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Intra-OECD waste trade

Global North and Global South dynamics in the plastic waste trade

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Resumen:

La gestión de residuos ha carecido históricamente de transparencia y los ejemplos de países que destacan en su buena gestión son escasos, por no decir inexistentes. Este estudio pretende demostrar si entre el grupo privilegiado de países de la OCDE - con normas exclusivas sobre residuos entre sus miembros- siguen dándose algunos de los comportamientos jerárquicos tradicionales relacionados con el vertido de residuos. Así pues, el ámbito de este estudio se limitará al comercio de residuos dentro de la OCDE, centrándose en la chatarra de plástico y los residuos peligrosos. La crisis del plástico ha dado mayor visibilidad -y contestación pública- a las prácticas nacionales de gestión de residuos para luchar contra lo que se ha reconocido como uno de los retos medioambientales más acuciantes del siglo XXI (Carrington, 2021). Los países que pertenecen a la Organización para la Cooperación y el Desarrollo Económicos (OCDE), conocidos familiarmente como el "club de los países ricos", deberían dar ejemplo de cooperación en materia de comercio de residuos, pero podría no ser así.

Palabras clave: residuos plásticos, crisis de contaminación por plásticos, comercio mundial de residuos, racismo medioambiental, slow violence, OCDE, gestión de residuos, movimiento transnacional de residuos, economía medioambiental, residuos sólidos, reciclaje, desarrollo sostenible, justicia climática

Abstract:

Waste management has historically lacked transparency and examples of countries that excel at managing waste are scarce, not to say non-existent. This study aims to expose if among the privileged group of OECD countries - with exclusive waste rules among members – some of the traditional hierarchical behaviors related to dumping waste still occur. The scope of this study will thus be limited to intra-OECD waste trade, focusing on scrap plastic and hazardous waste. The plastic crisis has brought greater visibility – and public contestation – of national waste management practices to fight what has been recognized as one of the most pressing environmental challenges of the 21st century (Carrington, 2021). The countries that belong to the Organization for Economic Co-operation and Development (OECD), familiarly known as the “rich countries club” should set an example of waste trade cooperation, but this might not be the case.

Keywords: plastic waste, plastic pollution crisis, global waste trade, environmental racism, slow violence, OECD, waste management, transnational movement of waste, environmental economy, solid waste, recycling, sustainable development, climate justice

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ACRONYMS ABBREVIATIONS

- DAC: Development Assistance Committee
- EPR: Extended Producer Responsibility
- EU: European Union
- GNI: gross national income
- HDI: Human Development Index
- IBRD: International Bank for Reconstruction and Development
- MPI: Multidimensional Poverty Index
- NGO: Non-Governmental Organization
- ODA: Official Development Aid
- UN Comtrade: United Nations Commodity Trade Database
- OECD: Organization for Economic Co-operation and Development
- UNDP: United Nations Development Program
- U.S.: United States of America
- US EPA: Unites States Environmental Protection Agency
- UK: United Kingdom
- WW2: World War II

1. INTRODUCTION

The renowned naturalist David Attenborough reminds us that “humans have created 100 thousand new materials, any number of which could interact with the environment in catastrophic ways” (Clay, 2021). Novel entities such as plastics have revolutionized the way in which societies consume and have facilitated material exchanges between countries. Treating plastic residues as a commodity that can be shipped internationally has created problematic dynamics between countries while aggravating life support systems on Earth. Plastic waste of all sizes, ranging from shapes that can be seen with the naked eye to microscopic particles, accumulate in the environment and disrupt ecosystems. The hazardous characteristics of plastics are not given all the importance they deserve; according to Sherri Mason, professor of chemistry at Penn State University, “plastics are second only to climate change with regard to [the threat to] our ability as a species to survive on this planet” (Asher, 2021). As evidence piles up, plastics are proving to be hazardous from “cradle to grave”, and yet the international community decided to consider this aspect only recently (Cole & Foster 2000, p.75). Developments in international law and increasing plastic pollution media attention have brought the plastic waste trade to the limelight.

The transboundary movement of plastic waste not only entails negative environmental consequences, but it can also represent a threat to local communities. Plastic pollution hides deeply embedded injustices, even among the members of the Organization for Economic Co-operation and Development (Schlosberg, 2021). Rich countries have blamed developing countries for overflowing nature with toxic chemicals and non-biodegradable items of all kinds. This problematic view “forgets” or does not acknowledge how the global north is not only involved, but the main reason why this problem exists in the first place.

2. SCOPE AND REASONS

For the vast majority of people in industrial societies, waste is a taboo that lurks in the outskirts of the cities hiding from sensitive citizens who do not dare to see the reality of the discarded. Reinventing trash, waste and all things that have perished into a “new product” has long been considered distasteful, and yet it is an important part of our economy and trade.

Most of us do not consider waste – especially plastic waste – as a commodity that is traded in international markets. This wouldn’t necessarily be a problem if this type of product didn’t entangle a global ecological crisis due to its monstrous negative externalities. Plastic pollution is an especially difficult challenge to solve because the leakage of toxic substances starts by affecting local communities but ultimately ends up being “everybody’s business”. The phenomenon of globalization combined with profit driven activities gave way to a multi-billion-dollar industry engaged in waste trade that generated problematic economic structures and domination dynamics (Sembiring, 2019). Developed countries have traditionally used developing countries as “backyard” dumpsters to get rid of unvaluable scraps that in return, developing countries transformed to obtain cheap raw materials.

Waste management has historically lacked transparency and examples of countries that excel at managing waste are scarce, not to say non-existent. This study aims to expose if among the privileged group of OECD countries - with exclusive waste rules among members – some of the traditional hierarchical behaviors related to dumping waste still occur. The scope of this study will thus be limited to intra-OECD waste trade, focusing on scrap plastic and hazardous waste. The plastic crisis has brought greater visibility – and public contestation – of national waste management practices to fight what has been recognized as one of the most pressing environmental challenges of the 21st century (Carrington, 2021). The countries that belong to the Organization for Economic Co-operation and Development (OECD), familiarly known as the “rich countries club” should set an example of waste trade cooperation, but this might not be the case.

3. STATE OF AFFAIRS

3.1 Global Waste Trade Imbalances

After the Industrial Revolution, keeping garbage at bay without severely harming citizens' health has been possible so far in the Global North at the expense of the rest of the planet. Only a few marginalized communities within their borders are being disproportionately affected by pollution as it is the case of "Cancer Alley" in the U.S. This name was infamously attributed to an 85-mile strip of the Mississippi River where residents contract cancer at alarming rates and find breathing difficult. The community, which lives among petrochemical plants transforming oil into plastic compounds - among other activities - and which is largely of color and low-income, has the "highest risk of developing cancer from air pollution" in the entire United States (Our Changing Climate, 2021). This is an example of what has been coined as "environmental racism", a concept that will be developed in the theoretical framework of this study.

Putting minorities aside, a safe environment is taken as a given in the developed world when compared to the situation of developing countries. Air pollution from burning fossil fuels causes one out of five premature deaths worldwide, 90% of these deaths occurring outside the United States and Europe (Martins, 2021). If we focus on what mismanaged waste entails, one person every 30 seconds dies each year in low and middle-income countries as a consequence of dumped and burned trash (Whilliams et al. 2019, p.21).

Moreover, out of the ten most plastic-polluted rivers in the world, eight are located in Asia - the Yangtze being at the top of the list - and the remaining two in Africa. These ten rivers account for 90% of the 8 million tons of plastic stream that ends up in the oceans every year (Gray, 2018). The plastic debris carried by the rivers into the ocean contains "organic contaminants, of which 78% are toxic" for wildlife and humans alike once polymers enter the food chain (Ranci 2020, p.288). And yet, apart from India, "all low and lower-middle-income countries are heavy net importers of single-use plastic polymer" that is predominantly shipped from high-income countries and some middle-

income petrostates (Charles, Kimman, & Saran, 2021). The lack of infrastructure and proper waste management systems in developing countries is problematic enough for plastic alone, but even more so when it comes to hazardous materials. Workers in the Global South are exposed to toxic chemicals when handling the dangerous waste materials that arrive to the dumpsters – most times also through illegal activities – because of the absence of suitable equipment, thus putting their health and lives at risk (Varkey, 2019). Other spillover effects of the garbage industry can be seen in countries where waste regulations and sound management systems are flawed directly connects to illegal activities such as arms trafficking or money laundering (Varkey, 2019). The border controls in the Global North fail to deliver effective supervision of hazardous waste before being exported due to the immense inflow of waste inserted into containers and the "short timeframes for inspection". This is an obvious driver of waste crime or illegal trading (Ahmad Khan 2020, p.204).

The out-of-control plastic pollution – meaning plastic that ends up in the environment - that was taking place in developing countries was used as "evidence" by international actors and influential rich countries to shift the blame on them. And yet, according to 2016 figures extracted from the World Bank, the U.S. is the leading plastic waste generator – in terms of disposed amount of plastic - and ranked as the third biggest ocean plastic waste polluter (Rosane, 2020). Furthermore, the U.S. sends more than half of its collected plastic waste abroad, especially to countries that do not have the capacity to deal with American society's waste. The study that was conducted showed how 88% of it was shipped to "countries that struggle to adequately recycle" (Rosane, 2020). The EU is the following greatest plastic waste generator on Earth, but if we take the per capita waste generation, the U.S., the UK, and South Korea are on top of the list (**APPENDIX 1**) (Law et al. 2020, p.2). The constant flow of waste generation in developed countries, together with "very limited waste-disposal capacity, has now made the export of waste a necessity" (Comolli 2021, p.1). The shipment of waste as a developed country necessity to elude responsibility has evolved into "a great power imbalance" coined as "waste colonialism" (Comolli 2021, p.1). Above all, this has created a dependency where developing countries have based a big part of their economy on the waste trade. As a consequence, they import "a disproportionately

large volume of the world's waste and scrap when viewed in proportion to their income" (Kellenberg 2015, p.112).

The reason behind the existence of a large commodity market for plastic waste, ethical issues aside, is that "global waste trade seems to be the most effective way to allocate resources to manage waste" (Sembiring 2019, p.2). In 1991, World Bank president Lawrence Summers wrote in a confidential memo that:

> the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that… I've always thought that countries in Africa are vastly under polluted; their air quality is probably vastly inefficiently low compared to Los Angeles… Just between you and me, shouldn't the World Bank be encouraging more migration of the dirty industries to the Least Developed Countries? (Sembiring 2019, p.2).

For Summers, a perfectly polluted world is a world of perfect equality. Even if this influential professional saw it fit to transport hazardous waste abroad, other international actors considered such behavior detrimental to the receiving countries and thus unfair. The international conventions created for the purpose of prohibiting or limiting pollution and hazardous wastes internationally were the Basel Convention (1989), the Bamako Convention (1991) and the Stockholm Convention (2001) (Varkey, 2019). However, the most relevant international framework for this study will be the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal.

3.2 The Basel Convention

The Basel Convention is the main international legal instrument controlling the transboundary movement of hazardous wastes and their disposal. This convention came into being in 1989 to prevent developed countries from dumping hazardous waste in developing countries. The principal goals set forth to protect the environment and human health were to:

> "reduc[e]…hazardous waste generation and… promot[e] environmentally sound management of hazardous wastes, wherever the place of disposal," to "restrict []…transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management;" and to "[apply] a regulatory system…to cases where transboundary movements are permissible." (Azoulay & Eisen 2021, p.3)

The Convention makes this possible by imposing three main requirements: (1) parties should generate a minimal amount of potentially harmful and pollutant wastes, (2) while maximizing their safe disposal domestically according to environmental standards, and (3) further trade controls. To further trade controls, (a) exporters of covered wastes must "notify and seek prior informed consent ("PIC") for international shipments of such wastes from both their own government and the government of the country of import", (b) trade ban with non-parties related to the covered wastes, (c) ban hazardous wastes export ban OECD to non-OECD countries[1] (Azoulay & Eisen 2021, p.3), and finally (d) ban hazardous wastes export to nations where hazardous waste imports have been prohibited (especially developing countries) (Kellenberg 2015, p.114).

During the negotiations of the Convention's adoption, there was a stark difference in stance between developed countries wanting a control system and developing countries demanding a complete ban on the transnational movement of hazardous waste (Comolli 2021 p.7). One of the major amendments of the convention, the Ban Amendment, was introduced in 1995 to prohibit "developed countries from exporting any hazardous wastes to developing countries" (Kellenberg 2015, p.120). Despite these efforts, the Ban Amendment only entered into force in December 2019, and "many of the world's largest exporters of hazardous waste" such as the United States have still not ratified the amendment (Kellenberg 2015, p.120) (UN Environment Programme, 2021).

Amendments concerning plastic waste were inserted in 2019, and entered into effect on January 1, 2021 (United Nations, p.3). Under these new amendments, "almost all plastic waste transactions involving Basel parties that do not qualify as uncontaminated single-polymer waste will be subject to treaty rules applicable to

[1] Adopted in the Basel Convention in 2011 and implemented in December 2019 (Comolli 2021, p.8)

transfers of hazardous waste" (Ahmad Khan 2020, p.202). This action shows the increasing environmental concern surrounding plastics that were traditionally not considered hazardous. The amendments specifically target transnational plastic waste exchanges to include clearer trade regulations, greater transparency, and authorities' enforcement to address the ocean plastic problem (Ahmad Khan 2020, p.200; Law et al. 2020, p.3).

Even though the Basel Convention has existed for more than 30 years, the international trade of plastic waste has mostly operated outside of the Convention's framework (Ahmad Khan 2020, p.200). In fact, there has been "little evidence that the Basel Convention or the Ban Amendment has had a causal impact on waste trade flows" (Kellenberg 2015, p.120).

3.3 Classifying the types of contamination

Environmental pollutants are "compounds introduced in the natural environment causing adverse changes", mostly representing a threat to living organisms by disrupting their health (Moldoveanu & David, 2015). These can generically be categorized into air pollution, water pollution, soil pollution, noise pollution and in a more extreme level radioactive pollution (Arik, 2014). Considering the nine planetary boundaries, plastics are novel entities within the category of chemical pollution (Asher, 2021). As of today, scientists haven't established an irreversible tipping point for the number of human-made pollutants released in the environment (Clay, 2021). Pollutants are further classified into those that are based on degradation and those based on the environment's absorption capacity (**APPENDIX 4**) (Adhikari, 2018). Plastic is a non-biodegradable, non-organic stock pollutant that can contaminate water, soil, and air.

Waste management prevents pollutants from entering the environment. Waste management methods are also classified into sound or dangerous practices. According to World Bank Data, properly managed waste categories, meaning waste "captured

and contained to prevent leakage into the environment" include: "anaerobic digestion," "compost," "controlled landfill," "sanitary landfill," "recycling," and "incineration" (Law et al. 2020, p. 5). On the other hand, if the final destination of waste is reported in "open dump," "waterways," "unaccounted for[2]" and "other[3]", it is "considered to be inadequately managed" (Law et al. 2020, p. 5). The last category is dedicated to the ambiguous term "landfill unspecified", which represents countries with all types of management "ranging from 0.21 to 100% of waste treatment" (Law et al. 2020, p. 5).

Moreover, the Basel Convention specifies in its Annex I the categories of waste that are subject to supervision as they can cause potential harm to the environment and people's health (United Nations, 2019). It differentiates between the "wastes to be controlled" and "wastes requiring special consideration", identifying also, the types of materials to be considered hazardous (United Nations 2019, p.34-37). The 2019 plastic waste amendment of the Convention modified the nature of plastic, deliberating that plastic should be reclassified as a hazardous waste or substance. This is highly relevant for cross-border transactions because it determines whether "it can flow freely in global commerce" or be subject to "stringent geographical limitations, transparency and consent mechanisms, environmental management obligations, and financial insurance responsibilities" (Ahmad Khan 2020, p.201). Previously, "solid plastic waste" was considered to be non-hazardous and was thus outside of the scope of the Convention. (Ahmad Khan 2020, p.201).

Excluding plastic that has been contaminated by other hazardous compounds, plastic polymers can be found under the category of "wastes requiring special consideration" in Annex II of the Basel Convention (**APPENDIX 3**). A footnote in the Convention's annex indicates that parties are allowed to impose stricter requirements in relation to the given list if they wish to, which could imply that the trade ban of these materials would be justified as a polluting agent (United Nations 2019, p.37). Nevertheless, to explain what should be considered "hazardous" substances or wastes, the convention includes toxic and ecotoxic compounds in the definition. If toxic substances are defined

[2] Same as dumped
[3] Usually used for open burning waste

as those that “may involve delayed or chronic effects, including carcinogenicity” if “inhaled or ingested or if they penetrate the skin”, plastic waste should be considered a toxic substance for its high probability of mismanagement that releases dangerous chemicals into the environment (United Nations 2019, p.41). These emissions are potentially carcinogenic, stress human immune systems and cause respiratory illnesses (Biemiller, 2013). On the other hand, ecotoxic substances are those that “if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems” (United Nations 2019, p.41). Once plastic breaks down, nano particles can then be eaten by different animals and easily enter the food chain, as even zooplankton digest this material (GRID-Arendal, 2018).

3.4 The National Sword Ban: reconsidering the status-quo

Ever since the 1950’s, the global production of plastic polymers has increased along with the rising demand for this revolutionizing material. This plastic “boom” is even expected to increase significantly by 2050, triplicating the current levels of carbon budget dedicated to the transformation of plastic (**APPENDIX 2**) (Center for International Environmental Law, 2019). However, with the current waste management system, it is unclear where – and how - all that plastic will be processed.

For the past two decades, China has imported “almost half of the world’s waste plastic” (Mak, 2018). The country benefitted from a cheap labor force that drove the outsourcing of production from highly industrialized countries, thus establishing a comparative advantage for the Asian giant. As a consequence, waste was also outsourced. Plastic scraps purchased from overseas constituted a “mutually beneficial arrangement”; for the Chinese counterpart it was a source of higher plastic quality “than what was available domestically” and for foreign sellers it was a convenient and cheaper way of getting rid of trash rather than sorting it domestically (Mak, 2018). But as China’s economy grew, Pekin switched strategy and lost interest in this low-value, low-profit, and highly polluting business.

China announced it would ban imports of impure plastic and other materials meant for recycling in 2017 under its “National Sword policy” or “anti-pollution campaign” (Mak, 2018). The policy prohibits imports of “personal/household waste plastic, unsorted waste-paper, and other types of solid waste” (Law et al. 2020, p.3). Right before the ban, China imported 60% of the world’s plastic waste back in 2016, a raw material that was later on transformed into new manufactured goods, to live up to the name of “The World’s Factory” or “workshop of the world”. In 2018, China produced around 30% of the world's plastics and the waste ban was a game-changer; with it, the inefficiencies of the waste trade became visible (Miranda, 2020). The example set by China was followed by other developing countries that saw fit to get back their sovereignty. However, this big step towards environmental control from the side of the recipient countries did not stop international waste flows. Since 2017, global plastic and e-waste has increased, and rich countries found several substitutes for China around the world, switching also to regional exchanges (McCrea, 2020).

4. THEORETICAL FRAMEWORK

4.1 Power Dynamics and Trade theories

- **World-Systems Theory**

Within the ambit of Marxist theories of International Relations, scholar Immanuel Wallerstein propounded the World-Systems Theory to “provide a theoretical framework for the interpretation of the entire history of the capitalist world system” (Teschke 2010, p. 169). In this theory, Wallerstein classifies States in the world system based on the degree of profitability of a nation’s production structure (Wallerstein 2004, p.28). The world-systems’ vision of the modern world is described as a “system revolving around the geographical redistribution of surplus, supervised by changing hegemonic powers” (Teschke 2010, p. 171). This approach of the world economy is understood as:

> a single international division of labor based on different "regimes of labor control" (wage labor, sharecropping, serfdom/slavery) between multiple states. Their strength and geopolitical location within the world economy (core, semi-periphery, periphery) correspond in descending order to their labor regimes. (Teschke 2010, p. 169)

Consequently, States' labor regimes reflect political hierarchies and development differences. Countries are categorized into regional blocks through "core - semi-periphery – periphery" interactions, establishing their position of power in the world economy (Teschke 2010, p. 170). The core states benefit from a "high-skill/high-capitalization regime" that receives the surplus of the unequal exchange transfer from the "low-skill/low-capitalization" periphery (Teschke 2010, p. 169). As we can see on the representation in **appendix 5**, semi-peripheric states are in some way, a nexus between the core and the periphery (Moyer, 2016).

Therefore, world-systems theory examines how the "function, strength, and location of specific states on the world system's core-semi-periphery-periphery spectrum is determined by their trade-mediated integration into the economic (the "development of underdevelopment") and political hierarchies ("dependency")" (Teschke 2010, p. 172).

- **Dependency Theory**

Global economic forces can be better understood through international political economy studies. This field of study examines "how the political battle between the winners and losers of global economic exchange shapes the decisions that societies make about how to allocate the resources they have available to them" (Oatley 2013, p.6). The decisions made to use resources have human welfare consequences, for they maximize or undermine the level of societal well-being (Oatley 2013, p.6).

Dependency theory is quite similar to World Systems theory and maintains similar core-periphery structures. This theory proposed by Raúl Prebisch eliminates the "semi-peripheral" position. It can be understood within the international political economy as a way in which developed and developing countries establish

asymmetrical relations. When it comes to trade, dependency theory assumes that the periphery in the market behaves as a raw materials and cheap labor seller, that advanced economies later on buy to transform into final goods. These finished goods are then sold to developing countries at a much higher price, reinforcing the status of a "rich core and a poor periphery" (Munro, 2018). Robert O. Keihane and Joseph S. Nye label it in another way by interpreting relations among countries as establishing a "mutual dependence" or interdependence (Mumme 1985, p.160).

- **State-power Theory**

Through trade, it is possible to analyze economic structures, structures of domination and power dynamics among countries. According to Stephen Krasner, trade is of utmost importance in determining these dynamics. He presented the state-power theory to explain how "the structure of international trade is determined by the interests and power of states acting to maximize national goals" (Krasner 1999, p.20). The goals that countries pursue to maximize are four basic interests: social stability, economic growth, aggregate national income, and political power (Krasner 1999, p.20). Krasner classifies countries in the system according to their "potential economic power" and by how this power is distributed through the "international trading structures" (Krasner 1999, p.20). The latter refers to the multipolar or hegemonic status of a country, while the first concept is given by the level and size of the country's economic development (Krasner 1999, p.20).

4.2 Defining global north and global south

- **The North – South divide**

Nomenclature that differentiates the development stage or quality of life between countries has been subject to various debates in the past. When constructing how the world looks, it is important to note that the graphic representation of our planet in a map has historically been used by elites to construct hegemonic worldviews and

project power (O'Lear 2021, p.209). The borderline between the highly developed and developing world was first drawn in the Brandt Commission Report of 1980, represented in spatial terms as the Global North and the Global South respectively (**APPENDIX 6**) (Clarke, 2018). The North-South divide is today used to express world disparities through a socioeconomic and political perspective, making the Human Development Index (HDI) and human freedoms – political rights and civil liberties - the most relevant indicators to regroup countries (**APPENDIX 7**) (Solarz, 2012). Just like the "periphery" in world system theory, Dados and Connell (2012) argue that the "term Global South functions as more than a metaphor for underdevelopment", giving the term a political economy connotation rather than a geographic category (Clarke, 2018). In this way, the Global South "references an entire history of colonialism, neo-imperialism, and differential economic and social change through which large inequalities in living standard, life expectancy, and access to resources are maintained" (Dados & Connell 2012, p.13).

The main drawback of the North-South conceptualization of the world is that it clusters "very diverse economic, social and political experiences and positions into one overarching category", thus simplifying reality (Clarke, 2018). Moreover, big inequality gaps between the rich and the poor can also be found at the regional and local level within wealthier countries due to globalization, making it possible for North-South disparities to coexist in the same zone.

Having taken into consideration that this rich-poor country division is flawed, the North-South divide is still relevant to draw "attention to the problem of global inequalities and the power relations at the world and regional scale" (Solarz 2021, p.560). Therefore the line depicted in 1980 can still be used to explain "the essential facts about world politics and its deep inequalities well into the twenty-first century" (Lees, 2021).

4.3 Waste Regimes

The increasing interdependence between countries brought about by globalization has also transformed the way in which societies interact with waste. In an

in-depth sociological study of how waste is generated, treated, and portrayed in Hungary, Zsuzsa Gille developed the concept of "waste regime". Gille conveyed for the first time in her 2007 study "how materiality, social practices, classification, asymmetries in power, and economic processes related to waste co-constitute the social", thus bringing forward the conceptualization of waste as a social category (Sosna, 2020).

In international relations, the most notorious definition of what constitutes a regime has been given by Stephen Krasner. He contends that a regime is an explicit or implicit set of rules, norms, principles, and decision-making procedures "around which actors' expectations converge in a given area of international relations" (Krasner S. D. 1983, p.32). It could therefore be said that a waste regime is defined by waste regulations, access to urban waste infrastructures and distribution, translated into the modes of governance, waste networks, and flows respectively (Gille 2010, p.1056). Adding to Krasner's definition, a waste regime represents the "economic, political, and material dynamics through which waste is produced at the societal level" (Gregson & Forman, 2021).

The three parameters that make waste regimes differ from each other are the "production, representation, and politics of waste" (Gille 2007, p.34). These parameters are not static and change through time, which makes waste regimes dynamic structures. When taking a closer look at the politics of waste, what must be addressed within a regime is:

> whether or to what extent waste issues are a subject of public discourse, what is a taboo, what are the tools of policy, who is mobilized to deal with waste issues, and what nonwaste goals do such political instruments serve. (Gille 2007, p.34)

The waste regime's parameters directly result from power struggles. The production, representation, and politics of waste "guide material and financial flows into new directions, make certain social actors more legitimate than others" – therefore enabling predominant roles – and thereby affecting the environment (Schulz 2015, p.43).

Bringing the focus back to plastic waste, the challenge is threefold; according to Gregson and Forman plastic constitutes a "political-economic-material" challenge (Gregson & Forman 2021, p.222). Stemming from a political problem that transfers the liability of not properly recycling to individuals – households are the actors responsible for the initial sorting in most developed countries – the policy in question is the Extended Producer Responsibility (EPR) for packaging and distribution. EPR is a policy undertaken by producers that includes in the market price of the product the cost to treat or dispose of post-consumer products (OECD, Extended Producer Responsibility: A guidance manual for governments, 2001). However, most post-consumer products' packaging is hardly recyclable or easy to break down in an environmentally safe procedure, leading to the piling up of plastic in landfills. As a result of this policy, there is a lack of markets willing to take that quantity of discarded polymers put into circulation. Another technical-material challenge associated to this policy is related to incineration infrastructure that mostly relied on plastic as "an important component of the feedstock" to generate energy due to the lack of political interest in waste management, and inevitably creating a problematic dependence on this material (Gregson & Forman 2021, p.222).

4.4 Environmental injustice

- **<u>Environmental racism</u>**

Rising environmental awareness has brought to the surface how not everybody has equal access to unpolluted living spaces. The injustices caused in the Anthropocene are only starting to be given attention, proof of it is that countries all around the world managed to agree on the fact that a clean, safe, and healthy environment is a basic human right on the 8th of October 2021. This idea had been resonating in the United Nations system "since the 1980s, repeatedly tabled by governments for further study" (Conca, 2015). And yet, the consensus reached at the end of 2021 is a steppingstone towards achieving climate justice for acknowledging "environmental degradation and climate change as interconnected human rights crises" (Dewan, Kennedy, & Said-

Moorhouse, 2021). Climate justice encompasses a global ethical movement; it focuses on tackling the challenges and impacts of climate change that disproportionately affect the most vulnerable population sectors and communities. Equivalently, climate justice stipulates that no one should be left behind in the transition towards a zero-carbon economy, thus ensuring that all people can "realize their right to development" is essential to the movement (Canzi, 2015).

Unequal access to a safe environment is linked to poverty, nevertheless, other systemic matters that come into play are given less coverage when it comes to understanding why some people are more exposed than others to pollution and waste. Such is the case of environmental racism, a major factor behind the unequal distribution of environmental hazards (Cole & Foster 2000, p.54). The term "environmental racism" was coined by civil rights leader Benjamin Chavis in 1982, which he interpreted in the U.S. context as:

> racial discrimination in environmental policy-making, the enforcement of regulations and laws, the deliberate targeting of communities of color for toxic waste facilities, the official sanctioning of the life-threatening presence of poisons and pollutants in our communities, and the history of excluding people of color from leadership of the ecology movements. (Beech, 2020)

The scholar who put forward environmental justice, Robert Bullard, thought "race to be more important than socioeconomic status in predicting the location of the nation's commercial hazardous waste facilities" in the U.S. (Beech, 2020). Studies that analyzed the distribution of environmental hazards - air pollution, toxic waste production and disposal, garbage dumps, and occupational hazards among others – by income and race showed how "race was most often found to be the better predictor of exposure to environmental dangers" (Cole & Foster 2000, p.54-55). One example that we have previously mentioned is Cancer Alley in the Mississippi River, a place that uses historically vulnerable communities' backyard to host the "densest cluster of chemical facilities in the Western Hemisphere" (Fisher, 2021).

By bringing to the limelight how "racial disparities exist in the location of toxic waste facilities", a pattern of "unequal enforcement of environmental laws" in vulnerable communities can be identified (Cole & Foster 2000, p.58). The policies and practices

that discriminate are a consequence of the economic and social forces reflected in the disparities produced by the environmental decision-making processes (Cole & Foster 2000, p.65). In most cases, these structural disparities do not disappear because vulnerable communities "lack the resources to raise awareness or fight a costly legal battle" (Beech, 2020).

- **Slow violence**

The "state of affairs" section of this study exposes how the environmental hazards that derive from the life cycle of plastics threaten human health in several ways. As it has also been previously mentioned, environmental degradation does not affect everyone equally because greater pressure is put on the most vulnerable. This unequal access to a healthy environment has been theorized as a form of violence in academia, where the natural world is a vehicle for violence.

Violence can be defined as "any act that substantially threatens the physical or psychological well-being of individuals" (Kahl 2001, p.140), with "intended or unintended, and direct or indirect characteristics" (O'Lear 2021, p.2). In its numerous shapes and forms, violence can also be manifest or latent if its effects are "immediately observable or not yet visible but likely to emerge in the future" (O'Lear 2021, p.2). Moreover, violence is not exclusive to human structures and systems, it can be "intertwined with environmental features" through forms of governance, normalization practices and numerous tactics (O'Lear 2021, p.10). The following paragraphs delve into the category where environmental degradation falls.

Johan Galtung developed in 1969 the concept of structural violence, an act that unravels as a "society causes harm to its citizens and their property, often invisibly, through social or health inequalities, racism, sexism or another systemic means" (Fisher, 2021). Because there is not a clear actor committing harm, it is difficult to hold someone accountable even though the damage is tangible. Structural violence is a consequence of the uneven access (health care, education, housing, etc.) and

distribution of resources (O'Lear 2021, p.2). In other words, this systemic violence stems from political and economic inequalities (Kahl 2001, p.140).

Environmentalist scholar Rob Nixon developed the category of slow violence, a "subgenre" within structural violence. According to Nixon, slow violence unfolds "over many years, possibly even generations", which complicates identifying it as a form of violence because it gradually erodes the environment in time and space (Fisher, 2021). Environmental catastrophes such as climate change or ecosystem alteration resulting from pollution, therefore, constitute acts of slow violence. This type of harm is rooted in inequality and emphasizes unjust solutions because "those with more privilege can escape it" (Fisher, 2021).

The variables that shape resource allocation in the international political economy – "international sources of demand-induced, supply-induced, and structure induced pressures on resources" – together with unjust policies and practices are at the heart of environmental degradation (Kahl 2001, p.138). The book Violent Environments (2001) explores how environmental degradation constitutes an act of violence for threatening human well-being, cultural practices, and economic livelihoods (Kahl 2001, p.140).

5. OBJECTIVES AND QUESTIONS FOR THE STUDY

This study analyzes the evolution of waste imports after China's National Sword Policy. Even though my starting point goes back to what waste trade looked like before the announcement of the 2017 policy, my aim is to expose what happened afterwards focusing on OECD countries. I want to show that the dynamics between countries still present a similar pattern (World Systems theory) even if China no longer dominates the "aggressive" purchasing of waste materials to reinforce its economy with "scraps".

This dissertation will delve into Global North and Global South dynamics through OECD countries' relations when it comes to waste trade. The main types of waste I will concentrate on are scrap plastics considered to be hazardous waste.

The question that arises is whether or how OECD members from the Global North reinforce their dominant power/status in the international political economy through waste trade with Global South OECD members. The main hypothesis put forward is that Systems Theory can be applied to the current OECD waste trade model, meaning that Global North OECD members reinforce their dominance by selling problematic waste to the Global South. If a country's position in the world economy does not correspond to the amount of unconvertible or hazardous waste it receives, then our hypothesis (based on World Systems Theory) would be rejected.

6. METHODOLOGY

This research dissertation is an analytical study of plastic waste trade dynamics among OECD countries. In the following section, open data numeric sources are contrasted with reports and articles from trade "watchdogs" to give country-specific information. Accordingly, the research will combine qualitative and quantitative research methods to understand salient global events. The theoretical framework that was laid above will help interpret the data gathered in order to answer the question of the study and make a generalization based on the evidence found.

The main objective of this research is understanding the impact of China's National Sword policy in the relations of OECD countries when it comes to transboundary flows of plastic scrap and waste. In other words, the aim is to understand "state behavior grounded in the international system itself" (Lamont 2015, p.8). The analysis will be within the time frame of January 2018 – when the import ban is implemented - until November 2021. Data on the trade value in US$ of waste parings and scrap of plastics (3915 commodity code in the database) from the UN Comtrade database were collected for this purpose in **appendix 8** and **appendix 9** (UN Comtrade, 2021).

7. ANALYSIS

7.1 Country Classification

The OECD designs policies in the name of development and shared prosperity through the lens of economic growth. Its existence can be traced back to 1960 as a make-over of the Organization for European Economic Co-operation (OEEC), the organization in charge of administering European reconstruction aid under the Marshall Plan after WW2. Today, the OECD has an exclusive membership composed of 38 countries – listed in **appendix 10** -, most of which are developed and highly industrialized. This reduced group of countries is responsible for shaping new policies to face the challenges of obtaining "resilient, inclusive and sustainable growth" (OECD, 2021). The first challenge presented in this study is assessing which OECD members are currently a part of the global north and global south. The North-South divide will be relevant in the following chapters of this dissertation to make a political economy analysis of power imbalances in the waste trade.

The Basel Convention defines developed countries as all those belonging to the OECD and EU, and thus explicitly excludes developing countries from these two groups (Kellenberg, 2015). On the other hand, according to the 1980 Brandt Line division, Chile, Colombia, Costa Rica, and Mexico would be the only actual OECD economies belonging to the Global South. So where can the line between the north and the south be drawn?

To classify OECD countries in the world system, I will base my criterion on different indicators. For this purpose, **appendix 10** compares OECD members on a socioeconomic, political, and environmental level. The chosen socioeconomic indicators are based on income groups, lending category and international development cooperation criteria, HDI, GINI coefficient, and Multidimensional Poverty Index (MPI). Moreover, political rights and civil liberties will be measured by the Global Freedom Score while environmental action will be determined by the Legatum Prosperity Index.

The classification of economies into four income groups by the World Bank based on gross national income (GNI) per capita indicates that Colombia, Costa Rica, Mexico, and Turkey are the only upper middle-income countries of the OECD (World Bank, 2021). For having a "GNI per capita between $4,096 and $12,695", these economies can access loans from the International Bank for Reconstruction and Development (IBRD) (World Bank, 2021). Despite this, Chile, and Poland - both high-income countries of the OECD - are within the IBRD operational lending category, along with the above mentioned upper-middle income countries of the OECD (World Bank, 2021). Another characteristic element of the international development cooperation regime is which countries are eligible to receive Official Development Aid (ODA). The OECD Development Assistance Committee (DAC) defines ODA as "government aid that promotes and specifically targets the economic development and welfare of developing countries"; within the OECD, Colombia, Costa Rica, Mexico, and Turkey are ODA recipients (OECD, 2021). The DAC establishes which countries can receive ODA. However, not all OECD countries are members of the DAC: the Baltic States, Chile, Colombia, Costa Rica, Israel, and Turkey are not members, but they participate in DAC meetings as the organization states in its webpage (OECD, 2021).

Other socioeconomic indicators that better reflect inequalities on a national level must be included. The greatest inequalities in the distribution of wealth in the OECD according to the GINI coefficient can be found in descending order in Colombia, Costa Rica, Mexico, Chile, Turkey, and the US (**appendix 10**). The next indicator of this category is the HDI, divided into four ranks: very high, high, medium, and low human development. OECD countries have a very high human development and most of them are at the top of human development, the exceptions are Colombia and Mexico for ranking high in human development (**appendix 10**). Finally, the MPI is a relevant indicator that evaluates how health, education and standard of living interact under the umbrella of multidimensional poverty. Multidimensional poverty mostly targets developing countries, nevertheless, poverty in previously mentioned OECD countries has also been considered for Colombia, Costa Rica, and Mexico (OPHI, 2021). It is worth noting that these countries do not have high poverty rates, and yet the MPI

report's findings expose how in Colombia "indigenous groups are the poorest", where ethnicity has a clear impact in poverty factors (OPHI 2021, p.13)

When it comes to evaluating the political context on a national scale, the Freedom House provides data that measures the "respective level of political rights and civil liberties" of each country (Solarz, 2012). By comparing the Global Freedom Score (**appendix 10**) we can see that most OECD economies respect human freedoms. "Partly free" countries where political and civil rights are put at risk are Colombia, Hungary, and Mexico. The only country that is not "free" in the OECD is Turkey, where the opposition to the main party is prosecuted and institutions are blatantly influenced by the government.

As for the environmental aspect, the Legatum Prosperity Index can give us an overview of how the state of the natural environment has an impact on prosperity; prosperity being "about creating an environment where a person is able to reach their full potential." (Legatum Institute 2019, p.4). **Appendix 10** isolates the natural environment[4] element in the index, thus making it the only pillar taken into consideration for 2020 figures. The natural environment pillar "measures the aspects of the physical environment that have a direct effect on people in their daily lives and changes that impact the prosperity of future generations" (Legatum Institute 2020, p.77). The States that contribute the least to a healthy environment are in descending order: Israel, Turkey, Mexico, Korea, Belgium, Italy, and Poland.

The socioeconomic, political, and environmental indicators among OECD States have been contrasted by aggregation methodology, assuming that each dimension considered has the same weight when identifying a country as belonging to the "global south". After contrasting these indicators, a pattern of "nonperforming" countries can be identified. The countries that stand out more clearly than the rest of OECD members are Colombia, Costa Rica, Mexico, and Turkey. Furthermore, Chile and Poland could also be included in this group for having common characteristics in their

[4] Elements of prosperity weighted: emissions (GHG & other pollutants in a country), freshwater access, exposure to air pollution, oceans (quality of a country's marine resources), forest land and soil (quality of these elements in a country), preservation efforts ("efforts to preserve and sustain the environment for future generations, and public satisfaction with those efforts.") (Legatum Institute 2020, p.77)

rank of performances. Therefore, to carry on with the main hypothesis, I will reframe the following OECD members as Global South or semi-peripheric States: Chile, Colombia, Costa Rica, Mexico, Poland, and Turkey. By analyzing how these countries interact with other members in the waste trade, it will be possible to determine if Chile, Colombia, Costa Rica, Mexico, Poland, and Turkey may act as "backyard dumpster" for more typical global north countries.

7.2 OECD Waste Regime

According to UN trade data, every year only 2% of the 360 million tons of plastic scrap and waste produced worldwide is exported to be treated (OECD, 2020). It has been previously mentioned that the international shipping of plastic waste falls under the regulation of the Basel Convention, however, regional blocks like the OECD have also developed their own "trading rules" to exchange plastic waste between members. Within the OECD area, waste movements rules are covered in the "Manual for the Control of Transboundary Movements of Recoverable Wastes". The Organization defines transboundary movements as "any movement of wastes from an area under the national jurisdiction of a member country to an area under the national jurisdiction of another member country" (OECD Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes 2009, p.11). Moreover, the distinction between "recovery" and "disposal" is purposefully made to cover what happens with the end-of-life of materials. Recovery tackles the transformation of waste into a new product for human use, such as recycling, fuel transformation or other means of energy generation (excluding direct incineration). To ensure that the waste is recovered, the OECD sets a time limit requiring "the recovery facility to ensure that the waste is processed as soon as possible and no later than one year after the receipt of waste" (OECD Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes 2009, p.28).

On the other hand, the disposal of waste implies that materials will no longer be used. Some examples of waste disposal can be translated into the processes of incineration on land, landfill drop-off and release into water bodies. Therefore, waste destined for

disposal is subject to the legal control of the "Basel Convention and any applicable national law" and is not covered by OECD-specific trading rules (OECD Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes 2009, p.11).

The recovery of waste within the OECD area follows a control procedure based on two levels: Green and Amber. The "Green control procedure" is for the shipment on non-hazardous compounds, while the Amber control procedure applies to shipments that "may pose a risk for human health and the environment during their transboundary movement for recovery within the OECD area" and is thus "subject to specific control procedures" (OECD Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes 2009, p.13) (**APPENDIX 11**). The classification of waste is harmonized with the Basel Convention, so the list of hazardous plastic waste within the Basel Annex II (**APPENDIX 3**) follows the OECD Amber control procedure (OECD Guidance Manual for the Control of Transboundary Movements of Recoverable Wastes 2009, p.9).

As previously mentioned in the State of Affairs of this dissertation, the latest Basel Convention modification regarding plastics came into effect in the beginning of 2021. The new Basel entries - B3011[5] and Y48[6] – expand the restrictions on plastic waste controls by reclassifying plastics that were previously considered non-hazardous. Regarding this matter, there was a lack of consensus among OECD members in applying stricter controls to the shipment of materials concerning the new Basel entries. Accepting "plastic waste that is dirty, halogenated, mixed, or not destined for environmentally sound recycling" is thus left to members' national law and international law (Morán 2021, p.13). And yet the domestic laws of OECD members vastly differ from each other, for example, exports that would be regarded illegal in

[5] "a group of cured resins, non-halogenated and fluorinated polymers, provided the waste is destined for recycling in an environmentally sound manner and almost free from contamination and other types of wastes; mixtures of plastic wastes consisting of polyethylene (PE), polypropylene (PP) or polyethylene terephthalate (PET) provided they are destined for separate recycling of each material and in an environmentally sound manner, and almost free from contamination and other types of wastes." (UN environment programme, 2019)

[6] "plastic waste, including mixtures of such wastes unless these are hazardous (as they would fall under A3210) or presumed to not be hazardous (as they would fall under B3011)" (UN environment programme, 2019)

Europe are allowed under US legislation, thus perpetuating an inconsistent system (Comolli 2021, p.8). Until the decision to acknowledge the new Basel entries for all OECD parties is not revised, the organization will fail to maintain environmental protection since "waste trade controls within the OECD are lighter than outside the OECD" making the OECD "a risk for illegal trade in plastic waste" (Morán 2021, p.13). Non-conforming with the previous statement, the US protested against the adoption of the Basel "plastic amendment" into the OECD waste regime:

> According to the U.S. Environmental Protection Agency, the enhanced scrutiny over plastic waste is unnecessary in the context of OECD trade, as "OECD member countries have attained high environmental standards and have the capacity to manage waste in an environmentally sound manner". (Ahmad Khan 2020 p.202)

7.3 OECD plastic waste trade dynamics

According to the Basel Action Network, the primary exporting countries of plastic waste are the UK, the US, the EU, Canada, and Japan, all OECD global North economies. Primary importing countries that belong to the OECD included in the hazardous waste watchdog list are Turkey and Mexico (Basel Action Network, 2021). Alternatively, according to the Interpol, Chile is an importing country, while Mexico and Turkey are both importing and exporting plastic waste economies (**appendix 12**).

To get a clearer view of plastic waste trade dynamics, it is relevant to visualize where and how these global flows take place. As it can be observed in **appendix 13**, plastic waste flows have intra-regional and inter-regional dynamics. There is a clear power dynamic in which global north countries are identified as exporting countries and global south regions as importing actors. The biggest plastic waste movements happen from global north countries who direct their waste towards global south countries, creating unequal exchanges.

UN Comtrade Data analysis

To assess waste transnational movements in the OECD area, **Appendix 8** gathers the value of plastic waste exports and imports in the timeframe of 2018-2020. The difference between exports and imports results in gains or losses derived from the plastic waste trade. The countries that engage more heavily in exporting activities will have a positive revenue, whereas heavy imports will be translated into monetary losses if the materials are not recovered.

The UN Comtrade database reveals that Mexico is the second OECD economy that earns more money for heavily relying on exports, therefore selling plastic waste abroad (**appendix 8**). However, when taking a closer look at the evolution of waste trade flows in **Appendix 9**, Mexico has steadily decreased its waste exports since 2018. Between 2018 and 2020, Mexican exports of plastic scrap saw a 28% decrease while imports rose a 42% in that same period (**appendix 9**). This is a symptom of the Mexican recycling industry trying to accommodate to increased plastic waste flows coming from North America after China's import ban. Another important aspect to consider is that the Covid-19 pandemic has multiplied the demand of single-use plastic and contributed to waste generation in "an already out-of-control global problem" (Laville, 2021).

In the Latin American region, Colombia follows its neighbor's example by having a positive trade balance (**appendix 8**). But unlike Mexico, Colombian exports of plastic waste have increased since 2018 and imports have decreased (**appendix 9**). What is relevant to note, is that between 2018 and 2019, Colombia had the greatest evolution in export values, with a rise of 135%. On the other hand, imports also rose in that same period over 109% (**appendix 9**). This boost in trading activities is the most noticeable in the OECD area, meaning that Colombia is starting to give strategic value to plastic waste as a commodity.

The position of Chile and Costa Rica in the OECD trading system is very similar, both rely more on imports than exports (**appendix 8**). However, imports of plastic waste after China's National Sword policy have radically decreased in both countries, most likely to protect their market from a waste flow that the countries cannot manage

(**appendix 9**). Another relevant finding is that Costa Rica registered a 58% increase in exports since China's import ban until today, with a very high peak in exports between 2019 and 2020 – an evolution similar to Colombia one year later (**appendix 9**).

Other important findings presented in **Appendix 8** involve Turkey for being the OECD country at the top of waste plastic imports. Since 2018, plastic waste imports have increased steadily in Turkey by bringing in scraps from other OECD members, translated into a 49% increase in this commodity between 2018 and 2020 (**appendix 9**). The imports increase has been complemented by a decrease in exports, turning Turkey into a waste haven. Poland's trade balance is also negative, making the country a major importer of plastic scrap (**appendix 8**). Unlike Turkey, Polish imports have sunk a 30% between 2018 and 2020 (**appendix 9**).

These facts show that OECD global south members do not engage in transnational waste trade in the same ways. Mexico and Turkey have followed a similar path after the National Sword came into effect. Since 2018, plastic waste imports from Mexico and Turkey have risen above 40%. Moreover, between 2018 and 2020, plastic waste exports in both countries decreased in about 30%.

On the contrary, Chile, Colombia, and Costa Rica drastically reduced imports and focused more on exporting plastic commodities. And yet in general terms, Costa Rica, Chile, Poland, and Turkey still managed to import more than they exported in the 2018 and 2020 period.

To better understand why global south countries have different strategies when it comes to dealing with plastic waste, specific case studies will be analyzed in the following sections.

Transnational organized crime: waste havens

Recent developments in trade flows showcase that plastic waste is drawing the attention of transnational organized crime. To tackle the accumulation of plastic waste, countries that have traditionally relied on exporting this commodity are now engaging in waste crimes (INTERPOL 2020, p.34). The illegal activities associated to

waste are divided into illegal treatment and illegal trade – a violation of export or import bans (Comolli 2021, p.7). The International Criminal Police Organization identified two significant trends globally. The first finding is related to export countries, as they have experienced "a significant increase in disposal in illegal landfills and in waste fires, both accidental and deliberate, as methods to cheaply deal with large volumes of untreated domestic waste previously exported to China" (INTERPOL 2020, p.34). On the other hand, in import countries "the rapidly increasing supply of waste has fueled unauthorized recycling facilities, and illegal landfilling" (INTERPOL 2020, p.34). Since 2018, illegal shipments of plastic waste were detected in 20% of traditional plastic waste trade routes (**Appendix 13**) (INTERPOL 2020, p.22).

The latest series of global events have been used as an opportunity for illegal waste disposal. In the context of the Covid-19 pandemic, the year 2020 accounted for a 280% increase in illegal practices of plastic waste disposal, "with countries such as the UK seeing a 300% increase in so-called fly-tipping[7]" (Comolli 2021, p.5). Likewise, the illegal dumping of waste has also increased in the US (INTERPOL 2020, p.35). The illegal disposal of waste allows the actors involved – in many levels of the supply chain - to compensate for the monetary losses that the global waste trade chaos entangles and to bypass export and import bans and regulations (Comolli 2021, p.1). The implications of illegal waste trade go beyond environmental damage, facilitating corruption, money laundering, and drug trafficking in some cases (Comolli 2021, p.1). In the context of the EU, there is a correlation between the incineration of waste shipments and "disparate incineration and landfill taxes across member countries" (Kellenberg 2015, p.120). By seeking "lower-cost, lower-regulation locations for hazardous waste disposal", EU countries reinforce a "waste haven effect" (Kellenberg 2015, p.120).

As it has been previously mentioned, the main destination for waste disposal has abruptly changed with increasing regulations, but the generation of waste has not. Domestic recycling plants can hardly absorb those large quantities of accumulated waste, leaving two options to tackle in the short term with the waste that was previously being sent to China: re-routing towards other destinations, or incinerating or landfill dumping in the country of origin (INTERPOL 2020, P.17). The focal ports of

[7] "illegally dumped household waste in roads, fields, rivers, etc." (Comolli 2021, p.5)

origin of illegal waste shipments, situated in Australia, North America, Japan, and Europe, are all within the borders of global north OECD members (Ahmad Khan 2020, P.204). In some cases, illegal activities may be endemic in transporting nodes, as for example a 2007 report found "all of Canada's major seaports to be directly or indirectly infiltrated by extensive organized crime networks" (Ahmad Khan 2020, P.204). This proves that global north countries have perpetuated waste crime by not tackling the issue at source. Moreover, after China's ban, "massive quantities of hazardous waste falsely labelled as plastic recyclables" were diverted to South Asia from the US, the EU, Australia, and Canada (Ahmad Khan 2020, P.202). Large global shipping lines[8] – mostly belonging to OECD countries - have been accused of "facilitating illicit and unsustainable movement of waste" and asked to "introduce policies and procedures to stop the movement of plastic waste from OECD to non-OECD countries, Mexico and Turkey" by civil society groups (Comolli 2021, p.28).

7.4 OECD global south country-specific analysis

Turkey

In the year 2000, Turkey's municipal waste had a 1% recovery rate (Ipa News, 2019). Eighteen years later, recovery rates varied to 12% according to the Turkish Statistics Institution (Uğurtaş, 2020). **Appendix 14** casts that the recovery rates of Turkey, recycling and other recovery methods in 2019 represented less than 10%, making the country the worst OECD recovery destination. Taking into consideration that data from Colombia, Costa Rica, Chile, and Mexico are lacking in the chart, Turkey is the country that recycles or recovers less waste from the OECD members (**appendix 14**). The chart's footnote also indicates that "incineration with energy recovery" is included in "other recovery" methods. This information is worrisome considering that this way of making energy promotes environmental racism and is thus detrimental for local communities (Noronha, 2020). Waste-to-energy needs sophisticated technology to perform well, and even in the cases where "governments adopt international

[8] "the nine largest global shipping lines: Hapag-Lloyd (Germany), Maersk (Denmark), CMA CGM (France), MSC (Switzerland), Hamburg SUD (Germany), Hyundai Merchant Marine (Korea), Evergreen (Taiwan), COSCO (China), and Orient Shipping (Jordan)" (Basel Action Network, 2021).

emission standards, it doesn't guarantee that dangerous emissions aren't being released, especially in developing countries where there is no technical capacity to monitor emissions continuously" (Astudillo, 2021). And yet this type of energy is often offered as a solution to manage plastic waste because this material is highly combustible and perfect for incineration facilities. However, eliminating waste in this way is "the most emission intensive form of energy generation, generating more total carbon emissions per kWh than coal, oil or natural gas" (Astudillo, 2021).

Turkey's recent role in the waste trade has earned it the title of "Europe's garbage dump", a position that led the trade key node to take stricter decisions on its waste intake (Uğurtaş, 2020). In July 2021, Turkey introduced a ban on the imports of plastics - HDPE, LDPE and PET – that was modified[9] short after due to a clash between government officials. This internal tension was embodied by Turkey's ministry of environment who advocated for a complete ban while the ministry of trade pushed for trade openness. Turkey's sudden U-turn was a "by-product of the narrative that, at times of financial crisis, waste management and processing are needed to generate revenue" and employment (Comolli 2021, p.12). The economic interests behind being "the plastic waste-taker of last resort for Europe" are that Turkey has an "85 percent dependence on imported plastic raw materials" (Uğurtaş, 2020). As previously mentioned, Turkey fails at recovering its own municipal waste, which is why the recycling sector is dependent on foreign waste. But the rampaging problem that Turkey is faced with – and that Europe has benefitted from so far - when it comes to garbage imports is organized crime:

> In Turkey, an average of two suspicious incinerations per week take place at recycling plants – usually at night, in their storage areas – and illegal workers and Syrian refugees can sometimes be found working at these facilities in exploitative conditions. It goes without saying that these are hazardous – and sometimes deadly – conditions for workers. (Comolli 2021, p.16)

In fact, the Interpol reported in January 2018 that within Turkish borders, waste fires "were suspected of having been started deliberately to eliminate illegally landfilled plastic scrap" (Uğurtaş, 2020). The fires lasted in time, as in May 2021, plastic waste that originated "mainly from the United Kingdom, Germany, Poland and other EU

[9] "PET was removed from the list of banned imports" (Comolli 2021, p.12).

countries" was burned in ten sites of the Adana province (Gumrukcu, 2021). As a matter of fact, some of the most common routes for illicit plastic waste include Turkey as a final destination and originate in Germany[10] and the UK[11] (Comolli 2021, p.23). The plastic waste that is not burned is "open dumped", causing every year 800,000 tons of this mater to be released in the environment, thus failing to be recovered and presenting a serious health concern (Moore, 2021). Criminal connections between the UK and Turkey have also pointed at waste companies operating between the two countries "used as a front for prostitution, drug trafficking and other illicit activities" (Comolli 2021, p.33). The involvement of criminal groups in the waste trade is a clear sign of lack of control, which is taken as an opportunity to generate revenue in the underground economy. What is worrisome, is that the permissive environment of these countries from which the global north has benefitted so far has contributed to nets of international crime, which explains why "Turkish polycriminal groups are significantly involved in the management of European waste" (Comolli 2021, p.33).

Costa Rica

Recent trends in plastic waste trade indicate that Latin America and the Caribbean are the new emerging destinations for plastic waste shipments coming from world powers like the US (Morán 2021, p.5). The reconfiguration of international waste flows is now making Latin America join Africa and Asia in increased waste exchanges with the global north. The US is increasing its presence in the region, looking for "new markets for plastic waste" and investing in "new recycling facilities in Mexico, Argentina, and other Central, South American, and Caribbean countries" to meet domestic plastic demand (Morán 2021, p.6). Costa Rica almost exclusively trades plastic waste in the OECD area with the US, and this interdependence has been reinforced in the 2018 – 2020 period (**appendix 17**). Bearing in mind that the US is not a part of the Basel Convention, to trade plastic waste it must sign individual hazardous material "import/export agreements with the nations with which it does the most

[10] "As of June 2021, over 100 illicit containers that had reached Turkey from Germany via the port of Antwerp were sitting in Turkey waiting to be sent back to Germany. They contained mixed waste contaminated with household waste" (Comolli 2021, p.23)

[11] "The Cilicia region of Turkey, from the Mediterranean to the Syrian border, is the main entry point for plastic waste and a highly polluted area" (Comolli 2021, p.23)

plastic shipping, including Canada, Mexico, Costa Rica, Malaysia and the Philippines" (Pekow, 2021). Unsurprisingly, these trade agreements do not guarantee the environmentally sound recovery of materials. Costa Rica's energetic decarbonization has proved to be successful, however "poor waste-management practices and a lack of proper landfill space" are taking the toll on the country (Ellis, 2019). Taking a closer look at how Costa Rica handles plastics, a 2018 report estimated that 550 tons of plastic were dumped daily at the national level: 80% made its way to the ocean, 11% ended up in landfills and dump sites, and only 9% of the total waste amount successfully reached recycling facilities (Smith, 2021). As of 2018, the plastic industry represented the third largest industry in the country and Costa Rica was reported to be the top importer of plastics in Central America according to the UNDP (Smith, 2021). The government has "admittedly struggled in their recycling efforts, particularly in the plastics industry" due to logistics difficulties (Smith, 2021), which is why it decided to join efforts with another OECD economy (Smith, 2021). Costa Rica recently announced that it would be strengthening bilateral relations with South Korea to target the "disposing of waste" among other "eco-friendly" projects (Ji-hye, 2021). This might be translated into increased plastic waste exchanges that do not necessarily meet environmental standards with other OECD countries.

Colombia

To get an overview of Colombia's role in the global plastic waste trade, a 1988 – 2018 chronological analysis ranks the country as the third biggest importer of plastic scrap in Latin America, importing 5.4% of the plastic produced in the region (**appendix 15**). However, on a global scale the country is not considered a major importing actor (**appendix 15**). From 2018 to 2020, Colombia's main trading partner of the OECD area to import plastic waste is the US (**appendix 17**).

A common problem that researchers face when trying to understand plastic pollution levels in Colombia is that there is scarce data about microplastic and macroplastic pollution at the national level. This is due to the country's inexperience in waste management, exploitation, and valorization (Colorado & Echeverri-Lopera 2020, p.52). Nevertheless, studies confirm that Colombian coastal environments are highly polluted by microplastics and plastic litter, with severe impacts on sensitive ecosystems in spite

of preservation efforts. Microplastics are especially concentrated in industrialized areas where they interact "with heavy metals and organisms" (Garcés-Ordóñez et al. 2020, p.2). The release of these materials in the Caribbean and Pacific coast is attributed to poor waste management practices – deficient or non-existent in coastal areas - and tourism. Of the total solid waste produced in Colombian coastal municipalities, "65% are inadequately discarded", meaning that waste ends up in water bodies, buried in the ground, burned, or thrown into open dumps (Garcés-Ordóñez et al. 2020, p.9). The main source of macro-plastic pollution in Colombian coasts is suspected to be household sewage due to the lack of waste management systems. But when it comes to microplastics, plastic pellets of industrial origin - specifically "white new plastic pellets" – were found to be the primary type of microplastic pollution (Acosta-Coley, et al., 2019). This indicates that the recycling facilities that are processing foreign plastic do not meet environmental standards if these materials are being released into the environment. Poor "legislation, and more importantly, a poor law enforcement by the city authorities" characterize Colombia's current waste management situation (Colorado & Echeverri-Lopera 2020, p.53). Another matter worth noting is that environmental activists are exposed to life-threatening risks when denouncing environmental mismanagement in Colombia. In 2020, Colombia became the most dangerous country in the world for environmentalists where 65 environmental and land defenders were murdered. 2020 was a dire year for environmental vigilantes who want to protect their communities from slow violence – and direct armed violence - as 227 lost their lives worldwide, the highest number of deaths for environmental activists ever recorded (Santaeulalia, 2021).

Mexico

As of 2018, Mexico had cumulatively imported 58% of Latin America plastic scraps and exported 83% of the region's plastic waste (**appendix 15 & 16**). Mexico is the biggest actor in plastic waste trade in Latin America by far and is also a global actor in these exchanges, as it exports 5% of the world's plastic scraps and to a lesser extent, imports 0.5% of the total global plastic exchanges (**appendix 15 & 16**). As previously mentioned, Mexico is among "the most significant plastic importers" in the global

economy; a country characterized by lack of controls and legislation loopholes for waste treatment (Morán 2021, p.2). The recycling sector is growing in Latin America, as global powers invest in new markets to redirect their plastic waste, such as the US and China, both "enthusiastic about the cheap labor and the proximity of Latin American countries to the United States, the largest producer of these wastes", making Mexico the perfect location for being the US' bordering state (Morán 2021, p.6). It comes as no surprise that Mexico receives large quantities of plastic waste from the US. According to the UN Comtrade Data extracted from 2018 to 2020, 93% of the plastic waste that Mexico imported on average from the OECD area was from the US (**appendix 17**). Mexico also mainly exports plastic waste to the US, being its biggest trading partner of the OECD. According to Mumme's analysis of US-Mexico relations in the context of hazardous waste:

> Mexico is bound to the United States by a web of economic, social, and strategic relationships that limits its capacity to exert leverage in binational affairs. The structure of the relationship prevents Mexico from negotiating problems with the United States on an equal footing and frequently obliges Mexico to accept unilateral decisions from Washington without alternative. (Mumme 1985, p.160)

This analysis consistent with dependency theory establishes the US as a clear hegemonic state with political influence in Mexico's waste regime.

Recent developments in plastic waste flows have pushed Mexican environmental watchdogs to demand that international environmental standards be met by guaranteeing that imports follow the Basel framework, regardless of whether the partner country has ratified the convention (Morán 2021, p.5). Even though these demands are specifically targeted to the US, there is a "potential practical incompatibility between the Treaty between the United States of America, the United Mexican States and Canada (T-MEC), and the Basel Convention" (Morán 2021, p.14). Moreover, domestic recycling policies contradict international waste management standards, as "waste and hazardous waste incineration and burning in cement kilns" are considered to be a "part of a circular economy" (Morán 2021, p.15). Plus, to get rid of local waste, municipalities have lobbied to "sign agreements for municipal solid waste to be incinerated in their ovens, a practice with severe environmental

consequences" (Morán 2021, p.15). Taking into consideration local dynamics, it is relevant to note that Mexico is the second deadliest country in the world for environmental activists, Colombia being at the front. In 2020, 30 environmental defenders were murdered according to the NGO Global Witness (Santaeulalia, 2021). Understanding Mexico's environmental reality is also difficult due to the lack of transparency, for there is a "lack of access to official or contradictory information", "little data on the transboundary movement of plastic waste" and "significant under-reporting and poor accounting by the Mexican government" (Morán 2021, p.15). Cases of environmental racism related to hazardous waste have also been reported, as "mass shipment of spent American batteries to Mexico, where illegal waste dumps from plants operated by American, European and Japanese companies have resulted in soaring rates of anencephaly[12]" (Beech, 2020).

Chile

A problem that has been described to affect Latin America and that facilitates illegal exchanges under the Basel Convention in the region is "the use of ambiguous and generic tariff classifications[13] to import plastic waste" which effectively hinders the traceability of recycled materials (Morán 2021, p.14). Chile's role in the global plastic waste trade from 1988 to 2018 has been similar to Colombia, making it the fourth biggest importer of plastic scrap in Latin American by importing 5% of the region's plastic (**appendix 15**). Unlike Colombia during that same period, Chile established itself as a plastic exporting economy, but only managed 1.2% of the plastic exports in the region (**appendix 16**). Chile's plastic waste exchanges also didn't have a major impact on a global scale. Recent data on these exchanges point again at a lack of information at the national level: "researchers reported that polyethylene and polypropylene plastic waste is recycled locally and exported without specifying exact quantities and destinations", "as for the transboundary movement of "dirty" plastic waste, no records were found" (Morán 2021, p.15). Another commonality with the LATAM countries mentioned above, is that Chile has significantly increased trading

[12] (when babies are born without brains) (Beech, 2020)
[13] "procedures that allow the location and trajectory of a product" (Morán 2021, p.14).

relations with the US in the exchange of plastic waste. In 2020, 85% of the plastic waste that Chile imported from the OECD area was from the US (**appendix 17**).

After China's import blockade, Chile reported an increase in illegal activities to deal with large quantities of plastic waste. As a consequence, dumping in unauthorized sites, incineration, illegal recycling, and illegal dumping in legitimate sites have increased since 2018 (Morán 2021, p.10). Taking illegal waste treatment specifically, waste fires and illegal landfills or stockpiling have considerably increased in Chile after the recent changes in the plastic waste trade status quo (INTERPOL 2020, p.34). **Appendix 18** reveals how this is not just a regional trend, but a global one, as "almost half (40%) of the countries that provided data to Interpol on the evolution of illegal waste treatment in their territories since 2018, reported an increase in such illegal activities" (INTERPOL 2020, p.33).

Poland

Recovery rates in Poland in the beginning of the 21st century were quasi non-existent, however, municipal waste management has vastly improved and outpaced traditional global north economies such as Canada, Australia or the US (**appendix 14**). In spite of waste management ameliorations, Poland has had several problems related to the importing of waste in recently.

In European countries, wild dumps and illegal landfills have been a continuing problem for years. Yet, illegal disposal has aggravated in the region "since January 2018 in the countries that now export less waste" and Poland is no exception (INTERPOL 2020, p.35). **Appendix 9** shows how Polish exports to OECD countries that initially increased 13% in 2018-2019, then dropped a 10% from 2019 to 2020. Imports of plastic waste from the OECD area dropped significantly, a 30% drop from 2018 to 2020 (**appendix 9**). This can be explained by the big volumes of plastic waste that the country was receiving and that were creating problems domestically.

In the European market, intra-regional plastic waste exchanges have increased since 2018 and waste criminals have proliferated in Eastern and Central Europe due to "more landfill traditions and lower taxes and prices for the disposal of wastes than other European countries" (INTERPOL 2020, p.30). The analysis of illicit waste

movements has brought to the surface how “although the human impacts of the illicit trade in plastic waste seem to be most detrimental in waste-receiving countries, waste workers in source countries have also been subjected to them” (Comolli 2021, p.16). This applies to Polish workers who strive to earn a better income by going abroad and are then exploited:

> in 2021, Biffa Waste Management Service, one of the largest waste companies in the UK, was sued for allegations of trafficking and modern slavery by three claimants who had been trafficked from Poland to the UK. It emerged that the three were among some 400 people trafficked from Poland by an organized crime group who were given employment, through a recruitment agency, in farms, factories and recycling plants. […][victims] ended up sorting rubbish and performing other low-skilled jobs for as little as £0.50 an hour while living in substandard accommodation. (Comolli 2021, p.16)

One of the most common global routes for illicit plastic waste flows originates in the UK and finds its way to Poland; Poland being “the third-largest recipient of illicit plastic waste from the UK” (Comolli 2021, p.23). Poland receives waste from “EU countries and the UK that is misdeclared as ‘recyclable’ (already sorted plastic that is, in fact, mixed with banned waste) and ends up being illegally dumped or burnt” (Comolli 2021, p.20). Poland suffers from “fugitive polluters” as manufacturers and industries try to get rid of illegal wastes within Polish borders (Mumme 1985, p.162). This is not an uncommon issue as local NGOs confirm that “waste is often wrongly declared or exported to Poland without a permit” (Zimmermann, 2021). Illegal shipments have also been reported to come from Germany - the partner from which it imported the most waste in 2019 – and other parts of western Europe (Zimmermann, 2021). To deal with the “trash mafia”, Poland’s environmental protection inspectorate created a special unit in August 2020 to fight waste crime (Wądołowska, 2020). Poland intensively started importing waste from abroad in 2015 but it only became a public concern when several rubbish dumps caught fire in 2018 to eliminate waste excesses (Wądołowska, 2020). This was related to a “major case of illegal waste exports” from the UK, where containers “mostly composed of non-segregated plastics from the United Kingdom households and supermarkets” were meant to be repatriated and investigated but were suspected to be burnt deliberately to “destroy evidence” (INTERPOL, 2020, p.31). The 80 waste fires that took place in 2018 in Poland had

severe repercussions on the environment and public health as the combustion of hazardous materials released toxic emissions into the atmosphere (INTERPOL, 2020, p.31).

8. CONCLUSION

The transnational movement of plastic waste in the OECD area presents different power dynamics between members belonging to the global south and global north defined in this dissertation. After having analyzed country-specific cases based on their level of development, it can be confirmed that world-systems theory applies for Costa Rica, Colombia, Chile, Mexico, Turkey, and Poland as Semi-Peripheric countries. Lower environmental standards and cheaper labor in these countries allow Core countries to save costs, making the labor regime in the global south a reinforcing dynamic of "political hierarchies and development differences" (Teschke 2010, p. 170). By outsourcing waste disposal, global north countries can save money on expensive infrastructure to process waste and rely on a short-term solution to meet plastic demand. As Schlosberg points out "the entire economy around recycling is possible because we have poverty", recycling only being possible in our current system because people "work for very low cost" (Schlosberg, 2021).

Dependency theory is highly relevant in this study to determine who is the "winner or loser" in the global economy. In this sense, it is difficult to say if an actor is winning at all, because in a very interconnected system environmental damages of the scale of plastic pollution affect the entire globe. However, there are clear disparities in who is most affected under a human health point of view when we consider which society is seeing its well-being undermined. The vast void in data makes it difficult to take into account the full extent of the plastic waste trade's impact on local communities.

The OECD system is based on asymmetrical relations where there is "a single state that is much larger and relatively more advanced than its trading partner" (Krasner 1999, p.23). This hegemonic system would apply to the interdependence between the US and LATAM countries, between UK/Germany and Poland, and between the EU and Turkey. This is directly related to state-power theory, because in the end, Core states

and Periphery states are trying to maximize their national goals. Considering Krasner's basic interests, global south OECD countries' national goals would be routed towards economic growth and increased aggregate national income. Adversely, global north OECD countries want to maximize social stability - as waste accumulation would be a destabilizing element for domestic industries and the state would need to make drastic changes in plastic waste demand – and political power to reinforce their dominant status in the international political economy.

After having assessed the OECD's waste regime, the reality of the members' waste management landscape discloses that not a single example of sound waste management was found in the country analysis carried out in this dissertation. Turkey, Costa Rica, Mexico, Colombia, Chile, and Poland cannot be considered safe destinations for the recovery of plastic waste. This clearly contradicts the OECD's transboundary waste recovery policies. Other inconsistencies in waste disposal show that OECD members can have incompatible waste treatment policies, but this doesn't stop them from engaging in plastic waste trade that is considered illegal in the Basel Convention, as it is the case of the trade treaty between Mexico, the US and Canada (Morán 2021, p.14). The increase in waste crime after China's ban also shows how the OECD waste regime is highly inefficient in complying with environmental standards. As it has been previously mentioned, waste crime represents a threat for local communities and leads to environmental racism.

Slow forms of violence are being inflicted through the constant degradation of the environment in the OECD global south countries. Nevertheless, direct forms of violence that stem from the transnational movement of plastic waste have also emerged in the form of exploitative working conditions that threaten the lives of workers. And yet the forms of governance and normalization practices in these countries allow for criminals to make a living of illegal plastic waste trafficking while global north countries fail at enforcing international trade laws at the ports of origin. In the countries where there is evidence of illicit flows of plastic waste trade such as Turkey, Poland, Chile and Mexico, "waste poses serious criminal, environmental and health risks, and holds communities back from achieving environmental justice" (Comolli 2021, p.2).

Through the analysis of the plastic waste trade in the OECD region, we can conclude that the OECD's goal to obtain "resilient, inclusive and sustainable growth" up to this day has not been met (OECD, 2021). Not just for the members who are comparatively less developed, but also in developed countries. How can growth be sustainable if toxic commodities are being mismanaged, causing environmental damages that will most likely be transferred to future generations? How can growth be inclusive if there is evidence showing that environmental racism happens on the national and international level? Whether we analyze trade dynamics through the lens of the Basel Convention or the OECD environmental legal framework, empirical evidence shows that environmentally sound management of waste among all OECD members is not being met (Ahmad Khan 2020, p.203). The OECD internal rules and international laws prohibit certain types of waste exchanges, nevertheless plastic waste is still being sent to "underdeveloped, inefficient, or non-existent waste management infrastructures" beyond developed country's borders (Ahmad Khan 2020, p.200). Even though the amendment of the Basel Convention concerning plastic wastes should change the current waste management state-of-affairs, we can say that it is each state's responsibility to reconceptualize their consumption patterns and prevent the generation of waste. After all, access to a healthy environment is a human right that has not yet been developed enough.

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10.APPENDIX

APPENDIX 1: Countries with the highest plastic waste generation in 2016

Country	Plastic waste generation (metric tons)	Total waste generation (metric tons)	% Plastic in solid waste	2016 Population (millions)	Per capita plastic waste generation (kg/year)
United States	**42,027,215**	**320,818,436**	**13.1**	**323.1**	**130.09**
United States	34,020,748	263,726,732	12.9	323.1	105.30
EU-28	*29,890,143*	*243,737,466*	*11.7*	*511.2*	*54.56*
India	26,327,933	277,136,133	9.5	1,324.5	19.88
China	21,599,465	220,402,706	9.8	1,378.7	15.67
Brazil	10,675,989	79,081,401	13.5	206.2	51.78
Indonesia	9,128,000	65,200,000	14.0	261.6	34.90
Russian Federation	8,467,156	59,585,899	14.2	144.3	58.66
Germany	6,683,412	51,410,863	13.0	82.3	81.16
United Kingdom	6,471,650	32,037,871	20.2	65.6	98.66
Mexico	5,902,490	54,151,287	10.9	123.3	47.86
Japan	4,881,161	44,374,189	11.0	127.0	38.44
Thailand	4,796,494	27,268,302	17.6	69.0	69.54
Korea, Rep.	4,514,186	18,576,898	24.3	51.2	88.09
Italy	3,365,130	29,009,742	11.6	60.6	55.51
Egypt, Arab Rep.	3,037,675	23,366,729	13.0	94.4	32.16
France	2,929,042	32,544,914	9.0	66.9	43.81
Pakistan	2,731,768	30,352,981	9.0	203.6	13.42
Argentina	2,656,771	18,184,606	14.6	43.6	60.95
Algeria	2,092,007	12,378,740	16.9	40.6	51.59
Malaysia	2,058,501	13,723,342	15.0	30.7	67.09
Spain	1,832,533	20,361,483	9.0	46.5	39.42

Source: (Law et al. 2020, p.2)

APPENDIX 2: Pollutants and Classification of Pollutants

Classification	Type	Definition	Examples
Based on degradation	Biodegradable pollutants	Pollutants that break down under natural conditions due to the action of micro-organisms. Considerably less harmful than other pollutants, they are a threat only in very large quantities.	Excreta, sewage, etc.
Based on degradation	Non-biodegradable pollutants	Cannot be broken down under natural conditions by the action of micro-organisms or they take an extremely long time to degrade.	Common plastics, DDT, metal wastes such as lead, mercury, arsenic, etc.

Based on the environment's absorption capacity	Stock pollutants	Pollutants that the environment has little or no absorption capacity to process. These accumulate in the environment over time and the damage persists, thus becoming a burden for future generations.	Persistent synthetic chemicals, non-biodegradable plastics, and heavy metals
Based on the environment's absorption capacity	Fund pollutants	Pollutants for which the environment has some absorption capacity. These do not accumulate in the environment unless the input amount exceeds the environment's absorption capacity. Fund pollutants are not destroyed, but rather converted into less harmful substances, or diluted/dispersed to non-harmful concentrations.	Carbon dioxide, which is absorbed by plants and oceans

Source: Adapted from B. Adhikari (2018)

APPENDIX 3: Categories of Wastes Requiring Special Consideration under the Basel Convention

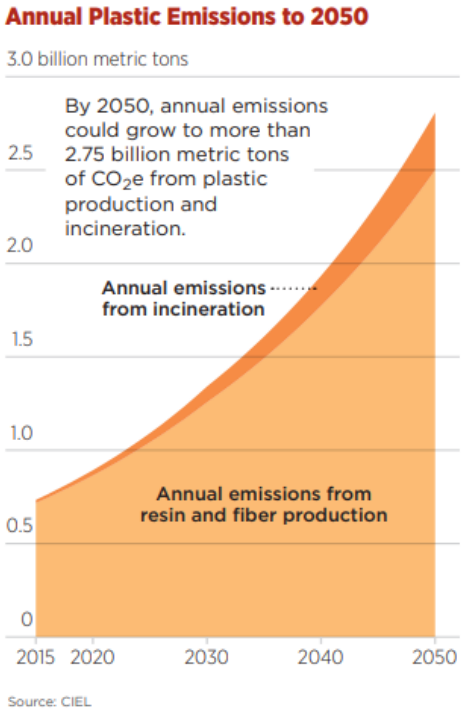
Y48[6,7]	Plastic waste, including mixtures of such waste, with the exception of the following: • Plastic waste that is hazardous waste pursuant to paragraph 1 (a) of Article 1[8] • Plastic waste listed below, provided it is destined for recycling[9] in an environmentally sound manner and almost free from contamination and other types of wastes:[10] - Plastic waste almost exclusively[11] consisting of one non-halogenated polymer, including but not limited to the following polymers: ▪ Polyethylene (PE) ▪ Polypropylene (PP) ▪ Polystyrene (PS) ▪ Acrylonitrile butadiene styrene (ABS) ▪ Polyethylene terephthalate (PET) ▪ Polycarbonates (PC) ▪ Polyethers

- Plastic waste almost exclusively[11] consisting of one cured resin or condensation product, including but not limited to the following resins:
  - Urea formaldehyde resins
  - Phenol formaldehyde resins
  - Melamine formaldehyde resins
  - Epoxy resins
  - Alkyd resins
- Plastic waste almost exclusively[11] consisting of one of the following fluorinated polymers:[12]
  - Perfluoroethylene/propylene (FEP)
  - Perfluoroalkoxy alkanes:
    - Tetrafluoroethylene/perfluoroalkyl vinyl ether (PFA)
    - Tetrafluoroethylene/perfluoromethyl vinyl ether (MFA)
  - Polyvinylfluoride (PVF)
  - Polyvinylidenefluoride (PVDF)

• Mixtures of plastic waste, consisting of polyethylene (PE), polypropylene (PP) and/or polyethylene terephthalate (PET), provided they are destined for separate recycling[13] of each material and in an environmentally sound manner and almost free from contamination and other types of wastes.[10]

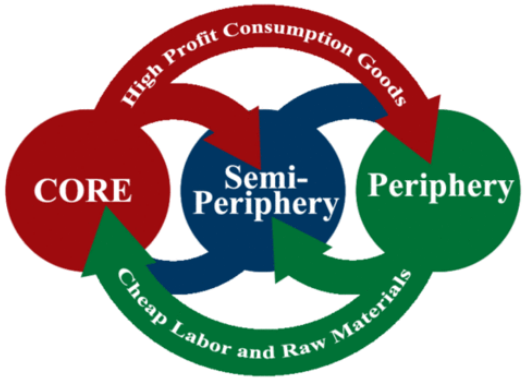
Source: (United Nations 2019, p.37-38)

APPENDIX 4: Prediction of annual plastic emissions to 2050



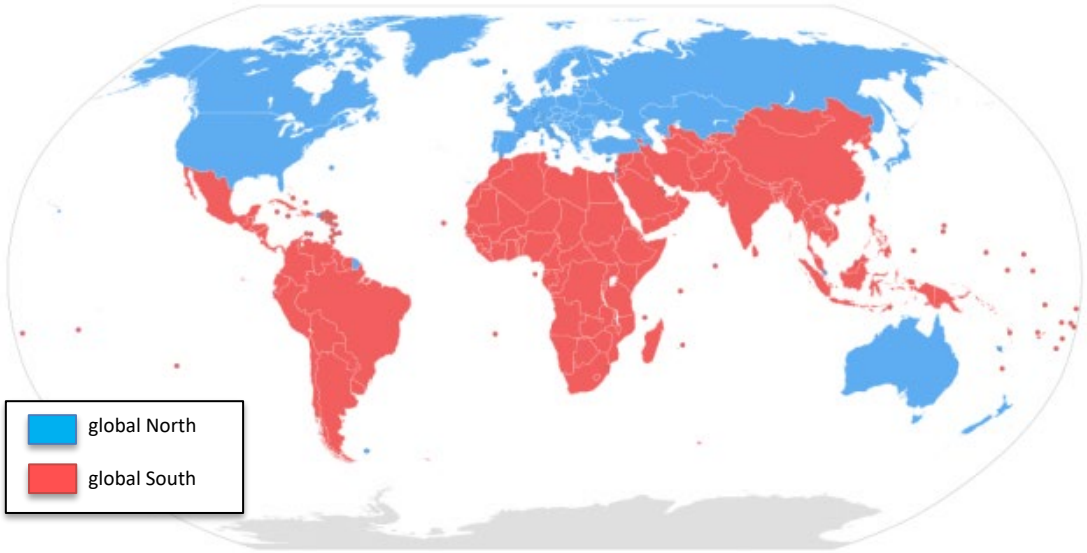
Source: (Center for International Environmental Law 2019, p.5)

APPENDIX 5: Wallerstein's World-Systems Theory Model



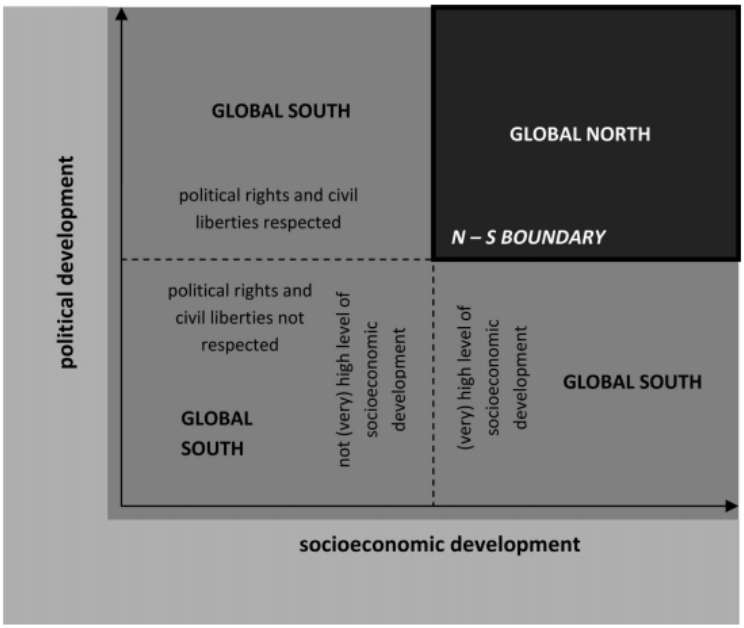
Source: Extracted from K. Moyer (2016)

APPENDIX 6: Original visualization of the Brandt Line



Source: (Clarke, 2018)

APPENDIX 7: Global North vs global South at the beginning of the 21st century, theoretical perspective.



Source: (Solarz 2012, p.565)

APPENDIX 8: Waste, parings, and scrap of plastics trade flows between OECD countries, trade value in US$ from 2018 to 2020

OECD area transnational movements between 2018 - 2020

country	Total exports ($)	Total imports ($)	waste intake gain (X-M)
Australia	8655020	11549715	-2894695
Austria	230286107	159905968	70380139
Belgium	296266091	254696865	41569226
Canada	156848438	207793444	-50945006
Chile	1816277	3754902	-1938625
Colombia	2635851	2226539	409312
Costa Rica	1891862	3337013	-1445151
Czechia	94879003	62631454	32247549
Denmark	52413338	51689287	724051
Estonia	17528152	1958389	15569763
Finland	15877659	11431160	4446499
France	400609130	210184646	190424484
Germany	775504880	462146761	313358119
Greece	17761105	14919606	2841499
Hungary	23434184	14082387	9351797
Iceland	6604058	21444	6582614
Ireland	46557174	148472772	-101915598
Israel	16427000	4464000	11963000
Italy	147649104	246401089	-98751985
Japan	121758833	2777253	118981580
Korea. Rep.	1490950	130318802	-128827852
Latvia	10919686	27791446	-16871760
Lithuania	11578819	31610750	-20031931
Luxembourg	12236730	16091298	-3854568
Mexico	276299523	68838029	207461494
Netherlands	390792647	554953790	-164161143
New Zealand	1110345	9948765	-8838420
Norway	53904106	5145713	48758393
Poland	149810205	196932466	-47122261
Portugal	56352981	77404289	-21051308
Slovakia	55079732	18321527	36758205
Slovenia	66778706	68684694	-1905988
Spain	85531776	172014553	-86482777
Sweden	50976106	38433857	12542249
Switzerland	48267844	19437034	28830810
Turkey	15260653	266117610	-250856957
United Kingdo	255191727	184554235	70637492
United States	367841775	550042824	-182201049

OECD countries waste intake gain ($) in descendant order

	country	gain ($)
1	Germany	313358119
2	Mexico	207461494
3	France	190424484
4	Japan	118981580
5	United Kingdom	70637492
6	Austria	70380139
7	Norway	48758393
8	Belgium	41569226
9	Slovakia	36758205
10	Czechia	32247549
11	Switzerland	28830810
12	Estonia	15569763
13	Sweden	12542249
14	Israel	11963000
15	Hungary	9351797
16	Iceland	6582614
17	Finland	4446499
18	Greece	2841499
19	Denmark	724051
20	Colombia	409312
21	Costa Rica	-1445151
22	Slovenia	-1905988
23	Chile	-1938625
24	Australia	-2894695
25	Luxembourg	-3854568
26	New Zealand	-8838420
27	Latvia	-16871760
28	Lithuania	-20031931
29	Portugal	-21051308
30	Poland	-47122261
31	Canada	-50945006
32	Spain	-86482777
33	Italy	-98751985
34	Ireland	-101915598
35	Korea. Rep.	-128827852
36	Netherlands	-164161143
37	United States	-182201049
38	Turkey	-250856957

Source: Data extracted from UN Comtrade (UN Comtrade, 2021). Commodity analyzed: waste, parings, and scrap of plastics - 3915 commodity code. Retrieved November 19, 2021.

APPENDIX 9: Evolution of plastic waste flows in the OECD area between 2018 and 2020

Evolution of plastic waste flows in the OECD area between 2018 and 2020

	X (evolution of $ exchange)			M (evolution of $ exchange)		
country	2018 -2019	2019 -2020	2018 -2020	2018 -2019	2019 -2020	2018 -2020
Australia	15%	6%	22%	7%	-32%	-27%
Austria	-11%	-20%	-29%	-4%	-10%	-13%
Belgium	-22%	-13%	-32%	-23%	-13%	-32%
Canada	3%	-5%	-3%	-5%	-6%	-10%
Chile	36%	-33%	-9%	-84%	-80%	-97%
Colombia	135%	-40%	42%	109%	-76%	-51%
Costa Rica	-32%	134%	58%	-12%	-52%	-57%
Czechia	-2%	-13%	-15%	10%	-44%	-38%
Denmark	6%	-5%	1%	-12%	-28%	-37%
Estonia	22%	4%	27%	-13%	22%	6%
Finland	9%	-8%	0%	-23%	66%	28%
France	-4%	-25%	-28%	4%	-11%	-7%
Germany	-5%	-21%	-25%	7%	-15%	-9%
Greece	-22%	-1%	-23%	7%	35%	45%
Hungary	-3%	9%	6%	-20%	-39%	-51%
Iceland	-32%	-5%	-35%	361%	234%	1438%
Ireland	28%	-5%	22%	-20%	-46%	-57%
Israel	16%	18%	37%	-40%	-7%	-44%
Italy	-15%	-10%	-24%	-24%	-16%	-36%
Japan	0%	-44%	-43%	-25%	-44%	-58%
Korea. Rep.	117%	-18%	77%	11%	-52%	-46%
Latvia	-11%	6%	-6%	-4%	8%	4%
Lithuania	-47%	-23%	-59%	5%	-18%	-13%
Luxembourg	-13%	-23%	-33%	0%	-7%	-7%
Mexico	-20%	-11%	-28%	7%	33%	42%
Netherlands	1%	-14%	-13%	-3%	-7%	-10%
New Zealand	-9%	53%	39%	5%	-38%	-35%
Norway	-2%	-14%	-16%	12%	41%	59%
Poland	13%	-10%	2%	-11%	-21%	-30%
Portugal	17%	4%	21%	-15%	-36%	-46%
Slovakia	13%	-29%	-20%	-11%	-42%	-48%
Slovenia	-10%	-8%	-17%	37%	-33%	-9%
Spain	-1%	-5%	-6%	7%	-24%	-19%
Sweden	6%	20%	27%	-2%	22%	19%
Switzerland	-6%	-24%	-29%	-15%	5%	-11%
Turkey	-46%	27%	-31%	6%	41%	49%
United Kingdo	24%	-6%	16%	8%	-29%	-23%
United States	-12%	-5%	-16%	-5%	-10%	-15%

Source: Data extracted from UN Comtrade (UN Comtrade, 2021). Commodity analyzed: waste, parings, and scrap of plastics - 3915 commodity code. Retrieved November 19, 2021.

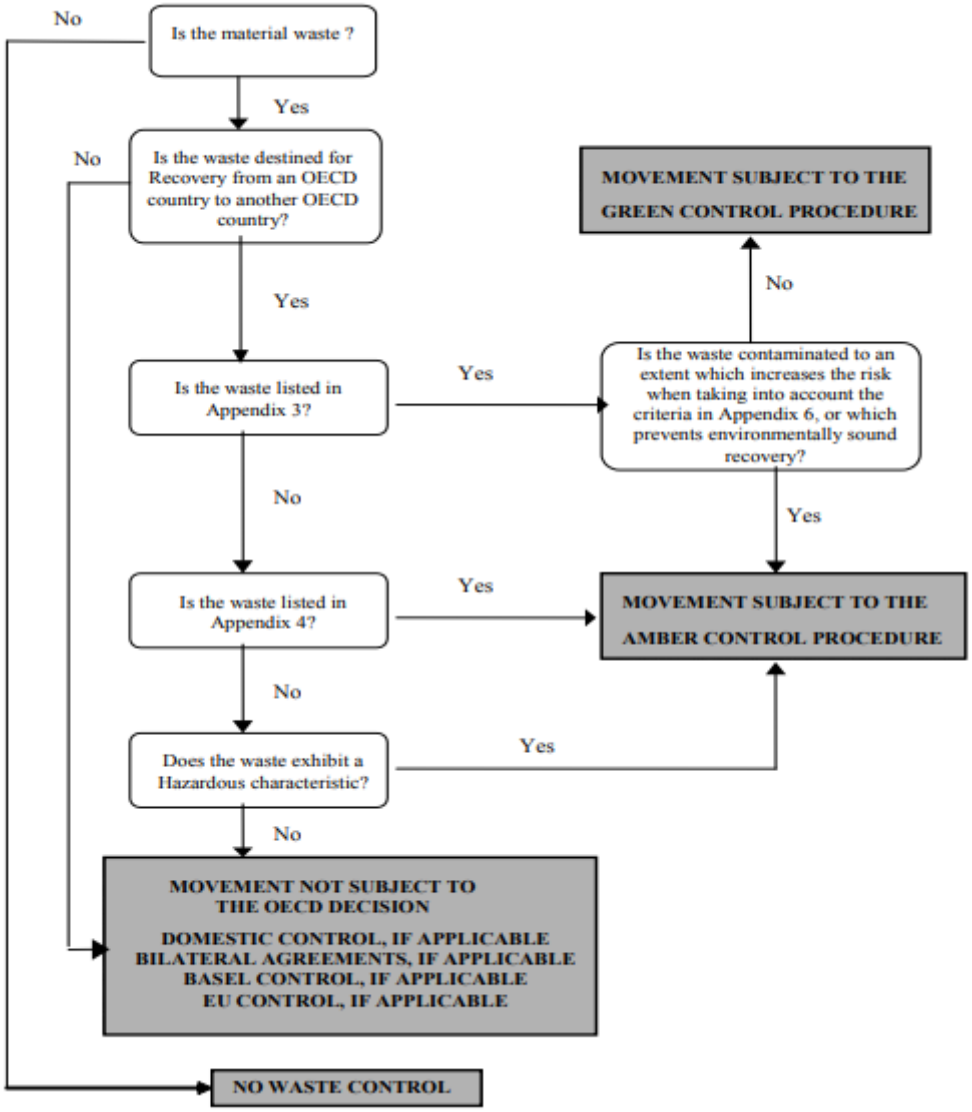
APPENDIX 10: OECD country classification based on indicators

Country	Income group [14]	Lending category	GINI Index[15]	Global Freedom Score[16]	Human Development Index[17]	Legatum prosperity index [18]
Australia	High income	—	34.4 (2014)	97 (free)	0.944	66.97
Austria	High income	—	30.8(2018)	93	0.922	72.29
Belgium	High income	—	27.2 (2018)	96	0.931	58.28
Canada	High income	—	33.3 (2017)	98	0.929	68.38
Chile	High income	IBRD	44.4 (2017)	93	0.851	59.63
Colombia	Upper middle income	IBRD	51.3 (2019)	65 (partly free)	0.767 (not top 50)	64.56
Costa Rica	Upper middle income	IBRD	48.2 (2019)	91	0.810 (not top 50)	66.66
Czechia	High income	—	25.0 (2018)	91	0.900	64.50
Denmark	High income	—	28.2 (2018)	97	0.940	70.51
Estonia	High income	—	30.3 (2018)	94	0.892	69.64
Finland	High income	—	27.3 (2018)	100	0.938	76.75
France	High income	—	32.4 (2018)	90	0.901	67.83
Germany	High income	—	31.9 (2016)	94	0.947	67.38
Greece	High income	—	32.9 (2018)	87	—	63.54
Hungary	High income	—	29.6 (2018)	69 (partly)	0.854	62.91
Iceland	High income	—	26.1 (2017)	94	0.949	67.28
Ireland	High income	—	31.4 (2017)	97	0.955	68.24
Israel	High income	—	39.0 (2016)	76	0.919	50.45

[14] World Bank data: Country Classifications by Income: FY 2021-2022. Obtained from https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html
[15] World Bank estimate. Obtained from: http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3ASI.POV.GINI
[16] FY 2021. Obtained from: https://freedomhouse.org/countries/freedom-world/scores?sort=asc&order=Country
[17] FY 2020. Obtained from: http://hdr.undp.org/en/countries
[18] Only natural environment pillar score taken into consideration: FY 2020. Obtained from: https://www.prosperity.com/rankings

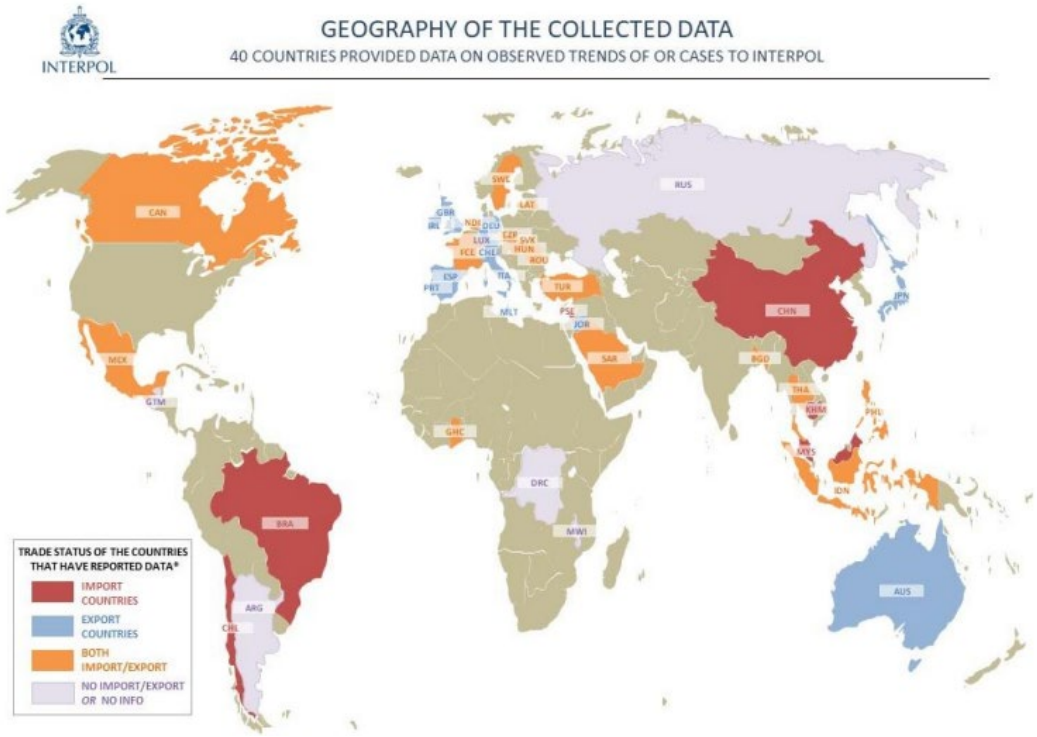
Italy	High income	—	35.9 (2017)	90	0.892	59.47
Japan	High income	—	32.9 (2013)	96	0.919	67.40
Korea, Rep.	High income	—	31.4 (2016)	83	0.916	56.02
Latvia	High income	—	35.1 (2018)	89	0.866	70.80
Lithuania	High income	—	35.7 (2018)	90	0.882	66.51
Luxemburg	High income	—	35.4 (2018)	97	0.916	69.03
Mexico	Upper middle income	IBRD	45.4 (2018)	61 (partly)	0.779 (not top 50)	55.86
Netherlands	High income	—	28.1 (2018)	98	0.944	59.58
New Zealand	High income	—	—	99	0.931	74.26
Norway	High income	—	27.6 (2018)	100	0.957	70.23
Poland	High income	IBRD	30.2 (2018)	82	0.880	59.55
Portugal	High income	—	33.5 (2018)	96	0.864	59.95
Slovakia	High income	—	25.0 (2018)	90	0.860	68.15
Slovenia	High income	—	24.6 (2018)	95	0.917	74.52
Spain	High income	—	34.7 (2018)	90	0.904	60.06
Sweden	High income	—	30.0 (2018)	100	0.945	77.61
Switzerland	High income	—	33.1 (2018)	96	0.955	71.91
Turkey	Upper middle income	IBRD	41.9 (2019)	32 (not free)	0.820 (not top 50)	53.11
United Kingdom	High income	—	35.1 (2017)	93	0.932	65.21
United States	High income	—	41.4 (2018)	83	0.926	66.77

APPENDIX 11: Identification of wastes subject to the OECD Decision



Source: (OECD 2009, p.15)

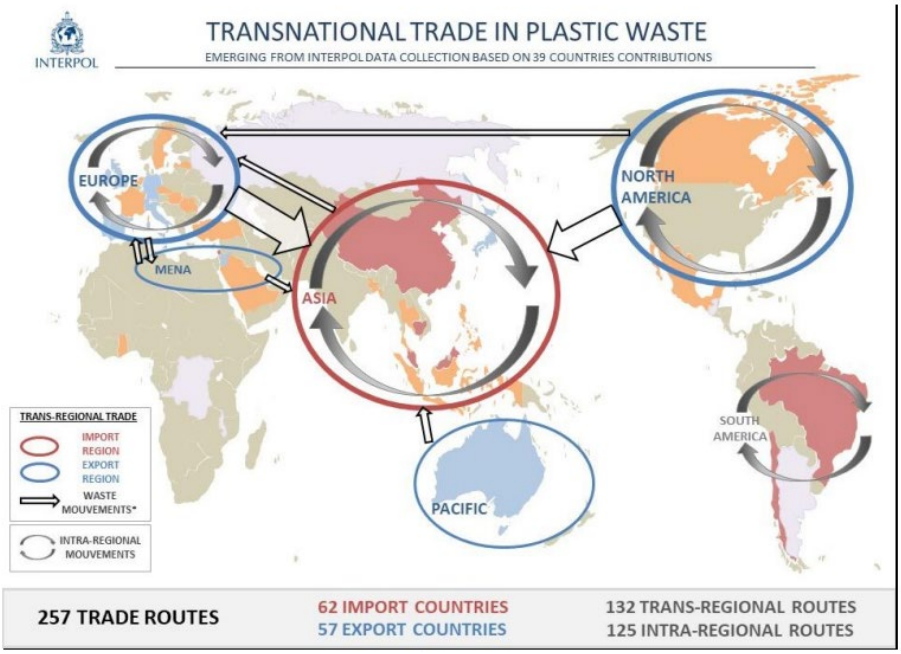
APPENDIX 12: Geographic distribution of the 40 INTERPOL member countries that provided official data for this assessment



Source: (INTERPOL 2020, p.20)

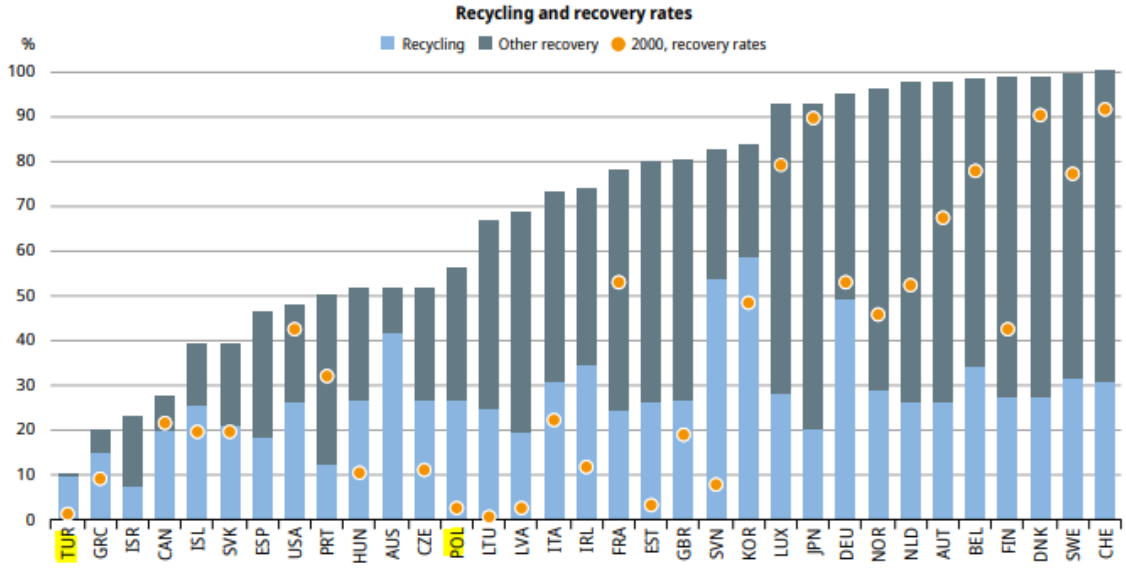
Note: "The colour code indicates data availability. It shows whether the contributory countries have provided data about their import, export, or both. It does not intend to present a global overview of the actual export/import countries"

APPENDIX 13: The global plastic waste market emerging from INTERPOL data collection on legal and illegal trade routes



Source: (INTERPOL 2020, p.21)

APPENDIX 14: Recycling and recovery rates in OECD area



Note: Other recovery includes composting and incineration with energy recovery.

Source: OECD (2019), "Waste: Municipal waste", *OECD Environment Statistics* (database).

Source: (OECD, Environment at a Glance 2020, p.48)

Appendix 15: Top 10 Plastic Scrap Importers in LAC region (cumulative 1988 - 2018)

COUNTRY	CUMULATIVE IMPORTS(TONNES)	% OF REGION	% OF WORLD
Mexico	1,312,267	58%	0.5%
Brazil	133,467	5.9%	0.1%
Colombia	122,278	5.4%	<0.1%
Chile	112,089	5.0%	<0.1%
Costa Rica	104,654	4.6%	<0.1%
El Salvador	100,297	4.4%	<0.1%
Bahamas	70,690	3.1%	<0.1%
Peru	55,101	2.4%	<0.1%
Ecuador	47,752	2.1%	<0.1%
Dominican Republic	46,027	2.0%	<0.1%

Source: (Brooks, Jambeck, & Mozo-Reyes 2020, p.23)

Appendix 16: Top 10 Plastic Scrap Exporters in LAC region (cumulative 1988 - 2018)

COUNTRY	CUMULATIVE EXPORTS (METRIC TONS)	% OF REGION	% OF WORLD
Mexico	11,212,367	83%	5.0%
Argentina	423,065	3.1%	0.2%
Ecuador	228,122	1.7%	0.1%
Dominican Republic	224,347	1.7%	0.1%
El Salvador	196,967	1.5%	0.1%
Brazil	167,870	1.2%	0.1%
Chile	164,966	1.2%	0.1%
Costa Rica	118,058	0.9%	0.1%
Guatemala	114,848	0.9%	0.1%
Nicaragua	104,682	0.8%	<0.1%

Source: (Brooks, Jambeck, & Mozo-Reyes 2020, p.22)

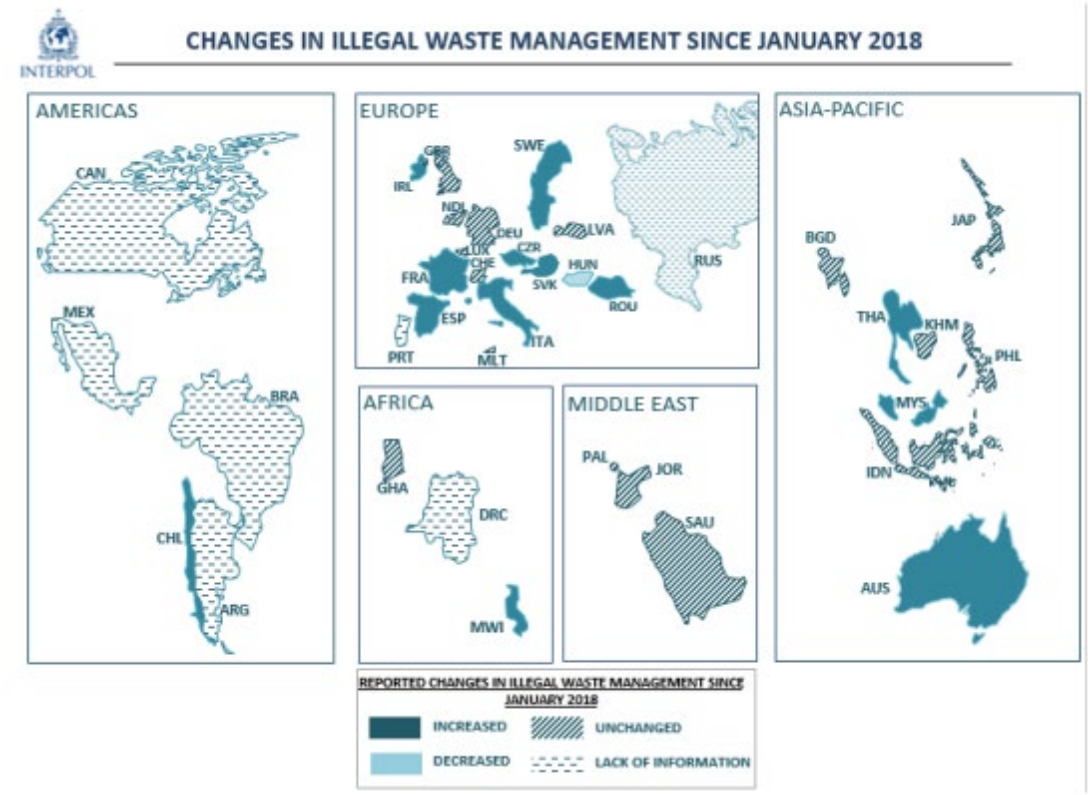
APPENDIX 17: Waste, parings, and scrap of plastics trade flows between the US and LATAM region, trade value in US$ from 2018 to 2020

US plastic waste exchanges in LATAM region (2018-2020)

	year	exchange	US	TOTAL	Total % of trade exchange
Chile	2018	Exports	291146	555521	52%
		Imports	75221	3142676	2%
	2019	Exports	355498	757181	47%
		Imports	11695	508226	2%
	2020	Exports	342567	503575	68%
		Imports	88107	104000	85%
Colombia	2018	Exports	221034	552473	40%
		Imports	454165	620630	73%
	2019	Exports	158197	1298447	12%
		Imports	1095076	1299903	84%
	2020	Exports	122356	784931	16%
		Imports	208140	306006	68%
Costa Rica	2018	Exports	454633	581594	78%
		Imports	1122613	1447386	78%
	2019	Exports	323006	392675	82%
		Imports	1191648	1273729	94%
	2020	Exports	774941	917593	84%
		Imports	608716	615898	99%
Mexico	2018	Exports	96543806	109596258	88%
		Imports	18808956	19731850	95%
	2019	Exports	82662549	88015812	94%
		Imports	18771134	21036074	89%
	2020	Exports	74990928	78687453	95%
		Imports	26626970	28070105	95%

Source: Data extracted from UN Comtrade (UN Comtrade, 2021). Commodity analyzed: waste, parings, and scrap of plastics - 3915 commodity code. Retrieved November 19, 2021.

APPENDIX 18: Interpol countries that provided information on the changes in illegal waste management since January 2018



Source: (INTERPOL 2020, p.33)