carbon leakage and carbon border adjustment*, Policy Department for External Relations Directorate General for External Policies of the Union, [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/603501/EXPO_BRI\(2020\)603501_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/603501/EXPO_BRI(2020)603501_EN.pdf)
- 7 The MSR is of a mechanism that lets allowances to adjust to changes in demand in order to maintain market equilibrium. It was created to solve the problem of the overabundance of allowances accumulated since 2009 due to the economic crisis and became operational in 2019.
- 8 European Council (2022), *Informal meeting of the Heads of State or Government. Versailles Declaration, 10 and 11 March 2022*, <https://www.consilium.europa.eu/media/54773/20220311-versailles-declaration-en.pdf>
- 9 Majocchi A. (2018), *Carbon Pricing and Border Tax Adjustment: the Compatibility with WTO Rules*, CSF Research Paper, <https://www.csfederalismo.it/it/pubblicazioni/research-paper/carbon-pricing-and-border-tax-adjustment-the-compatibility-with-wto-rules>
- 10 It remains to be decided whether the carbon price of imports should be based on the actual emissions of third-country producers, rather than a default value based on the averages of EU producers. In the former case, more virtuous behavior would be incentivised; however, more effort would be required for monitoring and calculation of actual emissions, thus making the system more complex.

- 11 Mörsdorf G. (2022), "A simple fix for carbon leakage? Assessing the environmental effectiveness of the EU carbon border adjustment", *Energy Policy*, 161 (112596), <https://www.sciencedirect.com/science/article/abs/pii/S0301421521004626>
- 12 Nordhaus W. (2015), "Climate Clubs: Overcoming Free-riding in International Climate Policy", *American Economic Review*, 105(4), p. 1339–1370, <https://pubs.aeaweb.org/doi/pdfplus/10.1257/aer.15000001>
- 13 As Nordhaus explains (2015, p. 1348): "Under this approach, imports from nonparticipants into a country would be taxed at the border by an amount that would be equal to the domestic price of carbon (or perhaps by an agreed-upon international target carbon price) times the carbon content of the import. Alternatively, under a cap-and-trade regime, the requirement might be that importers purchase emissions allowances to cover the carbon content of imports".
- 14 Sapir A. e Horn H. (2020), *Political Assessment of Possible Reactions of EU Main Trading Partners to EU Border Carbon Measures*, Policy Department for External Relations Directorate General for External Policies of the Union, [https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/603503/EXPO_BRI\(2020\)603503_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/603503/EXPO_BRI(2020)603503_EN.pdf)
- 15 Tagliapietra S. e Wolff G. (2021), "Form a climate club: United States, European Union and China", *Nature*, vol. 591, pp. 526-528, <https://media.nature.com/original/magazine-assets/d41586-021-00736-2/d41586-021-00736-2.pdf>
- 16 Ammann J. (2021), *Chinese business chief wants climate dialogue instead of CBAM*, Euractive, 19 Ottobre, <https://www.euractiv.com/section/economy-jobs/news/chinese-business-chief-wants-climate-dialogue-instead-of-cbam/>

- 17 A survey of reactions to CBAM by the Asian world is provided by Hübner C. (2021), *Perception of the Planned EU Carbon Border Adjustment Mechanism in Asia Pacific – An Expert Survey*, Konrad Adenauer Schiftung, <https://www.kas.de/documents/265079/265128/EU+Carbon+Border+Adjustment+Mechanism.pdf/fed1d5a4-4424-c450-a1b9-b7dbd3616179?version=1.1&t=1615356593906>
- 18 In particular, exposure is greatest for the iron and steel sectors. See UNCTAD (2021), *A European Union Carbon Border Adjustment Mechanism: Implications for developing countries*, https://unctad.org/system/files/official-document/osginf2021d2_en.pdf
- 19 Eicke L. et al. (2021), "Pulling up the carbon ladder? Dearbonization, dependence, and third-country risks from the European carbon border adjustment mechanism", *Energy Research & Social Science*, vol. 80, 102240, <https://www.sciencedirect.com/science/article/pii/S2214629621003339>
- 20 In order to support a sustainable development process in African countries, see also the proposal for a Next Generation Africa, financed with part of the most recent IMF Special Drawing Rights allocation to EU countries. See Masini F. (2021), *Time for a Next Generation Africa*, CSF Research Paper, <https://www.csfederalismo.it/it/publicazioni/research-paper/time-for-a-next-generation-africa>
- 21 The rest of the revenue, as a new European own resource, will be used to repay the debt incurred by the European Commission, issuing "Eurobonds" to finance the Next Generation EU.

22 Rajan R. G. (2021), *A Global Incentive to Reduce Emissions*, Project Syndicate, <https://www.project-syndicate.org/commentary/global-carbon-incentive-for-reducing-emissions-by-raghuram-rajan-2021-05?barrier=accesspay>

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