

Green Trade Barriers in the Context of Globalization: Legal Challenges and Countermeasures

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Abstract. The acceleration of globalization has brought about the deepening of economic cooperation, but also triggered an urgent need for environmental protection. Green trade barriers, as a trade restriction measure in the name of environmental protection, have gradually become an important factor in international trade. Major countries and regions have widely implemented green trade barriers, which have made enterprises face complex trade obstacles and affected the international trade order and domestic industrial competitiveness. Although previous studies have explored the impact and implementation of green trade barriers, there are still certain research gaps regarding their legitimacy under the framework of international law, their actual effects on environmental protection, and their specific impacts on domestic industries. Studying the legitimacy of green trade barriers under the framework of international law will help to clarify their reasonable limits. Evaluating their actual effects on environmental protection and analyzing their impact on domestic industries will help provide a scientific basis for policy making and promote a win-win situation for the economy and the environment. This article conducts research from three aspects: current dilemma, in-depth analysis, and optimization path, to provide possible opinions and response strategies for solving the problem of green trade barriers.

Keywords: Green trade barriers; environmental protection; WTO; legal countermeasures.

1. Introduction

In recent years, economic globalization has been advancing, and international trade has played an important role in promoting economic and cultural exchanges between countries. However, with the emergence of global environmental problems, environmental awareness has been increasing in countries around the world, especially in developed ones. Since the adoption of the Declaration of the United Nations Conference on the Human Environment, developed countries have gradually shifted from focusing only on economic benefits to pursuing the coordinated achievements of economic, social and environmental goals when developing their economies. As many international environmental agreements such as the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on Biological Diversity (CBD), and the Paris Agreement were adopted, more and more countries began to formulate, amend and improve domestic laws, regulations and measures, covering all aspects of natural resources, human, animal and plant life, and health.

Since the 1990s, with the conclusion of the Uruguay Round of negotiations and the establishment of the World Trade Organization, international trade has been liberalized, and various tariff and non-tariff barriers have been greatly weakened. However, recently, due to the relatively slow economic growth in some countries or regions, trade protectionism has been on the rise. Green trade barriers have emerged as a favored tool by many countries due to their perceived legitimacy and the WTO's generally supportive stance towards environmentally justified trade restrictions.

Existing literature primarily focuses on specific WTO case analyses of green trade barriers or investigates the interaction between these barriers and particular industries within a country, suggesting targeted solutions. However, there is a scarcity of studies that adopt a macro perspective by taking globalization as a starting point to explore the legal challenges and strategic responses to green trade barriers. In today's globalized context, it is crucial to deep analyze the recent trends and challenges associated with green trade barriers, assess their impact on international trade, and evaluate their effectiveness in promoting environmental objectives.

The structure of this paper is designed to methodically address the multifaceted nature of green trade barriers within the globalized trade environment. Section 1, the introduction, sets the stage by highlighting the importance of green trade barriers in the context of economic globalization and environmental sustainability. Section 2 examines the current situation and difficulties of green trade barriers, focusing on their evolution, the rationale behind their use, and the controversies they spark within international trade. Section 3 delves into the legitimacy of green trade barriers under the framework of international law, assessing their legal justifications, their real impacts on environmental protection, and their influence on the domestic industries of various countries. Section 4 proposes response strategies, advocating for the strengthening of international cooperation and multilateral mechanisms, the improvement of domestic legal systems and policies, and the promotion of environmental protection technologies and green consumer practices. Finally, Section 5 concludes the paper by summarizing the findings and offering recommendations for future policy and legal frameworks to better integrate environmental considerations into international trade law.

2. Current Situation and Dilemma

2.1. Definition and Classification of Green Trade Barriers

Green trade barriers arose in the 1960s when rapid industrialization began to seriously harm the human environment, prompting a global shift towards sustainable development. This shift was marked by the United Nations' first Conference on the Human Environment in 1972, which issued a declaration emphasizing the commitment to sustainable development and environmental preservation. Trade barriers in international trade today are generally divided into tariff barriers, which protect domestic markets by imposing duties on imports, and non-tariff barriers, which include various forms of market restrictions like licenses and quotas. In the context of economic globalization, traditional tariff barriers have been significantly reduced under international treaties, leaving room for non-tariff barriers such as green trade barriers that serve both environmental and economic purposes. Different scholars have different definitions of green trade barriers, which can be summarized as follows: green trade barriers are market access barriers that are implemented in accordance with the law and have various forms, mainly aimed at protecting environment and safeguarding the interests of domestic enterprises.

There are four main types of green trade barriers. Firstly, Green Technology Sign involves technologies deemed environmentally friendly based on their production processes or supply chains, with developed countries setting stringent standards that often exclude developing nations due to their limited technological capabilities [1]. Second, Green Environmental Mark System communicates to consumers the eco-friendliness of products through marks that are either legally required, voluntarily established by industry organizations, or certified by marking authorities, necessitating exporters to obtain these certifications before entering such markets. Thirdly, Green Package System utilizes environmentally friendly materials and manufacturing techniques that reduce energy use and the environmental impact of packaging, though compliance increases export costs and may lead to trade disputes. Finally, Green Quarantine System, established post the Uruguay Round, allows countries to implement sanitary and phytosanitary measures to protect against ecological threats posed by imported goods, emphasizing the protective yet restrictive nature of these trade barriers.

2.2. Implementation Status in Major Countries and Regions

Since the 1990s, when environmental issues - and in particular climate change - began to occupy a prominent place in international affairs. The European Union has been at the forefront, implementing a series of green trade measures. In December 2019, the European Union proposed a plan called the European Green Deal, which aims to make Europe the world's first climate-neutral continent by 2050. The EU's approach includes unilateral measures such as the European Carbon Border Adjustment Mechanism (CBAM), regulations on deforestation-free products and the directive on Corporate Sustainability Due Diligence (CSDD). Additionally, the EU has engaged in bilateral

agreements, such as the one with New Zealand which incorporates innovative chapters on trade and gender as well as trade and indigenous (Maori) peoples' rights [2]. At the multilateral level, the EU's actions are currently more experimental.

The US green trade policy is relatively flexible, focusing on promoting environmental protection through taxes, subsidies and incentives. In addition, different states in the US may have different environmental standards and regulations, which leads to certain complexity in policy implementation. The US Customs and Border Protection oversees international green trade measures, with its Green Trade Strategy launched in June 2022 to combat climate change within the trade sector.

China, as it opens its economy more widely to international trade, has been enhancing its regulatory framework for green trade. In the past five years, China has promulgated the "Administrative Measures for the Use of the Green Product Label" (2019) and the "Green Product Certification Implementation Rules" (2021) for multiple products to establish a unified green import and export standard, certification, labeling and statistical system. During the 14th Five-Year Plan period (2021-2025), China emphasized high-quality foreign trade development and the promotion of green, low-carbon products.

Due to the WTO's restrictions on import and export tariffs of various countries, most countries choose to adopt technical trade measures in their green trade strategies to protect human health and safety, protect the environment, and protect their own emerging industries. In 2023, the WTO reported a stable and slightly increasing trend in technical barriers to trade (TBT) notifications from developed countries like the United States, while developing countries, including China, showed a continuous upward trend [3]. Since 1995, the US, EU, and China rank as some of the top members in terms of TBT notifications. The difference between the green trade strategies of different countries lies in the fact that due to the differences in international influence and foreign policy, the green trade policies will also be different. For example, the EU actively shapes global environmental standards and partakes in international treaties, the US's policy fluctuates with domestic politics but leads in technological innovation and green finance, and China promotes green development globally through initiatives like the "Belt and Road Initiative" and enhances its environmental standards.

2.3. Dilemma and Challenges

In international trade, all countries can reach a consensus on the formal legitimacy of green trade barriers. So, in the DSB case involving the issue of green trade barriers, the focus of contention between the parties often revolves around Article 20 of the GATT 1994. According to GATT 1994 Article 20, if green trade barriers established by one country need to be recognized and respected by other countries, they must not constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail nor should they result in "a disguised restriction on international trade". When the establishment of a green trade barrier, even if its purpose aligns with the requirements of Article (b) or (g), effectively results in arbitrary and unjustifiable discrimination or constitutes a disguised restriction on trade, its legitimacy can be challenged by disputing countries through the WTO dispute settlement mechanism [4].

Furthermore, the disparities in economic capabilities between developed and developing nations also introduce significant legal challenges in the realm of green trade barriers. Developed nations, with robust economies and advanced technologies, can implement stringent environmental standards which are often embedded within their legal frameworks for trade. These standards, while promoting sustainable practices, pose significant legal challenges for developing countries. The latter struggle to meet these high standards due to their differing economic conditions and technological capacities, leading to disputes under international trade law. This situation often results in legal contests at the World Trade Organization, where developing nations may argue that the stringent standards act as a barrier to trade, indirectly discriminating against them and violating the principles of non-discrimination as outlined in international trade agreements. Thus, the implementation of green trade barriers not only impacts economic and environmental practices but also poses profound legal implications for global trade equity and justice.

3. In-depth Analysis

3.1. The Issue of Legitimacy under International Law

3.1.1. Compatibility of WTO rules and green trade barriers

The legitimacy of green trade barriers is mainly reflected in Article 20 of GATT 1994. Article 20 of the GATT 1994 emphasizes in its preamble that certain measures adopted by countries, provided they meet certain requirements, shall not be considered as violating the treaty. This implies that As long as the purpose of setting up green trade barriers is legitimate and the implementation process does not "constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail", green trade barriers are legal even if they restrict the freedom of trade stipulated by WTO rules to some extent. In other words, WTO rules and green trade barriers are compatible.

3.1.2. Application examples in international dispute settlement mechanisms

In the cases concerning green trade barriers, almost all of them failed because their measures did not comply with the "Chapeau" of GATT Article 20, which "constitutes a means of arbitrary or unjustifiable discrimination". Among these cases, the EU-Asbestos case is one of the few cases that successfully invoked the general exception clause.

Dispute Settlement Body usually apply Article 20 of the GATT 1994 in two steps to determine whether a measure constitutes a green trade barrier. Specifically, they first assess whether the disputed measure meets the requirements of Article (b) or (g) based on relevance and necessity. If the measure meets the criteria for either relevance or necessity, it is then assessed against the requirements of the preamble of Article 20.

Based on the evidence provided by the EU and the experts' determination, the DSB believes that chrysotile asbestos products pose a threat to human health and there are no other alternative measures to protect human health, so the EU's measures have relevance and necessity. Through the analysis of the disputed decree, the expert group believes that the import ban has not benefited the French alternative fiber industry, nor has it harmed the interests of third-country producers, so it does not constitute a disguised restriction on international trade [5]. As a result, the EU won the case, providing a good example for other countries that want to set up and reasonably use green trade barriers.

3.1.3. The relationship between green trade barriers and other international environmental protection agreements

Green trade barriers are closely related to other international environmental agreements in terms of goals and means. International environmental agreements, such as the Kyoto Protocol, the Paris Agreement, and the Convention on Biological Diversity, are all established to address global environmental issues. Green trade barriers have the same goals as these agreements and can be seen as measures taken by countries to fulfill their obligations under these international environmental agreements.

At the same time, international environmental agreements also reduce the negative impact of green trade barriers to a certain extent. For example, some international environmental agreements provide technical assistance to developing countries, helping them improve their environmental protection capabilities through technology transfer or project cooperation, thereby reducing trade barriers caused by green trade barriers. Some international environmental agreements also have monitoring and evaluation mechanisms to help evaluate the effectiveness and impact of environmental protection measures. For example, the Paris Agreement established a Nationally Determined Contributions mechanism, and countries need to submit reports regularly to evaluate the effectiveness of their emission reduction measures. This evaluation mechanism can prevent green trade barriers from becoming a tool for trade protection to a certain extent.

3.2. The Actual Effect of Green Trade Barriers on Environmental Protection

3.2.1. Balancing environmental protection goals with economic development

Environmental protection and economic development are essentially complementary and mutually reinforcing. In the short term, strengthening environmental protection may bring certain pressure to economic development, but this pressure does not come from increasing the intensity of environmental protection, but from the unreasonable industrial structure in these places, insufficient technical reserves for green development of enterprises, or imperfect systems and mechanisms for promoting environmental protection, etc [6]. Therefore, achieving environmental protection goals also provides more room for economic development in various countries. For underdeveloped countries, economic development may still be the primary goal of national development, but for developed and developing countries, finding a balance between environmental protection and economic development can bring more long-term benefits to the country.

3.2.2. Analysis on the environmental benefits of green trade barriers

Green trade measures of various countries are mostly formulated around the emission of harmful substances, the destruction and reduction of natural resources, and the use of clean production methods.

For example, some countries have established legal limits on pesticide and fertilizer residues in imported agricultural products to mitigate soil and water pollution. Such measures are often supported by national environmental protection laws and are in line with international agreements such as the Stockholm Convention on Persistent Organic Pollutants. This convention aims to eliminate or restrict the production and use of persistent organic pollutants, which include certain pesticides [7].

Stringent emission standards for vehicles, aimed at reducing harmful substances and greenhouse gases, are typically enacted under national air quality laws such as the Clean Air Act in the United States [8]. Internationally, these standards may also reflect commitments under the Paris Agreement, which, while not directly enforceable through trade measures, encourages countries to reduce their carbon emissions and thus supports the rationale for stringent domestic regulations on vehicle emissions.

Additionally, restrictions on the import of products that excessively exploit natural resources—such as wood, fish, and minerals—are supported by laws like the Lacey Act in the U.S., which makes it illegal to trade in wildlife, fish, and plants that have been illegally taken, possessed, transported, or sold. Internationally, these measures are also reinforced by the Convention on International Trade in Endangered Species of Wild Fauna and Flora, which aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival [9].

These green trade barriers not only reduce environmental pollution and promote the sustainable use of natural resources, but they also encourage clean production methods and enhance public environmental awareness. By embedding these practices within both national legal systems and international agreements, countries are able to leverage legal frameworks to support environmental objectives while promoting innovation in green technologies.

3.2.3. Potential impacts on biodiversity

Green trade barriers are restrictive measures mainly set up to protect the environment. While protecting the environment, they also have potential impacts on biodiversity.

Firstly, some countries avoid harming endangered species by imposing certain restrictions on product collection techniques. For example, under the Endangered Species Act in the United States, it is illegal to harm, harass, or trade in endangered species without a permit. Similar protections are enforced under the European Union's Habitats Directive, which aims to conserve natural habitats and wild species across Europe. Secondly, strict quarantine systems can reduce the risk of invasion of alien species. Thirdly, a sustainable development certification mechanism is established to protect animal and plant habitats from serious damage. These green trade barriers have a certain positive impact on protecting the biodiversity of various countries to a certain extent.

3.3. Impact on Domestic Industry

3.3.1. Protectionism and domestic industrial upgrading

Green trade barriers have a certain positive effect in protecting the environment, but it is undeniable that the establishment of some green trade barriers is also suspected of trade protectionism. By setting up green trade barriers, foreign products will find it difficult to enter the domestic market due to increased export costs or inability to meet the required production technology, and the circulation rate of domestic products in the domestic market will be greatly increased. At this time, the government of the country can promote domestic enterprises to adopt green production methods by introducing policies such as tax cuts and interest rate reduction loans, or provide technical training and support to help enterprises master green production methods, so as to promote domestic industrial upgrading while protecting the market share of domestic enterprises from being encroached upon.

3.3.2. The impact of green trade barriers on small and medium-sized enterprises

However, although green trade barriers can protect domestic industries to a certain extent, due to technical and cost barriers, and the difficulty of financing for small and medium-sized enterprises themselves, the adoption of new green technologies and methods will also bring heavy burdens to domestic small and medium-sized enterprises, resulting in a decline in their competitiveness in the market, thus affecting their economic conditions and resource management capabilities. However, due to the increasing global demand for green products and technologies, small and medium-sized enterprises can not only achieve sustainable development through environmental protection transformation, laying the foundation for the long-term and healthy development of the enterprise, but also have the opportunity to expand overseas markets and enter high-end markets to obtain greater profits.

3.3.3. Adjustment and adaptation of manufacturing and service industries

Both manufacturing and service sectors must adapt to the realities of green trade barriers. In manufacturing, where the value-added of products may be low, the impact of such barriers is pronounced, necessitating significant technological and innovative advancements. Some manufacturers may opt to relocate production to countries with less stringent environmental regulations—a strategy that, while effective in the short term, may not be sustainable as global environmental standards tighten. In contrast, the service sector, including tourism and transportation, can leverage green trade barriers to enhance their brand image and competitiveness by promoting environmentally friendly practices and products. For instance, developing green financial products or eco-friendly tourism packages can attract environmentally conscious consumers and align with international standards like those promoted by the Green Climate Fund, which supports projects that enhance the adaptive capacity of the tourism sector to climate change.

Overall, while green trade barriers pose legal and operational challenges, they also drive industrial innovation and adaptation, fostering a more sustainable and environmentally conscious global economy.

4. Methods of Optimizing

4.1. Strengthening International Cooperation and Multilateral Mechanisms

International standards refer to standards developed by the International Organization for Standardization, the International Electrotechnical Commission and the International Telecommunication Union, as well as standards developed by other international organizations that are confirmed and published by the International Organization for Standardization [10]. The conflicts caused by green trade barriers are partly due to the inconsistency of trade environmental protection policies among countries: some countries have extremely high standards for product production and packaging, while some countries cannot meet the environmental protection requirements of other countries. Countries should actively participate in the formulation of international environmental

protection standards, provide opinions and requirements for the formulation of international standards, and promote international standards that can both protect the environment and take into account the actual conditions of developing countries, so as to reduce friction on environmental issues in international trade.

Currently, the most active transnational environmental protection organizations in the world include Greenpeace, World Wildlife Fund, and International Institute for Environment and Development. These environmental protection organizations are committed to promoting the formulation and implementation of environmental protection policies by communicating and cooperating with multinational companies and environmentalists in various countries and providing policy recommendations. Countries can make transnational environmental protection organizations more effective by promoting transnational environmental protection organizations and encouraging companies to participate in their activities and initiatives that are conducive to protecting the environment. Furthermore, developing and developed countries should foster a new cooperative model that prioritizes environmental protection, rejects protectionist green trade barriers, and promotes economic trade cooperation through environmentally favorable trade agreements.

4.2. Improving Domestic Legal System and Policies

In the early 1980s, the international standards adopted by countries such as Britain, France, and Germany had reached 80% [11], while the environmental protection policies of many developing countries are still difficult to align with international standards. Developing countries should actively learn from the laws and regulations of developed countries, formulate and amend relevant laws and regulations, and formulate strict environmental standards based on international standards and their own actual conditions to adapt to international rules. At the same time, multinational companies are required to strictly abide by laws and regulations, and are encouraged to produce products in accordance with international standards and obtain international environmental certification to enhance their international trade competitiveness.

To institutionalize green trade barriers domestically, firstly, countries can study and evaluate international experience, understand the experience of other countries and regions in formulating relevant laws and regulations on green trade barriers, analyze the challenges and successful experiences encountered by these countries in the implementation process in order to draw useful lessons; secondly, formulate and amend relevant laws, including but not limited to the Environmental Protection Law, the Ecological Compensation Law, etc., to ensure that these laws can support and regulate the implementation of green trade barriers; thirdly, when formulating relevant regulations, widely solicit opinions from the public, enterprises and experts to enhance the transparency of regulations and public participation.

After formulating the corresponding laws and regulations, countries also need to strengthen domestic supervision and enforcement. A cross-departmental cooperation mechanism can be established, such as the Ministry of Environmental Protection, Customs, and the Ministry of Commerce working together to establish a joint working group or hold regular policy coordination meetings to ensure that green trade barriers are implemented in accordance with laws and regulations. At the same time, a special supervision agency can be established to inspect and review the environmental standards of imported and exported products to ensure that products that do not meet the standards cannot enter the market. In addition, countries should also strengthen law enforcement, impose penalties on violations of environmental standards, and ensure the effective implementation of laws and regulations.

4.3. Promote Environmentally Friendly Technologies and Green Consumption

If countries want to use green trade barriers reasonably, it means that when setting up green trade barriers, they will not unreasonably hinder international trade. So in essence, countries' efforts to innovate technology can effectively reduce the restrictions brought by green trade barriers. For example, companies can use blockchain technology to achieve transparency and traceability of the

supply chain. In this way, trading partners can clearly see whether the production process of the product meets green standards, reducing unnecessary trade disputes and improving the trust of consumers and trading partners.

In order to promote enterprises to develop clean production technology, energy-saving equipment and waste treatment technology, and then apply them to production, packaging, transportation and other links in various industries, and gradually realize the commercialization of green technology, the government needs to introduce some incentive policies. For example, by providing R&D subsidies and interest-free loans, the R&D costs of enterprises can be reduced, and enterprises can be funded for basic research and applied research on green technology; tax exemptions and deductions can be provided to enterprises engaged in the R&D and application of green technology, and enterprises can be encouraged to increase their investment in the field of green technology; cooperation between enterprises, universities and scientific research institutions can be promoted, joint laboratories and technology R&D centers can be established, and green technology problems can be jointly overcome, and technology transfer and achievement transformation can be promoted.

The market is regulated by supply and demand. If consumers' demand for green and environmentally friendly products increases, more companies will choose to supply green products. The government can use the media, educational institutions and other channels to publicize the importance of environmental protection, promote green products, and advocate green consumption to raise public awareness of environmental protection. As a result, more companies will produce green products, obtain green certification, and create green brands.

5. Conclusion

Green trade barriers are one of the most common non-tariff barriers in international trade today. Through the rational use of various countries, they can effectively protect the environment and promote sustainable economic development. However, due to the different economic development levels between developed and developing countries, many products exported by developing countries cannot meet the environmental protection standards stipulated by the laws of developed countries, resulting in disguised discrimination against developing countries. In this case, how countries can actively deal with green trade barriers and reach agreements that benefit both parties is a question that the international community needs to consider. By strengthening international cooperation and multilateral mechanisms, improving domestic legal systems and policies, and promoting environmental protection technologies and green consumption, countries can break through green trade barriers, give full play to their own advantages, and let environmental protection and free trade live together in the sun.

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