# Carbon Border Adjustment Mechanisms (CBAM), Nigeria's Export Structure, and the Green Trade Transition Challenge

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## Abstract

The European Union's Carbon Border Adjustment Mechanism (CBAM), which commenced gradual financial implementation in January 2026, poses significant challenges for emerging economies such as Nigeria. Nigeria's non-oil exports, including iron, steel, cement, aluminium, and fertilisers, are vulnerable to reduced competitiveness and declining trade revenues due to their carbon intensity. This paper examines Nigeria's exposure to CBAM-covered sectors, estimates potential fiscal and trade diversion effects, and evaluates current policy responses. Using data from the International Trade Centre (ITC), European Commission, International Energy Agency (IEA), and the National Bureau of Statistics (NBS), the study finds that Nigeria's CBAM-exposed exports, though relatively small, are concentrated in sectors with weak decarbonisation capacity and limited domestic carbon-pricing mechanisms. The paper recommends a three-pronged strategy: accelerating carbon-pricing reforms, strengthening trade diplomacy through AfCFTA and EU-Africa partnership frameworks, and promoting export diversification towards low-carbon industries. Without coordinated reforms, CBAM may deepen Nigeria's trade competitiveness challenges and undermine ongoing macroeconomic stabilisation efforts.

## Introduction

The global trade architecture is undergoing a fundamental transformation driven by climate imperatives. At the forefront of this shift is the European Union's Carbon Border Adjustment Mechanism (CBAM), a novel trade instrument that places a carbon price on imports of goods from sectors where the EU's Emissions Trading System (ETS) applies (European Commission, 2023). CBAM officially entered its transitional phase in October 2023 and moved into gradual financial implementation from January 2026, with full operation expected by 2034 when EU ETS free allowances are completely phased out (European Union, 2025).

For most African economies, including Nigeria, CBAM represents uncharted territory, as trade policy discussions have traditionally focused on oil revenue management, AfCFTA-driven tariff liberalisation, and exchange rate competitiveness (UNCTAD, 2021). The EU remains one of Nigeria's most important trading partners. In 2025, the EU accounted for approximately 36–42 percent of Nigeria's total merchandise exports, with non-oil products increasingly comprising this share (NBS, 2026).

Against the backdrop of Nigeria's macroeconomic stabilisation programme, characterised by exchange rate reform, subsidy removal, and fiscal consolidation,

the CBAM challenge arrives at a moment of acute economic fragility. The concern is not merely one of lost export revenues; it is that CBAM could accelerate de-industrialisation in precisely the carbon-intensive sectors that Nigeria is attempting to develop as part of its import-substitution and export-diversification agenda.

## The CBAM Framework: Scope, Mechanism, and Trade Implications

### 1. Scope and Covered Sectors

CBAM was established under EU Regulation 2023/956 and currently covers six carbon-intensive sectors: iron and steel, cement, aluminium, fertilisers, electricity, and hydrogen. These sectors were selected because they account for a disproportionate share of industrial carbon emissions and face the highest risk of carbon leakage — the relocation of production to countries with weaker climate regulation (European Commission, 2023). The mechanism requires EU importers to purchase CBAM certificates equivalent to the carbon price that would have been paid under the EU ETS, with exporters from countries with equivalent domestic carbon pricing eligible for a deduction (European Commission, 2023).

### 2. CBAM Phase-in Timeline

**Table 1: CBAM Implementation Timeline and Implications for Nigeria**

| Phase | Period | Key Provisions | Implication for Nigeria |
|---|---|---|---|
| Transitional | Oct 2023–Dec 2025 | Reporting obligations only; no financial charges | Data preparation required |
| Gradual Implementation | Jan 2026–Dec 2033 | Financial obligation begins; phased introduction of carbon certificates aligned with ETS free-allowance phase-out (European Union, 2025) | Rising export costs; potential trade diversion |
| Full Implementation | From Jan 2034 | Full carbon price applied to all covered sectors | Maximum fiscal exposure for Nigerian exporters |

Source: European Commission (2023); European Union (2025). Authors' compilation.

## Nigeria's Export Structure and CBAM Exposure

### 1. Overview of Nigeria's Non-Oil Export Basket

Nigeria's non-oil exports have grown modestly but remain structurally concentrated. According to the International Trade Centre (2024), Nigeria's total merchandise exports stood at approximately US$46.8 billion in 2023, of which crude oil and natural gas constituted around 82 percent. Non-oil exports, valued at approximately

US$8.4 billion, were dominated by agricultural commodities, processed foods, and a growing share of mineral-based industrial goods. Nigeria's exports to the EU in 2023 were valued at approximately US$7.1 billion (ITC, 2024). Non-oil exports to the EU have been rising, driven by the Nigerian Export Promotion Council's diversification drive and the depreciation-induced competitiveness of manufactured goods following the 2023 Naira float (NEPC, 2024).

## 2. Sectoral Exposure to CBAM

As shown in Table 2, Nigeria's most CBAM-vulnerable sectors are iron and steel, cement, and aluminium, all produced through energy-intensive processes reliant on natural gas and diesel in Nigeria's power-constrained environment. Nigeria's steel sector is dominated by small-scale electric arc and induction furnace operations. The Ajaokuta Steel Complex, though designed around blast-furnace technology, remains incomplete and non-operational at full capacity, limiting its direct EU export exposure (NBS, 2024). Dangote Cement, Nigeria's largest industrial exporter, faces particular CBAM exposure. Global cement production emits approximately 0.82 tonnes of $CO_2$ per tonne of output, with Nigerian producers recording higher intensities due to diesel backup power use (IEA, 2018). Thus, CBAM will impose significant additional costs on any EU-bound cement exports.

**Table 2: Nigeria's Key Export Commodities and CBAM Risk Exposure**

| Export Sector | Share of Non-Oil Exports (percent) | Est. Annual Export Value (US$ billion) | Carbon Intensity | CBAM Risk Level |
|---|---|---|---|---|
| Iron & Steel Products | 18.2 | 0.48 | High | Critical |
| Cement & Clinker | 9.7 | 0.26 | Very High | Critical |
| Aluminium Products | 6.4 | 0.17 | High | High |
| Fertilisers | 5.1 | 0.14 | High | High |
| Agricultural Products | 22.6 | 0.60 | Low–Moderate | Low |
| Processed Foods | 14.3 | 0.38 | Moderate | Moderate |
| Others | 23.7 | 0.63 | Mixed | Mixed |

Source: International Trade Centre (2024); National Bureau of Statistics (2024); IEA (2018); UNIDO (2023); Authors' estimates based on EU CBAM sector classifications.

## 3. Methodological Note

CBAM exposure was estimated in three steps. First, Nigeria's non-oil export shares by sector were derived from ITC (2024) mirror trade data, cross-validated with NBS

(2024) foreign trade reports. Second, sector-level carbon intensity coefficients ($tCO_2$ per tonne of output) were sourced from IEA (2018) and UNIDO (2023). Third, cost burden estimates applied three EU ETS carbon price scenarios — EUR 60, EUR 80, and EUR 100 per tonne — to the estimated $CO_2$ embedded in Nigeria's CBAM-covered EU-bound exports. The model assumes static export volumes and no domestic carbon pricing offset, representing an upper-bound cost exposure.

## Estimated Fiscal and Competitiveness Impacts

### 1. Carbon Price Scenarios

The EU ETS carbon price has fluctuated between EUR 60–100 per tonne of $CO_2$ in recent years (European Energy Exchange, 2024). Three scenarios are modelled: low (EUR 60/tonne), baseline (EUR 80/tonne), and high (EUR 100/tonne), applied to Nigeria's CBAM-exposed exports using emissions intensity data from IEA (2018) and UNIDO (2023). Under the baseline scenario, Nigerian exporters in CBAM-covered sectors would face an estimated additional cost burden of approximately US$ 38–55 million annually by 2026, rising to US$ 190–280 million by 2034 under full implementation, assuming no change in export volumes or domestic carbon pricing.

### 2. Trade Diversion Risk

Beyond the direct cost burden, CBAM risks triggering trade diversion effects. Nigerian exporters facing CBAM charges may redirect products to non-EU markets, including ECOWAS partners and Asian markets, while EU importers source from lower-carbon-intensity suppliers in countries with established carbon pricing. This could entrench Nigeria's marginalisation in EU value chains at precisely the moment when trade diversification is a top-tier national policy priority, driven by the Renewed Hope Agenda's target of a US$ 1 trillion economy by 2030 (Federal Ministry of Industry, Trade and Investment [FMITI], 2026). Studies confirm that countries lacking domestic carbon-pricing mechanisms face the strongest trade and FDI deterrence effects under CBAM (UNCTAD, 2021; Magacho et al., 2024; Maliszewska et al., 2023).

### 3. Macroeconomic Stabilisation Linkages

Nigeria's stabilisation programme — involving fiscal consolidation, exchange rate unification, and subsidy reform — creates an important context for understanding CBAM's second-order effects. The naira depreciation since June 2023, while boosting nominal export competitiveness, has simultaneously elevated the domestic cost of the energy inputs needed to decarbonise industrial production (IMF, 2024). This creates a perverse dynamic: reforms intended to improve Nigeria's external competitiveness may inadvertently increase carbon intensity per unit of output by making clean energy investments more expensive in naira terms, thereby deepening CBAM exposure over time.

## Policy Responses: A Three-Pronged Framework

### 1. Domestic Carbon Pricing Reform

The most direct route to reducing Nigeria's CBAM exposure is the establishment of a domestic carbon pricing mechanism. Under CBAM rules, exporters from countries with equivalent mandatory carbon pricing can claim a deduction for carbon costs already paid at home (European Commission, 2023). Nigeria has taken nascent steps: The Climate Change Act 2021 mandates a carbon budget framework, and the Nigeria Carbon Market Activation Policy (2022) signals intent to develop voluntary carbon markets (Federal Ministry of Environment [FMENV], 2022). However, voluntary carbon markets do not meet the EU's CBAM equivalence standard, which requires mandatory pricing underpinned by a robust MRV infrastructure. Establishing such a regime is estimated to require a startup fiscal outlay of US$ 15–30 million for the MRV system alone, alongside legislative amendments and capacity development — achievable on a 2026–2028 timeline. Revenue generated could be ring-fenced to finance industrial decarbonisation.

### 2. Proactive Trade Diplomacy

Nigeria must engage the EU proactively within multiple diplomatic frameworks. The African Climate Foundation (2023) has demonstrated that African CBAM-exposed economies stand to benefit most from negotiating carbon equivalence recognition and revenue-sharing arrangements with the EU. The AfCFTA–EU Economic Partnership Agreement (EPA) provides a multilateral channel for collective negotiation of such arrangements. A structural constraint is that Nigeria has not yet ratified the EU-West Africa EPA, limiting its formal negotiating leverage; ratification should be treated as an urgent prerequisite for CBAM diplomacy. Nigeria should also engage within the WTO's Committee on Trade and Environment to build a developing-country coalition, consistent with the UNCTAD (2021) position that CBAM's burden disproportionately falls on developing nations.

### 3. Export Diversification Towards Low-Carbon Sectors

Nigeria's medium-term export diversification strategy must incorporate an explicit green trade dimension. Sectors with naturally low carbon intensity — agro-processing, digital services, renewable energy equipment, and pharmaceuticals — face no CBAM exposure and represent growing EU import demand (ITC, 2024). The NEPC should recalibrate incentive structures to channel trade finance, export insurance, and market access support towards these sectors. Nigeria's emerging renewable energy sector presents an opportunity to supply EU markets with green hydrogen and renewable energy certificates, converting the CBAM threat into a strategic trade opportunity (IEA, 2018).

**Table 3: Policy Recommendation Matrix for Nigeria's CBAM Response**

| Policy Area | Recommended Action | Timeline | Lead Agency |
|---|---|---|---|
| Carbon Pricing | Enact a mandatory domestic carbon levy or cap-and-trade scheme for industrial emitters, backed by MRV infrastructure, to qualify for EU CBAM equivalence recognition | 2026–2028 | FMENV / FMFBNP |
| Industrial Decarbonisation | Launch a National Industrial Decarbonisation Fund targeting steel, cement, and aluminium; capitalised through carbon revenues and multilateral climate finance | 2026–2030 | FMITI / BOI |
| Trade Diplomacy | Appoint a dedicated CBAM trade negotiating team; engage EU on carbon equivalence within the AfCFTA–EU EPA framework and prioritise EPA ratification | Immediate | FMITI / MFA |
| Export Diversification | Redirect NEPC and NIPC incentives towards low-carbon export sectors: agro-processing, ICT services, renewable energy equipment, pharmaceuticals | Immediate | NEPC / NIPC |
| Data & Monitoring | Develop a national GHG emissions registry for traded goods aligned with EU CBAM reporting standards | 2026–2027 | NBS / FMENV |

Source: Authors' compilation. FMENV = Federal Ministry of Environment; FMFBNP = Federal Ministry of Finance, Budget and National Planning; FMITI = Federal Ministry of Industry, Trade and Investment; BOI = Bank of Industry; MFA = Ministry of Foreign Affairs; NEPC = Nigerian Export Promotion Council; NIPC = Nigerian Investment Promotion Commission; NBS = National Bureau of Statistics.

## Conclusion and Policy Recommendations

The EU's CBAM is not a distant regulatory abstraction. It is a live trade policy instrument whose financial implications for Nigerian exporters begin accumulating from January 2026. Nigeria's macroeconomic stabilisation agenda, while necessary, has not yet integrated a coherent green trade strategy capable of managing CBAM-related risks. Nigeria's response must be seen not merely as a defensive adjustment but as a strategic opportunity to position the country at the frontier of the global green trade transition.

The following priority actions are recommended:

- Enact a mandatory domestic carbon pricing framework for industrial emitters by 2028, structured to qualify for EU CBAM equivalence recognition.
- Establish a National Industrial Decarbonisation Fund, capitalised through carbon revenues and multilateral climate finance, targeting the most CBAM-vulnerable sectors.
- Appoint a dedicated CBAM trade negotiating team within FMITI to engage the EU

on carbon equivalence within the AfCFTA–EU EPA framework, and prioritise EPA ratification.

- Redirect NEPC and NIPC incentives towards low-carbon export sectors.
- Develop a national GHG emissions registry for traded goods aligned with EU CBAM reporting requirements, by 2027.

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