



Trade & Climate Change

Objectives and methodology

As, under the Green deal, the EU is heading towards a more ambitious trajectory by 2030 for the reduction of greenhouse gas emission and climate neutrality by 2050, Afep, the French Association of Large Companies, decided in 2020 to commission a comprehensive quantitative study to investigate the implications of this climate neutrality scenario for the competitiveness of EU companies and find policy solutions making growth and a lesser climate impact compatible, and notably narrowing the possible competitiveness gap resulting from a much higher carbon price in the EU.

The study, published on 14 January 2021 on Afep website, researched the economic and environmental impact of climate neutrality (Tier 1) and reviewed a vast array of internal and international instruments, with a view to finding the best policy tool(s) to combine effective worldwide GES emission reductions, growth and enhanced competitiveness for EU companies (Tier 2). To achieve such objective, the assessment relies on data produced by the General Equilibrium Model (GEM-E3²) used for quantifying the overall balance of GES emissions due to international trade and investment under the carbon neutrality scenario as well the comparative effects of the policy tools assessed along key macro-economic indicators including the level of carbon leakage avoidance.

Six policy tools have been considered individually and then in different combinations:

- a levy-shaped carbon border adjustment mechanism (CBAM) taxing EU imports, based on their carbon content,
- a further subsidization program directed to low carbon technologies combined with CBAM,
- a final consumption tax imposed both on domestic and imported products, based on their carbon content,
- an EGA-style plurilateral agreement reducing custom duties on environmental goods (list of low-carbon goods and product contributing to climate change mitigation),
- a revised Agreement on subsidies and countermeasures (ASCM) curbing down industrial subsidies in China and
- a plurilateral Agreement on the reduction of fossil fuel subsidies.

Key findings

The EU climate neutrality ambition comes along with a significant risk of increased carbon leakage on the period 2030-2050, possibly further diverting investments away from the EU production sites

The ambitious targets of the EU climate neutrality scenario (55% in 2030 compared to 1990 and climate neutrality by 2050) will require carbon prices increasing in the EU from 56€ in 2030 to 285€ in 2040 and 444€ in 2050. By contrast, if our major trading partners would comply with their Paris Agreement initial targets, carbon prices in non-EU countries would reach at a maximum of 44€ (China) or a minimum of 8€ (India).

Such gap in GES emission reduction efforts is estimated to result in additional 14% carbon leakage over period 2025-2050 compared with the EU previous targets (-40% in 2030 compared to 1990 and -80% by 2050). Thus, the model highlights the key role played by the increased production costs that will occur in the EU due to these higher carbon prices. Carbon leakage and connected investment relocation is expected to be geographically dispersed, with Russia (22% of production relocation), United States (11%), China (9%), and India (9%) being the main potential countries benefiting from these production shifts.



Carbon leakage under EU Climate Neutrality Scenario, Mega-tonnes CO₂ equivalent

	EU28 GHG Emissions in Carbon Neutrality Scenario	EU28 GHG Emissions in Baseline Scenario	EU28 GHG Emissions Reduction Target	Non-EU GHG Additional Emissions (absolute change from Baseline Scenario)	Additional Carbon Leakage rate (compared to Baseline Scenario)
2030	2 562	3 452	890	81	+9%
2050	569	1 138	569	130	+23%

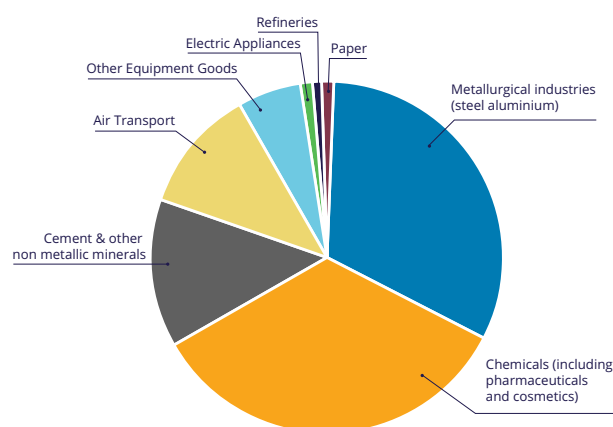
Source: GEM-E3

At the sectoral level, the model estimates that (under the EU Carbon Neutrality Scenario) the greatest exposure to leakage will occur in chemicals (35% of all leakage), metals (33%), cement (14%) and air transport (12%). Russia is projected to be the main destination for production relocation of metals, chemicals and equipment manufacturing, while the United States is estimated to capture a significant share of air transportation. Cement production, meanwhile, is expected to increase predominantly in China, India and North Africa.

A levy-based CBAM can well perform both in terms of GHG emissions/carbon leakage reduction and growth if its revenues are recycled throughout subsidies directed to low carbon technologies

All variants of a levy-based CBAM tested¹ in the study show a significant level of GHG emission reduction in third countries, being systematically above 4 000 megatonnes of CO₂ over the period 2025 -2050, meaning a parallel reduction of carbon leakage. However, the results suggest that, in order to achieve a positive long-term impact on EU GDP, employment and carbon leakage, a levy-based CBAM should come along with a recycling of the revenues it generates in a way that effectively supports acquisition and development of energy efficiency technologies. It is worth noting that these results can also be referred to assess the impact of a CBAM consisting in a notional ETS scheme for imported products, since the modelling features would be almost identical .

Sectoral distribution of the carbon leakage (2025-2050)



Estimated impact of CBAM variations on GDP, Unemployment and Cumulative non-EU GHG Emissions, 2025-2050 (in comparison to results from the EU Carbon Neutrality Scenario)

	No recycling, No retaliation	With recycling, With retaliation	With recycling, No retaliation	No Recycling, With Retaliation	3 sectors, No recycling, No retaliation
PIB	-0.08%	0.09%	0.10%	-0.09%	-0.07%
UE Exports	-1.53%	-1.81%	-1.60%	-1.75%	-1.45%
UE Imports	-1.85%	-2.02%	-1.81%	-2.06%	-1.73%
Employment rate	-0.11%	0.06%	0.07%	-0.11%	-0.09%
Change in non-EU GHG (Mt, 2025-2050)	-4 642	-4 328	-4 819	-4 153	-4 499

Source: GEM-E3

A CBAM can even better perform when coupled with a larger EU-wide subsidy scheme

The combination of the levy-based CBAM (in the variant implying the recycling of its revenues) with an broader EU subsidies policy also recycling the ETS revenues into low-carbon technologies would lead to significantly improved results in terms of GDP and employment while also generating further reductions in carbon leakage.

^{1/} with/without retorsions from trading partners, with/without revenue recycling throughout subsidies for the industrial low-carbon transition, CBAM covering all ETS sectors or limited to the three most carbon-intensive sectors, CBAM assessed on EU 28 or CBAM EU 27 Member States the UK being regarded as a third country.



Estimated impact of CBAM combined with EU wide subsidies on GDP, Unemployment & Cumulative Change in non-EU GHG Emissions, 2025-2050 (in comparison to results from the EU Climate Neutrality Scenario)

	CBAM + EU-wide subsidies in support of low-carbon technologies (with recycling, no retaliation)	CBAM only (with recycling, no retaliation)
PIB	0.29%	0.10%
Employment rate	0.18%	0.07%
Change in non-EU GHG (Mt, 2025-2050)	-5 019	-4 819
Revenues Recycled into EU economy (\$ billion)	1 288	915

A final consumption tax performs less than CBAM both on carbon leakage reduction and growth

A final consumption tax on carbon content is found to be effective in reducing carbon leakage **but only by 1 077 mega-tonnes of CO₂ over the period of 2025-2050** (four time less than CBAM in the least performing variant). In addition, a small but negative impact on economic activity and welfare in the EU is observed in the form of higher consumer prices and reduced of real disposable income. Indeed, among all policy scenarios modelled, the EU-wide Final Consumption Tax policy is projected to result in the **most detrimental outcome for the EU's GDP and employment by 2050**.

Trade agreements could achieve meaningful results if combined together

The three modelled agreements on the reduction of fossil fuel subsidies, a tariff erosion on environmental goods and the reduction of industrial subsidies in China, would reduce **GHG emissions by respectively 660, 1 100 and 1 700 megatonnes of CO₂ over the period 2025-2050**, while all proving individually either neutral or slightly positive for growth and employment. A **WTO agreement reducing massively industrial subsidies in China would be the most effective individual instrument among these trade rules** while the reduction of fossil fuel subsidies would trigger potential adverse effects, notably with an increased use of solid fuel, thus the unexpectedly low performance in reducing carbon leakage.

Only the combined application of the three agreements could achieve a **reduction of carbon leakage comparable with CBAM variants**, though it would be still lagging this EU internal tool: GHG emission reduction would reach **3 731 megatonnes of CO₂ and growth and employment would be improved respectively by 0.04 % and 0.03 % over the same period**.

The most effective results : combining CBAM with international trade agreements

This combination is estimated to produce the best performance in reducing GHG emissions globally and increasing employment and GDP. GHG emissions are reduced by nearly **9 000 mega-tonnes of CO₂** which amounts to almost the double of CBAM with recycling, while EU employment and GDP improve by 0.22% and 0.33%, respectively. Close to this policy mix, **combining CBAM with an agreement on environmental goods and an agreement reducing industrial subsidies** would still produce interesting results while **standing for a less demanding political outcome**.

Estimated impact of Policy Instrument Combinations on GDP, Unemployment & Non-EU GHG Emissions 2025-2050 (in comparison to results from the EU Climate Neutrality Scenario)

	CBAM, all international trade disciplines	CBAM, Tariffs + ENG's, Industrial Subsidies
Change in GDP	0.33%	0.32%
Change in employment rate	0.22%	0.21%
Change in Non-EU GHG (mt CO ₂ , 2025-2050)	-8 708	-7 995

By contrast, the final consumption tax combined with the three considered international trade agreements would barely reach the level of CBAM combined with subsidies for the reduction of carbon leakage and would still have a recessive effect.

Overall ranking of policy measures and key recommendations

In order to achieve the effective comparison between individual and combined policy measures, their respective performances have been subject to a ranking matrix, using a equal weighting for key macro-economic parameters. **The matrix confirms that CBAM in combination with international trade agreements best performs, followed, in descending order, by CBAM with a recycling of ETS and its revenues throughout subsidies directed to the low carbon technologies, combined international agreements, an agreement on industrial subsidies, CBAM without recycling and, at the bottom, the final consumption tax.**



Overall Policy Instruments Ranking: Scenario Results & Normalized Policy Ranking Matrix with Equal Weighting - All Trade & Tax Policy Measures (Individual & Combined) - Extract

				Normalised Ranking Matrix (Equal Weighting = 0.25)				
				Employment	Welfare	Economy	Leakage	Rank
COMBO - CBAM & All International Instruments (a11)	0.33%	0.22%	-8 708	16	16	16	16	1
COMBO - CBAM & a11 without Reduction of Fossil Fuel Subsidies	0.32%	0.21%	-7 995	15	14	15	15	2
CBAM + Domestic Subsidies, With Recycling, No Retaliation	0.29%	0.19%	-5 019	13	12	13	12	4
CBAM, With Recycling, No Retaliation	0.10%	0.07%	-4 819	12	9	12	11	5
CBAM, With Recycling, With Retaliation	0.09%	0.06%	-4 328	11	8	11	8	6
Reduction of Industrial Subsidies	0.01%	0.00%	-1 738	8	7	8	5	9
CBAM, No Recycling, No Retaliation	-0.08%	-0.11%	-4 642	4	3	4	10	12
CBAM, No Recycling, With Retaliation	-0.09%	-0.11%	-4 153	3	2	3	7	16
Final Consumption Tax	-0.15%	-0.27%	-1 077	1	1	1	3	17

MAIN RECOMMENDATIONS

Based on these quantified results as well as a complementary political feasibility test, the final report entails the following recommendations :

- A CBAM that includes recycling of CBAM and ETS revenues appears as being the most effective single policy, regardless of whether CBAM is shaped as a levy or a notional ETS scheme for imported product.
- Due to the need to combine CBAM with a tool supporting EU external competitiveness and growth and to minimize the risk of retorsion, careful consideration should be given to CBAM design (usage of funds and WTO compliance)
- The EU should pursue multiple policies in order to maximise potential gains to employment and GDP and minimise carbon leakage.
- In particular, there is an added value in combining CBAM with international trade agreements that could be politically at reach (reduction of industrial subsidies and tariff erosion on environmental goods).

Links to the documents:

- **The full report** : <https://afep.com/wp-content/uploads/2021/01/Trade-and-Climate-Change-Quantitative-Assessment-of-the-Best-Policy-Tools.pdf>. The executive summary is available on page 7.
- **The presentation webinar**: <https://afep.com/en/publications-en/trade-climate-friends-or-foes-making-the-case-for-cbam-and-green-trade-rules/>



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