

INTERNATIONAL TRADE AGREEMENTS: THE INTERPLAY BETWEEN TRADE AND THE ENVIRONMENT

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Introduction

1.1 Background of the Study

From ancient times, human beings have always had an innate drive to explore and discover new horizons. The pursuit of expanding boundaries and seeking out uncharted territories has been particularly pronounced during the ‘Age of discovery’. As a result, humans have journeyed to every corner of the globe. Despite the perception of a distance between individuals from different areas of this world, the interconnectedness of societies is undeniable. The relationship between a farmer in the southern hemisphere and a white-collar worker in the northern hemisphere may not be immediate, but it is in fact more profound and intricate than one might imagine.

From the time of the first European explorers venturing into new territories and discovering the abundance of spices and exotic goods that the rest of the world had to offer, there has been a growing drive towards interconnectivity. It quickly became difficult for a single nation to handle the increasing flows of goods. There was a pressing need for a more organized and institutionalized approach to address trade flows, which led to the development of the first trade agreements, most notably the Magna Carta or the Treaty of Tordesillas.

While the earlier trade agreements cannot be compared in terms of complexity to recent ones, they still played an important role in shaping global trade and commerce. In order to understand the birth of modern trade agreements, it is necessary to examine key historical events that fundamentally changed the economic landscape. During the sixteenth and eighteenth centuries, the idea of protectionist policies began to lose favor, thanks in part to the work of Smith and Ricardo who advocated for liberalization. This marked the beginning of a new perspective on trade, one that extended beyond the interests of individual merchants to encompass the well-being of entire populations. The completion of major infrastructure projects such as the Suez and Panama Canals, as well as the Trans-Siberian Railway, were clear examples of this change of perspective.

Undoubtedly, there can be identified various moments when protectionist tendencies resurfaced and slowed down the path toward free trade. In the first half of the twentieth century, two world conflicts disrupted the connections between and within Europe. As a result, the well-being of a significant portion of the world population decreased. In the aftermath of this dark period, global leaders recognized the importance of establishing the world's first economic management institutions, internationally recognized bodies such as the General Agreement on Tariffs and Trade (later evolved into the World Trade Organization), the International Monetary Fund, and the World Bank. The underlying logic of their choices can be summarized by this quote by Frédéric Bastiat: "When goods do not cross borders, soldiers will," suggesting that economic interdependence between nations can promote peace. Countries that are economically intertwined have interest in maintaining positive relations and avoiding conflicts. When we consider the relatively low number of war deaths and the relatively few conflicts that have occurred in the past century, it is clear that this system has been successful.

In recent times, there has been a shift in public focus towards the problem of Climate Change, which is now considered the most pressing issue ever faced by mankind. It is undeniable that human activities have contributed to the rising temperature compared to the pre-industrial period, pressing us to reconsider how we conduct our lives, including our trade practices. As a result, environmental concerns have gained significant importance in the structuring of trade agreements, as an attempt to minimize emissions and preserve ecosystems of signatories. However, it is important to acknowledge that these agreements are not flawless and can be subject of criticism.

1.2 Statement of the Problem

Over the last few decades, the effects of climate change have become increasingly evident. The rising temperatures, sea levels, melting glaciers, and collapsing ecosystems are some of the indicators of the transformations underway. These changes have already impacted many aspects of our lives, and more changes are expected in the future. One such area likely to be affected is our trading practices.

It is worth noting that, until recently, environmental issues were given marginal consideration in trade policy, with their inclusion largely limited to general exceptions that allowed for the protection of the environment under Article XX of GATT. However, recently, various trade agreements have introduced specific clauses aimed at making trade policies more environmentally-friendly. These provisions include the protection of endangered species, the reduction of greenhouse gas emissions, and the promotion of sustainable development.

Undoubtedly, these provisions serve a noble cause, but they have been subject to criticism from multiple fronts, including those with a more liberalist worldview and those who prioritize, above all, the protection of the environment. The former group's main critique pertains to the unavoidable trade-off between economic growth and environmental protection. In order to fully benefit from trade and progress towards higher stages of development, countries may have to compromise on environmental protection and loosen their environmental laws.

The latter group moves various critiques concerning those agreements. They argue that the negotiations surrounding these provisions lack transparency, with most international agreements, including trade agreements, being conducted behind closed doors. This limits the general public's capacity to intervene and have a say in the process. Additionally, they criticize the lack of enforceability of these provisions, which are often not legally binding, plus, there could be uncertainties over the authority that should intervene in the case of breaches. Finally, they advocate for stronger laws that set proper environmental treaties instead of just standards to follow, which would be more impactful in addressing pressing environmental issues.

The disagreement between the two worldviews is more nuanced than one might expect, considering the geographical location of the two sides. Those who support more stringent regulations are primarily from wealthy countries that have been able to develop for centuries without worrying about emissions or pollutants from their industries. Those who prefer a more

liberal, laissez-faire approach come from regions of the world that started developing relatively later and have therefore begun to pollute more only in recent times.

The key of the problem here is not just the opposition over regulations or economic views, moral concerns may also arise. Is it fair to limit the economic opportunities of notably poorer countries? And if we don't, would it be fair to future generations left to face the effects of climate change?

1.3 Purpose of the Study

As we will observe, international trade and the environment can significantly impact each other, and given the growing interests in these issues among international actors and the general public, it is reasonable to assume that they will become more central in the coming years. The aim of this thesis is to analyze the overall framework that encompasses these topics before delving into specific cases that enable the reader to fully comprehend their interconnectedness. By doing so, we can gain a more comprehensive understanding of the types of environmental provisions that have been incorporated into trade agreements.

This thesis will investigate the various areas in which trade agreements can have an impact, such as trade policy, tariffs, and investments. Moreover, the research will focus on examining the specific provisions and how they affect the economies and ecosystems of the signatory countries. The primary objective of this study is to determine whether and to what extent these provisions can facilitate the adoption of greener trading practices and promote sustainable development towards a cleaner future.

It is important to note that throughout the analysis, I will address various topics that cannot be easily categorized under a single subject. This complexity arises from the deep interconnectedness of international trade. I will discuss arguments pertaining to the economic aspects of global trade while attempting to provide a comprehensive framework concerning the legal structures that countries have developed over the years. Since this is a master's thesis from Departments of Economics, my analysis will predominantly focus on the economic perspective, which constitutes the primary emphasis I aim to present.

1.4 Research Questions

The reader can appreciate the complexity of addressing specific issues related to international trade and the measures taken by policy makers to counteract climate change. The topic is vast and requires consideration of the broader framework surrounding it. For this reason, this thesis aims to address various concerns regarding the relationship between trade and the environment. I will aim at providing comprehensive answers to the following research questions:

1. How have international trade agreements evolved over time to address environmental concerns, and what are the key features of modern trade agreements that incorporate environmental provisions?
2. What are the economic and environmental impacts of international trade agreements with environmental provisions on signatory countries?
3. What are the critiques and limitations of environmental provisions in trade agreements, and how can they be addressed to promote more inclusive and equitable environmental outcomes?

1.5 Scope and Limitations

In terms of the analytical part of this thesis, the primary focus will be on document analysis and secondary data sources. This will involve examining the extensive academic literature and official reports on the broad topics being investigated, in addition to several individual case studies. Due to the multitude of stakeholders involved and the broad scope of these topics, it would not be feasible for a single student to collect primary data. Fortunately, data sources in the field of international trade and environmental trends are far from scarce, academic literature and official reports provide extensive insights for research.

Despite the considerable availability of data sources, it is important to mention certain limitations of this thesis. The more pressing limitation is that the impacts of such provisions will only be evaluated on the countries that have signed the trade agreements. This is a significant constraint because the effects of climate change, such as ecosystem disruption, are certainly not restricted by national boundaries. However, this drawback will not be covered within the scope of this work.

Secondly, the focus of the thesis will only be on trade agreements that explicitly include environmental provisions. Although an increasing number of trade agreements are including some form of green clauses, they are still in the minority when compared to “traditional” agreements. It is important to note that this focus does not diminish the significance of these trade treaties, as they can still have a significant impact on promoting sustainable development through greener trading practices.

1.6 Significance of the Study

The significance of this thesis stems from the recent efforts by experts and policymakers to develop novel strategies for mitigating the negative impacts of human activities. Trade has always been an integral part of human civilization, with some arguing that it is inherent in our nature. Consequently, it was inevitable that green provisions related to trade would eventually be incorporated into trade agreements. These agreements are not limited to regulating the physical exchange of goods between countries, but also encompass various financial and investment

opportunities that can potentially drive diverse business practices. Therefore, trade agreements offer much more than just a means of intergovernmental regulation.

I believe that understanding the real-world impact of green provisions, as well as their limitations and disadvantages, can significantly aid signatory economies in transitioning from outdated development practices to more sustainable business models, while ensuring the economic welfare of all stakeholders involved. Furthermore, the pressing need to identify viable solutions to address climate change further justifies the relevance of this thesis.

I acknowledge that this thesis may have a limited readership; however, I aim to contribute to the ongoing discourse regarding the efficacy of green provisions in global trade. This involves exploring new perspectives and providing valuable insights that can serve as a catalyst for future research on the topic. As a strong advocate for environmental preservation, I believe it is our responsibility to conserve resources for future generations. Consequently, I hope that this thesis can serve as a means to promote international cooperation and peaceful dialogue among nations, fostering mutual understanding and promoting shared interests between various international actors.

Literature Review

2.1 Theoretical Framework

The expansion of international trade has led to numerous discussions on the relationship between trade and the environment. Can international trade be promoted without harming local ecosystems? What impact will interconnect markets have at the local level? Will exporting and importing nations be affected to the same extent? These questions have sparked numerous debates, particularly in recent years.

The first time this complex relationship was brought to international attention was in 1991¹ when the Mexican government brought a case to the World Trade Organization (WTO), formerly known as GATT, over the United States' ban on importing tuna from Mexico. The ban was enacted due to the fishing methods used by Mexican fishermen, which resulted in the deaths of many dolphins. The WTO ruled in favor of Mexico, stating that the US could not use domestic legislation to protect species outside their maritime boundaries. This decision generated significant controversy around environmental issues, which resurfaced in 1999² when the WTO ruled against the US's shrimp ban from countries using fishing practices that endangered sea turtles.

It is important to note that Article XX³ - Paragraph (g) of the general exceptions provided by the World Trade Organization (WTO) allows countries to breach trade agreements in order to promote the conservation of exhaustible resources. However, the WTO's approach is primarily focused on trade liberalization, and its authorities have been skeptical of arguments for green protectionism put forth by member states. This is due to concerns that some nations may use environmental regulations as a disguise for trade barriers and impediments. The WTO follows the economic principle of the specificity rule, which will be further explained in the next section, the conceptual framework.

While it has been recognized that the expansion of trade routes between different countries can benefit their economies by promoting efficiency and increasing wealth, the impact on the environment has also been well established and can be disruptive if left unregulated. One difficulty is that while there are binding regulations and authorities at the national level, there are still many gray areas internationally that can be exploited to favor countries' economic interests without considering environmental consequences. This issue becomes even more critical when the lack of environmental protection in one country has effects that extend beyond national borders.

The economic literature regarding these issues has been approached in two different ways. The first approach originated during the 1970s and was primarily normative in nature, with a strong emphasis on the benefits of trade and optimal trade and environmental policies. More recently, there has been a shift towards policy analysis, as policymakers have attempted to balance trade

¹ Reference number 6

² Reference number 7

³ Reference number 5

and climate protection. Various hypotheses have been developed to understand how trade affects environmental outcomes through multiple channels. However, before analyzing the debate and examining the arguments presented by both sides, it is vital to understand the theoretical framework underlying the various hypotheses in order to assess their empirical validity. This will allow for a critical analysis of the subject.

2.1.1 The Conceptualization of Comparative Advantage

The theory of comparative advantage is an essential consideration for those interested in international trade policy. This theory has significant academic backing and is commonly advocated by proponents of trade liberalization. It has been described by Ronald Findlay, economist and trade theorist, as the "deepest and most beautiful result in all of economics". Essentially, the theory demonstrates that lifting trade barriers can result in improved living standards for all nations involved. The World Trade Organization, as well as the International Monetary Fund and the World Bank, have also been affected by it. However, the level of support for this theory may be compromised when one examines its context and underlying assumptions, which are neither trivial nor easy to follow.

Before diving into the specifics, it is necessary to provide an introduction to the theory of comparative advantage. This theory is closely linked to the work of David Ricardo, who extensively elaborated on it in his *On the Principles of Political Economy and Taxation*. This work is considered the basis of neoclassical theories. Ricardo was the first economist to distinguish between international and domestic trade, arguing that they are characterized by different natures. The key to this distinction lies in the fact that labor and capital can move freely within a country, but their movements are limited when it comes to international borders. The main reason for this limitation is the uncertainty surrounding the transfer of capital to a new set of rules and authorities, as well as a natural indisposition to compromise family and social connections that tie individuals to their home country. Ricardo argued that there is room for comparative advantages to emerge on the international stage.

As is often the case, an example can help to provide a clearer understanding of a concept. This is why Ricardo came up with the well-known England-Portugal example. In this example, only two goods are taken into account: cloth and wine. The Iberian country requires 90 and 80 workers respectively to produce a given quantity of these goods, while England requires 100 and 120. Ricardo demonstrated that, due to the differing production costs, it would be optimal for both countries to specialize in producing the goods in which they have an advantage. This would result in an increase in the overall quantity produced for a given number of factors of production. As a consequence, the international trade of goods would be cheaper than domestic production, benefitting the entire population as consumers.

At the heart of the concept of comparative advantage is the Price-Specie-Flow mechanism. Ricardo, as well as subsequent neoclassical economists, viewed international trade as a form of barter where money serves only to facilitate transactions. So, prices and wages are determined solely by the quantity of gold present in a nation. In the previous example, Portugal can produce

both goods with less labor, resulting in lower prices for Portuguese goods compared to their English counterparts. Portugal would experience a trade surplus, meaning that the quantity of exported goods would be greater than the quantity of imported goods. Consequently, more gold would flow into Portugal, leading to an increase in Portuguese prices and wages. English goods would gradually become the cheapest in international markets, causing the previously experienced trade imbalances to reverse until an equilibrium state is reached. Thus, the PSF mechanism prevents any perpetual trade asymmetry, whether it be a surplus or a deficit.

As economists revisited classical economic theories, such as the one of comparative advantage, they found them as compatible with the neoclassical worldview. While some properties required reexamination, the fundamental structure remained largely unchanged. The neoclassical approach incorporates contemporary microeconomic tools, including the concept of opportunity cost, which helps determine the relative price of a good in a given country. Additionally, social indifference curves and the production possibility frontier are employed to calculate the optimal production composition, situated at the point of tangency between them.

The PSF mechanism, which provided the rebalancing tool, was a crucial component of the comparative advantage theory. It was necessary to update this mechanism with the neoclassical approach, that is, with a modern interpretation. Exchange rates were the answer to this problem. While the quantity of gold previously depended on the inflows and outflows of goods, modern exchange rates could serve the same purpose since they are solely determined by trade flows. If a country experiences a trade deficit, its national currency will depreciate, while currencies of countries with trade surplus will gain value. This system results in commodities produced in countries with advantageous exchange rates becoming cheaper and more competitive, while those produced in countries with unfavorable rates become less demanded at the international level. Consequently, the equilibrium is gradually reached thanks to this adjustment.

Economic theories and models are always an abstraction of reality since they must simplify complex relationships to establish a workable and practical framework. However, at times the authors may drift so far from reality that the basic principles they aim to demonstrate become abstract and irrelevant in a real-world context. Once the fundamental principles of the comparative advantage theory have been thoroughly examined, it is possible to find critical points⁴.

Various critiques have been highlighted in the literature regarding the potential flaws of the traditional theory of comparative advantage. One notable critique is that differentiating between domestic and international markets was not feasible even at its foundation, given the significant international movements of labor and capital. Additionally, the assumptions of balanced trade flows, full employment, and peaceful exchange of goods were not compatible with the complexities of real-world scenarios. However, it is important to note that many of these criticisms have already been incorporated into new conceptualizations of the theory, which have been redesigned to align with modern perspectives.

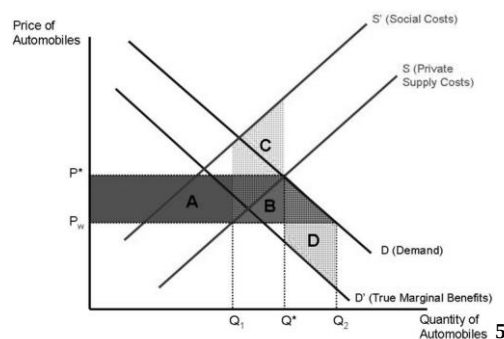
⁴ Reference number 11

A clear example of this is the recognition that the traditional interpretation does not only allow for a static benefit of trade. New interpretations have emphasized how countries can enhance their positions by investing in development, innovation, and education to foster the accumulation of human capital and technological advancements, both of which lead to productivity gains. Furthermore, this new concept of dynamic comparative advantage acknowledges the possibility of strategic government interventions through industrial policies. This demonstrate that new interpretations have emerged while still upholding the overall concept of specialization resulting from participation in international trade.

The production specialization that gives certain countries an advantage over others can have both positive and negative consequences. For example, developing nations that are rich in agricultural goods may have a strategic advantage in agricultural production, which can create opportunities for economic growth. However, this specialization can also undermine their development in other areas, such as more refined industries, and push them further behind industrialized nations.

This analysis reveals that despite widespread support for this theory, there are several critical aspects that limit its validity. While the theoretical shortcomings are important, the most significant consequences of its use lie in its application in practical lawmaking. If trading policies are based on an imperfect argument, they may not achieve the desired effects or may even produce counterproductive results. As Keynes famously noted in his General Theory, "the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood [...] soon or late, it is ideas, not vested interests, which are dangerous for good or evil." Policymakers often rely on simplistic theories that provide validation and justification for their choices. However, in the case of trade liberalization, which is highly desired and pursued by the World Trade Organization, it can become an end in itself, leading to unforeseen consequences.

To demonstrate the impact of liberalization advocated by the WTO, on the environment, a practical example can be useful. The concept of comparative advantage proposes that countries involved in trade can benefit by specializing in the production of goods that they can produce more efficiently. However, this theory fails to account for environmental externalities associated with the production or consumption of those goods. To illustrate, let us consider the production of cars as the specific good in question.



⁵ Reference number 9

If we do not take international trade into account, the consumers of a nation will experience the price P^* and the quantity Q^* that is solely based on the output of domestic car manufacturers. However, when we consider imports and exports, the situation changes. The price will shift to the world price (P_w), and a higher quantity of cars (Q_2) will be demanded. Domestic manufacturers will only provide (Q^*-Q_1) number of cars, while the remaining (Q_2-Q^*) will be provided by exports. As a result, the changes in price and quantities will affect the economic welfare. Domestic producers will lose the shaded area A, while they will gain area (A+B). The net gain from international trade will thus be $(A+B) - A = B$.

However, this reasoning excludes the negative environmental externalities that are related to the production or consumption of automobiles. The production of cars may lead to environmental damages, causing a shift of the supply curve upwards. By relying on exports, a country may shift these social costs to other countries by an amount C. Similarly, if it is the consumption that leads to environmental damages, trade will increase the environmental costs by the area D. Therefore, once we consider these aspects, we cannot be certain about the gains from trade anymore. These gains will essentially depend on the externalities represented by areas C and D.

2.1.2 Reconciling Development and Sustainability

Undoubtedly, one of the primary objectives of establishing trade agreements among countries worldwide is to enhance the economies of signatories through participation in larger markets and meeting more than just domestic demand. However, when discussing development, it is crucial to recognize that this term has been a central topic of discussion among economists, and there is no clear-cut definition of what it means or how it should be interpreted. For centuries, many scholars focused solely on the straightforward and more simplistic interpretation of development, primarily looking at economic growth. They believed that it should be regarded as the gradual capacity to produce goods and services over time, mainly measured by increases in the Gross Domestic Product (GDP). On the other hand, others believe that a more comprehensive approach should be adopted, such as the Human Development approach, which considers aspects of life such as education or health and not just improvements in income. Finally, the definition of sustainable development is perhaps the most fitting for the theme of this thesis.

Sustainable development is a term that has gained significant traction in recent decades, despite a lack of consensus regarding its definition. These discrepancies can be attributed to varying economic conditions across different regions of the world. For instance, the Northern hemisphere primarily emphasizes sustainability, while the Southern hemisphere has a divergent perspective, emphasizing the necessity for traditional development. These contrasting views of the world may seem contradictory, but they are in fact complementary.

To establish a definition for sustainable development, it is essential to take into account two key components: the concept of development itself, along with its primary objectives and the necessary conditions to ensure sustainability. This approach adopts a dynamic method, with the aim of satisfying the needs of present generations without jeopardizing the ability of future generations to meet their own needs. This new perspective acknowledges the interconnectedness of economies,

societies, and ecosystems, and recognizes a shift towards a more holistic approach where different issues must be addressed simultaneously.

The discussion around the sustainability of development can be traced back to the 1950s⁶, when there was a growing recognition that populations and communities might not be able to recover from environmental damage. Researchers from various fields began to contribute to the foundations of sustainable development, including forest and wood management scientists who developed the concept of "sustainable yield." At that time, the world population was booming, and economists were revisiting Malthusian arguments about resource scarcity and the "natural checks" that would inevitably limit growth. However, it was during the 1980s that the concept of sustainable development gained momentum, largely due to the efforts of the World Commission on Environment and Development.

Various actors have identified a range of policy responses that local governments and stakeholders must consider. These policies include the need for appropriate demographic policies that provide incentives to maintain a population under control, ensuring that all individuals have the necessary resources to live a fulfilling life. Additionally, agricultural reforms are necessary to achieve sufficient yields while preserving the fertility of arable land, avoiding the use of pesticides and chemicals that alter the natural nutrient balance of the soil. Specific policies must be implemented to meet the growing demand for energy without relying on obsolete sources such as coal. Finally, the protection of delicate ecosystems is crucial, not only from an environmentalist perspective due to their diverse fauna and flora, but also from a practical standpoint, as valuable resources can be derived from them. For example, Trabectedin, an anti-cancer component found in Sea Squirts, is a pharmaceutical derived from natural organisms that provided new strategies to fight the disease.

The debate surrounding sustainable development extends beyond finding environmentally friendly ways of living. It also raises questions about how to assign economic values to natural resources. There is a significant body of literature focused on the benefit-cost analysis of environmental goods. There are two main views⁷ on this topic: the first believes that this type of analysis has scientific value and can be used for policy-making and assessment purposes. The second group argues that it is not feasible to appropriately deal with environmental goods in economic terms due to multiple reasons. Nonetheless, assessments are important tools for guiding policymakers in their decisions. These evaluations should be conducted with a double time perspective: firstly, assessing the current resources, and secondly, predicting future values. The issue of the variation in value is central, as sustainability requires inter-generational equity. These assessments are also important from a macroeconomic point of view, as most national accounts systems do not consider the net consumption of natural resources as disinvestment. For example, earning €1 million from forest felling is accounted for the same as earning €1 million by sustainably cropping agricultural land. However, in the first case, the asset is compromised, while in the second case, it remains for future generations to enjoy.

⁶ Reference number 13

⁷ Reference number 13

The concept of sustainability is not adequately integrated into national accounts, as they are still primarily governed by traditional rules and perspectives that are becoming increasingly outdated. To overcome this limitation, environmental accounting and social accounting matrices can be employed. Environmental accounting involves quantifying the impact of human activities on the environment, such as carbon emissions and the depletion of natural resources, and integrating this data into national accounts. On the other hand, social accounting matrices enable policymakers to assess the effects of different policies on various social groups, allowing them to identify potential trade-offs and modify policies to promote sustainable development. By incorporating these approaches, a more comprehensive and inclusive view of economic performance can be achieved, aiding in the design of trade and environmental policies that can mitigate major global issues such as climate change, deforestation, and agricultural pollution.

2.1.3 The role of Environmental Policy

As demonstrated in the preceding paragraphs, the concept of sustainable development revolves around the notion that present generations' needs and wants must not impede the ability of future generations to satisfy their own needs and desires. Environmental policy, on the other hand, encompasses the field of policymaking that is responsible for developing laws, regulations, and guidelines aimed at safeguarding the natural environment. It is evident that these two concepts are deeply intertwined, and their evolution has followed parallel trajectories. Effective environmental policy is instrumental in providing incentives to individuals and guiding investment decisions towards more environmentally conscious projects and technologies. In essence, it is only through the implementation of green policies that sustainable development can be achieved in practice.

Environmental policy refers to a set of measures and systems implemented by various entities such as governments, international organizations, or private groups to manage and reduce the adverse impacts of human activities on the environment. These policies are critical tools for policymakers and climate advocates, for two primary reasons. Firstly, environmental impacts are often economic externalities, meaning they are indirect costs that affect actors who are not involved in the activity causing the damage. Polluters usually do not bear the full consequences of their actions, and these negative externalities can be borne by entire communities, either currently or in the future. Secondly, natural resources have often been undervalued due to the assumption that they are limitless. These two factors have led to what is known as the "Tragedy of the Commons."

The tragedy of the commons describes the dynamics that occur with common resources, which have low levels of excludability and high rivalry in consumption. This term was first introduced by Garret Hardin, biologist, in 1968, as a way to draw attention to the lack of technical solutions to the consequences of overpopulation. Hardin argued that when the use or consumption of a particular resource is available to everyone, individuals will make choices that lead to overexploitation and depletion of the resource, resulting in negative consequences for all involved. Specifically, in the case of public resources, individuals often act solely in their own self-interest without considering the broader impact on the shared resource.

Throughout history, there have been notable examples of rulers' commitment to environmental protection, such as the construction of sewage systems by the ancient Romans and the establishment of forest harvesting laws in ancient Greek city-states. However, as the negative impacts of industrialization and urbanization became evident in the late 19th and early 20th centuries, governments developed additional rules and regulations to address public health concerns, including the Clean Water and Clean Air Acts in the United States. Despite these efforts, environmental issues persist due to the many diffuse sources of pollution, such as exhaust from private cars or runoff from individual farms. Given the widespread nature of these problems, there has been growing concern about finding more effective ways to address environmental issues.

Over the course of time, several principles have been formulated to aid policymakers in their endeavors, with two of the most prominent being the polluter pays principle (PPP) and the precautionary principle⁸. The PPP is a practice followed by governments to hold polluters accountable for their actions. Instead of burdening entire communities with the negative impacts of the actions of a few, governments internalize the negative externalities by imposing disincentives, typically in the form of taxes or fines, to discourage polluters from emitting harmful substances. On the other hand, the Precautionary Principle serves as a risk management tool in policymaking, urging actors to take responsibility for their actions. It is employed when there is scientific uncertainty about a suspected risk to human health or the environment from a specific technology. Together, these principles can help prevent environmental harm.

By following these guidelines, various instruments have been devised to influence the behavior of individuals who contribute to environmental issues. Typically, policymakers have concentrated on traditional forms of interventions, but in recent decades, new and unconventional instruments have emerged that have proven to be equally or even more effective.

Regulations are commonly used as a traditional means of intervention to establish minimum environmental quality requirements. In most cases, companies and other polluting agents are required to obtain permits for specific activities, which must be periodically renewed. Local and regional authorities oversee permit controls, while more hazardous activities such as chemical treatment plants are directly monitored by federal or national authorities. The implementation of regulations has led to significant improvements in air, water, and land quality, primarily because they are legally binding. However, regulations are relatively inflexible and can impede innovation. Therefore, it is important to strike a balance between setting effective standards and avoiding excessively burdensome regulations that are difficult to implement. One noteworthy improvement is the use of performance requirements, which allows actors to develop their own strategies for meeting specific standards, thus increasing flexibility and adaptability.

Governments often use financial incentives to encourage specific behaviors, which can take the form of positive measures such as subsidies and tax discounts, or negative measures such as fines and levies. A notable example of their effectiveness is the German government's heavily subsidized promotion of solar energy systems, which led to a significant increase in domestic households powered by solar energy. However, these policies can potentially disrupt the market,

⁸ Reference number 14

particularly if they are not carefully regulated and may also have a significant impact on a country's finances.

Decision makers often use various instruments to evaluate the effects of their policies in practice. Typically, cost-benefit analyses incorporating environmental impact assessments (EIAs) are employed. In many countries, such analyses are a legal requirement, particularly for significant projects such as the construction of dams or nuclear reactors. Environmental management systems provide broad approaches for organizations to reduce their reliance on natural resources, with the most widely recognized standard being ISO 14000, issued by the International Organization for Standardization (ISO). Another way to promote information transfer among stakeholders is through ecolabels and certificates applied to specific goods or services that meet specific standards, such as the EU Ecolabel or the USDA Organic label, which denote the environmental friendliness of the product.

Environmental policy making has a multinational dimension, as laws do not always originate from national authorities but are derived from international efforts. Since the early 1970s, the United Nations has served as a forum for national authorities to interact and discuss environmental issues. Several conferences, most notably Stockholm in 1972, the UNCED summit in Rio de Janeiro in 1992, Kyoto in 1996, and Copenhagen in 2009, have laid the foundation for global environmental management and established a corpus of hard and soft laws aimed at addressing global problems.

However, sometimes the international standards can be financially challenging to meet, and the international community has provided mechanisms to lower the cost of compliance. The first mechanism is Joint Implementation, which allows countries to invest in other ratifiers of the Kyoto Protocol to fulfill their obligations and reduce emissions overall rather than just between their boundaries, which would be very expensive for industrialized countries. The second mechanism is the Clean Development, which permits industrialized countries to meet their targets by investing in any country where it would be cheaper, even if those countries are not ratifiers.

The most innovative instrument applied is the Carbon Emission Trading System, a market-based solution based on the concept that countries or private actors, simply by trading with each other, can obtain an efficient allocation of the rights to pollute. This system employs a cap-and-trade model in which governments determine the maximum number of pollutants that can be released into the environment and gradually lower the cap over time. This ensures that emission reductions can be achieved at the lowest cost possible.

2.2 Conceptual Framework

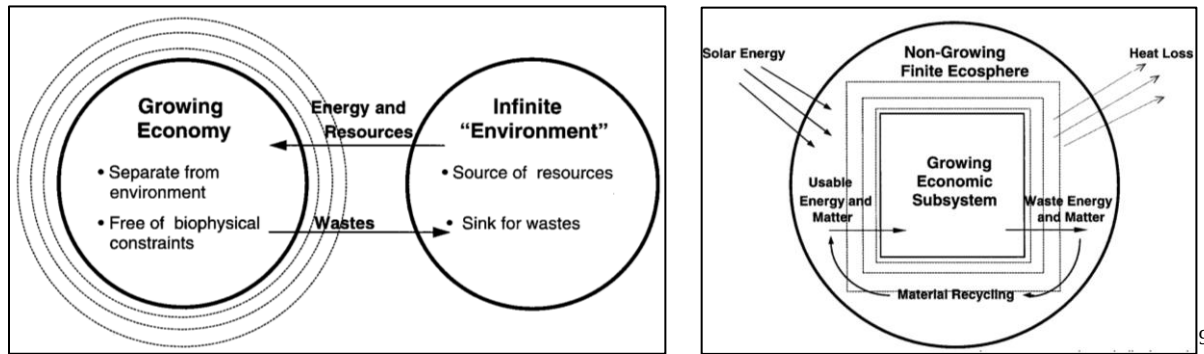
Having reviewed the theoretical arguments put forth by various experts in the fields of environmental studies and economics, it is now necessary to examine the different schools of thought that have debated the most effective strategies and approaches for dealing with specific issues. Specifically, when considering the practical analysis of a country's potential for economic growth and the resulting expansion of its trade, there are two primary perspectives to consider: neoliberalism and ecological economics.

Neoliberalism is an economic perspective that emerged during the 20th century and gained popularity in the 1970s and 1980s. The term "neo" suggests a return to a more unconstrained economy, which is closely related to the concept of free-market capitalism and deregulation. This school of thought emphasizes the minimal role of the state in the economic lives of individuals, with every economic agent being left free to manage their affairs without fear of intervention. Following the philosophy of Adam Smith, the idea is that the aggregate of individual decisions will lead to a stable macroeconomic environment.

Neoliberalism places particular emphasis on the concept of competition as the primary mechanism for achieving economic efficiency and growth. When countries are able to compete without constraints, they are more likely to identify products in which they have a comparative advantage, leading to improved living standards and economic growth. However, although neoliberalism remains a dominant school of thought in many countries, it has been associated with negative outcomes such as rising income inequality and the lack of social safety nets. Critics argue that neoliberalism's excessive focus on the market fails to consider the social and environmental costs associated with economic activity, leading to significant challenges and criticisms of the approach.

Ecological economics is a relatively recent school of economic thought that arose in the second half of the 20th century as a response to neoclassical economics and growing environmental concerns. This perspective seeks to provide a more complete understanding of the connection between economic activity and the natural environment by recognizing that economic activity is deeply embedded within natural systems, and that human actions can significantly impact ecological systems. Ecological economics supporters emphasize the need for a more holistic and comprehensive approach over economic endeavors.

Ecological economics is based on the fundamental principle of sustainability, which means conducting economic activity in a manner that ensures the long-term preservation of natural resources while also promoting equity and social justice. This means that policy makers must design policies that ensure that both the benefits and costs of economic activity are equitably shared across all members of society. To achieve this goal, ecological economists often focus on the concept of externalities, which refer to the costs or benefits of an economic activity that are not fully reflected in the market price. The aim is to hold agents, responsible for specific activities, accountable for the costs they impose on society, including environmental degradation or social inequalities, thereby ensuring that economic activity is conducted in a socially responsible and sustainable manner.



Within this context, ecological economists view the ecosphere as a closed system, and thus utilize thermodynamic terminology to support their perspective. They perceive nature as the producer of resources, while the economy and its various agents are the consumers. For the economy to produce goods and services, a constant flow of both energy and natural resources is necessary. Comparing the worldviews of neoclassical and environmental economists, we can observe a duality. The neoclassical view depicted in the image on the left treats the economy as open and continually expanding due to the infinite nature of the environment. However, this view relies on the inaccurate assumption that resources are infinite and readily available or replenishable within a timeline compatible with human existence. In contrast, the image on the right represents the perspective of environmental economists who view the economy as a growing subsystem fully dependent on a finite ecosphere with limited resources.

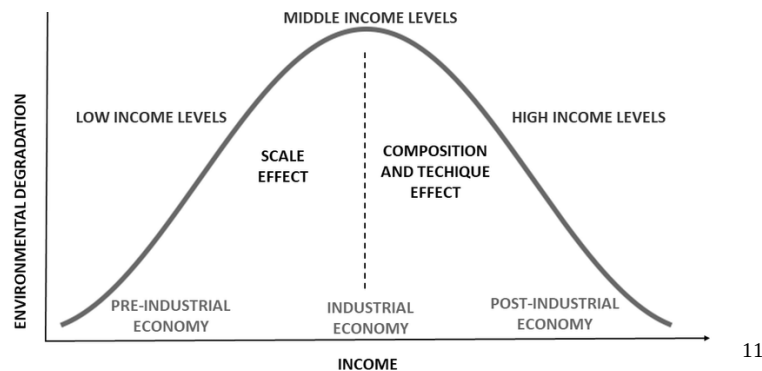
Environmental economists have tried to catch the attention of the public by linking these economic problems that relates to overexploitation of resources with the world of physics. According to the second law of thermodynamics, any alteration in a closed system leads to a state of equilibrium where entropy, or disorder, is at its maximum, and energy is uniformly distributed, making it impossible to create or perform any further activities. Hence, it can be contended that if the fundamental interconnection between the economy and the finite environmental resources is disregarded and human activities are permitted to proceed without regulation, the entropy of the economic system will escalate. This implies that resources will be used more extensively, and that they will become more and more scarce to a point where it will be impossible to produce or consume any further.

The two worldviews are markedly different and reconciling them presents a significant challenge. However, as with most opposing viewpoints, the greater the distance between them, the greater the urgency for finding common ground to benefit society. While environmental issues must receive stronger attention in policymaking, it is important to acknowledge that even the most environmentally conscious actors will inevitably impact their surroundings. This is due to natural patch disturbance¹⁰; the mere fact that humans are relatively large animals living in numerous groups, leads to the exploitation of resources. Furthermore, underdeveloped or developing countries may be willing to tolerate environmental costs associated with some activities to achieve

⁹ Reference number 16

¹⁰ Reference number 16

satisfactory levels of well-being for their population. Therefore, any discussion and agreement must take this into consideration.



One potential solution for reconciling the debate between those advocating for strong environmental protection and proponents of deregulation, particularly for developing countries that prioritize economic growth over environmental concerns, is the Environmental Kuznet Curve (EKC). This theory proposes a connection between economic growth and environmental degradation, which follows an inverted-U curve. As a country undergoes development, its impact on the environment initially increases significantly. However, as it reaches more advanced stages of growth, the damage on the environment decreases to more sustainable levels.

The theory proposes that economic growth and environmental sustainability are not contradictory but rather complementary objectives that can be pursued at different stages. As countries develop, they can adopt sustainable technologies and practices to mitigate their environmental impact. However, less developed nations may require assistance from developed countries in the form of financial aid and technology transfers to achieve better environmental performance. Overall, a balance between economic growth and environmental protection can be achieved through international cooperation. More specifically, the WTO framework provides the opportunity for underdeveloped nations to receive preferential treatment compared to developed nations. Therefore, it is reasonable to include environmental clauses in trade agreements to safeguard a country's natural resources while also promoting its development and improving the living standards of its people.

¹¹ Reference number 17

2.3 The Interplay between International Trade and the Environment

Trade is a complex and expansive human activity that can be challenging to fully grasp. It involves various industries and agreements, making it difficult to quantify its real impact. Trade can also have significant effects on the environment. While the physical impacts of trade on the environment, such as the construction of large-scale infrastructure like dams or canals, are evident, this thesis aims to explore the less noticeable consequences of trade resulting from the purely economic rationale behind the production of certain commodities and products. These products are often chosen based on cost-benefit analyses conducted by countries. This thesis will examine the environmental implications of such decisions.

The Pollution Haven Hypothesis is the most crucial concept that scholars have cited when discussing the evolution of trade routes and flows. This hypothesis suggests that foreign direct investments (FDI) mainly move from developed countries in the North to developing countries with weaker environmental regulations in the South to reduce production costs. In the past, this was not possible as poor countries lacked the infrastructure to support certain industries. However, globalization and advancements in transportation have made it possible for even poorer countries to attract investments from abroad, leading to more interconnectedness.

While the pollution haven hypothesis has gained traction within academia, it remains a subject of controversy. Numerous studies have indicated a positive correlation between FDI and relaxed environmental regulations, but these findings have not been universally accepted. Critics have pointed out several weaknesses in the theory's formulation. For instance, while weak environmental protection may attract foreign investment, alternative hypotheses suggest that other factors, like the availability of resources or technology, may have a greater impact on investment decisions. Moreover, measuring the stringency of environmental protection is a difficult task, and any estimate is only able to partially capture the phenomenon. Overall, we can argue that there exist some cases where companies relocate to countries with weaker regulations to avoid compliance costs, but this is not and cannot be considered a universal fact.

When a country engages in international trade, it experiences two economic effects¹². The first is the scale effect, which results in increased production and consumption levels due to access to a wider range of products and services that may be lacking or scarce domestically. This effect is a natural consequence of a country's development. On the other hand, the composition effect is closely related to trade. It refers to the changes that countries may experience in terms of imports and exports due to their participation in global trade. The composition effect can manifest in various ways. For instance, a country may specialize in producing and exporting goods and services that are in demand internationally, leading to greater investments in innovation in that sector. However, other sectors may experience a decline in production.

The immediate consequence of trade liberalization, supported by numerous real-world examples, is specialization. When a country engages in international trade and experiences the two previously

¹² Reference number 21

mentioned effects, particularly if it is situated within the middle to lower echelon of the global income spectrum, it may become heavily reliant on the export of a specific good or commodity. This heavy reliance can render the country vulnerable to external shocks, such as sudden fluctuations in global demand or prices, supply disruptions, and particularly relevant in the current climate change era, weather anomalies. For a low to middle income country, a significant proportion of its exports will occur in foreign exchanges, which can be risky as a considerable portion of its Gross Domestic Product will not only be derived from a single crop, but also traded in a currency over which it lacks control. Thus, any major event impacting that currency would also be reflected throughout the country's finances and beyond. Furthermore, specializing in a single product's export means forgoing diversification and neglecting the development of industrial capacities in potential future sectors. Ultimately, diversification is a vital mechanism for a country's economic and social development, as it can reduce inequality and promote more inclusive growth by distributing economic activities among multiple industries.

The specialization in the export of a particular crop has a second significant consequence, which is the degradation of natural resources and landscapes. As discussed in the theoretical review section of this thesis, the theory of comparative advantages urges countries involved in international trade to specialize in producing goods and services that they can produce at lower costs than other nations. However, the problem arises when this specialization is conducted without regard for the preservation of natural resources for future generations. Developing nations, in particular, can only enjoy cost advantages over richer countries in the primary sector, which involves the extraction of natural resources through farming, fishing, mining, and other like activities.

While specializing in the commercialization of natural resources can be profitable and efficient in the short term, it can lead to several environmental risks in the long run. One primary concern is the risk of dedicating all arable and fertile land in a country to the production of a single crop, a practice known as monoculture agriculture, which poses various challenges. One of them is the vulnerability to pests and diseases. When large areas of land are used to grow the same strain of a plant, it creates a perfect environment for parasites and diseases that can quickly spread and cause immense and sometimes irreversible damage to farmers and food shortages for consumers.

Another risk associated with monocultures is soil degradation. It is widely known that fields must be allowed to regenerate themselves naturally, enabling microorganisms to release essential components such as nitrogen into the soil. When agriculture is conducted according to international demand rather than following natural times, it can deplete the soil of organic matter, reduce yields, and increase the need for harmful chemical fertilizers, which have negative impacts on both the environment and human health.

Furthermore, many countries clear vast areas of forests to make space for arable land dedicated to the production of a single crop, such as palm oil in Southeast Asia, specifically in Thailand or Vietnam, or soybeans in South America, particularly in Brazil and Argentina. Deforestation can have severe environmental consequences, such as habitat loss for local flora and fauna, declining biodiversity, and significant carbon dioxide emissions due to the cheapest and most destructive method of clearing land: wildfires.

It is clear that the connection between the environment and global trade patterns is more complex than anticipated. Therefore, policymakers in environmental policy must take into account both the scope and the composition effects in order to develop effective solutions to intricate issues. This means designing policies that can encourage sustainable economic growth while mitigating the impact on natural resources and ecosystems.

2.4 History of International Trade Agreements

All throughout history, international trade agreements have played a pivotal role in building the global economy. These agreements have evolved over time to reflect the different changes in economic landscapes, advancements in technology and shifting of political priorities. While the history of trade relations between communities and countries is a fascinating field to explore, this thesis will focus on recent evolutions, starting from the end of the Second World War up until modern days. The General Agreement on Tariffs and Trade, followed by its successor the World Trade Organization, have been the main protagonists during the past century. Due to limitations in space and scope, it would not be possible for me to capture the entire evolution of trade relations, but the selected time period provides nonetheless a comprehensive overview of the recent history of international trade agreements.

The World Trade Organization serves as a platform for its members to engage in three interconnected functions: negotiations, transparency, and litigation, but it is primarily recognized as a negotiating body. However, it cannot be identified as an independent international organization with overarching power over its members, as its actions are essentially the actions of the members themselves. The organization's governance is based on consensus, which is both its main strength and weakness. This means that any changes must be agreed upon by all members before implementation. The consensus rule effectively allows members to have a strong impact on the functioning of the organization. For example, due to disagreements over recent interpretations of the WTO, the United States refuses to support the appointment of new members to the Appellate Body, which is an organ of the DSU. As a result, the Appellate Body is now stalled because it cannot operate with fewer than three judges. To fully understand the significance of the Agreement on an international scale, it is crucial to explore the origins of the General Agreement on Tariffs and Trade (GATT).

The drive towards multilateralism can be rationalized by taking a look back to the 1930s and 1940s, the darkest era for international trade. The imposition of protectionist policies by major players such as the United States with the Smoot-Hawley tariffs¹³ virtually brought international commerce to a halt. Following the end of World War II, twenty-three nations came together to negotiate the General Agreement on Tariffs and Trade, which established a basic ensemble of

¹³ Reference number 22

regulations governing trade flows leading to a significant reduction in tariffs. Over time, as a result of eight rounds of negotiations, an increasing number of countries joined the GATT project, expanding from the original 23 in 1947 to 128 by 1994. Since then, an additional 150 countries have signed onto the agreement. The World Trade Organization represents the legacy of all those agreements. The culmination of the Uruguay round (1986-1994) is represented by the signature of the Marrakech Agreement on April 14th 1994 that established the formal framework and institutional structure for the WTO. The agreement presented some key points worth discussing; it frames the WTO as an international organization with the mandate of monitor international trade, it encompassed the various agreements under one comprehensive set of rules, it enhanced transparency of the organization thanks to the Trade Policy Review Mechanism (TPRM) and most notably created a formalized dispute settlement mechanism within the organization itself.

Although the GATT operates under the principle of one country, one vote, influential countries have historically exerted their power. This was especially evident during the first five rounds of negotiations (1947-1961), when major exporting countries negotiated reciprocal access to markets, focusing on reducing trade barriers in countries that were of interest to their exporters. Initially, developing countries were not granted significant advantages in terms of liberalization, as they were not major importers nor exporters.

The Kennedy Round, which began in 1964, introduced a tariff-cutting formula approach to further reduce trade barriers. However, in practice, this approach did not result in significant advancements due to the fact that countries were able to include exceptions for sensitive products that, most of the times, were the one that formulas were trying to tackle. Exceptions have always been a point of controversy between signatories, particularly in the agriculture and textile sectors. The WTO provides a platform for settling these disputes.

Over the years, the WTO has undergone significant changes which led to the institutionalization of the negotiations between its members and the formalization of trading principles. These principles, which include the principle of reciprocity, as well as the two nondiscrimination principles of most favored nation treatment and national treatment, are fundamental and must be upheld by all members.

During negotiation rounds, the principle of reciprocity has typically been applied, even though there is no GATT regulation that requires the reciprocal access to market liberalization. In fact, the reciprocity principle is interpreted in the WTO framework as a way of conceding some form of trade benefit or tariff reduction in exchange of an equivalent concession from the negotiating party. In practice the principle encourages contracting parties to find common ground for the sake of liberalization, but it has been nonetheless subject to criticism as it can lead to narrow trade progress rather than broader objectives.

The WTO's nondiscriminatory pillar is a concept that represents a shift from protectionist policies to a more liberalized and multilateral approach to trade. It emphasizes equality between member states by ensuring impartial treatment of both parties and their traded goods.

The most-favored-nation clause (MFN) contained in article I General Most-Favored-Nation Treatment, requires that any lower tariff or favorable market access granted to one member

must also be offered to all others. This clause was a major incentive for multiple countries to join the GATT as it provided signatories with the best available treatment. It is worth saying that there are exceptions to this rule, particularly in the case of Preferential Trade Agreements (PTAs) where non-participating nations may be excluded from certain privileges. This may appear as a threat to the WTO's objective of trade liberalization but it is not, since they share the same goal of removing trade barriers. PTAs must be notified to the WTO and allowed only if they substantially liberalize trade between participants. The Generalized System of Preferences (GSP) provides exceptions to the MFN clause in various scenarios, particularly: Article XX provides general exceptions that include the protection of public morals, human, animal, or plant life or health. Article XXI contains exceptions for national security reasons. Article XXIV presents exceptions for regional integration. It is relevant to remember that better trade conditions can also be offered to developing countries as a means of promoting their economic growth.

The National Treatment clause represents the second aspect of the nondiscrimination pillar. It aims to ensure that once a foreign product is allowed into an importing country, it would be granted the same conditions as the domestic products. This principle is in place to prevent discrimination against foreign goods through taxes or subsidies. The concept of likeness is often at the center of controversies related to national treatment. Some interpret it strictly, based on physical characteristics and usage, while others take a more flexible approach, considering the elasticity of substitution¹⁴. Many disputes have arisen due to violations of the national treatment principle, with the Japan-Alcoholic Beverages¹⁵ case being a notable example.

While there are several other aspects to consider in the evolution of the WTO, the most crucial point has been highlighted: there has been an unprecedented reduction in trade barriers, leading to the promotion and liberalization of international trade. In this section, we have also briefly mentioned various trade agreements involving varying numbers of member states and the reasons why they have been permitted. However, the next section will delve deeper into the types of trade agreements and the pros and cons associated with them.

2.5 Types of Trade Agreements

International trade agreements are a crucial part of global commerce as they provide a framework for trade relations between countries. These agreements cover a wide range of economic activities that extend beyond the simple exchange of goods and services, including investment opportunities and intellectual property rights. While the primary objective of these agreements is to eliminate barriers between nations, the way and scope in which they are implemented can vary significantly. In fact, there are various types of trade agreements that have different characteristics, making them more desirable for signatories.

¹⁴ Reference number 1

¹⁵ Reference number 23

Generally speaking, trade agreements can be categorized as either bilateral or multilateral, depending on the number of countries involved. A multilateral trade agreement involves at least three countries and aims to promote trade between them. Such agreements are considered by the WTO as the best way to encourage a global economy that provides access to markets and benefits to all countries. However, negotiating and implementing such agreements is more challenging due to the larger number of actors involved. Each country has its own industries that may require protection from international competition, making it necessary to balance the opening of markets with the need to protect domestic products that are strategically important.

There is no maximum limit on the number of participants in multilateral agreements, and there are no strict parameters for defining such agreements. The General Agreement on Tariffs and Trade is perhaps the most important multilateral agreement. However, narrower agreements may also be relevant, especially when negotiating with countries that have strong connections with each other, such as those located in the same geographical region, as seen in the ASEAN Free Trade Area or the USMCA.

Multilateral agreements have both advantages and disadvantages. On the positive side, they lead to greater economic efficiency, as countries specialize in producing goods that are economically viable, resulting in lower tariffs and cheaper products. Furthermore, multilateral regulation standardizes treatment across different nations and simplifies trade strategies and opportunities. However, multilateralism can also result in the loss of national authority over certain domains. Specialization may lead to winners and losers in international trade, with domestic producers facing competition from cheaper imported goods.

Bilateral trade agreements (BTAs) refer to trade arrangements between countries that establish the terms and conditions for trade flows between them. BTAs can be as simple as an agreement between two countries or involve a country with a Preferential Trading Area (PTA) or between two PTAs. It is worth noting that almost all countries worldwide have signed BTAs, and their numbers have increased over time, particularly after the implementation of the WTO framework in 1995. BTAs are significant because they constitute the vast majority of trade agreements, with a range of general and specific factors driving their creation.

The general factors that lead to the creation of BTAs relate to the disappointment and slowdown of liberalization at the multilateral level. Since the inception of the Doha Round in 2001, members of the WTO have faced increasing difficulties finding common ground on international affairs, with developed and developing countries holding opposing worldviews. Furthermore, following the September 11th attack in New York, there has been a general trend towards closeness. In this context, BTAs have been seen as a way of still pursuing trade liberalization, albeit on a smaller scale. Moreover, BTAs are less scrutinized by the press than broader trade agreements, making the negotiation process more manageable.

Apart from the general factors, specific factors driving the creation of BTAs can be identified, such as economic, strategic, and event-driven factors¹⁶. Economic motivations for BTAs include

¹⁶ Reference number 24

the desire to develop a specific sector that could benefit from international trade or to expand a country's market. Strategic motivations relate to the desire to achieve particular strategic objectives, such as greater integration of a region through trade. Finally, BTAs can result from particular events, such as gaining access to the WTO.

The most common type of BTAs is the Free Trade Agreement (FTA), which allows two or more countries to offer advantageous trade terms or tariff privileges to their partner signatories. FTAs have become an essential component of the global trading system, with their numbers increasing from 19 in 1990 to 292 by 2019¹⁷. Compared to Custom Unions (CUs), in FTAs, countries retain their own tariffs for non-members. Consequently, most of the negotiation process is characterized by the inclusion of Rules of Origin clauses to combat the phenomenon of trade deflection. Trade deflection refers to the practice of importing goods to the FTA member with lower tariffs before transporting them to other members of the FTA to avoid tariffs.

In recent years, observers of the international trade landscape have noted a shift in regular FTAs that only focused on eliminating trade restrictions. These so-called "modern FTAs" now include many provisions relating to intellectual property, health and safety, labor standards, and migration. The aim behind this broadening of issues covered by FTAs is to achieve deeper economic integration beyond the simple reduction of trade barriers.

Regionalism has emerged as a central issue in international trade, leading to a debate among experts as to whether it is compatible with the WTO trading system. While article XXIV¹⁸ of GATT allows for regionalism in principle, the increase in their number has resulted in a large portion of world trade being conducted through them, causing confusion in terms of regulations and rules of origin, often referred to as the "spaghetti bowl effect."

However, it can also be argued that regionalism allows a group of countries to bring down trade barriers, often to zero, more quickly and effectively than the WTO. Regionalism has the advantage of fewer contracting parties, resulting in faster agreement than at the WTO level, where every member must agree on deliberations. Additionally, bilateral trade agreements, free trade agreements, and other regional agreements are more effective in dealing with specific issues such as investment, banking, and the environment, making them more adaptable to specific circumstances. Overall, regionalism has advantages and disadvantages in international trade, and it is important to consider its compatibility with the WTO trading system, its impact on rules and regulations, and its potential for achieving more targeted policies.

¹⁷ Reference number 25

¹⁸ Reference number 26

2.6 The Emergence of Environmental Provisions in Trade Agreements

The WTO has acknowledged the right of national governments to address environmental issues, and has established several provisions to deal with these concerns¹⁹. In its preamble, along with the optimal use of resources, raising living standards and ensuring full employment, the organization has recognized sustainable development as one of the main objectives, and has created an ad hoc committee of Trade and Environment to integrate environmental sustainability into its work. The committee's responsibilities include analyzing the relationship between trade and the environment, and making recommendations for changes to trade agreements.

It is important to note that the committee's work is guided by two principles. Firstly, the WTO's competence is limited to trade, and it only intervenes when environmental policies have a significant impact on trade. The organization has explicitly stated that it is not an environmental agency. Secondly, if a problem is identified, it will be addressed according to the principles of the trading system. The committee believes that the best way to address international environmental problems is through purely environmental agreements, rather than using trade policy as a way to promote environmental policies abroad. This approach would promote greater international cooperation and avoid using trade as a way to push environmental policies.

Outside the WTO framework, there are over 200²⁰ multilateral environmental agreements (MEAs), with about 20 containing provisions that can affect trade like the Basel Convention on the trade or transportation of hazardous wastes across borders. The committee recognizes that these arrangements may affect trade and have significant results, especially when trade is the primary cause of environmental damage. In recent years, the international community has been exploring new and innovative approaches to addressing climate change, which has sparked a debate among experts in international trade. While environmental standards and other specific measures are being considered, addressing trade may also be an important avenue for fighting climate change. A comprehensive approach to environmental policy should consider all potential factors, as seemingly disparate mechanisms can collectively promote sustainable behavior and safeguard natural resources for the years to come.

As demonstrated in the previous section, over the past three decades, international trade has increasingly moved towards regionalism. This trend reflects a growing preference among countries, including those who are members of the WTO, to enter into agreements with other countries within their geographic region. The rationale for this approach is that negotiations can proceed more smoothly and the scope of policy areas covered can be broader. As a result, environmental provisions have become more prevalent in regional trade agreements, which now include not only general commitments to protect the environment, but also stronger messages and institutional agreements that signatories are obligated to uphold.

The 1988 North America Free Trade Agreement (NAFTA) was the first of a new generation of trade agreements that included environmental provisions as integral chapters, rather than just side

¹⁹ Reference number 27

²⁰ Reference number 28

agreements. The North American Agreement on Environmental Cooperation (NAAEC) was negotiated alongside NAFTA, and institutionalized a trilateral organization to address trade-related environmental issues between Canada, Mexico, and the United States. More recent examples of these agreements include the United States-Peru Free Trade Agreement (PTPA), which became effective in 2009. The PTPA included groundbreaking rules for the protection of workers and the environment, and obliged parties to effectively enforce their domestic laws. It contained an entire Environmental Chapter, which included an Annex on Forest Sector Governance to fight illegal logging and trade in wildlife. The agreement recognized the importance of preserving natural resources and protecting biodiversity. The Trans-Pacific Partnership (TPP), signed on February 4, 2016, has been celebrated as the greenest trade agreement ever ratified on the international scale. It contains detailed and cutting-edge policies on environmental concerns, including wildlife and marine conservation, logging, marine pollution and ozone. Over the past 30 years, trade agreements have evolved alongside public focus on environmental protection. These agreements can be effectively categorized into three sections²¹: bronze, where the only obligation for countries was to enforce environmental laws for economic gain; silver, for agreements that took a stronger environmental stance; and gold, which includes agreements with even stronger environmental rights and harsher fees for violators, including the potential loss of trade benefits.

	BRONZE Singapore, 2004 Chile, 2004 Australia, 2005 Morocco, 2006 CAFTA, 2006-09 Bahrain, 2006 Oman, 2009	SILVER Peru, 2009 Colombia, 2009 Korea, 2012 Panama, 2012	GOLD TPP, 2015
Effectively enforce their own environmental laws	No	Yes	Yes
Cannot waive or derogate from environmental laws to encourage trade/investment	Yes	Yes	Yes
Implement the Convention on International Trade in Endangered Species (CITES)	No	No	Yes
Further commitments on combatting illegal trade in wild fauna and flora, including that in violation of other countries' laws	No	No	Yes
Includes commitments on: control of marine pollution, control of ozone depleting substances, protections for natural protected areas, & on illegal fishing	No	No	Yes
Prohibits harmful and unfair fish subsidies	No	Yes	Yes
Penalties for violators can include trade sanctions	No	Yes	Yes

22

Between 1948 and 2023, 585 Regional Trade Agreements were reported to the WTO²³, the majority of which included environmental provisions that did not differ significantly from those already established by the WTO. In most cases, these provisions simply reaffirm the exceptions provided in Article XX of the GATT. Article XX includes paragraphs (b) and (g), which provide broader exceptions for the protection of plant life and the conservation of natural resources. These exceptions serve as means for environmental protection and have been applied in numerous cases specifically for that purpose. Notably, in the Brazil - Retreaded Tires Case²⁴ (2007), the South American country imposed a ban on the import of retreaded tires. Retreaded tires undergo a process of refurbishing for their external part, granting them a longer lifespan. Problems arise when these

²¹ Reference number 29

²² Reference number 29

²³ At time of writing. Reference number 30

²⁴ Reference number 31

tires become unusable, particularly in tropical countries where the lack of tire recycling facilities leads to their accumulation outdoors. This can result in water trapping and tires becoming vectors for diseases such as yellow or dengue fever. Another example is the Canada - Measures Affecting Export of Unprocessed Herring and Salmon Case²⁵ (1998), in which the Canadian government recognized the necessity to limit the harvest of these species to preserve their ability to reproduce and maintain a stable population over time. More recently, an increasing number of RTAs have gone beyond the WTO mandate. The specific provisions included in these agreements depend on the parties involved, indicating that countries may still have differing priorities and opinions regarding environmental issues.

The majority of these modern trade agreements have been negotiated with developed nations, who have a greater interest in addressing environmental problems due to their development stage and the attention and pressure they face from their own citizens' political and social agendas. Nonetheless, several developing nations, are beginning to replicate similar provisions in agreements with other developing nations. Currently, approximately 85 percent of all Preferential Trade Agreements or Bilateral Trade Agreements contain "green" provisions²⁶, demonstrating that countries are attempting to incorporate environmental considerations into their trade agreements through various means, not just tariffs.

Regional trade agreements often incorporate provisions regarding investment between participating countries. Including investments can allow countries to develop their bilateral or regional relationships to a greater extent than is possible on an international level, as investments can be made in numerous areas that profoundly affect the businesses of all involved countries. Countries negotiate over an investment framework that allows investors to send capital abroad in a protected and supported manner. Such agreements also include dispute settlement mechanisms that further safeguard international investors. Investment agreements can be made environmentally sustainable by including provisions that promote sustainable investment practices that comply with environmental requirements.

Additionally, preferential trade agreements can address subsidies, which are financial assistance provided by governments to strategic industries to promote certain goals. Traditionally, the goal of subsidies was to enhance the competitiveness of the industry, often by implementing cost-cutting policies. Nowadays, with greater attention devoted to the environment, subsidies have shifted to supporting environmentally friendly sectors, such as energy or environmental goods. These types of agreements can be environmentally sustainable by clearly defining the scope and limits of such subsidies to establish a harmonized system that all relevant actors must follow.

Other non-tariff measures, such as quotas to limit the overexploitation of resources, rules of origin that could serve as an indicator for sustainable products, and price control policies, can also be considered. Trade agreements can be more environmentally sustainable through technical barriers to trade (TBTs), which are regulations or standards that must be met by those importing or exporting specific categories of products within the preferential trade area.

²⁵ Reference number 32

²⁶ Reference number 33

A notable example of a technical barrier to trade is the European Union's recent regulation to curb EU-driven deforestation and forest degradation, first proposed in November 2021. EU members acknowledged their partial responsibility for advancing deforestation in developing countries due to their demand for products such as cocoa, coffee and rubber, which are known to be linked to deforestation. The regulation will reduce carbon emissions caused by EU consumption, estimated at a minimum of 32 million metric tons per year²⁷, and allow the Union to address deforestation caused by agricultural expansion to prevent forest degradation and destruction. The regulation will be gradually applied in a flexible manner, with stronger due diligence and shorter time to adopt the new regime for large enterprises, while allowing more flexible terms for small and medium enterprises (SMEs). Only products that comply with the regulation will be allowed in the EU, effectively banning imported products linked to deforestation. This sets a global benchmark that other developed nations are likely to follow. The EU's agreement is one of the most ambitious attempts to tackle these issues, and it will have a great impact in the way European trade will look in the future.

2.7 Case Studies on the Effects of Environmental Provisions in Trade Agreements

Since the 1990s, there has been a significant drive towards liberalization, particularly with the evolution of the General Agreement on Tariffs and Trade (GATT) into the World Trade Organization (WTO). While the reduction of trade barriers can lead to increased growth and productivity, it can also have negative impacts on the environment. To address these concerns, trade agreements have incorporated provisions aimed at promoting compatibility between trade and ecosystems. However, the environmental and economic effects of these provisions are not well understood. Therefore, this section aims to explore recent attempts to measure the relationship between trade and the environment. Specifically, we will examine three cases related to air pollution, deforestation and the exports of developing countries.

In their research, Inmaculada Martínez-Zarzoso and Walid Oueslati investigate the effectiveness of environmental provisions in improving air quality by focusing on fine particulate matter with a diameter of less than 2.5 micrometers, also known as PM 2.5. Their analytical framework involves estimating the environmental impact of trade provisions while considering the depth of these provisions²⁸. To do so, they employ a fixed-effects model and control for factors such as GDP per capita, population density, and urbanization. Their findings suggest that trade openness and air pollution are positively correlated, but this relationship is mitigated by the presence of environmental provisions in Regional Trade Agreements (RTAs). Specifically, the authors discovered that RTAs with more comprehensive provisions are associated with lower levels of PM 2.5 concentration in ratifying countries compared to non-ratifying countries or those with less comprehensive provisions. However, the authors note that the improvement of air quality is not immediate, as environmental policies require some time to take effect. Sensitivity analysis

²⁷ Reference number 39

²⁸ Reference number 40

confirms the robustness of the results across different specifications and sample sizes. The authors suggest that more comprehensive environmental provisions can encourage countries to adopt greener policies, and that such provisions may lead to emissions convergence among countries. The policy implications of their research are clear: incorporating more comprehensive provisions in trade agreements can help foster sustainable development.

Ryan Abman, Clark Lundberg, and Michele Ruta conducted a study for the World Bank Group to analyze the effects of environmental provisions on the forests of signatory countries²⁹. To obtain more accurate results, the authors identified countries with similar pre-Regional Trade Agreement (RTA) deforestation rates and economic characteristics and employed a matched panel approach. They grouped countries that were similar in these factors but differed in whether they had signed an RTA with environmental provisions or not, to examine whether there were any differences. To mitigate biases, they controlled for factors that could affect deforestation, such as changes in economic activity or population increases. Additionally, the authors conducted an alternative analysis using a multiple event study model at the country level, which provided similar results to the primary analysis, thereby increasing the significance of the findings.

The authors found that RTAs with environmental provisions can decrease deforestation rates compared to RTAs without those provisions. Specifically, they found that RTAs with deforestation-specific provisions provided a 6% reduction in deforestation rates following the implementation of the agreements. The authors noted the significance of the results and their robustness to a variety of model specifications and control variables.

Furthermore, the authors argue that environmental provisions can increase transparency and accountability of domestic governments over the management of their natural resources, providing an indirect link between environmental provisions and deforestation rates. The authors concluded their analysis by highlighting the primary evidence that environmental provisions are effective at mitigating forest loss from trade liberalization. In their study, covering the period from 2003 to 2014, 7500 square kilometers of forest were spared thanks mainly to provisions.

Clara Brandi, Jakob Schwab, Axel Berger, and Jean-Frédéric Morin conducted a study to examine the impact of environmental provisions on the economic performance of developing nations³⁰. Their hypothesis asks whether environmental provisions can reduce dirty exports and increase green exports from developing countries. The authors argue that trade agreements can be used as policy tools to leverage synergies between the environment and economic outcomes. The study employs a gravity model approach to understand the effect of environmental provisions on trade patterns. The authors utilize bilateral trade flow data, environmental provisions in PTAs, and other trade-related variables such as GDP, distance, and language. The authors find a positive correlation between the presence of environmental provisions and the greenness of exports. Specifically, they show that the inclusion of environmental-specific provisions leads to a 5% increase in green exports. The authors also observe that the effects become stronger when the provisions become

²⁹ Reference number 41

³⁰ Reference number 42

more stringent, which suggests that they level the playing field for eco-friendly products, whose market is primarily located in developed nations.

The results of the study are robust and withstand various checks. The authors use a fixed effects analysis to control for unobserved heterogeneity across countries, an instrumental variable approach to test for endogeneity, and heterogeneity tests across different types of PTAs. In all cases, the main results remain robust, indicating that they are not driven by spurious correlation or methodological biases. However, the authors note that the effectiveness of environmental provisions has some limitations, such as weak enforcement by local agents and limited coverage for environmental issues that are sometimes disregarded.

In conclusion, the authors highlight the importance of environmental provisions in the economies of developing countries, but they also point out the limitations of their effectiveness. Overall, they suggest that trade agreements can be effective policy tools to leverage synergies between the environment and economic outcomes if designed correctly.

2.8 Criticisms of Environmental Provisions in Trade Agreements

After investigating the motives and reasons for countries including environmental provisions in trade agreements and analyzing their legal nature and effects on the signatories' ecosystems, it can be concluded that these provisions offer a significant policy option for countries seeking to promote regional trade while simultaneously enhancing their environmental performance and conserving valuable resources. Nonetheless, there remains room for improvement in these provisions.

With numerous regional trade agreements (RTAs) in force for over a decade, it is now possible to evaluate the implementation of environmental provisions in such agreements. While *ex ante* assessments have been made to determine the need for environmental provisions, *ex post* analyses are still scarce due to their complexity, data intensity, and high cost. Therefore, alternative approaches have been considered, such as examining the implementation of the provisions by each party in the RTA and assessing whether the objectives have been achieved, with the aim of learning from any mistakes.

From this analysis, a significant drawback of these provisions emerges: their weak or complete lack of legal bindingness. In practice, countries have used these provisions as a means of "greenwashing" trade agreements with empty promises that do not translate into greener trade. This situation often subordinates environmental concerns to economic interests. The critical issue here is that these provisions are frequently not associated with implementation mechanisms, such as positive financial incentives or negative sanctions or fines. As a result, they are difficult to enforce and lack institutional arrangements to back them up. This has led to a situation where countries express commitments to green trade on paper but do not follow through in practice.

Critics of environmental provisions often raise concerns about the WTO's specificity rule. This rule is a fundamental concept of the WTO and requires any measure proposed by a country to address a certain problem to be specific to that problem and not to distort trade. The rule aims to promote unrestricted trade and minimize unnecessary barriers that could be incompatible with the WTO framework.

However, critics argue that measuring environmental outcomes can be challenging. For example, it can be difficult to attribute changes in air quality solely to trade provisions, as it depends on a multitude of other factors. It is also possible that positive environmental effects may be due to changes in domestic regulations that would protect natural resources regardless of trade regulations. Environmental provisions included in trade agreements can also be viewed as protectionist measures that limit trade to defend domestic firms, rather than being solely motivated by environmental concerns.

Environmental provisions in trade agreements can be divided into two categories: defensive and offensive. Defensive provisions aim to safeguard a country's regulatory sovereignty over environmental standards to prevent external sources of law from undermining its own regulations. Offensive provisions aim to push for stricter environmental standards in other countries. However, some critics argue that offensive provisions may limit a country's sovereignty and that stronger and more economically powerful countries may have an advantage during negotiations, leading to power asymmetry.

Finally, the distinction between trade and the environment is also a critical concern. While higher environmental standards are generally beneficial, some countries may prioritize economic growth over environmental protection. The relationship between economic growth and environmental protection is complex, and different stakeholders may have varying opinions. For instance, the recent EU regulation on deforestation aims to increase accountability and limit carbon emissions, but it also imposes requirements on exporting countries that may not have been approved by their own legislators.

In this section of the thesis, various positions on the topic have been presented. The intention is not to persuade the reader to adopt a particular stance but rather to encourage consideration of different stakeholders' perspectives on environmental provisions in trade agreements.

Methodology

3.1 Research Design

The research design for this master thesis will be based on a correlation analysis between the variables of interest using publicly available data for a specific group of countries. Understanding the purpose and objective of the analysis is crucial in providing the results of the study; the analytical part aims to explore the relationship between environmental provisions and their impact on environmental conservation. The thesis seeks to determine the exact nature of this relationship and quantify its significance.

To design an effective strategy for assessing the effects of environmental provisions on the environment, a careful understanding of the data is essential. The selection of variables and the timeframe for analysis relies on data availability and their relevance. It is important to note that environmental concerns in trade agreements have started to emerge more frequently only recently, with the PTT being a clear example of the shift in priorities. The period of interest spans 18 years, from 2001 to 2018, during which the majority of these types of provisions can be found.

Considering the two variables of interest, it is important to find data that can accurately represent what they signify. In the past century, international trade has experienced substantial growth, and the focus has shifted towards regionalism, which has become a breeding ground for international agreements. Preferential Trade Agreements and Regional Trade Agreements have played a leading role in international trade. These agreements have also prompted the establishment of stricter regulations and laws aimed at limiting the adverse impacts of trade, thereby making them more indicative of green and social sustainability. Consequently, they are the most suitable candidates for this analysis.

When considering the environmental variable, a range of possibilities emerges. Numerous environmental trends have been monitored since the mid-twentieth century, encompassing aspects such as deforestation rates, air quality, CO₂ emissions, global temperature, and depletion of the ozone layer. These trends yield valuable data for studying environmental patterns and facilitating future predictions. International organizations like the United Nations Environment Program, World Meteorological Organization, and Intergovernmental Panel on Climate Change have been established to analyze these data and propose policies accordingly. For the purpose of the thesis, the ideal variable should be easily accessible and preferably directly influenced by trade and the international demand for specific goods.

Based on my analysis of academic works, it has become evident that forest loss could serve as the ideal variable. The destruction of primary forests is a highly visible phenomenon that garners significant media attention, due to its profound impact on landscapes and native wildlife. Additionally, forest coverage data has been extensively studied through various techniques, such as ground-based research and satellite imagery, leading to a highly accurate representation of the Earth's surface.

The research design involves a regression model aimed at capturing the correlation between two crucial variables of interest: the number of environmental provisions agreed upon by each country in trade agreements and the extent of forest loss measured in hectares during the same period. The selected timeframe for analysis ranges from 2001 to 2018, enabling the examination of forest trends and patterns. This frame facilitates an evaluation of the influence of environmental provisions, encompassing both short-term fluctuations and long-term trends. It is important to note that the effects of environmental provisions on forest coverage rates may not be immediately observable, a sufficiently large timeframe accounts for potential lag effects.

It is important to highlight that governments worldwide started placing greater emphasis on environmental issues at the beginning of the twenty-first century. This aspect makes the chosen analysis period highly suitable for comprehending the influence of recent environmental provisions on signatory countries. Moreover, incorporating the most up-to-date data enhances the relevance and applicability of the study's findings. While the period of interest spans from 2001 to 2018 based on data availability, countries actively engaged in international trade agreements following the conclusion of World War II in 1945. However, the cumulative number of provisions until the year 2000 is negligible and can be disregarded without distorting the results.

3.2 Data

To carry out the study, it was crucial to locate a suitable dataset that aligned with the research objectives. As previously mentioned, the analysis centered around two primary variables: primary forest loss, which served as the dependent variable, and the presence of environmental provisions in trade agreements, which served as the independent variable. Therefore, my data search primarily focused on these two aspects.

Finding environmental data proved to be the less challenging of the two tasks. Thanks to advancements in technology, particularly satellite imagery, the collection of accurate data has become considerably more accessible. Furthermore, the global recognition of forests as a shared resource, with their conservation and management drawing significant attention from the general public, has fostered a common understanding regarding the importance of tracking forest-related information. Numerous international organizations are actively engaged in gathering the required data for research purposes.

After careful consideration, I made the decision to utilize the dataset compiled by Global Forest Watch (GFW)³¹. This organization proved to be an invaluable resource due to its comprehensive, dependable, and regularly updated information on global forest and tree cover. Their dataset, accessible through their website, encompasses a wide array of variables pertaining to forest cover. It distinguishes between forests that have undergone loss over time, those that have been subject to disturbances, and those that have remained stable. By leveraging their work, I was able to gather robust data spanning various continents and time periods, establishing a solid foundation for my analysis. Primary forest loss emerged as a crucial variable closely aligned with the objectives of

³¹ Reference number 43

this thesis. It specifically focuses on the portion of global forests that have remained untouched by human activities, serving as a valuable indicator for measuring the decline in biodiversity and the degradation of landscape integrity.

The accuracy of GFW's data is ensured through the utilization of state-of-the-art techniques, including advanced remote sensing and satellite imagery. This approach effectively overcomes the limitations and challenges often associated with ground-based surveys or assessments. Moreover, the availability of GFW's data over time makes it particularly suitable for constructing panel data, which is of utmost importance for my thesis. Furthermore, the organization is highly regarded for its commitment to transparency, as they openly share their data, methodology, and analytical tools, thereby fostering scientific collaboration. The opportunity for the scientific community to review and scrutinize the data further enhances its reliability and credibility.

The second primary variable of interest pertains to the number of environmental provisions associated with each country included in the analysis. However, obtaining this data posed a slightly greater challenge. Initially, it became evident that sources providing information on these provisions were relatively scarce. My initial intention was to explore the data provided by the World Bank. However, during my research, I came across the Trade & Environment Database by TREND Analytics, which proved to be a valuable resource. This database is a collaborative project between the German Development Institute/Deutsches Institut für Entwicklungspolitik (DIE) in Bonn, Germany, and Jean-Frédéric Morin, the Canada Research Chair in International Political Economy at Laval University, Canada.

This database provides a comprehensive and distinctive compilation of environmental provisions identified in bilateral and preferential trade agreements signed since 1945. It encompasses not only the primary text but also includes annexes, side agreements, letters, protocols, and secondary agreements. It is essential to highlight that the dataset does not distinguish between norms, clauses, or suggestions. Instead, it adopts a more inclusive term, "provisions," encompassing various types of commitments, regardless of their enforceability. While this approach may be seen as a limitation, it still serves as a valuable tool for measuring the level of commitment towards enhancing environmental conservation and overall country engagement in this regard.

The TREND dataset also provides the opportunity to explore the nature of these provisions, categorizing them into various types. These categories include: those who can be clearly assigned an environmental protection purpose, those that rule the enforcement of environmental regulations and environmental measures, those that specify how the environmental content of the agreement will effectively implemented, provisions that limit the regulatory space of each country, provisions that take into account the role for economic development, provisions that aim to expand international environmental communities, e.g. some MEAs, provisions that aim at establishing a level playing field and guaranteeing harmonization on environmental standards, and finally provisions that specify the relationship between the environment and other policy areas like investments, transport or tourism. By categorizing these provisions, the TREND dataset allows for a more nuanced understanding of the various dimensions and objectives encompassed within environmental provisions in trade agreements.

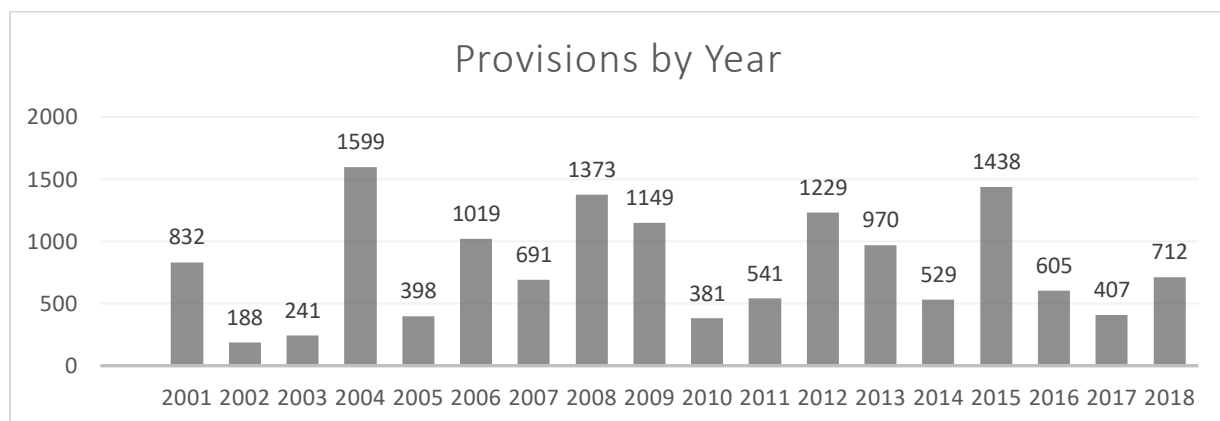
While it is apparent that not all of the previously mentioned factors directly relate to the objective of preserving forest coverage, they still provide valuable information. The number of environmental provisions agreed upon can serve as an indication of a country's environmental consciousness and commitment to protecting its land and resources.

The data used in this study was collected from the Global Forest Watch Database, relying on the information that I was able to retrieve. As a result, the analysis in this study focuses on a subset of 79 countries rather than encompassing all countries worldwide. Although limited, the included countries represent a significant portion of global forest coverage. Excluded countries either lack suitable climatic conditions for forest formation, have minimal forest coverage or their data was not available.

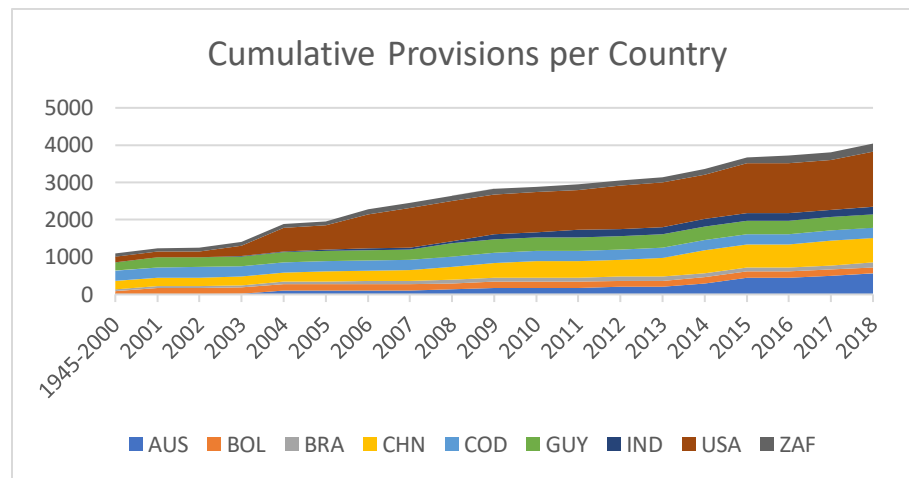
Another aspect to consider is the involvement of countries in the Trans-Pacific Partnership (TPP) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Initially, the TPP was signed by 12 Pacific Rim economies with the aim of enhancing trade in the region. It included 137 environmental provisions that took effect upon the agreement's enforcement. However, the United States, under the Trump administration, withdrew from the TPP due to concerns regarding its impact on certain American industries, aligning with the "America First" policy. Subsequently, the remaining countries amended the agreement, leading to the implementation of the CPTPP in 2018. The CPTPP retained the same number of provisions (137), with slight modifications to accommodate the changed landscape. For the purpose of this study, only the 137 provisions of 2015 were considered, as they are virtually identical to those appearing in 2018.

3.3 Analysis

Beginning the analysis with a visualization of the data is an effective approach as it aids in identifying and contextualizing the key focal points. The variables of interest in this study include the quantity of environmental provisions and the extent of global primary forest loss.



The initial graph provides a clear depiction of notable fluctuations in the number of provisions signed by countries worldwide during the specified period. These variations can be attributed to the unpredictable nature of trade agreements, which are influenced by evolving economic and political dynamics. Several peak points stand out, including those in 2004 and 2015, among others. These peaks can be attributed to the signing of significant trade agreements, such as the Central America Free Trade Agreement (CAFTA) and the previously mentioned Trans-Pacific Partnership (TPP).

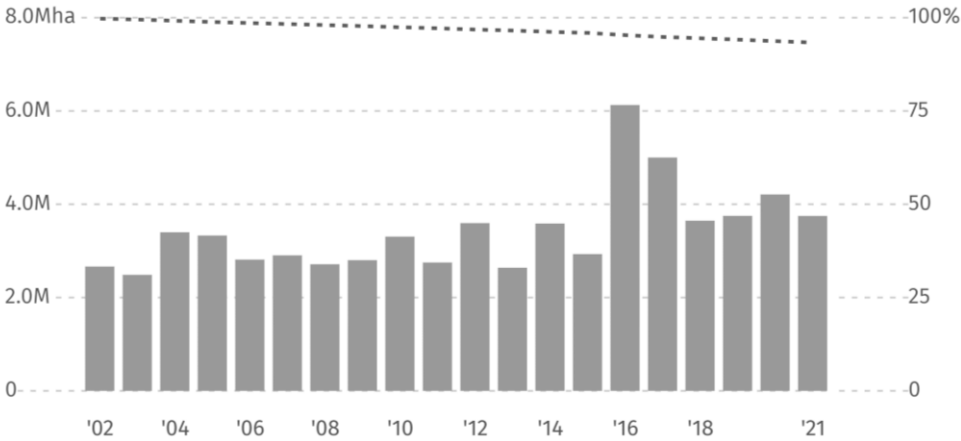


One interesting aspect to analyze is the extent to which the level of economic development influences countries' decisions to adopt environmental provisions. As observed in the preceding sections of this thesis, the majority of these provisions have been promoted by developed countries, predominantly representing the northern hemisphere. To examine this trend, the graph presented above considers countries with similar characteristics and tracks the evolution of their cumulative number of provisions since 1945. In the graph, I have included Guyana, Bolivia, and the Democratic Republic of the Congo as representatives of the South. These countries share comparable population densities, Human Development Index rankings, and significant rainforest coverage, although they differ in size. Additionally, I have incorporated the two wealthiest countries in the dataset, namely the United States and Australia, both of which score exceptionally high in terms of development index. Lastly, I considered emerging markets and economies by including the BRICS countries with available data: Brazil, India, China, and South Africa.

The graph clearly demonstrates an accelerating increase in provisions starting from 2003, highlighting the growing centrality of environmental protection in new trade agreement negotiations. Naturally, the graph is influenced by the participation of the selected countries in global trade, as evident from the United States' 2018 count of 1479 provisions. Several observations can be made. Firstly, southern countries have played a marginal role in this scenario, displaying a comparatively low number of provisions over the past two decades with negligible cumulative growth. On the other hand, the United States and Australia have experienced a significant increase in the number of provisions, particularly following the signing of the TPP.

Their trade policies have been substantially affected by a shift in priorities, which their citizens have vocally demanded, particularly with regard to environmental protection.

As is often the case in 21st-century analyses, China exhibits an incredible trend. Not only has it become a stronger presence in global trade, but it has also signed an increasingly higher number of provisions for environmental protection. India has also made noteworthy progress, becoming actively engaged after 2007 and experiencing a substantial increase, especially considering its virtually non-existent participation prior to that year. However, it is disheartening to note that Brazil, among the countries under consideration, lags behind in terms of environmental protection, despite its vast territory being mostly covered by the Amazon rainforest. In reality, the country's representation is minuscule. This discrepancy can be attributed to various reasons, such as concerns over sovereignty, domestic policy debates, but, most importantly, divergent priorities influenced by the country's willingness to enhance competitiveness and prioritize traditional economic development.



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The third graph illustrates the changes in global primary forest loss, measured in millions of hectares. It is important to note that this analysis specifically focuses on primary forest areas that overlap with tree cover, thus examining changes in previously intact ecosystems. Additionally, the term "loss" encompasses various factors contributing to tree disappearance or mortality, including mechanical harvesting, fire, disease, or storm damage.

Upon initial observation, it is apparent that primary forest loss has remained relatively consistent over the years, with a notable surge occurring in 2015. This surge can be attributed to advancements in measurement techniques employed by the Global Forest Watch. The organization adjusted their algorithm to improve the detection of forest loss, including fires, selective logging, and shifting agriculture. Furthermore, they incorporated data from Landsat satellites with enhanced sensors, enhancing ground resolution and capturing smaller-scale forest loss that was previously

³² Reference number 43

overlooked. While acknowledging the data inconsistency resulting from these adjustments, the dataset remains valuable for understanding forest trends, as ongoing improvements are continuously implemented.

In contrast, the dotted line depicted on the graph represents the remaining extent of global primary forest. It is noteworthy that the planet has not experienced positive growth in terms of forest coverage, as the extent has steadily declined over time.

Moving forward, the analysis will delve into examining the relationship between primary forest loss (PFL) and the environmental provisions established in trade agreements by countries for a given year (Prov). For this regression analysis, a fixed effects model was selected. This model accounts for individual-specific characteristics that remain constant over time. Given that the sample consists of 79 countries observed over an 18-year period, this approach helps address the presence of unobserved heterogeneity that may influence the dependent variable.

```
Fixed-effects (within) regression      Number of obs   =    1,422
Group variable: Country_2             Number of groups =     80

R-squared:                            Obs per group:
    Within = 0.0001                    min =         1
    Between = 0.0004                   avg =        17.8
    Overall = 0.0000                   max =         18

corr(u_i, Xb) = -0.0108                F(1,1341)       =     0.12
                                      Prob > F          =     0.7248
```

PFL	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
Prov	26.13095	74.21998	0.35	0.725	-119.4689	171.7308
_cons	39878.67	2139.893	18.64	0.000	35680.77	44076.58
sigma_u	159050.92					
sigma_e	75625.097					
rho	.81560838	(fraction of variance due to u_i)				

```
F test that all u_i=0: F(79, 1341) = 79.55                Prob > F = 0.0000
```

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Alternatively, considering that the extent of primary forest loss should realistically depend on the total number of provisions signed in previous years, we can conduct an additional regression analysis that takes this factor into account by examining the cumulative provisions over time (CProv).

Fixed-effects (within) regression		Number of obs	=	1,422
Group variable: country		Number of groups	=	80
R-squared:		Obs per group:		
Within = 0.0050		min	=	1
Between = 0.0185		avg	=	17.8
Overall = 0.0073		max	=	18
corr(u_i, Xb) = -0.1497		F(1,1341)	=	6.69
		Prob > F	=	0.0098

PFL	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
CProv	51.29917	19.83679	2.59	0.010	12.38466	90.21368
_cons	28193.08	5034.838	5.60	0.000	18316.06	38070.09
sigma_u	160218.67	(fraction of variance due to u_i)				
sigma_e	75440.711					
rho	.81852485					

F test that all u_i=0: F(79, 1341) = 79.31		Prob > F = 0.0000	
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Additionally, to better specify the model, it is possible to include lags. The impact of environmental provisions should not only be viewed as cumulative, related to the number of provisions signed in the past, but we should also acknowledge that the effects of provisions within trade agreements are not instantaneous. By incorporating lags, we can capture the delayed changes resulting from these agreements. Given that we are dealing with international agreements, I believe that including a lag of one year should be sufficient for national authorities to implement the newly specified rules or recommendations.

Fixed-effects (within) regression		Number of obs	=	1,341
Group variable: country		Number of groups	=	79
R-squared:		Obs per group:		
Within = 0.1353		min	=	15
Between = 0.9958		avg	=	17.0
Overall = 0.7918		max	=	17
corr(u_i, Xb) = 0.8972		F(2,1260)	=	98.59
		Prob > F	=	0.0000

PFL	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
CProv	23.96953	19.1824	1.25	0.212	-13.66345	61.6025
PFL L1.	.3418901	.0246772	13.85	0.000	.2934772	.390303
_cons	22492.87	4955.762	4.54	0.000	12770.41	32215.32
sigma_u	112096.66	(fraction of variance due to u_i)				
sigma_e	67655.212					
rho	.73299555					

F test that all u_i=0: F(78, 1260) = 8.38		Prob > F = 0.0000	
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Results and Conclusion

4.1 Summary of Findings

The regression outputs reveal inconclusive results, as it appears that a higher number of provisions is associated with higher primary forest loss, which is counterintuitive. However, the low R-squared value undermines the significance of these findings. The models are incomplete and requires improvements. Several factors contribute to this outcome, with a primary factor being the absence of key explanatory variables that could have provided a deeper understanding of the relationship. The omission of such variables limits the explanatory power of the regression model and hinders the ability to draw precise conclusions.

As identified in the literature review, both primary forest loss and environmental provisions are influenced by numerous factors, including socioeconomic and climatic characteristics. The failure to incorporate these variables represents a limitation in the analysis. Throughout the research process, I encountered challenges in identifying suitable variables to include in the study. Even if such variables were available, their coverage would not have been sufficient for all 79 countries. Typically, data of this nature is computed and tailored for country-specific analyses rather than global-level investigations.

These limitations inherent in the analysis will be addressed in the subsequent section, where alternative approaches and methodologies will be presented to guide future studies.

4.2 Implications and suggestions for Future Research

Based on the analysis findings, there are several recommendations to improve the research and achieve more conclusive results.

Expanding the sample size by including a larger number of countries would enhance the research. While the current thesis covers a significant portion of global forests by including a substantial number of countries, it would be ideal to encompass all countries worldwide. To achieve this, future researchers can combine different data sources and datasets to provide a comprehensive view of forest loss rates.

Updating the datasets and extending the analysis timeframe could significantly enhance the research. Although the current analysis covers a large number of years, including the provisions and forest loss experiences from the previous century, mainly from 1945 to the year 2000, can represent a significant step forward in reducing the correlation between the explanatory variable and the error term or other unobserved factors. A longer longitudinal analysis that spans a broader timeframe would yield more robust results and provide a deeper understanding of the factors driving environmental changes.

Incorporating control variables is another strategy for future researchers interested in examining the role of environmental provisions in trade agreements. Additional control variables can encompass socioeconomic factors, such as the level of development experienced by countries. This can help incorporate the effects of the Kuznet curve in the analysis and is crucial to identifying the significance of provisions in natural resource management. Climate factors like temperature and precipitation, as well as meteorological area, can also be influential in forest loss in the long run. Population density is another relevant aspect to include, as it can influence the pressure on natural resources and contribute to land conversion. Additionally, variables such as political stability, governance indicators, and land tenure rights can be considered, depending on their relevance to the specific case and the availability of data.

Exploring alternative research designs, such as a difference-in-differences approach, can provide valuable insights into causality. Researchers can identify two comparable countries or geographical areas with similar climates, political stability, and development levels but varying policies regarding environmental provisions. One area can serve as a treatment group where the provisions have been implemented and upheld by the government, while the other area acts as a control group where the provisions were not signed. By comparing the differences in forest loss outcomes before and after the implementation of environmental provisions, this design allows for a rigorous analysis of the effects.

Furthermore, researchers may employ geographically weighted regression or other spatial econometric models to examine the effectiveness of environmental provisions across different regions of the world. These techniques enable the identification and quantification of spatial heterogeneity in the relationship between forest changes and environmental provisions. Such analyses provide a more precise understanding of the relationship and help prioritize resources and conservation efforts in areas vulnerable to forest loss.

In summary, there are multiple avenues for refining the analysis, and it is hoped that the provided suggestions serve as inspiration for future researchers interested in exploring the complex relationship between trade and the environment. By adopting these strategies, researchers can contribute to a deeper understanding of the interplay between human activities and the environment.

4.3 Recommendations for Policy-makers

This section of the thesis aims to synthesize the findings and recommendations discussed throughout the study and provide actionable suggestions for policymakers or individuals in positions of power who can influence environmental management. It is important to note that the analysis conducted in this thesis concludes in 2018, and although progress has been made in terms of environmental consciousness among countries and governments, there is still a need to offer practical tips for achieving greater sustainability.

Firstly, it is evident that the majority of international and regional agreements lack stringent provisions, with only a handful of exceptions as previously mentioned. These agreements often rely on suggested good practices rather than enforceable measures. Therefore, the primary recommendation is to strengthen the provisions themselves to ensure their effective implementation and desired outcomes. Additionally, there is a pressing need to enhance monitoring efforts. Strengthening the oversight and surveillance capabilities of local authorities is crucial to meet the challenges of the future.

Secondly, sustainability should be prioritized by countries and the World Trade Organization as a fundamental aspect of trading practices. This could involve granting specific benefits to eco-friendly products and promoting the adoption of more efficient transportation technologies to reduce carbon emissions associated with international trade. Implementing a credible and comprehensive sustainable certification system, potentially in collaboration with ISO, can incentivize consumers to embrace sustainable consumption practices and influence global demand for environmentally responsible products.

Thirdly, there is a need for a unified global approach rather than fragmented regional movements. The international community must foster stronger international cooperation to address pressing global issues like climate change. This approach should also consider the economic disparities among countries, with wealthier nations providing support for capacity building in poorer nations, including technical assistance and financial resources to enhance monitoring and administrative capabilities.

Lastly, it is essential to increase stakeholder engagement by fostering dialogue and collaboration among businesses, organizations, and local communities. Such engagement is a crucial step toward achieving true environmental and social sustainability. It will ensure that policies and their outcomes align with global goals, prioritizing environmental protection and considering the overall well-being of societies and ecosystems.

Implementing these suggestions will form a more sustainable and harmonious relationship between trade and the environment.

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Appendices

6.1 List of abbreviations

ASEAN - Association of Southeast Asian Nations	NAFTA - North American Free Trade Agreement
BTA - Bilateral Trade Agreement	NAIRU - Non-Accelerating Inflation Rate of Unemployment
CAFTA - Central America Free Trade Agreement	PM - Particulate Matter
CU - Customs Union	PPP - Polluter Pays Principle
CPTPP - Comprehensive and Progressive Agreement for Trans-Pacific Partnership	PSF - Price-Specie-Flow mechanism
DSU - Dispute Settlement Understanding	PTA - Preferential Trade Agreement
DIE - German Development Institute / Deutsches Institut für Entwicklungspolitik	PTPA - Peru Trade Promotion Agreement
EIA - Environmental Impact Assessment	RTA - Regional Trade Agreement
EKC - Environmental Kuznets Curve	SME - Small and Medium-sized Enterprise
EU - European Union	TPP - Trans-Pacific Partnership
FDI - Foreign Direct Investment	TPRM - Trade Policy Review Mechanism
FTA - Free Trade Agreement	TREND - Trade & Environment Database
GATT - General Agreement on Tariffs and Trade	TBT - Technical Barriers to Trade
GDP - Gross Domestic Product	UNCED - United Nations Conference on Environment and Development
GFW - Global Forest Watch	UNEP - United Nations Environment Programme
GSP - Generalized System of Preferences	USA/US - United States of America
IMF - International Monetary Fund	USDA - United States Department of Agriculture
IPCC - Intergovernmental Panel on Climate Change	USMCA - United States-Mexico-Canada Agreement
ISO - International Organization for Standardization	WB - World Bank
MFN - Most Favored Nation	WMO - World Meteorological Organization
	WTO - World Trade Organization

