

CBAM Economic Impact Assessment and Implications

Technical Assistance Project on Impact Assessment of the EU's Carbon Border Adjustment Mechanism
and Recommendations on Carbon Tax Policies for Viet Nam

14/04/2023

CBAM-targeted sectors (updated March 2023)

(Numbers are 2017-2021 average)

- **Iron & steel (Steel): ~1.1 billion USD (12 %) export value to EU**
- **Aluminium: ~ 48 million USD (7 %) export value to EU**
- **Fertilizer: small export quantity (~0.2 \$ mil/year export to EU)**
- **Cement: ~ 12 million USD (1%) export value to EU**
- **Electricity (no export)**
- **Hydrogen (neglectable recorded – possibly informal trade or errors in the record system)**

Some key parameters

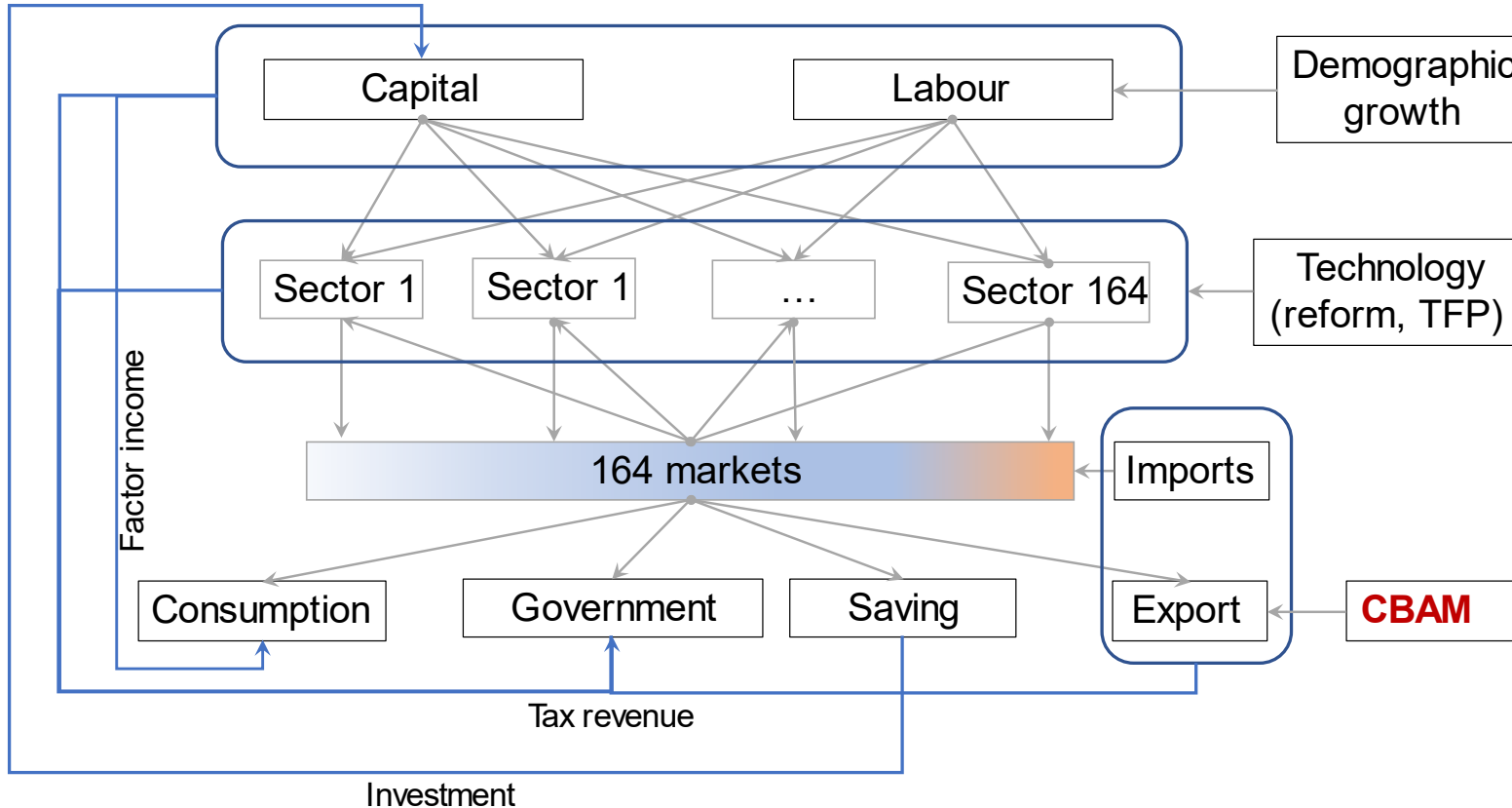
EU's ETS ~65 USD /tCO₂ (converted to 2019-value USD for comparability) with a decadal incremental rate of 30% corresponding to the updated phase-out plan for free emission allowances in the EU's industrial sectors (as announced by European Court of Auditors, 2020)

Unit: tCO ₂ /tonne of output	Mean (range) using MONRE guidelines - unless otherwise indicated	World average
Steel (29)	1.78 (0.53 - 3.73)	1.8
Fertilisers (15)	1.97 (1.19 – 6.20)	1.7-2.3
Cement (25)	0.76 (0.31 – 1.28)	0.5
Aluminium (13)	Too small samples; a previous study reported 14.3	16

Challenges in quantitative analysis and solutions

Challenges	Solutions
Surveyed enterprises did not provide adequate information	<ul style="list-style-type: none">• Extracting as much information as possible• Using information from published literature (peer-review preferred)• Customizing economic models to best fit with available data (data-driven modelling)
Some secondary data is outdated, and many inconsistencies and incompatibilities	<ul style="list-style-type: none">• Updating and cross-checking• Customizing models (data-driven)
Uncertainties in CBAM implementation and possible responses from other countries	<ul style="list-style-type: none">• Survey and consultation with stakeholders,• literature review
Inadequate data to estimate indispensable hyperparameters for modelling (e.g., price elasticity - how much consumers and producers respond to a change in price)	<ul style="list-style-type: none">• Literature review, elicitation;• Using a large number of parameters randomised from conservative value ranges to construct confidence intervals, rather than single-value estimate

Economy-wide impacts: General-equilibrium modelling (CGE)



- Consider possible cross-sectoral impacts
- Complicated
- Only aggregate sectors

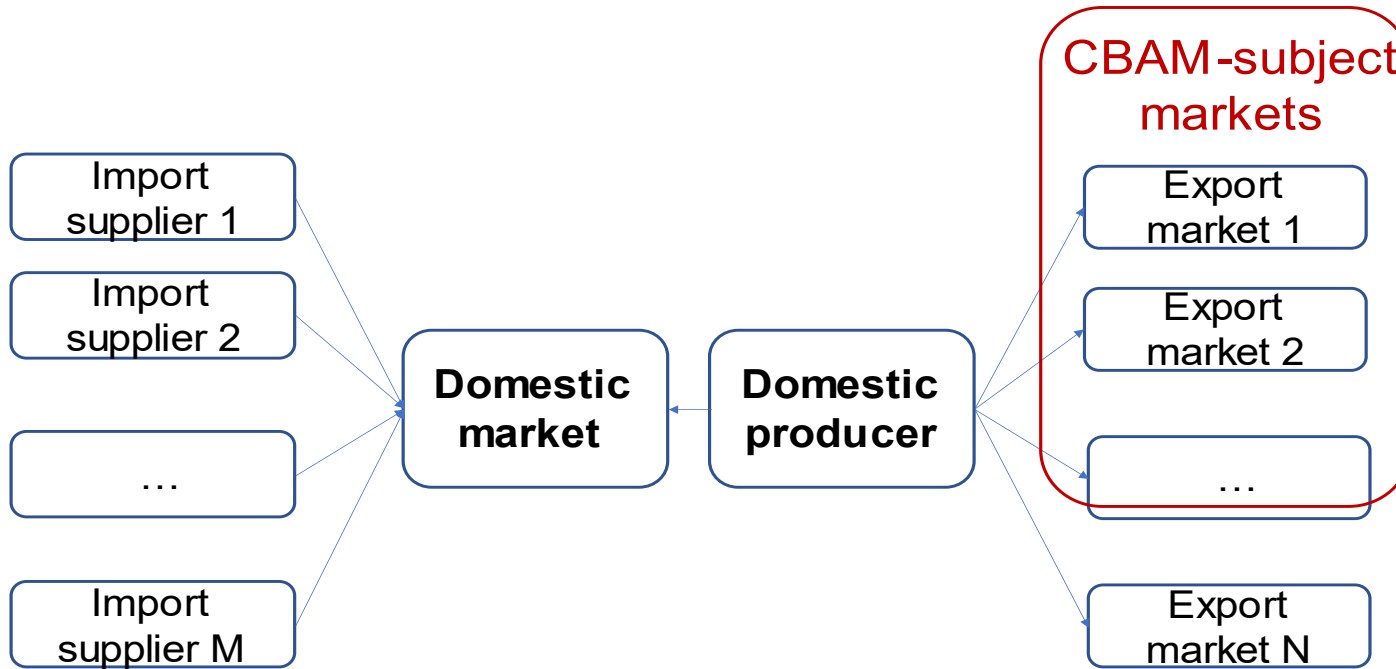
The CGE model is constructed using Vietnam's Input/Output Table 2019

Estimated economic impacts of CBAM (3/2023 version) on macroeconomic indicators in 2030

- Positive = increases from economic trends set by the master plan for 2021-2030 (other conditions remained unchanged unless indicated otherwise); negative = decrease;
- Inside brackets are 95% confidence intervals, and outside is the estimated mean.

Indicators	Under CBAM (3/2023 version)
Change in GDP (billion USD 2019 value)	-0.1 [-0.2, -0.0]
Change in GDP (%)	<0.1 in absolute value
Change in domestic fossil fuel price (%)	< 0.1 in absolute value
Change in employment index (%)	<0.1 in absolute value
Change in share of net export in GDP (%)	<0.1 in absolute value

Sectoral impact assessment: Modelling individual sector



- Focus on specific sectors
- Intuitive, easy to communicate
- Not consider possible impacts on other sectors, e.g., sectors that do not export CBAM-targeted commodities

The number of import suppliers and export markets (aka trading partners) ranges from 50 to 85, depending on specific considered sectors, i.e., steel, aluminium, fertilizer, and cement.

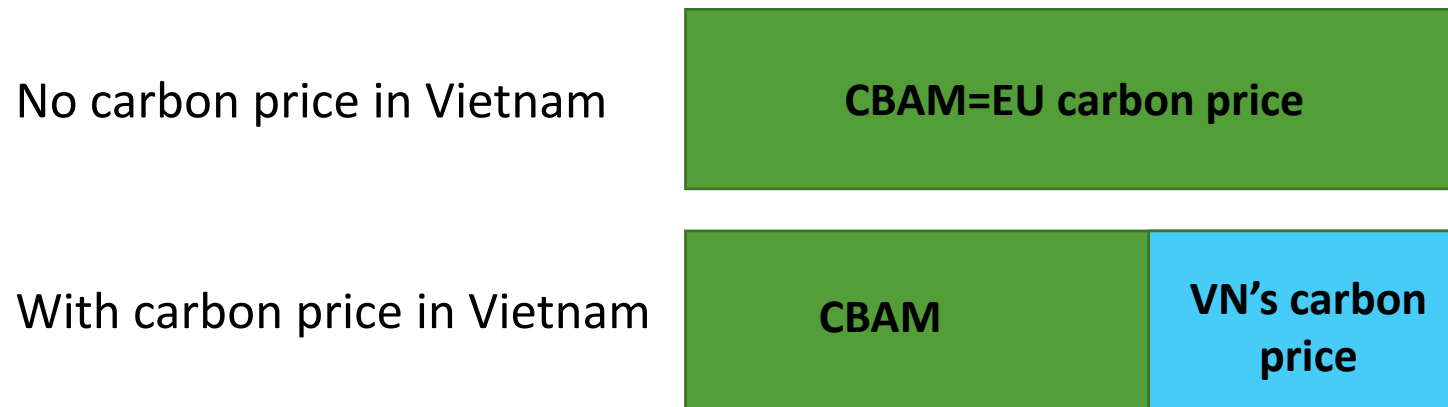
Estimated economic impacts of CBAM (3/2023 version) in 2030

- Negative = decreases from continuing trends when CBAM is added (other conditions remain unchanged); Positive = increases;
- Inside brackets are 95% confidence intervals, outside are the estimated mean;
- -0.0 and +0.0 (if any) refer to negative and positive numbers, respectively, with absolute values less than 0.05.

	Steel	Aluminium	Fertiliser	Cement
Change in production output (%)	-0.8 [-1.7, -0.0]	-0.4 [-0.8, -0.0]	-0.0 [-0.0, -0.0]	-0.1 [-0.2, -0.0]
Change in export value (%)	-3.7 [-5.5, -0.4]	-4.3 [-5.7, -0.7]	-0.0 [-0.0, -0.0]	-0.6 [-0.8, -0.2]
Change in import value (%)	-0.3 [-1.3, +0.8]	-0.1 [-0.7, +0.4]	-0.0 [-0.0, +0.0]	-0.1 [-0.7, +0.1]
Change in emission quantity (mil tCO₂)	-1.0 [-2.0, -0.0]	-0.2 [-0.4, -0.0]	-0.0 [-0.0, -0.0]	-0.2 [-0.4, -0.0]

Carbon pricing: Why matters in CBAM context

- Both CBAM and (Vietnam's) carbon pricing aim at pricing GHG emissions. Carbon pricing is part of Vietnam's commitments (starting 2028)
- Tax-revenue implications in CBAM-target sectors where some of the revenue is retained in Vietnam:



- Key difference: CBAM applies to some exports to the EU while Vietnam's carbon pricing has broader coverage (on Vietnam's economy).
- Vietnam's NDC estimates the lowest-cost mitigation option 11USD/tCO₂.

Estimated price-change sectoral impacts in 2030: without and with carbon pricing

Steel

	CBAM	CBAM+C Pricing
Change in production output (%)	-0.8 [-1.7, -0.0]	-5.1 [-9.6, -0.4]
Carbon pricing value (bil USD)		+1.2 [+1.1, +1.3]
Change in emission (MtCO ₂)	-1.0 [-2.0, -0.0]	-5.5 [-10.2, -0.4]

Aluminium

	CBAM	CBAM+C Pricing
Change in production output (%)	-0.4 [-0.8, -0.0]	-9.3 [-18.1, -1.0]
Carbon pricing value (bil USD)		+0.6 [+0.5, +0.6]
Change in emission (MtCO ₂)	-0.2 [-0.4, -0.0]	-4.6 [-8.4, -0.5]

Fertiliser

	CBAM	CBAM+C Pricing
Change in production output (%)	-0.0 [-0.0, -0.0]	-8.1 [-14.4, -1.0]
Carbon pricing value (bil USD)		+0.2 [+0.2, +0.2]
Change in emission (MtCO ₂)	-0.0 [-0.0, -0.0]	-1.6 [-2.7, -0.2]

Cement

	CBAM	CBAM+C Pricing
Change in production output (%)	-0.1 [-0.2, -0.0]	-32.9 [-70.6, -3.3]
Carbon pricing value (bil USD)		+1.8 [+1.3, +2.2]
Change in emission (MtCO ₂)	-0.2 [-0.4, -0.0]	-48.5 [-86.0, -6.6]

Estimated impacts on Vietnam's NDC in 2030

Estimated fossil emission from energy in million tCO₂

(Inside brackets are 95% confidence intervals, and outside is the estimated mean)

Scenarios		2030
Continuing trend estimates (using IEA 2019 data)		538 [502, 577]
CBAM, no carbon pricing	Emission intensity unchanged	538 [502, 577]
	Emission intensity reduces as Vietnam's green growth strategy	517 [482, 553]
CBAM + Carbon pricing	Emission intensity unchanged	396 [357, 449]
	Emission intensity reduces as Vietnam's green growth strategy	379 [339, 430]

The 2030 NDC milestone for the energy sector: 457 million tCO₂e (Prime Minister's Decision 896/QD-TTg 2022).

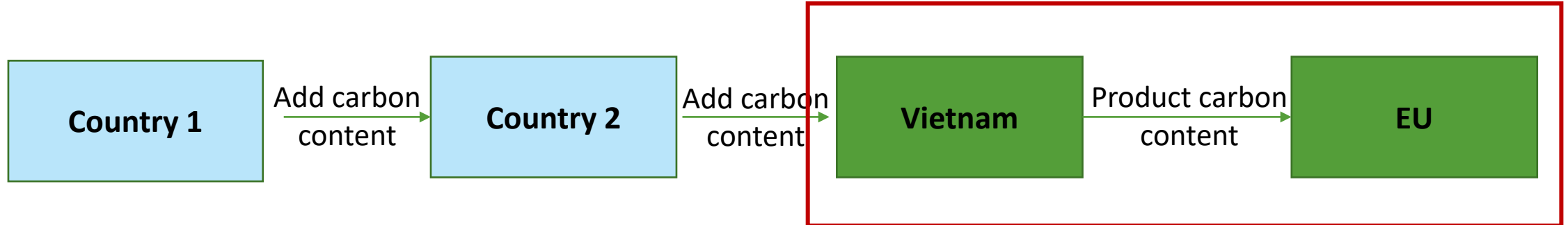
Energy transition

- Scheduled energy transition in the electricity sector suggested that emission intensity per kWh would reduce by about 13% from 2019 to 2030.
- How much gain/loss in GDP would this transition generate under carbon pricing and CBAM?

Unit: million USD (2019-value)	Carbon pricing from 2028 and CBAM from 2026
2026	-1 CI [-2, -1]
2027	-3 CI [-4, -1]
2028	+8 CI [+6, +12]
2029	+13 CI [+9, +18]
2030	+18 CI [+12, +25]
2031	+24 CI [+17, +33]
2032	+32 CI [+22, +43]
2033	+41 CI [+29, +55]
2034	+51 CI [+36, +70]
2035	+64 CI [+45, +86]
Total 2026-2035 period	+248 CI [+173, +336]

Some other careful-watch impacts

1. Tracing carbon content in the value chain



2. CBAM coverage extends to other commodities (e.g., ceramics, pulp, and paper in the EU's ETS and other non-ETS sectors)

3. Other countries may apply CBAM (next section)

Implications

1. Many surveyed businesses currently do not see CBAM as a threat. This picture may change if CBAM is expanded. Non-economic impacts (administrative, reporting, etc.) may be significant. Preparedness is essential.
2. Negotiations, dialogues, and clarifications are important to minimize negative impacts, e.g., the 'deepness' scope of CBAM, the possibility of extension to Vietnam's important export (ceramics, pulp, and paper in the EU's ETS); the reaction from other countries (some may follow the EU).
3. CBAM provides direct incentives for targeted producers to reduce emission intensity – it would have greater benefit if this impact could spread out to other sectors, in line with Vietnam's green growth strategy.
4. Carbon pricing is a consideration in the context of CBAM: (i) part of NDC commitments, (ii) support emission target achievement.

Thank you!

