6. The Carbon Border Adjustment Mechanism in the agricultural sector: what prospects?

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1. AGRIFOOD ENVIRONMENTAL EFFECTS

Global food production is responsible for greenhouse gas (GHG) emissions equal to more than 17 billion tons of CO_2 per year and agricultural activities alone account for around 14 per cent of global greenhouse gas emissions.[1] The sector accounts for 11 per cent of the EU's GHG emissions, but it also has the unique capacity to sequester carbon from the atmosphere, so there is great potential for climate action.[2]

GHG emissions from the food sector, particularly those such as carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), are increasing globally because of anthropogenic activities,[3] which are mainly responsible for climate change by absorbing and re-emitting energy from the lower atmosphere. They result primarily from agricultural practices.

Food accounts for 10–30 per cent of a household's carbon footprint,[4] where lower-income households typically fall in the higher percentages.[5] Production accounts for 68 per cent of food emissions, while transportation accounts for 5 per cent. Meat products have larger carbon footprints per calorie than grain or vegetable products because of the inefficient conversion of plant to animal energy and due to CH_4 released from manure management and enteric fermentation in ruminants.[6]

It is worth remembering that there are four key elements to consider when trying to quantify food GHG emissions.

First, livestock – animals raised for meat, dairy, eggs and seafood production – contribute to emissions in several ways, producing 31 per cent of emissions. For example, ruminant livestock – mainly cattle – produce methane through their digestive processes.[7] Manure management, pasture management and fuel consumption from fishing vessels also fall into this category. This percentage, however, relates to on-farm 'production' emissions only, and does

not include land use change or supply chain emissions from the production of crops for animal feed: these figures are included separately in other categories.

Second, 21 per cent of food emissions comes from crop production for direct human consumption, and 6 per cent comes from animal feed production. They are the direct emissions which result from agricultural production – this includes elements such as the release of nitrous oxide from fertilizer and manure application; methane emissions from rice production; and carbon dioxide from agricultural machinery.

Third, many emissions result from land use for livestock (16 per cent) and for crops for human consumption (8 per cent).

Last, food processing (converting produce from the farm into final products), transport, packaging, and retail all require energy and resource inputs.

Many assume that eating local is key to a low-carbon diet; however, transport emissions often amount to a very small percentage of food total emissions – only 6 per cent globally.[8]

The need to implement tax policies to penalize the most polluting agrifood products is, therefore, particularly felt. Of the abstractly viable options within the European context, this chapter will focus on the extension of the Carbon Border Adjustment Mechanism (CBAM) to the agribusiness sector and, residually, on a VAT rate modulation of agricultural products.

Preliminarily, we must consider that any tax instrument aiming at regulating carbon emission needs to quantify the cost of carbon.

2. CARBON PRICING INSTRUMENTS

The need to quantify the cost of carbon is also valued and promoted by the OECD,[9] the World Bank[10] and the International Monetary Fund.

In particular, the IMF suggests the implementation of fiscal policies based on hard-hitting carbon taxation to mitigate the effects of climate change:[11] on the one hand, carbon taxes are one of the most powerful and efficient tools at countries' disposal; on the other hand, they must be implemented in a careful and growth-friendly manner. Therefore, the key is to redesign the tax system in fair, creative and efficient ways. In a 2019 Report, the IMF's Fiscal Monitor developed concrete indications for international policymakers in order to reshape tax systems and discourage carbon emissions, also enhancing political acceptability of carbon pricing.[12]

There are two basic types of 'carbon pricing' which disincentivize the use of polluting fuels: the first one is a carbon tax, directly linked to the CO_2 content of fossil fuels; the second one is an Emissions Trading System (ETS), in which organizations must purchase an allowance for every ton of CO_2 emitted, staying within a certain threshold to avoid penalties.

In the European Union system, the ETS has been widespread and tested for some time now.

The mechanism is based on the 'cap and trade' principle,[13] that is, the determination of harmful emission maximum caps. It was initially fixed at a national level, and then became uniform at European level. The harmful emissions which overcome such limits must be discouraged: the polluting subjects must pay for emissions exceeding the cap.

Briefly, a maximum cap is fixed at European level and the overall GHG amount that factories, installations and plants are allowed to emit must not exceed such a level. Thus, the overall amount attributed to each Member State is further distributed among its operators. Plants are free to choose whether to make their productive processes more efficient, by reducing polluting emissions and selling exceeding allowances, or to exceed the cap and buy the number of allowances corresponding to the exceeding emissions from other operators. Each allowance gives the holder the right to emit one ton of CO_2, or the equivalent of other greenhouse gases, according to art. 3, par. 1, lett. A) of Directive n. 2003/87/CE.[14]

The cap goes down every year to guarantee that, at an aggregated level, the predetermined aims are reached; the cap is expressed in a certain number of allowances to emit (EUA), which are allocated by auction or are given out for free to the plants. Free allocation must be seen in the context of the goal, stated in the fifth 'whereas' of Directive 2003/87, of bringing about the least possible decrease in economic development and employment[15] so as to reduce the economic impact of an immediate and unilateral introduction by the European Union of an emission allowances market. Therefore, free allocation is inspired by the logic of protecting national operators against potential international competitiveness.

This sacrifices both environmental goals, recognized as the purpose of Directive 2003/87,[16] and the internal market, favouring – through the windfall profits phenomenon[17] – installations which benefit from free allowances. As we will see, the EU CBAM is complementary to the ETS and will help through a faster reduction of allowances and a phase-out of free allowances.

3. THE EU CARBON BORDER ADJUSTMENT MECHANISM (CBAM)

The EU CBAM Regulation officially entered into force on 17 May 2023,[18] while the mechanism applies in its transitional phase as of 1 October 2023. Such instrument is a key tool of the EU's broader Fit for 55 package, which aims to cut 55 per cent of net GHG emissions in the EU by 2030. It is also a foundational aspect of the Commission's new own resource proposal to fund EU budget initiatives.

CBAM is designed to complement the ETS by placing a carbon price on certain imports into the EU from third countries, which do not tax carbon at an EU-approved level. The goal is to maintain the competitiveness of European producers relative to foreign producers and prevent the so-called 'carbon leakage' phenomenon.

Furthermore, the EU hopes CBAM will inspire other countries without a carbon tax to implement their own. Once third countries link their national carbon pricing systems to the ETS, third-country exporters would no longer face CBAM payments. It is presented as a multipurpose tool, aimed at mitigating climate change, neutralizing commercial competitive advantages for polluters, strengthening climate leadership, and raising resources for public finance.

Scholars have strongly criticized the measure as being 'inconsistent with the Commission's main objectives of promoting fair competition and climate mitigation in line with the Paris Agreement'.[19] The EU Regulation itself, on the contrary, proclaims that such a mechanism is inspired, *inter alia*, by the need to reach the goal of a climate-neutral Union at the latest by 2050, in line with the Paris Agreement, by addressing the risk of carbon leakage that results from the Union's increased climate ambition.[20] It is also expected to create incentives for the reduction of emissions of operators in third countries.

However, the positive aspects seem to outweigh the objectionable aspects; above all, the path laid out is strategically indispensable.

After all, the legal basis has been identified by the Commission in Articles 191–193 of the TFEU, thus focused on environmental policies and not in the area of taxation, in part for its obvious and shareable thematic interconnections, but certainly also to avoid the endemic and chronic paralysis generated by the unanimity rule in tax matters. The balancing act and ambiguities that characterize, for political exigencies, the preparatory works on CBAM are therefore understandable.

The EU CBAM is a carbon-anchored taxation on imports of certain high-polluting products, with the intention of preventing carbon leakage and European environmental policies from leading to the relocation of industrial plants abroad, or foreign production being advantaged by the non-existence of environmental constraints in their home States.

From the economic point of view, this should lead to the reduction of emissions in Europe and the decrease of emissions worldwide, preventing carbon-intensive production from being relocated. A virtuous effect should also be triggered: non-European industry and the States involved will be pressured to adopt measures that are harmonious with European environmental policies.

Specifically, importers will have to pay some sort of surtax in addition to normal customs taxes, based on the carbon factor related to imported goods,

to reflect emission trading costs that a European producer would face if he polluted the same amount. The price of the tariff will be calculated based on weekly average price of ETS auctions. By doing so, the price foreign producers will pay for carbon emissions will equal the price European producers pay without the administrative burden of daily calculations.

The CBAM will be phased and applied gradually and initially to imports of particular goods and selected precursors the production of which is carbon-intensive and at most significant risk of carbon leakage: cement, iron and steel, aluminum, fertilizers, electricity and hydrogen.[21]

In the 23/25 biennium, the Union will monitor information companies report on their emissions; in 2026, an additional tax will begin to be applied to customs duties on the import of goods into the Union single market.

4. THE EU CBAM'S LEGAL NATURE AND ITS GOALS

The EU CBAM is particularly interesting for tax scholars as in the current tax debate the focus is on digital economy, dematerialization of business models, value chains, and so on. The new mechanism, instead, draws attention to the relevance of borders and the physical and material factors of international trade taxation. CBAM induces tax scholars to catch up with the whole range of classical discussions on customs taxes, which have been somewhat neglected in recent years.

The CBAM fits into the Own Resources system of the EU budget (agricultural levies, customs duty and resource on VAT share). Although the question of legal nature is somewhat debated, in our opinion the CBAM seems to take the form of a customs duty and its tax nature is undeniable.[22]

Duties are imposed on imports of products from non-EU countries at rates determined in the Common Customs Tariff. Member States are responsible for customs duty collection in accordance with the rules laid down in the Council Regulation implementing the Own Resources Decision. In the 2021–7 period, Member States will retain 25 per cent of customs duties collected. This serves not only to cover collection costs, but also as an incentive to ensure diligent collection of amounts due. In total, 75 per cent of CBAM revenue is earmarked for the Union budget with the priority of addressing Union indebtedness resulting from spending policies implemented to counter the Covid health emergency and boost the economy. Nevertheless, it has been assumed that the share of CBAM revenues earmarked for the EU budget, as compared with the 75 per cent proposed by the European Commission based on a decentralized governance model, will need to be increased. Indeed, the CBAM administration is centralized at EU level. This is also relevant considering the Next Generation

EU COVID-19 Recovery Plan passed in 2020, because both CBAM and Pillar One revenues are supposed to provide a 'steady stream of revenue' to repay it.

At any rate, two points can be stressed regarding the CBAM Regulation. The first is the choice to establish the CBAM by Regulation to make it binding on Member States, with no room for discretion as to whether objectives are met. The second is that the legal basis for CBAM proposal is Article 192(1) of TFEU. In accordance with Articles 191 and 192(1) of TFEU, the Union shall contribute to the pursuit, *inter alia*, of the following objectives: preserving, protecting and improving the quality of the environment; promoting measures at international level to deal with regional or worldwide environmental problems; and in particular combating climate change. Therefore, the legal basis stresses the priority of the regulatory environmental function of CBAM, thus leaving in the background its function of collecting resources. Indeed, the co-decision procedure is perfectly compliant with the hybrid and multipurpose nature of CBAM.

Nevertheless, this environmental function is not shown through a direct impact on Member States fiscal policies nor through a specific allocation of revenue, but rather through a kind of moral suasion towards third countries to stimulate a 'virtuous circle' of compliance with European environmental policies. Regarding revenues, these will not be included in the general tax flow destination but will support both the achievement of Green Deal goals and European funding towards the least developed countries most exposed to climate change risks. The revenues will also and maybe primarily repay Recovery Plan loans. From this point of view, we might not conclude that the climate destination is overriding and exclusive.

Furthermore, the EU CBAM is also an instrument of climate leadership.[23] The ambition to drive environmental policy change is evident in Article 2 of the Regulation, which, in identifying the scope of the mechanism, establishes a complex system of exceptions. These are calibrated to the attitude held by third countries in converging with European choices. A relevant example could be the CBAM exemption for imports from countries that have concluded agreements with the EU by applying European law in the electricity sector, by including legislation on the development of renewable energy sources, as well as other energy, environmental and competition rules.

5. POSSIBLE APPLICATION TO THE AGRIFOOD SECTOR

Despite the huge impact of the agrifood sector on GHG emissions, the EU CBAM does not currently involve such sector. There is not a legal limit as the CBAM is in its transitory phase and needs further implementation. The EU Commission has commissioned an exploratory study on ways to put a price on

agricultural emissions[24] and at the time of writing the results were due to be published by the end of 2023.

Of course, such an extension assumes the full inclusion of the sector in the ETS as well, since, as seen in para 3, CBAM stands as a mirror of the former. Moreover, available technologies show the possibility to measure the amount of carbon emissions from agricultural products. There are dozens of applications – even very advanced ones – that can exactly calculate the environmental footprint of agrifood products in such a way to measure the climate impact of each item based on the type, weight and origin of the food. Advanced 'official' software could be easily developed at the EU level for measuring the carbon footprint of agrifood products. This could also be made available for citizens to enable them to check the environmental impact of their consumption and address their food choices regarding both imports and European goods.

The extension of CBAM to the agrifood sector could be desirable for several reasons. First, globally, the CBAM pros seem to outweigh the cons, and the path is already marked: a pragmatic approach leads to enhancing the tool by expanding its scope of application to highly polluting areas not currently covered. Second, the agrifood sector would benefit from the consolidated application basis 'inherited' by the CBAM from the Customs Code: numerous points of contact are felt between the customs discipline, fully harmonized by EU Regulation No. 952/2013, and the CBAM enforcement mechanism. Indeed, the choice to regulate the carbon price adjustment system with a Regulation identifies an initial point of contact with the customs matter and shows the Commission's determination to make the CBAM immediately operational through its direct application at a national level. Therefore, even if it is a brand-new instrument, its application has a solid basis and the possible expansion of its scope should not suffer insurmountable problems of interpretation/application.

Third, the legal basis (Article 192(1), above) stresses the priority of the CBAM regulatory function, thus leaving in the background the function of collecting resources. This justifies its extended application to more polluting sectors, such as the agrifood one.

Last, we might not exclude that CBAM in the agrifood sector would have a positive impact on consumers' behaviours in the long-term. Most consumers are increasingly aware of the impact of food habits in terms of emissions, but also waste land and other environmental effects. Thus, including the agrifood sector in CBAM could strengthen the regulatory function of such a regime and represent a further step towards a green food culture.

6. CRITICAL PROFILES AND ALTERNATIVES: VAT RATE MODULATION

The EU CBAM has been criticized on the export side.[25] Indeed, a border adjustment requires two elements. One is a fee charged on imports, and the second is a crediting mechanism for exports. In this case, an EU import fee keeps European products competitive within the EU market while an export rebate is essential for keeping European-produced goods competitive in markets outside of the EU.

Unfortunately, a carbon tariff was adopted without export rebates for European producers. For European exporters, things have become more difficult. On one hand, the current system of 'free' allocation of ETS allowances will be phased out over a nine-year period, between 2026 and 2034, with a progressively increasing price. On the other hand, there is currently no policy in place for export rebates to replace these 'free' allowances. Instead, the EU has promised to explore other WTO-compliant ways to prevent carbon leakage on exports.

The EU's reasoning for not including export rebates is because they would likely violate the World Trade Organization's rules against subsidies. Contradictorily, the EU opted for a tariff, which is what the WTO was principally designed to eliminate.

Such critical issues would have quite a relevant impact on food product exports. Moreover, we might not exclude an increased application complexity resulting from the extension to the agribusiness sector. This could lead to exploring alternatives such as a VAT rate modulation through the increase of VAT rates for carbon-intensive agrifood products. Indeed, the European Commission has approved Directive (EU) 2022/542, published in the European Official Journal No. L107 of 6 April 2022, which gives Member States the option to grant reduced rates for certain goods and services if there is no serious risk of distorting the functioning of the single market. Such Directive will take effect on 1 January 2025, and, therefore, Member States are required to transpose the provisions by 31 December of the previous year.

Among the many changes introduced by the Directive, the following are particularly relevant.[26]

Member States can provide:

- no more than two reduced rates, no less than 5 per cent;
- one super-reduced, less than 5 per cent;
- an exemption with the right to deduct input tax (so-called zero rate).

Such reform implies a modernization of the VAT system,[27] concerning also the list of supplies of goods and services set out in Annex III of the Directive,

which may be subject to preferential VAT treatment. Specific needs can be pursued, such as the promotion of the use of renewable energy sources, strengthening the resilience of national health and disability protection, the pursuit of a green and climate-neutral economy and, finally, the digital technology transition.

VAT can be a strong tool to orient production and consumption of goods and services in a direction that is fully compatible with specific objectives and worthy of social attention, such as the commitment made by the European Commission in the Green Deal. Nevertheless, the economic evaluation also confirmed the view expressed in earlier economic studies[28] that the use of reduced rates is often not the most suitable instrument for pursuing policy objectives, particularly for ensuring redistribution to poor households or encouraging the consumption of a good that is deemed socially desirable. Therefore, VAT modulation for more polluting food could cause a regressive effect. Furthermore, expanding VAT benefits would also not be the best method to promote certain goods or services to consumers and to promote objectives of social policy, considering the average consumer's point of view.[29]

To conclude, even the possible modulation of VAT rates does not exclude critical profiles, especially considering the possible low impact on average consumer behaviour in the agrifood sector, too.

7. FINAL REMARKS

Leaving aside more strictly economic considerations, no tax solution – whether VAT rate modulation or CBAM extension – can exclude consideration of the possibility of measuring food carbon footprint; available technologies also seem to confirm this.

Given, therefore, the impact of the agri-food sector on emission levels, it seems imperative that the European lawmaker who, through CBAM, aims at strengthening leadership and acting as a driving force in the fight against climate change, should introduce incisive instruments, including tax ones, to curb emissions in such a sector. The Commission itself seems to be aware of this, as underlined by initiatives for analysing ways to put a price on agricultural emissions.[30]

The possible extension of the CBAM scope to the agrifood sector clearly presupposes that, at the same time, it will be included in the ETS, to preserve the fundamental 'mirror effect' between the two mechanisms.

Whichever path is chosen (extension of the CBAM or VAT rate remodulation), the role of new technologies in accurately quantifying the environmental impact of agrifood products seems crucial. From the perspective of affecting consumer behaviour, through the incentive/disincentive effect typical of func-

tional tax policies, the transparency of environmental impact measurement tools seems indispensable: European footprint detection software should in fact be made available to taxpayers, in such a way to increase their level of awareness and 'environmental culture' and effectively affect their behaviour.

NOTES

1. FAO (2017), *The Future of Food and Agriculture – Trends and Challenges* Ann. Rep., 296 (2017), 1–180.
2. Directorate-General for Climate Action (2023). *Putting a price on emissions and rewarding carbon removals in the land sector*, 27 June 2023.
3. See the interesting FAO Database on greenhouse gas (GHG) emissions by unit of product for a selection of agricultural commodities (FAOSTAT Emissions intensities) available on www.fao.org/faostat/en/#data/EI.
4. A carbon footprint is the total greenhouse gas (GHG) emissions caused directly and indirectly by an individual, organization, event or product. It is calculated by summing the emissions resulting from every stage of a product or service's lifetime (material production, manufacturing, use and end-of-life), see The Carbon Trust (2018) *Carbon Foot Printing.*
5. Jones C., Kammen D. (2011), *Quantifying Carbon Footprint Reduction Opportunities for US Households and Communities*.
6. Boehm R., et al. (2018), *A Comprehensive Life Cycle Assessment of Greenhouse Gas Emissions from US Household Food Choices*.
7. Such a process is known as 'enteric fermentation'.
8. Poore J., Nemecek T. (2018), *Reducing food's environmental impacts through producers and consumers*. Science, 360(6392), 987–92.
9. OECD (2019), *Taxing Energy Use: Using Taxes for Climate Action*; OECD, Tax Policy Reforms 2021.
10. World Bank (2021), *State and Trends of Carbon Pricing 2021*.
11. IMF (2020), *How to Mitigate Climate Change, World Economic Outlook.*
12. IMF (2019), *How to Mitigate Climate Change, Fiscal Monitor.*
13. Peeters M., Weishaar S., De Cendra De Larragan J. (2007), *A governance perspective on the choice between 'cap and trade' and 'credit and trade' for an Emission Trading Regime*, in European Environmental Law Review, p.191.
14. Cló S. (2011), *European Emission Trading in Practice*, Cheltenham.
15. Regarding the need to protect national operators against international competition, see European Court of Justice, S.P.C.M., Case C-558/07, par. 57; Commission/Polonia, Case C-504/09, par. 77; Commission/Estonia, Case C-505/09, par. 79.
16. European Court of Justice, 16 December 2008, Société Arcelor Atlantique et Lorraine and others, Case C-127/07, par. 32.
17. Pérez Rodríguez D. (2014), *Absorbing EU ETS windfall profits and the principle of free allowances: Iberdrola and others*, Common Market Law Review, 679 seq.

18. Regulation (EU) 2023/956 of the European Parliament and of the Council of 10 May 2023 establishing a carbon border adjustment mechanism.
19. Pirlot A. (2021), *Carbon border adjustment measures: a straightforward multi-purpose climate change instrument?* Journal of Environmental Law, 1–28.
20. See no. 10 and art. 1 of the 2023/956 Regulation.
21. See art. 2 of the 2023/956 Regulation (scope) and the Annex I.
22. Of course, if we conclude for/assume CBAM tax nature drags a few consequences that are not irrelevant, such as, for example, the legitimacy of the procedure for adopting the Regulation (EU) 2023/956 based on Art. 192(1) of TFEU (infra) and not unanimously, as Art. 115 TFEU would require.
23. Pirlot A., note 19.
24. The background is a 2021 report by the European Court of Auditors which concluded that EU law does not apply the polluter-pays principle to agricultural emissions and recommends that the Commission should 'assess the potential of applying the […] principle to agricultural emissions, and reward farmers for long-term carbon removals'.
25. The CBAM has also been criticized for its impact on developing countries: Grau Ruiz M.A. (2023), The Achilles heel of broader carbon adjustments: united effects on developing countries, in Comelli A. et al., *Taxation and the Green Growth Challenge*, Cheltenham, p.69.
26. See Art. 98 et seq.
27. See COM[2022] 39, 10 February 2022 (Proposal for a Council Directive amending Directive 2006/112/EC as regards the extension of the application period of the optional reverse charge mechanism in relation to supplies of certain goods and services susceptible to fraud and of the Quick Reaction Mechanism against VAT fraud). Such a definitive VAT system, which now focuses on the principle of destination (replacing the one originally conceived on the place of origin), all Member States would be bound by the same rules and enjoy equal freedom in setting VAT rates allowing a wider application of the principle of fiscal neutrality.
28. Copenhagen Economics, Study on reduced VAT applied to goods and services in the Member States of the European Union, Final Report, 21.6.2007 and COM [2011] 851, par. 5.2.2.
29. EU Commission, Directorate-General Competition, COM 6789/2013 regarding the e-book case.
30. Above, note 24.