The CBAM dividend for Namibia and Ghana

Research Note – December 2025

Roadside poster near Windhoek, Namibia © Sandbag 2025

The Carbon Border Adjustment Mechanism (CBAM) is often seen as a challenge for developing countries — a policy that risks penalising exports to Europe with new carbon costs. In a research note in October based on Sandbag's CBAM Simulator, we wrote that the CBAM's impact on African countries would be small and even positive for the aluminium sector. The note

concluded that African exporters could largely avoid CBAM costs through relatively modest production changes and that, by adopting more sustainable value chains, the continent is well positioned to capture the benefits of the EU ETS phase-out of free allocation through higher EU market prices[1].

The scenarios considered in that research note were "backward-looking", in the sense that they were based on the amount of goods exported by countries to the EU in 2023, without assuming any transformation of their industry. In our most recent research, we have modelled the CBAM's impact on Namibia and Ghana in a more transformative scenario, based on development plans announced by those countries.

Our results show that with those investments made, these countries could significantly *benefit* from the CBAM — drawing new financial resources from the EU policy.

Profit comes from the expected **higher prices imports will sell at in European markets**, once the CBAM is implemented. As EU producers face higher costs with the phasing out of free allocation in the EU ETS for CBAM goods, the market price of CBAM goods in Europe will necessarily increase to pass these costs through to customers. The price increase will not only compensate costs for EU-made goods but benefit imports as well.

The modelling distinguishes between the current CBAM scope and its possible future extension to **indirect emissions** (from the use of electricity in the manufacturing of CBAM goods), which particularly affects electricity-intensive products like aluminium.

Unless otherwise stated, all figures and tables are based on Sandbag's CBAM modelling.

Namibia: CBAM-financed hydrogen

Namibia's exposure to the EU Carbon Border Adjustment Mechanism (CBAM) in 2023 was extremely small. Exports of steel and aluminium to the EU amounted to only a few tonnes (as

[1] Source: Sandbag 'The EU CBAM: a two-way street between the EU and Africa'. Available [here].

shown in Table 1), which would be liable to **CBAM fees of roughly €3k** and **total net costs under €1k** after full implementation of the CBAM[2].

Table 1. Namibia's main exports of CBAM goods to the EU in 2023 (source: Eurostat Comext).

Product_code	Description	Qty (t)	Value (€)
73269098	Other articles of iron or steel	1	2,331
7309	Reservoirs, tanks, vats and similar containers for any material (other than compressed or liquefied gas), of iron or steel, of a capacity exceeding 300 litres, whether or not lined or heat-insulated, but not fitted with mechanical or thermal equipment	6	2,700
731815	Other screws and bolts, whether or not with their nuts or washers	1	5,318
72111400	Hot-rolled flat products	7	8,930
730723	Beams, billets, rails and tubes -- of stainless steel	3	247,813

Although exports to the EU are currently negligible, there are plans to increase them, based on **two flagship hydrogen-based projects**.

The Hylron project, developed with support from the EU and the German government[3] in the Namib desert, began in April 2024, and hydrogen production commenced in March 2025. Having already begun producing around 15 kt of "green iron" since 2025, the project aims to scale up production capacity of up to 1.6 Mt of hot briquetted iron (HBI) per year[4]. Because hydrogen will be produced from electricity, therefore without direct emissions, the CBAM liability will be close to zero. Thanks to an expected **price increase of +€113** per tonne of ore-

[2] Source: Sandbag CBAM Simulator (2025), Business-as-Usual scenario for Namibia.

[3] European Commission (2025), *Global Gateway: Namibia becomes pioneer of Africa's green transition*. Available here

[4] Namibia GH2 Forum – UNGA 2023, "Green Hydrogen & H2-Based Industrialisation Roadmap", Government of Namibia & Hyphen Hydrogen Energy.

based metallics such as HBI in Europe, as illustrated in Figure 3, the phase out of free allocation in the EU ETS should result in a net positive balance for exports from this project.

The **Hyphen project** is a green hydrogen development company established specifically to develop large-scale hydrogen projects in Namibia. Under its current development plans, the project targets the deployment of around **300 kt of hydrogen per year by 2028–2030**, which could be transformed into approximately **1.7 mt of ammonia annually**.

Under current CBAM methodologies, both hydrogen and ammonia produced via water electrolysis have **no direct process emissions**, resulting in **zero CBAM fees**. At the same time, EU price effects linked to the EU ETS are expected to increase prices by around **€438/t for hydrogen** and **€97/t for ammonia**. Together, these results illustrate Namibia's potential to benefit from the CBAM under a **hydrogen-based industrial development pathway**.

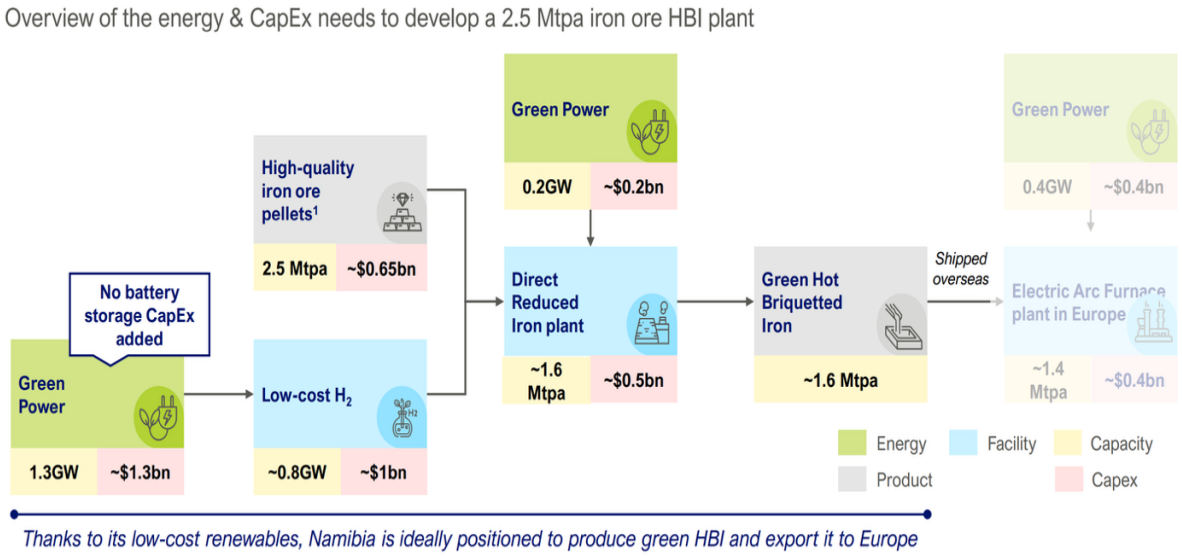

Figure 1. Hydrogen-based HBI production pathway under the HyIron project (source: Namibia Green Industrialisation, UNGA 2024, systemiq analysis based on expert interviews).

It should be noted that, for these products, there is no risk of circumvention or change of rules to prevent circumvention, which is illustrated by identical values in our "resource shuffling" scenario.

If indirect emissions were included in the CBAM (assuming constant power grid emissions of 64 $kgCO_2$/MWh), CBAM fees would increase marginally for HBI exports, by €2/t, but revenues

would increase by €19/t due to the phase out of indirect cost compensation in the ETS which is expected to occur in parallel.

For hydrogen and ammonia, the CBAM's impact is dominated by revenues rather than charges: EU prices increase by around €110/t for hydrogen and €24/t for ammonia, while CBAM-related costs remain comparatively small, leaving Namibia as a net beneficiary in both cases.

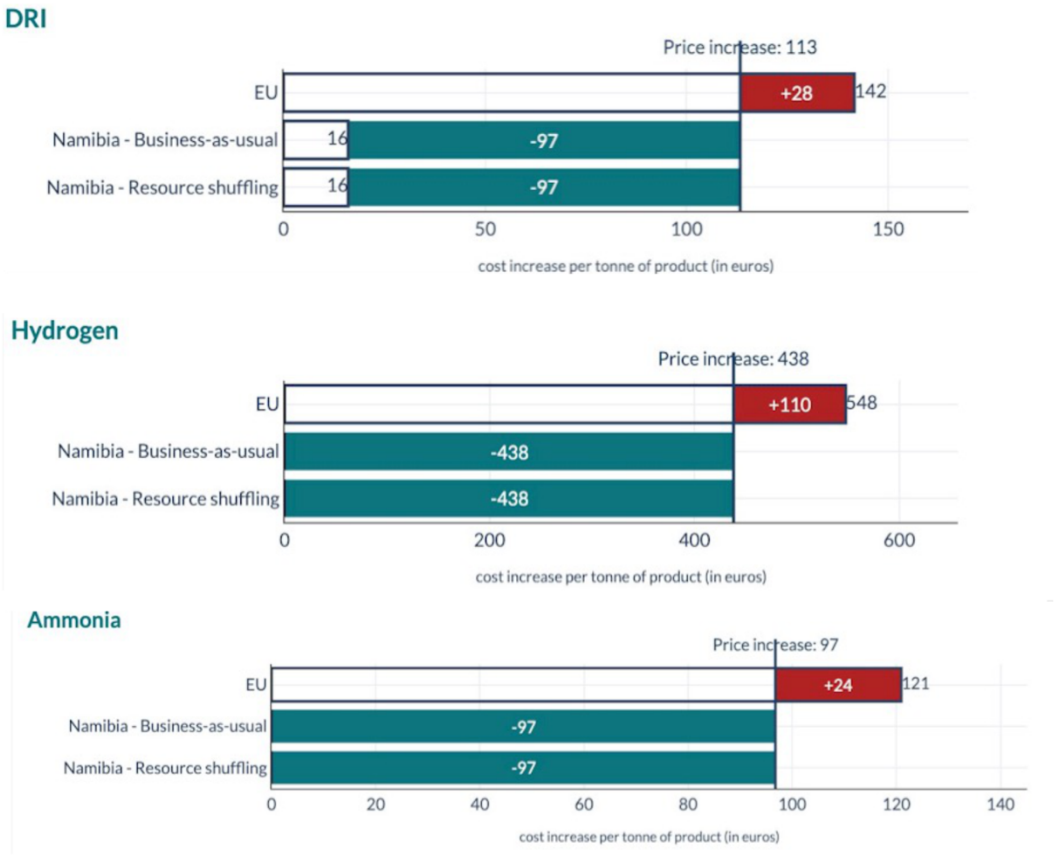

Figure 2. Unit cost impacts for Namibian goods under CBAM (€/t), for direct reduced iron (DRI), hydrogen and ammonia.

Aggregate impact

Aggregating CBAM costs and revenues from exported output from both projects, CBAM fees remain very low, at around €26 million across all products. At the same time, revenue increases by €287 million if the hydrogen is exported directly or by €322 million if it is transformed into ammonia before being exported.

Table 2. CBAM fees for HBI and hydrogen under Namibia's transformation scenario assuming hydrogen is exported directly (million €).

	CBAM Fees	Revenue	Total Net Costs
HBI	26	182	-156
Hydrogen	0	131	-131
Total	**26**	**313**	**-287**

Table 3. CBAM fees for HBI and ammonia under Namibia's transformation scenario assuming hydrogen is converted into ammonia (million €).

	CBAM Fees	Revenue	Total Net Costs
HBI	26	182	-156
Ammonia	0	166	-166
Total	**26**	**348**	**-322**

The CBAM's impact on Namibia's development projects would be very positive, thanks to very low CBAM fees and CBAM goods selling at substantially higher prices in the EU. The CBAM would in effect support investment in those projects. Extension of the CBAM to cover indirect emissions would have no extra impact if Namibia's hydrogen is produced from renewable electricity.

Ghana: A CBAM winner?

Ghana's exposure to the EU Carbon Border Adjustment Mechanism (CBAM) is highly concentrated and overwhelmingly shaped by a single product: **unwrought aluminium**. In 2023, aluminium exports to the EU amounted to around €81 million, while CBAM-covered steel exports (the second largest CBAM-covered exports) were much smaller, at approximately €0.3 million.

Table 4. Ghana's main CBAM-covered exported goods to the EU, 2023 (source: Comext).

Product code	Description	Qty (t)	Value (€m)
7308	Structures of iron or steel	103.2	**0.10**
7310	Tanks, casks, drums, cans…	43.9	**0.13**
731100	Containers for compressed or liquefied gas	17.8	**0.01**
73269098	Other articles of iron or steel	5.6	**0.06**
731815	Other screws and bolts	2.7	**0.01**
7601	Unwrought aluminium	34,915	**81.03**

For **unwrought aluminium**, the EU ETS cost of emissions embedded in European production should push prices up by around €246/t. CBAM fees applied to Ghanaian aluminium under the current scope are lower than this price uplift, resulting in a **net positive margin of around €129 per tonne**.

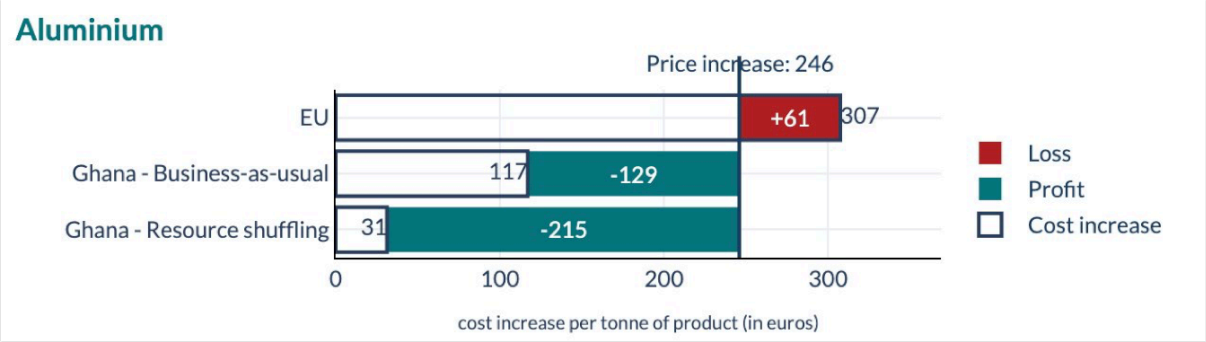

Figure 3. Unit cost impacts for Ghanaian unwrought aluminium under CBAM (€/t).

To understand why Ghana remains a net beneficiary under both scopes, the table below decomposes the per-tonne cost and price effects underlying these aggregate results.

Table 5. Per-tonne ETS costs, EU price increases, CBAM fees, and net costs for Ghana across current scope and indirect-emissions.

€ per tonne of aluminium	ETS cost EU	Price increase in EU	CBAM fees Ghana	Net costs Ghana
Current scope	178	142	117	-25
Indirect emissions	612	488	216	-272
Total	**791**	**630**	**333**	**-297**

Without indirect emissions in the CBAM, Ghanaian aluminium exports face CBAM fees of around **€117/t**, while benefitting from EU price increases of around **€142/t**, resulting in a net positive gain of €25 per tonne. When including indirect emissions, Ghanaian exports become liable of €333/t in CBAM fees but earn €630/t in price premiums — a net gain of €297/t. The aggregate CBAM impacts under the current scope and if indirect emissions were included are shown in Table 6. (source: Sandbag calculations[5],[6]). Based on 2023 trade volumes and the current CBAM scope, importers of Ghanaian products would face roughly **€4 million** in CBAM fees. At the same time, the EU ETS pass-through raises EU aluminium prices by a larger amount, leaving Ghana with a **net gain of about €4 million**. When **indirect emissions** are modelled using Ghana's electricity-grid mix (59% gas, 38% hydro, small oil/solar share[7]), aluminium-related CBAM fees rise to around €20 million, but Ghanaian exports still record a net gain of approximately €5 million.

Table 6. Aggregate CBAM impacts for aluminium based on 2023 export volumes (million €).

CBAM Scope	CBAM fees (€m)	Revenue (€m)	Total net costs (€m)
Current scope	4.085	8.584	-4.499
Indirect emissions	16.377	17.117	-0.74
Total	**20.462**	**25.701**	**-5.239**

[5] There is no BF-BOF steel production in Ghana; only EAF facilities are present. Flat steel products are imported and are therefore assumed to originate from BF-BOF production, while long steel products are assumed to be produced via EAF. Sources: Dawa Industrial Zone [here], Global Iron and Steel Tracker map [here].

[6] For aluminium, we assume a mix of 25% scrap and 75% primary aluminium. Ghana imports alumina for primary aluminium production. Source: Alcircle [here] and Valco.

[7] Source: Sandbag CBAM Simulator – Ghana unit-cost methodology (grid-mix assumptions based on internal modelling)

Going forward: more gain through more exports

The figures shown in the previous section were "backward-looking", in the sense that they were based on the amount of goods exported by countries to the EU in 2023. Here we have modelled a more transformative scenario, based on development plans announced by different sources.

Under the Ghana Integrated Aluminium Development Corporation (GIADEC) project, **domestic refining and smelting capacity is expected to expand significantly**. In particular, aluminium smelting capacity is assumed to increase from approximately **200 kt to 800 kt**, supported by the development of new refineries and smelters.

The modelling assumes that neither emission intensity of aluminium production nor of the electricity grid will change, so the bottom line is only affected by changes in export volumes.

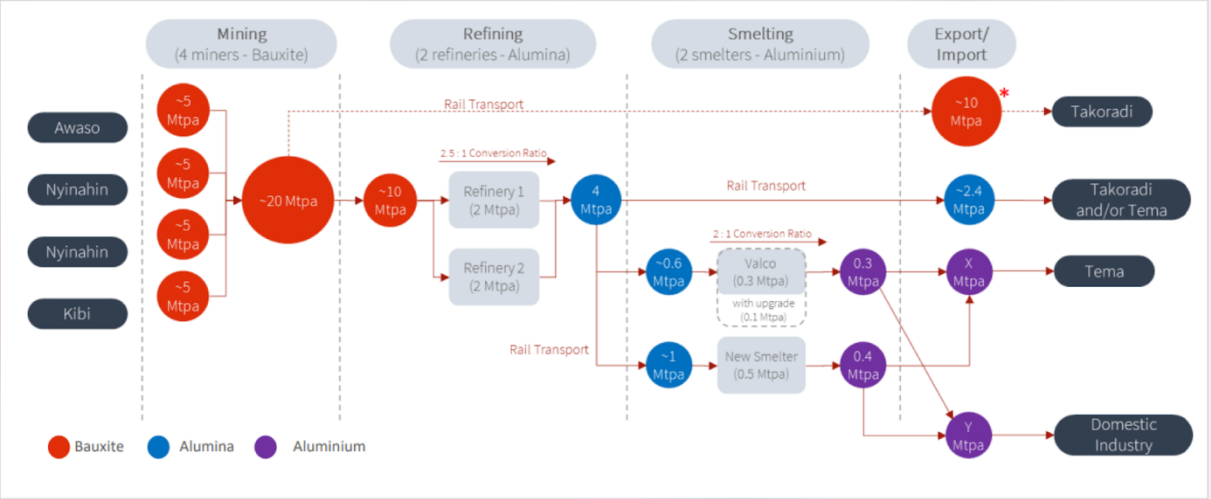

Figure 4. The transformation of Ghana's aluminium value chain under the GIADEC 2023 project. Source: GIADEC, 'Future state of Ghana's integrated aluminium industry'.

If the additional aluminium production were exported to the EU, CBAM fees applied to Ghanaian exports would amount to €74 million under the current CBAM scope, while EU price pass-through would raise export revenues to around €156 million, resulting in an overall net gain of €82 million[8]. If indirect emissions were included in the CBAM, CBAM fees would rise to €211 million (instead of €74 million), but higher EU price pass-through would more than offset this increase, leading to a net gain of €256 million per year.

[8] Source: Sandbag CBAM Simulator – Ghana unit-cost methodology (grid-mix assumptions based on internal modelling).

Summary of Ghana's CBAM impact

Ghana aluminium exports consistently record net financial gains, as EU price pass-through exceeds the value of CBAM certificates. This remains true even after implementing a development plan that is not particularly aimed at reducing climate impacts.

Table 7. Total CBAM fees and net costs (€m) for aluminium under the transformation scenario, comparing current-scope and indirect-emissions assumptions.

€ million	CBAM fees	Revenue	Total net costs
Current scope	74	156	-82
Indirect emissions	137	311	-174
Total	211	467	-256

Conclusion

CBAM is not necessarily a cost for Africa. In Ghana and Namibia, Sandbag's modelling shows how the mechanism could create net gains for exports to the EU. In Namibia this would result from green development plans, but for Ghana, industrial exports could benefit from the CBAM even without additional climate measures.