

Chapter 5


Carbon, Clauses, and Chains: The New Architecture of Sustainable Global Trade

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ABSTRACT

The international trade architecture is shifting from a focus on pure economic growth to global emissions mitigation, primarily to combat carbon leakage. By utilizing instruments like the Carbon Border Adjustment Mechanism (CBAM) and integrating environmental provisions into trade agreements, green production standards are harmonized to protect climate goals from policy asymmetries. This transition is systemically transmitted through Global Value Chains (GVCs), where multinational

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transparency demands drive the adoption of environmental standards in developing nations. Ultimately, the synergy between carbon pricing, legal clauses, and GVC connectivity shifts the global paradigm from cost efficiency to sustainability, fostering transnational decarbonization and inclusive green growth.

INTRODUCTION

In the contemporary global market, integrating sustainability into trade practices has become urgent. The restructuring of global trade to incorporate sustainable practices is driven by the need to reduce environmental impacts, particularly carbon emissions, and promote long-term economic and social benefits (Chen & Zhang, 2025; Jayaswal et al., 2025; Sarkar et al., 2018). This shift is evident in the implementation of various carbon regulatory policies, such as carbon cap-and-trade systems, carbon taxes, and carbon offsets, which aim to reduce greenhouse gas emissions and encourage investment in carbon reduction technologies (Kang & Tan, 2023; Zarrinpoor & Khani, 2021).

However, this transformation effort directly confronts the realities of global trade. Global trade, encompassing production processes and cross-border transportation, is a major contributor to carbon emissions that drive climate change (IPCC, 2022). This dependency creates an economic dilemma: on the one hand, trade expansion stimulates economic growth through increased industrial activity and massive energy consumption, which linearly increases pollution (World Bank Group, 2020). On the other hand, the resulting economic growth serves as crucial capital to fund research on clean technologies and energy efficiency needed in the future (OECD, 2025). In this reciprocal relationship, the main challenge is achieving sustainability that balances economic ambitions with environmental protection (United Nations, 2019).

Here, the role of trade policy becomes vital (WTO, 2020). Trade liberalization, for example, is a double-edged sword: it can accelerate the spread of green technological innovation worldwide (UNCTAD, 2021), but without strict regulation, it also risks exacerbating environmental damage from surges in global production and transportation volumes (OECD, 2019). In particular, this study highlights the issue of carbon emissions, which has become a crucial part of international trade. Various approaches, ranging from carbon pricing regulations and carbon restrictions to integrating environmental provisions into agreements and efforts to transform industrial chains to move towards green production, have become an important part of efforts to create a sustainable trading system and to mitigate climate change. The literature shows that reducing carbon emissions in international trade can be achieved through various strategic measures, particularly carbon regulation and carbon restrictions, which drive change toward green trade through innovation and

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