



environmental
investigation
agency

RETHINK
PLASTIC

Ocean

The Truth Behind Trash

The scale and impact of
the international trade
in plastic waste

September 2021





Executive summary

Until the mid-1950s, plastics were precious commodities that were used and treated carefully. But in just 65 years, plastic production has increased by 18,300 per cent – fuelling a relentless convenience lifestyle that produces enormous and unnecessary quantities of waste.

The global trade in plastic waste has mirrored the growth in global plastic production, allowing high-income, high-consuming countries to avoid the direct social and environmental impacts of their plastic problem and driving the ever-expanding production and consumption of virgin (new) plastics.

To date, humans have produced about 10 billion tonnes of plastic – of which an estimated six billion tonnes is now in landfill or the open environment.¹ Plastics may fragment in the natural environment but do not biodegrade and may persist for hundreds to thousands of years. Plastic pollution is now found in all environmental compartments, in our food and water and in the air we breathe.

Since 1988, more than a quarter of a billion tonnes of plastic waste has been exported around the globe. Almost one-third of the exports have originated from the USA, Japan and Germany. Until recently, the vast majority of plastic waste in trade was exported to China. In 2018, in response to the pollution caused by imports of dirty and hazardous solid waste, China implemented its “National Sword” policy, effectively banning the import of most plastic waste in order to protect its environment and human health.²

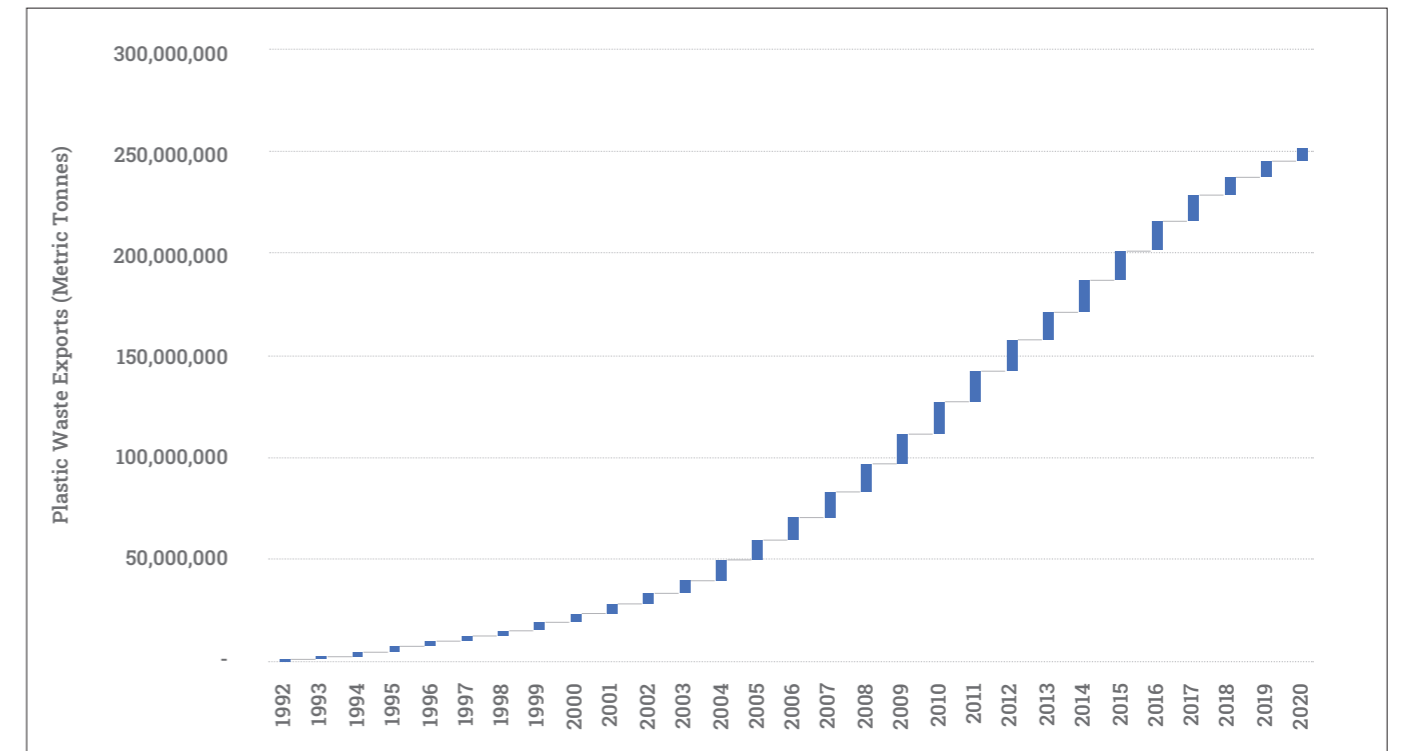
As a result, the trade has been diverted to new destination countries primarily in South-East Asia, such as Malaysia and Viet Nam.

The precise contribution of the plastic waste trade business to global plastic pollution is unknown, but it is clearly significant based on discrepancies between the sheer scale of the plastic waste trade and the ability of importing countries to deal with the waste responsibly. For example, Malaysia has an installed recycling capacity of 515,009 tonnes but now imports on average 835,000 tonnes of plastic waste each year, in addition to an estimated 2.4 million tonnes of plastic waste produced domestically.

The illegal trade in plastic waste has grown significantly in recent years as criminal groups have exploited the massive market disruption caused by China’s ban on plastic waste imports. Countries in Asia and Eastern Europe, especially Malaysia, Viet Nam, Thailand, Indonesia, India and Turkey, have seen significant rises in both total volumes of imported

Above: Mound of imported plastic waste in Malaysia. Ever-expanding production and the proliferation of ‘single-use’ have fuelled the plastic pollution crisis.

Figure 1: Cumulative global plastic waste exports (HS39151) from 1992 to 2020.



waste and the rates of illegal activity. With an estimated worth of up to €15 billion in the EU alone, the illegal trade in plastic waste is facilitated by a serious lack of transparency and accountability that operates in the sector.

While recent amendments to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal have provided some level of regulation to the international trade in plastic waste, the fact is that we are producing more plastic waste than we have the capacity to responsibly deal with. The plastic waste crisis can

only be solved through a holistic strategy that places emphasis on upstream solutions to reduce production and consumption of virgin plastic, alongside a ban on plastic waste exports. This can be done through an ambitious package of binding measures under a new global treaty to significantly reduce plastic waste generation and leakage while promoting resource efficiency and a safe circular economy for plastics. In the short to medium term, countries should work to ensure traceability and transparency of any plastic waste in trade and significantly improve inspection and enforcement capacity.

Plastic – a short history

The first completely synthetic plastic, Bakelite, was invented in 1907. Initially, plastics imitated ivory or silk and occupied a very niche market, until World War II (WWII) when polyvinyl chloride (PVC), a plastic polymer, was used to insulate electronic cables.

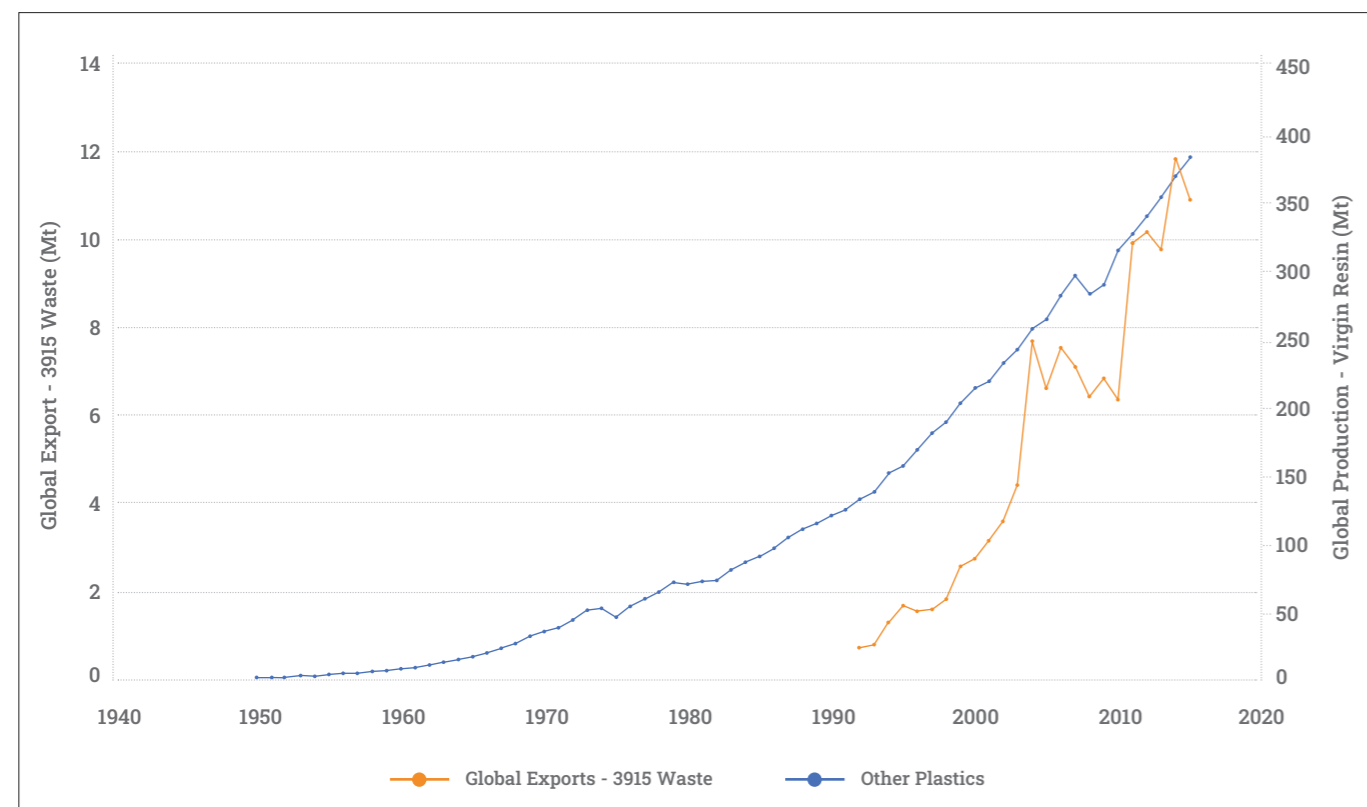
After WWII, as plastics were becoming mainstream, people reused and treated plastics as precious commodities, as they did with other materials. The rapid rise of plastic occurred in the mid-1950s when it was discovered that waste products from the petrochemical industry could be used to make PVC. This, combined with the positive public image of plastic as a clean, fashionable and modern material, marked the beginning of a new era for the consumer economy.³ Predicated on single-use plastics, a new 'convenience lifestyle' was born, which was welcomed by the emerging neo-liberal political atmosphere that encouraged the consumption of ever-increasing quantities of resources.⁴ Since then, global production of plastics has increased from two million tonnes in 1950 to 368 million tonnes in 2019.^{5,6}

Despite delivering benefits to society in the post WWII era, our plastic obsession has come at a huge environmental and human health cost. To date, humans have produced about 10 billion tonnes of

plastic. Based on previous estimates, this has generated about 7.6 billion tonnes of plastic waste, of which an estimated 79 per cent (six billion tonnes) is now in landfill or the open environment.⁷ Plastic is now pervasive in all environments on earth, contaminating marine life,⁸ freshwater⁹ and terrestrial life, farmland,¹⁰ bottled and tap water¹¹ and even table salt,¹² as well as existing atmospherically in particulate form.¹³ Plastic and its associated toxic contaminants are also accumulating in our bodies and microplastics are pervasive in wastewater effluent. When this is released into the environment or applied to agricultural land, it creates further contamination.¹⁴

Plastic pollution, including the approximate 13 million tonnes estimated to enter the oceans each year,¹⁵ is symptomatic of the unsustainable linear model of 'take, make, dispose' that still dominates the global consumer economy. This is demonstrated by the clear correlation between plastic production and plastic waste exports (see Figure 2).

Figure 2: Correlation between plastic waste exports and virgin plastic resin production from 1950 to 2015. While records began in 1988, reliable data on plastic waste exports only began in 1992.¹⁶



The legal trade in plastic waste

Enormous and ever-increasing quantities of plastic waste have overwhelmed domestic waste management infrastructures. In the face of this crisis, a key tactic for many high-income countries with high plastic consumption has been to export plastic waste overseas; for example, the 38 member countries of the Organisation of Economic Cooperation and Development (OECD) are responsible for 87 per cent of all plastic waste exports since reporting began in 1988.¹⁷

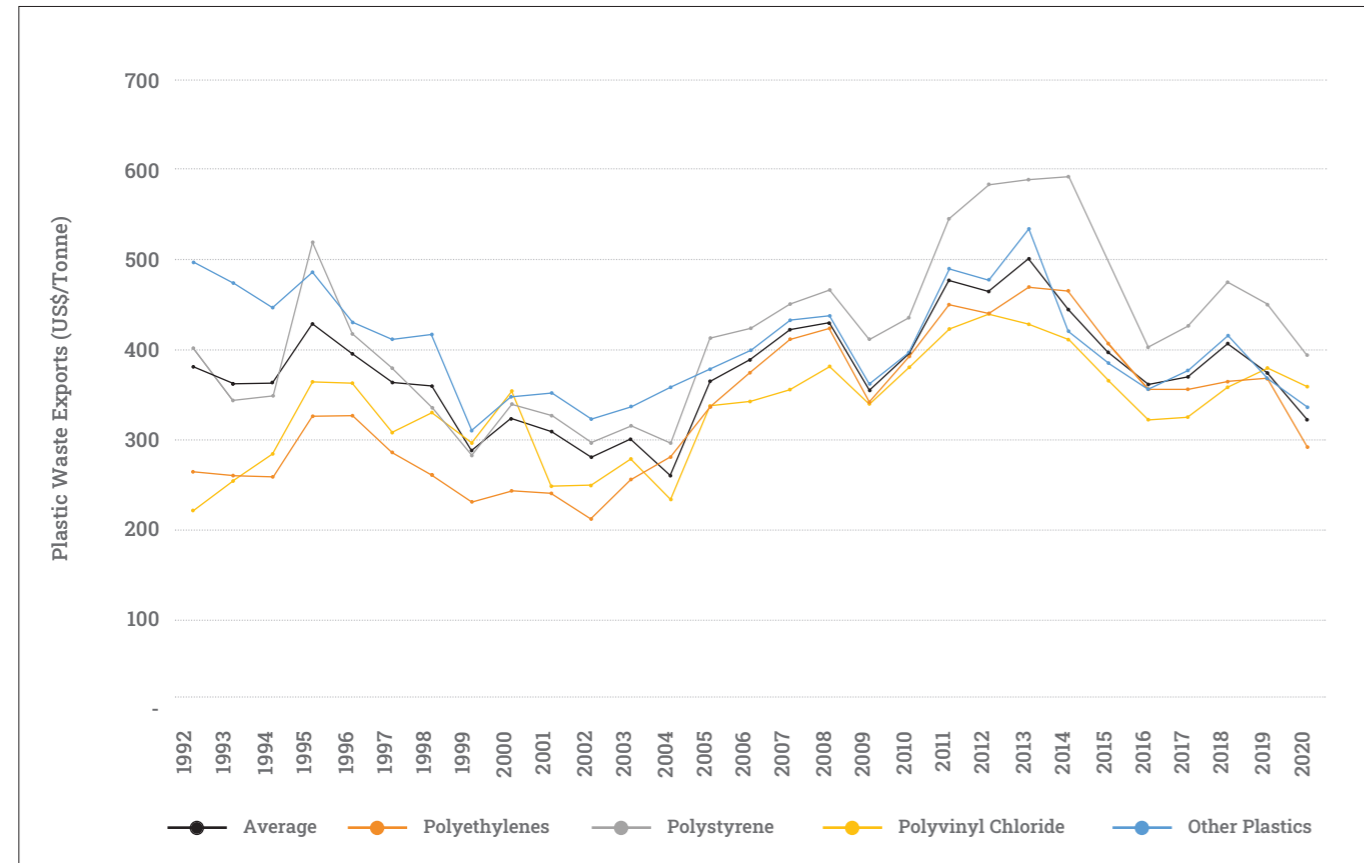
Since the 1990s, the global trade in plastic waste relied heavily upon a single importer, China, which received up to 72.4 per cent of the world's plastic waste during this 30-year time period.¹⁸ An estimated 76 per cent of China's plastic is mismanaged, i.e. either littered or not formally managed, including disposal in dumps or open, uncontrolled landfills where it is not fully contained.¹⁹ In 2018, China banned the importation of most plastics, a policy decision which is estimated to displace 111 million tonnes of plastic waste by 2030.²⁰ China's ban sent shockwaves throughout the world and forced plastic waste exporters to search for new destinations, which have largely been other countries in South-East Asia with equally high mismanagement rates, such as Malaysia (57 per cent mismanaged), Indonesia (83 per cent) and Thailand (75 per cent), as well as countries such as Turkey which are reported to send 90 per cent of their waste to landfill.²¹

According to UN ComTrade data, the cumulative value of the trade in plastic waste has risen from \$286 million in 1992 to more than \$7 billion in 2012. Since then, the value of the global trade has consistently reduced year-on-year to about \$2 billion in 2020, although this decline is likely to have been aggravated by the COVID-19 pandemic.²²

The most valuable and commonly traded polymers are High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), Polyethylene Terephthalate (PET) and Polypropylene (PP), followed by Polyvinyl Chloride (PVC), Polystyrene (PS) that are traded in much lower quantities (see Figures 3 and 4).²³

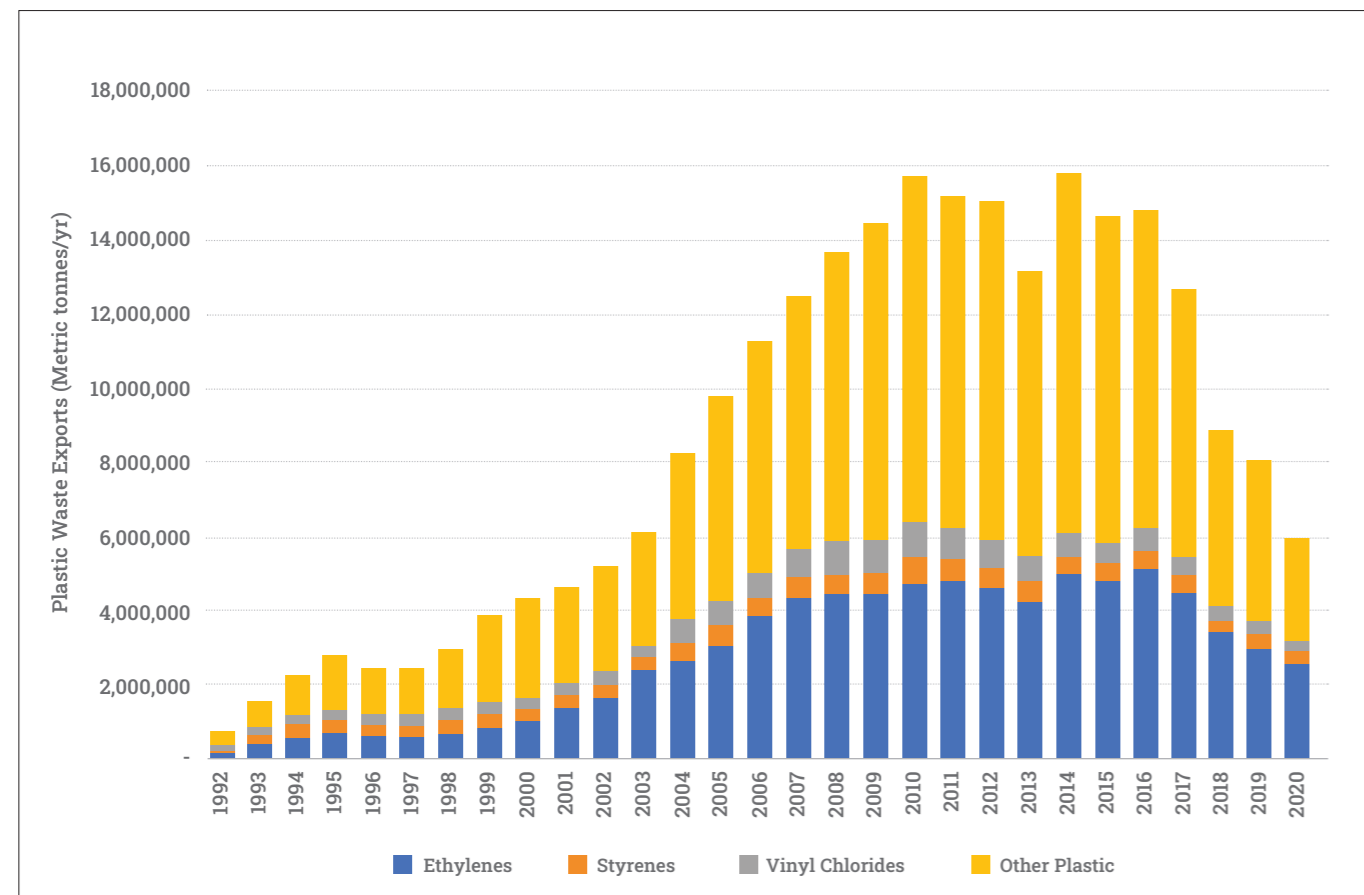
Above: The exportation of plastic waste first proliferated in the 1990's.

Figure 3: Average value per tonne of plastic waste exported since 1992.



Source: UN Comtrade

Figure 4: Global plastic waste exports traded by polymer type since 1992



Source: UN Comtrade

Impact of the trade in plastic waste

Plastic pollutes at each stage of its life cycle, from extraction to disposal. Plastics may fragment in the natural environment but do not biodegrade and may persist for hundreds to thousands of years.

Only 9 per cent of all plastic waste ever produced has been recycled. The vast majority, some 79 per cent, has accumulated in landfills or the natural environment while about 12 per cent has been incinerated.²⁴ Despite a lack of data quantifying the precise contribution of the global trade in plastic waste to mismanaged plastic waste, the contribution is undoubtedly significant. This is evidenced by several sources.

1. Recycling capacity, output and waste generation discrepancies. Most exports are made under the guise of 'recycling'. Cross-referencing recycling capacity and output data with domestic plastic waste generation and imports portrays a clear picture of the misalignment between what is produced and what is managed in an environmentally and socially responsible manner. Malaysia, for example, produces about 2.4 million tonnes of plastic waste per year and imports on average 835,000 tonnes per year (five-year average over 2016-20).²⁵ On the other hand, the annual

capacity of all recycling facilities in Malaysia is currently just 515,009 tonnes – a 2.7 million tonne discrepancy between what is produced and imported versus what is responsibly managed. The same is true for Indonesia, which has an installed recycling capacity of 729,730 tonnes per year but produces around 12.24 million tonnes of plastic waste and imports on average 246,000 tonnes per year – potentially leaving 11.7 million tonnes per year mismanaged.²⁶

2. Mismanagement rates. Almost all countries that receive or have received large quantities of imported plastic waste are those that also have some of the highest mismanagement rates in the world.²⁷

Below: Plastic waste mismanagement results in leakage into the environment, degrading land and water quality, traveling through wind, waves, tides, and rivers. (Bali, Indonesia).



3. Trade data. Despite the recent amendments to the Basel Convention (see Table 2), trade data analysis comparing the January to April period in 2021 with earlier years shows only a limited decline in exports to non-OECD countries. For example, G7 countries exports to non-OECD countries declined from 57 per cent of exports in the first four months of 2020 to 52 per cent of exports during the same period in 2021. Japan's exports appear unchanged over the period, with 89 per cent of exports destined for non-OECD countries. From January 2021 to April 2021, Japan actually increased plastic waste exports to non-OECD countries from 22,000 tonnes to 56,100 tonnes.²⁸

4. Seizures. A detailed assessment of the illegal trade in plastic waste by the International Criminal Police Organisation (INTERPOL) showed that illegal trade is significant and on the rise, particularly since 2018 as organised criminal groups have exploited the disruption caused by China's ban.²⁹

5. Reports from affected communities. Evidence for the impact of the plastic waste trade on communities across the world is abundant. For example, North Sumengko in East Java, Indonesia, was once a pristine and abundant farming village. Today, there are piles of plastic waste heaped into mounds two meters high in the middle of the road, collecting in the open environment, scattered along the roadsides and openly burnt in makeshift dumps.³⁰ This trend is all too common in villages, towns and rural areas across South-East Asia and other key importing regions.

The plastic waste trade has severe negative impacts which can be classified into three categories: environmental, social/health and economic.

Environmental impacts

- **Land and water quality degradation.** This is due to the leakage of toxic chemicals from informal dumps and landfills as a consequence of environmentally unsound plastic waste management.³¹ This is especially problematic in key importing countries whose economies are dominated by primary industry.
- **Air pollution.** This occurs through open burning and incineration, common methods to get rid of waste where there is no formal process to do so.^{32,33} Open burning releases as much as 29 per cent of global anthropogenic emissions of small particulate matter, 10 per cent of mercury emissions and 40 per cent of polycyclic aromatic hydrocarbons (PAHs).³⁴
- **Loss of biodiversity and ecological health.** There is widespread evidence for the overwhelming negative impacts of mismanaged plastic waste on all levels of biological organisation – from cells, to individual animals, to ecosystems.³⁵ Impacts range from ingestion and entanglement to chemical contamination and affect threatened, endangered

species as well as commercially important species.³⁶ Moreover, microplastic produced from fragmentation of mismanaged plastic waste may interfere with the formation and melting of ice cover and the capacity for plankton to store carbon and thus mitigate climate change.³⁷ In addition, non-native species are known to raft on floating plastic waste over large distances (trans-oceanic) exacerbating the risk of invasive species.³⁸

- **Climate change.** Incineration and open burning of plastic waste emit high quantities of carbon dioxide (CO₂) and other climate pollutants. On average, one tonne of plastic packaging releases about 2.9 tonnes of CO₂ into the atmosphere.³⁹ Plastics also emit methane and ethylene as they slowly break down, either in landfill or the open environment.⁴⁰

Economic impacts

Plastic pollution has a range of economic costs, from clean-up expenses and loss of tourism revenue to losses to ecosystem service provision.⁴¹

- **Cost to the global economy.** The economic costs of marine plastic pollution alone are up to \$33,000 per tonne. This equates to an annual loss of up to \$2.5 trillion from the world economy.⁴²
- **Clean-up costs.** Remediating pollution in impacted areas is protracted and can incur a significant financial burden, especially to national governments and local municipalities.^{43,44}
- **Loss of livelihoods.** The presence of plastic pollution has a negative impact on the attractiveness of locations for coastal tourism⁴⁵ and influences the locations visited by tourists.⁴⁶ Almost all the key plastic waste importing countries rely on the tourism sector for revenue. Plastic pollution also damages agricultural livelihoods, through impacts on livestock that consume plastic waste.⁴⁷ A high microplastic load in soils reduces crop productivity⁴⁸, while plastic pollution impacts on coastal environments directly threatens the lives of dependent coastal populations.⁴⁹
- **Corruption, tax fraud and money laundering.** The trade in plastic waste is characterised by a lack of transparency and accountability and is increasingly linked to organised crime and trafficking networks. The illegal trade is therefore also often associated with other forms of crime which serves to further destabilise importing countries.⁵⁰
- **Displacement of domestic recycling efforts.** Importing plastic waste when there is insufficient recycling capacity to manage existing domestic waste undermines national collection and recycling programs and increases mismanagement rates.⁵¹



Social and health impacts

- **Exposure to toxic chemicals.** The high potential for additives in plastic to contaminate soil, air, water and food is widely documented. High quantities of toxic and harmful substances, such as lead from PVC, can leach into the environment and lead to human exposure via e.g., food contact materials, such as packaging, or waste management practices such as unsound recycling or incineration.⁵² High inflows of difficult-to-recycle plastic to countries where resources are scarce can also act as an incentive for its use as a fuel, which creates further toxic chemical exposure and contamination.⁵³
- **Food chain contamination.** Many animals destined for human consumption (e.g. fish, mussels and crabs) readily uptake nano- and micro-plastics, which through trophic transfer end up in human bodies.
- **Antibiotic resistance.** Bacterial communities growing on the surface marine plastic litter and

Above: Verde Soko, Sitio, Phillippines. Children search among piles of illegally exported plastic waste for the few valuable items they can sell to junk shops. They are 'waste pickers' – a marginalised group that form part of informal waste management in key importing countries..

microplastics floating in the open ocean can develop (and spread) resistance to some of the most important and commonly used antibiotics.⁵⁴

- **Worsening of natural disasters.** Mismanaged plastic waste significantly worsens the effects of natural disasters (e.g. flash floods, hurricanes, tsunamis) in communities with poor waste management. The waste clogs waterways and drains, contributing to devastating floods and spreading waterborne diseases.⁵⁵
- **Maritime Safety.** Plastic waste can cause injury and even death in maritime workers through blocked intakes, entangled propellers and collision with larger debris items.⁵⁶

Table 1: Key actors involved in the plastic waste trade

Actor	Role and description	Stages
Public / citizens	Generate plastic waste and pay taxes to local authorities for collection and treatment	Waste generation
Other (i.e. hospitals)	Generate plastic waste and either pay taxes to local authorities for collection and treatment, or pay directly for private collection	Waste generation
Businesses	Generate plastic waste. Either pay for public collection through taxes, or often obliged to pay for and prove private collection themselves to the relevant government authorities.	Waste generation, collection, domestic reprocessing and exported reprocessing (in the form of EPR schemes), exportation
Government (including local authority/ department)	Pay private actors for waste collection and management, or fund public collection. Typically, government agencies are also responsible for inspection and enforcement.	Present throughout the entire plastic waste lifecycle
Waste brokers/ dealers	Private companies and individuals that charge a fee for helping companies manage and coordinate the treatment of their plastic waste, and/or buy and sell plastic waste to different carriers and companies on the premise that transactions will be based on market conditions (plastic waste availability and demand) to generate a profit. These companies do not necessarily provide a treatment or transport service, or even come into direct contact with the plastic waste they are managing. Brokers and dealers typically have to register with relevant governments and authorities in the areas within which they are operating.	Present throughout the entire plastic waste lifecycle
Waste carriers	Manage the transportation of waste. Can be publicly or privately funded fleets with regards to initial collection.	Present throughout the entire plastic waste lifecycle
Private waste management company	These are a large group of stakeholders that deliver any number of different services. There are smaller waste management companies that specialise solely in collection, transport, storage, sorting, recycling, disposal (landfilling or incineration) or export. There also may be waste management companies that have a mixture of services and larger waste management companies that may manage the entire post-consumer plastic waste lifecycle.	Present throughout the entire plastic waste lifecycle (sometimes paying for domestic or exported sorted plastic)
Recycling certification scheme	Typically, there are private schemes whereby recycling facilities pay to demonstrate good practice.	Reprocessing
Plastic converters	Buys recyclate to produce new plastic products (in part, would include virgin plastic feedstock as well).	Reprocessing (acquiring recycled plastic) and waste generation
Port authorities	Port authorities are typically privately run, although regulatory oversight would remain public.	Exportation, transshipments, importation
Registered importers and exporters	Those responsible for the consignment of plastic waste exports and imports are typically obliged to register in the jurisdictions in which they operate. Can be waste management company or waste broker/ dealer or a business (with regards to some importation national law restrictions).	Transshipments, importation, exportation
Informal waste sector	Pickers, dealers, labourers who sort domestic and imported waste for reprocessing outside of a formal facility, can consist of sorting through landfilled, dumped or donated waste.	Sorting and recycling in destination country
Compliance scheme	Private entities that provide consultancy services for businesses to help them comply with the export or producer responsibility regulations in the country of export. Not present in all countries.	Exportation, importation
Shipping agent	Private companies purely responsible for the movement of the commodity (plastic waste) itself. For example, a waste broker looking to ship plastic waste to Malaysia would contract a shipping agent to ship the container.	Exportation, transshipment, importation



Inside look: the plastic waste trade industry

The trade in plastic waste is complex and made up of many interconnected systems, actors (see Table 1) and processes. While the systems and processes differ from country to country, Figure 5 provides a broadly representative depiction of the post-consumer plastic waste value chain and how plastic waste is traded.

Generally speaking, local authorities fund public refuse collection or pay a private waste carrier to do so. Recyclables are transported to a Material Recovery Facility (MRF) where they are sorted by material type.⁵⁷ Plastic waste is then baled and sent for export, if not treated domestically, where those responsible for managing the consignment of plastic waste categorise it into the relevant entry codes.⁵⁸ The waste may then be shipped via intermediary countries (termed 'transshipment') through multiple waste brokers before arriving at the destination country.

Upon arrival, waste is either illegally dumped or sent directly to a recycling facility, where a large proportion (up to or more than 70 per cent)⁵⁹ is rejected. Rejected material is sometimes recycled or repurposed by the informal waste management sector, but as the exported rejected waste is low quality, the large majority is dumped, burnt or put in landfill. At various stages of the process, the plastic waste may be stored temporarily, e.g. prior to shipment or on arrival in the importing country.

Above: Plastic waste is placed on conveyor belt systems like these at Material Recovery Facilities (MRFs), where plastic waste is sorted.

How is plastic waste exported?

Step 1: Waste Generation

Plastic waste comes from numerous sources, including: municipal/household waste; industrial, business and commercial waste; other, including those from public bodies and services such as hospitals and public waste bins; and dumped or littered, which can be from any source and will remain uncontained in the environment unless collected.

Step 2: Collection

Plastic waste is set aside for either reprocessing or disposal. Reprocessing includes recycling or other forms of 'recovery', including energy recovery. Recycling and energy recovery are two distinct processes often incorrectly indicated together as 'reprocessing'. Depending on the country, department, municipality and source there may be different legal or voluntary obligations, recycling targets or disposal methods. Typically, collection of these two different waste streams (i.e. for disposal or reprocessing) happens separately.

Plastic waste collected for disposal is either landfilled or incinerated. Collection for reprocessing varies. Materials can be collected together (co-mingled) or they can be pre-sorted and collected by material type (e.g. paper, metal, plastic). Some plastic waste set aside for recycling/recovery is baled and sent directly for export at this stage.⁶⁰

Typically, citizens pay for household waste collection via taxes. Local authorities then pay for collection services either through funding public refuse collection or paying a private waste carrier to do so. Businesses/industry and commercial actors either pay for the collection of their waste via taxes or are obliged to organise, pay for and prove private collection themselves to the relevant government authorities. These three stakeholders (local authorities, businesses and private waste carrier companies) may then pay landfill or incineration companies directly for plastic waste disposal, depending on the collection system in place.

As well as private waste management companies, important intermediary actors are plastic waste brokers and dealers. These are private companies and individuals that charge a fee for helping companies manage and coordinate the treatment of their plastic waste, and/or buy and sell plastic waste to different carriers and companies on the premise that transactions will be based on market conditions (plastic waste availability and demand) to generate a profit. These companies do not necessarily provide a treatment or transport service, or even come into direct contact with the plastic waste they are managing. Brokers and dealers typically have to register with relevant governments and authorities in the areas within which they are operating.

Plastic waste destined for reprocessing is sometimes stored at a Waste Transfer Station, where it awaits pick-up by another carrier or waits for a larger accumulation of waste prior to moving on in the value chain.

Below: Plastic waste is shipped around the world in container ships. Megaports such as Rotterdam receive more than more than 342,000 containers per day, making inspections extremely challenging.



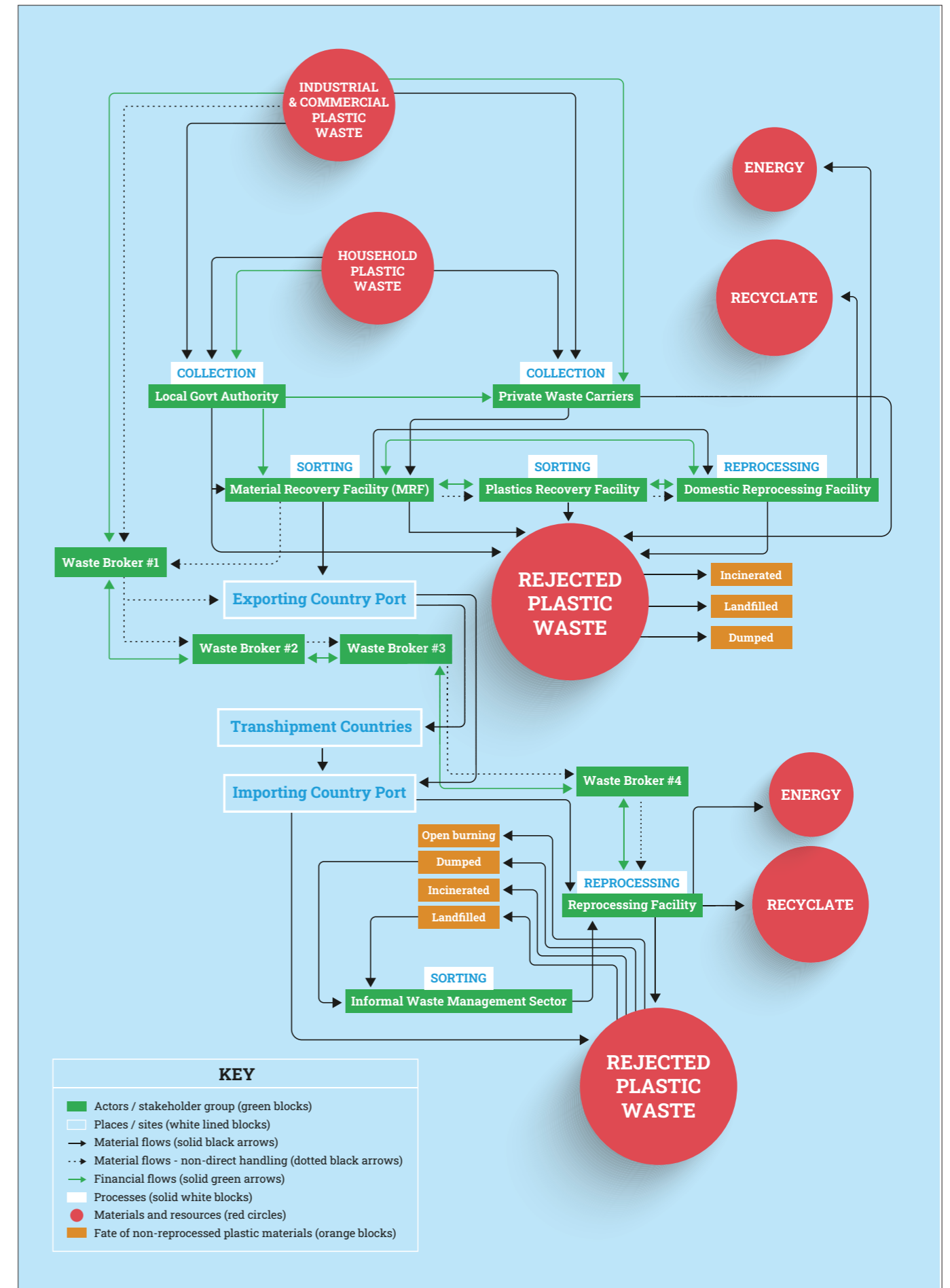
Step 3: Sorting in source country

Waste collected for reprocessing is sent to a Material Recovery Facility (MRF) to be sorted. They accept mixed waste (co-mingled) or single/multi-stream waste (e.g. metal and plastic together). Waste is sorted by material type (i.e. paper, metal, plastic) and, depending on market requirements and prices, may be baled for later transportation.⁶¹ Non-recyclable or contaminated recyclable materials along with recyclables that are not sorted during the process form a 'rejected' residue waste flow that is typically landfilled or incinerated.⁶²

Government/local authorities and waste management companies contracted to manage plastic waste can pay waste carriers and/or MRFs to sort their waste, or MRFs may purchase collected waste to then sell on as sorted recyclable waste downstream. Who pays for the pre-sorted waste depends on the quality and level of contamination, legal recycling obligations, timing of waste flows and availability of material on the market, among other factors.

Upon sorting, plastic waste can be brought to a plastic recovery facility (PRF) for plastic waste to be sorted further by polymer type, to a reprocessing facility for recycling or exported for treatment in another country. A PRF is an additional degree of sorting, occurring either within an MRF or within a separate PRF facility. This step separates plastic by polymer type (i.e. HDPE, PET) and as a result, increases its purity and market value.⁶³ Plastic waste sorted by polymer is more valuable and in greater demand and is therefore generally bought and recycled domestically. More difficult-to-sort and recycle plastic waste is often exported as this requires less investment and expense from the source country.

Figure 5: Generic, archetypal flowchart of the post-consumer plastic waste lifecycle.



Step 4: Domestic reprocessing (recycling and recovery)

There are three different ways plastic can be reprocessed:

Mechanical recycling. Plastics are recovered into plastic flakes or pellets (recyclate) through mechanical processes (grinding, washing, separating, drying, re-granulating, and compounding, flaking)⁶⁴ without changing the chemical structure of the material.⁶⁵ The more sorted and homogenous the initial plastic waste feedstock, the higher-grade and more valuable the recyclate produced.

Chemical recycling. Chemical recycling changes the chemical structure of plastic waste through solvent purification, chemical depolymerisation or thermal depolymerisation.⁶⁶ Depolymerisation (using either high temperature or chemical solvents) transforms plastics back into monomers that are required for plastic production, while solvent purification separates impurities such as additives with a solvent.⁶⁷ This is still a very small industry, and targets poorly designed difficult to recycle plastics.

Waste-to-Energy.⁶⁸ Mixed residual waste (including unsorted hard-to-recycle plastic) is turned into

electricity or heat through direct incineration, or transport fuels (known as refuse derived fuels, or RDF). The most common process undertaken to achieve this is incineration.

Step 5: Exportation from source country

Plastic waste destined for export is baled and brought to a port or border of the plastic waste producing country.

It is categorised into different entry codes, as per the Basel Convention and other national waste classifications, and depending on their entry codes different processes, procedures and consent are required for export and import. For shipments requiring prior informed consent (PIC) under Basel or as a result of specific national requirements typically require consent to be obtained prior to shipment (see Table 3). The registered exporter (which could be a waste management company, plastic waste export broker or business) completes relevant paperwork and receives the appropriate permissions from the exporting and importing countries and possible transshipment countries.⁶⁹ Shipments can be inspected prior to export, yet the vast majority are not.

Step 6: Transboundary shipments (transhipments)

Plastic waste can either be transported directly to the destination country or undergo transshipment – the process of being bought, sold and transported by multiple waste brokers across several countries. This can involve the unloading and loading of waste from one ship or carrier to another, temporary storage or re-sorting of waste (potentially mixed with plastics from other countries) at an intermediary country.

This process can be highly complex in terms of the number of countries and actors involved, greatly increasing the lack of traceability of the plastic waste trade.

Step 7: Importation to destination country

Upon arriving at the destination country, plastic waste containers can again be inspected for legality and conformity with Basel or national specifications and restrictions, although the majority are not. Of those that are inspected, whether at point of export, transshipment or import, illegal shipments are not always identified and repatriated due to difficulties in determining the level of contamination, as well as resource, personnel, socio-economic and logistical constraints. Registered exporters and importers are

charged with documenting and attaining government and custom permission prior to shipment.

Step 8: Reprocessing in destination country

Upon importation, plastic waste is transported directly to reprocessing facilities for recycling. Either through rejection, dumping or 'donation,' these wastes often also end up in an additional informal waste management system made up of waste dealers, pickers, and labourers.⁷⁰

The processes and transactions taking place at reprocessing facilities in importing countries are not dissimilar to that occurring within the exporting countries. Market conditions, level of waste flows, producer obligations and plastic waste quality will impact whether a recycler is paid or pays for imported plastic waste. Typically, waste to energy and mechanical recycling are the two reprocessing stages taking place. There is a lack of data on what proportion of these exported plastics are accepted for recycling, however recent analyses have assumed efficiency scenarios in non-OECD countries as low as 30 per cent.⁷¹

Below: 1,400 tons of misdeclared plastic waste illegally shipped to the Philippines is returned to South Korea in 51 shipping containers.



Figure 6: Top 25 plastic waste exporters since 1988

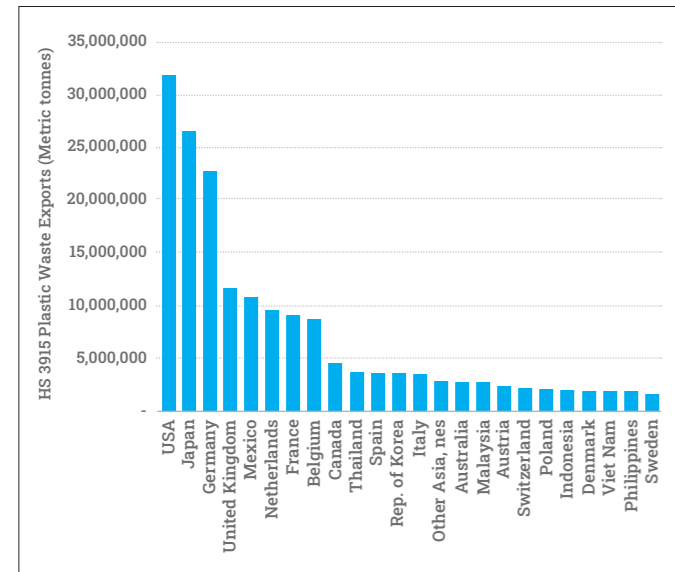


Figure 7: Top 10 plastic waste exporting countries in 2020

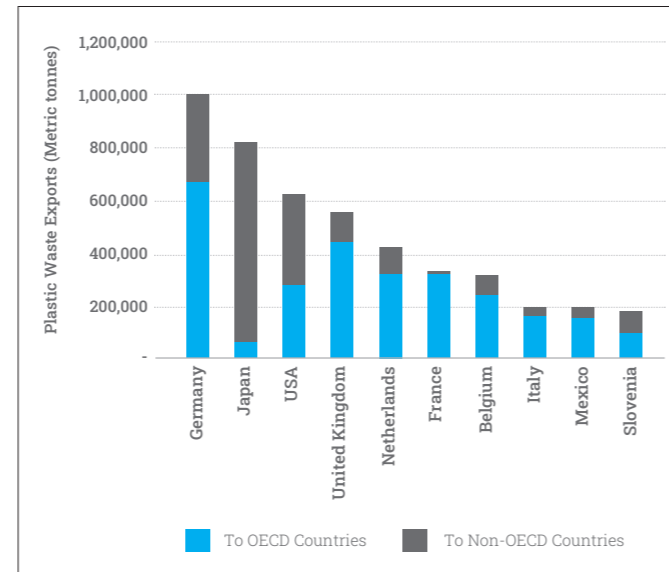


Figure 8: EU plastic waste exports between 2010-20.

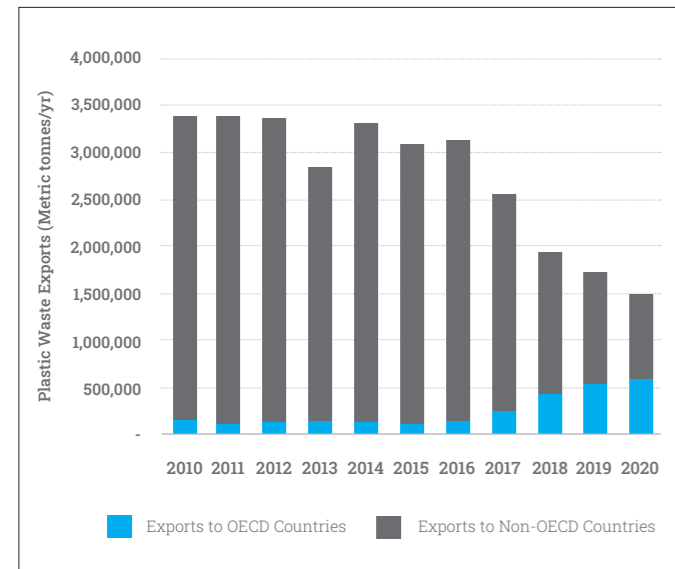


Figure 9: UK plastic waste exports between 2010-20.

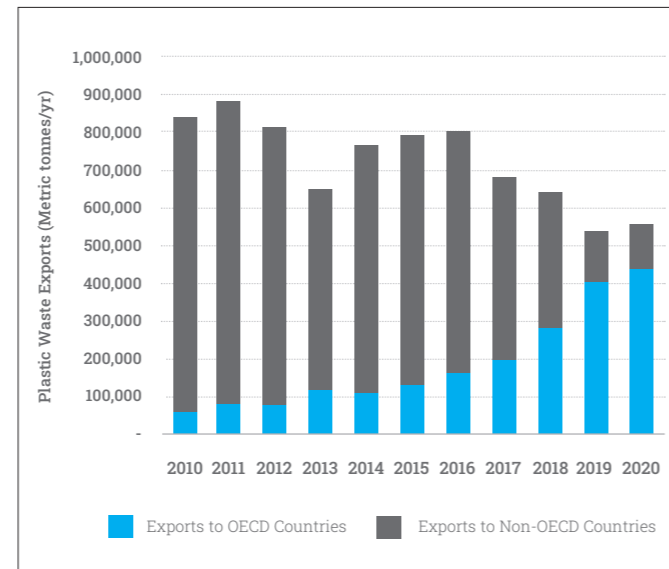


Figure 10: USA plastic waste exports between 2010-20.

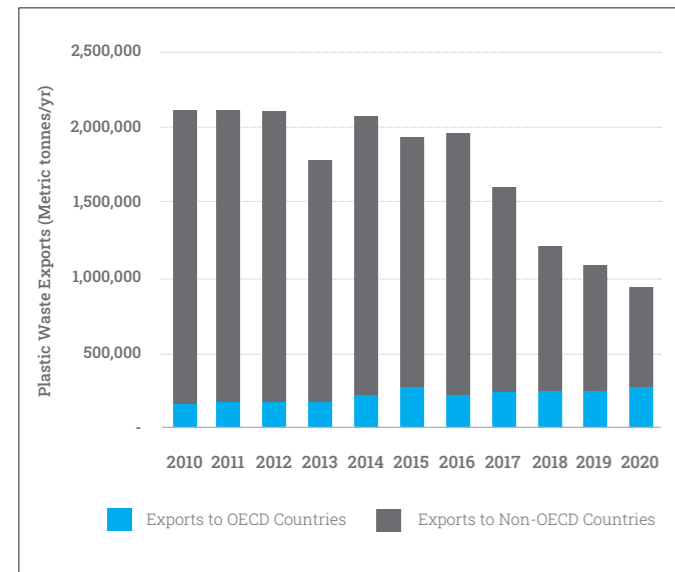
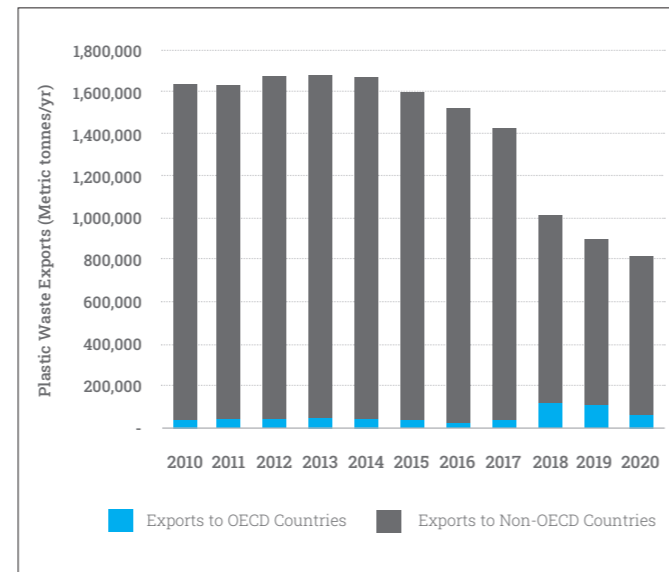


Figure 11: Japanese plastic waste exports between 2010-20.



The plastic waste exporters

The cross-border trade in plastic waste can be examined through publicly available government trade data, which is published and compiled by the United Nations Comtrade database.⁷² The Harmonized System (HS) trade code for most plastic waste (officially called “waste, paring and scrap”) is HS 3915.

EIA analysed global trade data using UN Comtrade, supplementing critical data gaps by adding data from EuroStat, UK Trade Data and US Trade Info. UN Comtrade uses the name EU-28 but does not include UK data – it is now EU-27 data. Many non-OECD countries do not report imports to UN Comtrade, therefore the destination country from export data was used to assess imports.

Germany, Japan and the USA continue to lead the plastic waste export market; in 2020, the top 10 plastic waste exporters were Germany, Japan, USA, UK, Netherlands, France, Belgium, Italy, Mexico and Slovenia. Of these, Japan sent by far the most plastic waste to non-OECD countries (92 per cent – see Figure 10), closely followed by the USA and Germany.

Since 1988, more than a quarter of a billion (252,448,534) tonnes of plastic waste has been exported around the globe. The USA, Japan and Germany are the leading plastic waste exporters, responsible for some 32 per cent of total cumulative exports over the period 1988-2020 (see Figure 6).

Plastic waste trade data shows a clear reduction in plastic waste exports as a result of China’s policy (see Figures 8-11).

The plastic waste importers

In terms of imports, China is by far the largest plastic waste importer over the past 10 years (see Figure 12 – note logarithmic scale), representing 65 per cent of imports over the period 2010-20.⁷³

As a result of China’s policy, Malaysia, Turkey and Viet Nam have emerged as key destinations for plastic waste from the US, Japan, EU and other high-income countries (see Figure 13).

Figure 12: Top plastic waste importing countries between 2010-20.

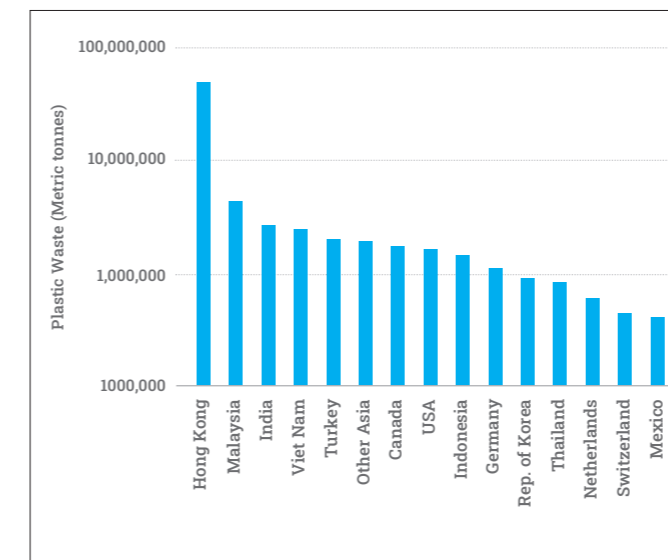
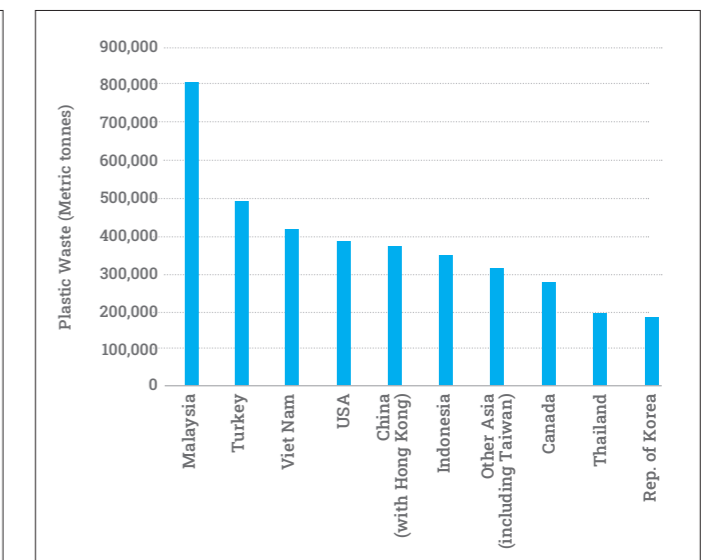


Figure 13: Top plastic waste importers in 2020.



Regulation of the plastic waste trade

Global Governance

The Basel Convention (1989) is an international treaty designed to restrict the movements of hazardous waste between countries. It has an annex-based structure whereby wastes are subject to differing control procedures depending on their material properties, characteristics and hazardousness. In May 2019, amendments to the Basel Convention were adopted to require prior informed consent (PIC) for exports of plastic waste unless sorted by polymer, destined for recycling and 'almost free from contamination'. Before these amendments, the global trade in plastic waste was largely unregulated.

The Basel amendments entered into force on 1 January 2021, meaning that for Parties to Basel, "Y48" shipments of contaminated or mixed plastic waste (unsorted by polymer) can only be exported to another Basel Party country subject to the PIC procedure (see Table 2).

If effectively implemented, the Basel amendments will fundamentally change the dynamics and economics of plastic waste, bringing increased transparency to the plastic waste trade and placing increased control in the hands of importing countries.

Some countries have taken further steps. For example, in recognition of its need to take responsibility for the waste it generates and transition to a circular economy, the EU has prohibited the export of mixed and unsorted plastic waste to non-OECD countries.⁷⁴ Some recipient countries have also banned imports (see Table 3).

The Organisation for Economic Co-operation and Development (OECD) implements the Basel Convention within the OECD, establishing a framework for the trade in hazardous and certain other wastes among OECD countries. As a result, trade in wastes is often characterised by whether the shipment is destined for an OECD country or not.

The OECD reached a separate agreement on its own system of controls for hazardous wastes specifically destined for recovery operations once the Basel Convention entered into force. The OECD Decision largely follows the Basel Convention in using appendices to define which wastes are subject to control procedures (known as "amber controls") and which wastes are presumed safe and not subject to controls unless proven hazardous.⁷⁵ Where agreement cannot be reached at the OECD, Basel applies by default.

Table 2: 'Basel in a Box.' The export codes, classifications and regulatory controls on plastic waste before and after the Basel Plastic Waste Amendments

Pre-Basel Amendments				Post Basel Amendments		
	Code	Classification	Control	Code	Classification	Control
Annex II	none	none	-	Y48	Plastic waste that is either unsorted by polymer (mixed), contaminated or not destined for recycling (so long as not hazardous)	PIC
Annex VIII	none	Hazardous plastic waste	PIC Banned to non-OECD	A3210	Hazardous plastic waste	PIC Banned to non-OECD
Annex IX	B3010	Solid plastic waste (all)	Free movement	B3011	Plastic waste that is sorted by polymer, almost free from contamination and destined for recycling (so long as not hazardous)	Free movement



Regional, bilateral and other multilateral governance

Several regional and bilateral agreements have been formed to supplement the provisions of the Basel Convention.⁷⁶

EU – the Waste Shipment Regulation.

In the EU, the transboundary movement of waste is governed through the Waste Shipment Regulation (WSR). It is currently under review and a full ban on exports outside of the EU is being considered.

Africa – the Bamako Convention.

In 1991, several African nations were dissatisfied with the Basel Convention in regulating the dumping of hazardous waste in their countries and agreed to ban the import of all hazardous wastes through the Bamako Convention. Implementation of the Convention has been extremely challenging, however, due to a lack of enforcement and inspection capacity.

Africa, Caribbean, Pacific – Lomé IV Convention.

African, Caribbean, and Pacific States (ACP) signed the Lomé IV Convention in 1975 to prohibit the "export of

Above: Current governance of the plastic waste trade is insufficient and serves to increase rates of mismanagement in some of the most biodiverse countries in the world.

hazardous wastes from the European Community to ACP States.⁷⁷ The Convention was one of the first attempts by low-income nations to protect themselves from an influx of hazardous waste from high-income countries. In 2000, it was succeeded by the Cotonou Agreement.

National measures to address plastic waste trade impacts

In addition to the international agreements and regional legislative frameworks, a host of countries have now enacted various import controls especially for mixed or contaminated waste (see Table 3). This is in part due to China's ban and due to the fact that illegal activities are more common when plastic waste is of a lower grade (e.g. highly contaminated, mixed or difficult to recycle).⁷⁸ Export restrictions have also been put into place in some countries and regions, including the EU's Waste Shipment Regulation.

Table 3: Key actors involved in the plastic waste trade

Country	Plastic waste trade provision
Kenya⁷⁹	<ul style="list-style-type: none"> Implemented a ban on the manufacture, sale, export and importation of plastic carrier bags which took effect in August 2017. Not yet transposed the Basel plastic amendments; however, through a multisectoral committee on sound chemicals management, the ratification of the Basel amendment as one of the action points the committee needed to act on was proposed, under the required action for the implementation of the Basel Convention. This is currently in a draft action plan developed by the committee. Centre for Environmental Justice and Development (CEJAD) Kenya launched a tracking app to monitor source of plastic waste in September 2021. Kenya partially restricts the transit of hazardous wastes and other wastes (no unpacking allowed, must be escorted to point of exit and insured in case of liability/incident). For Annex VIII BC wastes. All transit wastes cannot be offloaded for repackaging while in transit.
China & Hong Kong & Macau⁸⁰	<p>China</p> <ul style="list-style-type: none"> As of 1 January 2021, the importation of solid wastes (including plastic, whose prohibition occurred in 2018) into China is completely prohibited. <p>Hong Kong</p> <ul style="list-style-type: none"> Implementation of new contamination limit regulation took place September 2020, of 0.5 per cent (applies to plastic waste) Prohibited for import: non-halogenated polymers, cured resins/ condensation products, fluorinated polymers and non-hazardous mixtures of PE, PP and/or PET
India⁸¹	<ul style="list-style-type: none"> India prohibited the import of solid plastic waste by amending the Hazardous and Other Waste Rules on March 1 2019
Indonesia⁸²	<ul style="list-style-type: none"> As of December 2020, Indonesia put in place a number of plastic waste import requirements, including (i) not generated from landfill, (ii) not mixed with other waste, (iii) not contaminated with hazardous material/waste, (iv) homogeneous, (v) only direct shipments will be allowed, (vi) exporter must be listed on documentation so that they can be verified, (vii) exporter can only send from their own country. The Government may be considering prohibiting shipments from brokers and traders Prohibited for import: cured resins/ condensation products and fluorinated polymers. Non-halogenated polymers and non-hazardous mixtures of PE, PP and/or PET are under national controls.
Japan⁸³	<ul style="list-style-type: none"> As of March 2020, if plastic is not waste under the relevant Act, it can be exported without PIC (prior informed consent) procedure. If plastic is waste, import/export of plastic needs to get confirmation by the Minister of the Environment whether it can be treated in an environmentally sound manner in accordance with Wastes Disposal and Public Cleansing Act. Guidelines to distinguish clean plastic waste from dirty plastic waste is drafted (for export purpose only). However, the implementation guidelines have no contamination limits or any restrictions on halogenated plastics.
Malaysia⁸⁴	<ul style="list-style-type: none"> As of December 2020, plastic waste imports are allowed if they can contribute towards upgrading local recycling industry. There are a number of criteria that need to be met, including B3011 green-list plastic waste including: the waste must be separated plastic waste / without a mixture of plastic resins, any plastic or non-plastic containments should not exceed five per cent by weight, 95 per cent of the amount of imported plastic waste is recyclable by weight, the exporter must be approved in writing by the Department of National Solid Waste Management to supply the plastic waste.
Taiwan⁸⁵	<ul style="list-style-type: none"> As of December 2018, Licensed Taiwanese companies are now only permitted to import industrial plastic waste from the production facilities of their own subsidiaries abroad. Under certain conditions, they are also permitted to bring other single-sort plastic waste into the country.
Thailand⁸⁶	<ul style="list-style-type: none"> As of March 2020, Thailand continues to have a temporary ban of import. Recycling of plastic waste locally generated will be promoted. Prohibited for import: cured resins/ condensation products, fluorinated polymers and non-hazardous mixtures of PE, PP and/or PET. Non-halogenated polymers are subject to national controls.
Turkey⁸⁷	<ul style="list-style-type: none"> As of March 2021, Turkish import rules state that plastic waste can only be exported to Turkey if it is in single polymer form (not mixed) and has not undergone mechanical treatment. This means the following are prohibited: <ul style="list-style-type: none"> - Y48 plastic mixtures (single polymer types, such as PVC, may be allowed subject to obtaining prior informed consent). - B3011 – PET, PP and PE mixtures. - Plastic wastes containing any polymers (single or mixtures) produced as a result of mechanical treatment of wastes and therefore classified as EWC 19 12 04. As of May 2021, Turkey put in place a ban on HDPE and LDPE plastic waste imports, which was enacted in July 2021. This was originally to cover PET plastic as well, but this was later repealed.

Country	Plastic waste trade provision
Viet Nam⁸⁸	<ul style="list-style-type: none"> As of March 2020, all types of wastes are not allowed to be imported. Certain types of scraps, including plastics, can be imported if they are used for production process. Requirements on plastic scraps that are allowed to import including the followings; - Washed - Not dirty - Crushed/shredded - Segregated and not mixed with impurities In each shipment of imported plastic scrap, the total volume of impurities does not exceed two per cent volume of the shipment. Prohibited for import: cured resins/ condensation products and fluorinated polymers. Non-halogenated polymers and non-hazardous mixtures of PE, PP and/or PET are under national controls. Vietnam has not formally ratified the Amendment to the Basel Convention (Decision III/1) but the Law of Environment Protection of Vietnam in fact prohibits any transit regardless of their sources or destinations.
Netherlands⁸⁹	<ul style="list-style-type: none"> The Netherlands transposed the EU Waste Shipment Regulation via waste transport regulations entitled EVOA (Europese Verordening Overbrenging Afvalstoffen). However, in addition to the requirements of the Waste Shipment Regulation the Netherlands also: <ul style="list-style-type: none"> - distinguishes between household plastic waste and company waste and that household plastic packaging, in line with producer responsibility obligations, needs to be recycled within the EU (and not exported outside of the bloc). However, it is expected that this will change when company plastic packaging will be integrated within the Dutch EPR system in 2023. - has an additional two per cent contamination limit on PVC and other solid plastic waste exports
Norway⁹⁰	<ul style="list-style-type: none"> The translation of the Basel amendments on plastic waste into Norwegian law is made by Norway accepting the revised EU regulation on transboundary transports of waste implementing the plastic amendments. The revised EU regulation is stricter than the Basel Convention in one direction: The EU introduces a ban on exports of Basel-regulated plastic waste from the EU to non-OECD countries. Norway will adopt the same regime.
United Kingdom⁹¹	<ul style="list-style-type: none"> A consultation on a ban on plastic waste exports to non-OECD countries will take place in 2022. As of January 2021, the accreditation of packaging as per UK plastic producer responsibility obligations (including plastic packaging) will no longer consider municipal energy from waste recovery as recycling or reprocessing. A Packaging Note can be issued for recovery on 19 per cent of the municipal waste received at an accredited R1 energy from waste incinerator (but there must be an appropriate sampling method proposed and this does not include non-combustible elements of packaging waste.)
Canada⁹²	<ul style="list-style-type: none"> Canada has implemented the Basel Convention's plastic waste amendments, however, these new amendments do not affect plastic waste shipments between Canada and non-Parties to Basel if an Article 11 agreement or arrangement is in place. Therefore, these amendments do not apply to plastic waste shipments between Canada and the United States, except when a plastic waste transits through Canada or the USA for recycling or disposal in a third country, in which case applies.
Mexico⁹³	<ul style="list-style-type: none"> Mexico partially restricts the import of hazardous wastes and other wastes with regards to recovery this includes hazardous waste provisions: I. It will only be allowed in order to reuse or recycle the waste; II. In no case will the importation of wastes that are or are constituted by persistent organic compounds be authorised, and III. The Ministry may impose limitations on the importation of waste when it discourages or constitutes an obstacle to the reuse or recycling of waste generated in the national territory. As of February 2021, Mexico had yet to transpose the Basel Convention plastic amendments. The USA has identified Mexico as a plastic waste receiving country for US plastic waste, with the Mexican, Canadian and US T-MEC 2020 negotiations not incorporating these plastic amendments.
United States of America⁹⁴	<ul style="list-style-type: none"> The USA is not a member of the Basel Convention. Because of a longstanding provision under the Basel Convention that prohibits trade between countries that have ratified the Convention (i.e., Parties) and non-Party countries, Basel Parties are not able to trade Basel-controlled plastic scrap and waste with the US absent a separate bilateral or multilateral agreement that meets certain Basel Convention criteria. While the US has one such agreement that addresses trade in non-hazardous plastic scrap with member countries of the OECD, much uncertainty remains about what requirements OECD countries will impose on such trade. In some cases, OECD countries may not allow trade in non-hazardous plastic scrap with the US under the terms of the existing OECD agreement.
Australia⁹⁵	<ul style="list-style-type: none"> As of December, 2020, Australia's Recycling and Waste Reduction Act 2020 (Cth) received assent. The act implements an export ban on certain waste plastic, paper, glass, and tires agreed by the Council of Australian Governments (COAG) in March 2020. <ul style="list-style-type: none"> - from 1 July 2021 plastics that have been either: sorted into single resin or polymer type or processed with other materials into processed engineered fuel (energy from waste) can be exported (i.e. green-list waste for recycling and recovery) - from 1 July 2022, plastics that have been either sorted into single resin or polymer type and processed for further use (e.g. flakes or pellets) or processed with other materials into processed engineered fuel can be exported It has been announced that Australia is potentially looking to set a full waste export ban (announced 30 June 2021)



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Illegal trade in plastic waste

Illegal plastic waste activities, including that of illegal dumping, burning or export, can take place at any point throughout the post-consumer plastic waste lifecycle whether within the producing, transshipment or importing country.

Illegal trade occurs when national, regional, and/or international regulations to manage legitimate trade in plastic waste are breached. This is a highly financially lucrative business. The European Commission estimates the total annual revenues derived from the illicit waste market in the EU alone ranges between €4-15 billion, with illegal trade forecast to continue increasing.⁹⁶

The illegal trade in plastic waste has surged since 2018 as criminal groups have sought to exploit the massive market disruption prompted by China's decision to ban plastic waste imports.⁹⁷ It is countries in South-East Asia, South Asia and Eastern Europe which have borne the brunt of the growing illegal trade in plastic as shipments from Europe and North America have been diverted due to China's import ban.

Globally, Malaysia and Thailand have seen the biggest increase in illegal imports since China shut its borders.⁹⁸ Malaysia and Thailand also became the biggest importers of plastic waste since 2018. For example, US exports to Malaysia increased by 330 per cent in the first quarter of 2018 as the Chinese import ban came into force.⁹⁹ Moreover, recycling businesses

based in China have been forced to rapidly find new sources of raw materials in these countries and, as a result, further generated an incentive to re-route plastic waste to countries where these businesses re-establish. A significant portion of the waste is illegal and it is certain that growing trade routes towards emerging Asian destinations are exploited for illegal shipments.¹⁰⁰ In Indonesia, for example, out of 1,095 containers of plastic waste imported in 2019, 433 were deemed illegal by the Indonesian authorities due mostly to high levels of contamination.¹⁰¹

Authorities in Malaysia have responded strongly, with 150 containers of plastic waste weighing 3,700 tonnes being sent back to source countries, including 42 to the UK.¹⁰² The Government has also shut down 170 unauthorised recycling facilities. Clearing up the damage caused by rampant dumping and incineration of illegal plastics is a huge task. In the small town of Jenjarom alone, nearly 19,000 tonnes of plastic waste were piled up and burnt.¹⁰³

A detailed assessment of the illegal trade in plastic waste by INTERPOL also found increasing involvement of organised crime groups in the plastic waste trade.¹⁰⁴

It identified the main trafficking routes at the time through a survey of member countries. In Asia, 11 countries – Cambodia, Hong Kong SAR, India, Indonesia, Laos, Malaysia, Myanmar, Pakistan, Taiwan, China, Thailand and Vietnam – reported concerns of growing imports of illegal plastic waste. In Europe, seven countries were identified as the most affected by illegal plastic waste trade in the region, namely the Czech Republic, Germany, Italy, Poland, Portugal, Romania and Turkey.

The main motivation for criminal groups involved in the illegal plastic waste trade is pure profit, obtained through avoidance of costs associated with legitimate treatment and disposal of the plastics. Illegality occurs along the whole supply chain and involves a variety of participants, including waste brokers, shipping agents and importers in the destination countries. As with other forms of illicit waste, most seizures of plastic waste occur in destination countries rather than at the point of export, indicating enforcement failures in source countries. For instance, an international enforcement operation against illegal waste trade called Demeter V reported that 69 per cent of waste seizures occurred at the point of import.¹⁰⁵

Illegal trade is often linked to illegal treatment in destination countries, with the plastic waste being incinerated, landfilled, or dumped to avoid treatment costs. This has implications for the local environment and population as uncontained plastic waste exacerbates harmful chemicals release into the land, air and water.

With illegal trade in plastic waste leading to illegal disposal in the destination countries, the countries of

Above: Open Burning of Plastic Waste in Malaysia). Open burning is a common disposal method for illegally imported plastic waste, causing significant human health concerns, and releasing toxic contaminants into the food chain.

origin are effectively exporting pollution, and with it, severe environmental and health impacts. In some cases, the plastic waste is abandoned in the destination port, as brokers seek to avoid the cost of disposal or repatriation. In May 2019, for example, 265 unclaimed containers of plastic waste were discovered in Penang Port, Malaysia.¹⁰⁶

There are also many documented instances of illegal trade occurring between higher-income countries, including extended producer responsibility fraud, as evidenced by illegal shipments made between the UK and Netherlands.¹⁰⁷ Within the EU, one contributing factor is the lack of PIC required for trade of plastic waste destined for recovery between EU member states¹⁰⁸, as is evidenced by illegal shipments between Germany and Poland.¹⁰⁹

Smuggling methods

The main methods used to smuggle plastic waste are threefold and similar to those found in trafficking of other waste streams and hazardous substances, such as electronic waste and refrigerants.¹¹⁰

Misdeclaration involves falsely declaring the contents of the shipment. It may involve declaring contaminated, non-recyclable, mixed plastic or paper waste as sorted and non-hazardous in the hope of avoiding inspection at the point of export or import. It can also involve misdeclaring plastic waste as



Above: Lack of transparency, export restrictions and enforcement capacity facilitate the growth of the illegal plastic waste trade. (Waste Dump in Karahan, Adana Province, Turkey) .

destined for recycling or recovery, or simply as raw materials, such as reusable plastic, plastic granules or other products which are not subject to controls in the exporting and importing countries.¹¹¹

Concealment involves hiding illegal plastic waste behind a layer of clean, baled plastics or other materials in case the shipping container is opened for routine inspection.

Transshipment involves shipping the plastic waste via a circuitous route using a series of ports and potentially carriers to mask the county of origin, the shipper and consignee, or final destination. This can involve re-routing and reissuing shipping documents, such as the bill of lading, while the illegal plastic waste is at sea. This is intended to confuse the trail, defeat risk profiling used by customs authorities and make it harder for enforcement to trace the initial exporter and final importer. For example, the port of Antwerp in Belgium has emerged as a transit hub for illegal

plastic waste from Europe bound for Asia due to its perceived lack of inspection compared to other ports in western Europe. In 2020, Belgium exported 316,896 tonnes of plastic waste, the seventh highest total in the world.¹¹²

Barriers to transparency and accountability that facilitate illegal trade

There are multiple barriers to transparency and accountability that facilitate illegal activity, including:

- **Lack of notification and Prior Informed Consent.** It was not until January 2021 that all plastic waste streams (apart from those categorised as B3011, see Table 2) required PIC procedures. This procedure typically has four key stages:¹¹³ notification; consent and issuance of movement document; transboundary movement; and confirmation of disposal or recovery. It should be noted that not all countries are members of the Basel Convention and some members of the Basel Convention are yet to transpose the recent plastic PIC amendments into their national legislation and even where transposed, not all exports are conducted in line with PIC.

- **Lack of a harmonised global electronic notification system.** Current notification systems are paperwork based and different paperwork is required by different authorities across the globe, ultimately facilitating opacity and reducing traceability of any one shipment. Digitisation is a necessity and something that is being discussed in many different fora.
- **Lack of publicly available real-time data.** This is required in order to effectively monitor the movement and trade of plastic waste and hold the sector accountable but given the lack of digitisation of the plastic waste trade system, is not currently available. Producers and consumers do not typically monitor and disclose plastic waste data.¹¹⁴
- **Lack of capacity.** Customs, environment agencies and police are typically underfunded and do not have the capacity to monitor and inspect shipments sufficiently to deter illegal activities and trade.
- **Lack of documentation on treatment processes and management procedures.** There is a significant lack of information regarding the end fate of imported plastic waste, which reduces accountability of those exporting plastic waste which are supposedly ensuring environmentally sound management.
- **Fragmented market without overarching value chain coordination.** The lower the value or obligations associated with a plastic waste stream, the less likely it is to be closely managed. Lower-grade, less valuable plastic waste tends to be exported, contributing to the higher levels of mismanagement in destination countries.¹¹⁵

Enforcement efforts

A growing number of organisations and workstreams are actively seeking to address the illegal trade in plastic waste, including inter alia: Environmental Network for Optimizing Regulatory Compliance on Illegal Traffic (ENFORCE); the European Union's law enforcement agency (EUROPOL); Norwegian Agency for Development Coordination (NORAD); United Nations Office on Drugs and Crime (UNODC); Global Programme on implementing the Organized Crime Convention; the INTERPOL 30 Days at Sea Operation; UN Environment Programme (UNEP) WasteForce; European Union Network for the Implementation and Enforcement of Environmental Law (IMPEL) Shipments of Waste Enforcement Actions Project.¹¹⁶

Despite these efforts and a growing number of national initiatives, the enforcement response has largely lagged behind the surge in illegal trade of plastic waste. The majority of illegal plastic waste seizures still take place in destination countries; greater efforts are needed in source countries to identify and seize consignments of illegal plastic waste, including through increased funding, capacity and better use of intelligence-led operations. Although repatriation of illegal plastic waste consignments has been growing, the process is complicated and lengthy, especially when the shippers or origin countries cannot be identified due to fraudulent documents. In addition, financial investigations into the plastic waste syndicates need to be stepped up to identify and seize the profits generated by this growing environmental crime.



Conclusions

Shipping plastic waste around the globe enables the ever-expanding production of virgin (new) plastics and its unchecked consumption, undermines the principle of proximity¹¹⁷ and exacerbates rates of plastic waste mismanagement.

Rather than being valued as precious commodities, plastics continue to be irresponsibly produced, frivolously used and negligently disposed of. The trade in plastic waste is just a symptom of a wider problem – the unsustainable linear model of ‘take, make, dispose’ that still dominates the global consumer economy.

The waste management sector in many high-income countries has become structurally dependent on offshoring waste to lower income countries that are still developing economically and in doing so has externalised significant human and environmental costs in a form of waste colonialism.

The plastic waste trade is a significant contributor to mismanagement rates, as evidenced by: (i) recycling capacity and waste generation/import discrepancies; (ii) mismanagement rates in importing countries; (iii) trade data; (iv) seizures; and (v) reports from affected communities. This causes a myriad of well-documented impacts that reduce human quality of life and wellbeing, as well as environmental health.

Germany, Japan and the US are the most prolific waste exporting countries, with each having exported twice the plastic waste of any other country since reporting began in 1988. In 2020, they continued to lead the plastic waste export market, closely followed by the UK, Netherlands, France, Belgium, Italy, Mexico and Slovenia. The worst culprit in terms of exports

sent to non-OECD countries is Japan, which shipped 92 per cent of its plastic waste exports to non-OECD countries in 2020.

China has been by far the largest plastic waste importer over the past 10 years, representing 65 per cent of imports over the period 2010-20.¹¹⁸ With a mismanagement rate of approximately 76 per cent, the plastic waste trade was already a significant problem before China closed its borders to plastic waste in 2018. Since this time, Malaysia, Viet Nam and Turkey have emerged as key destinations for plastic waste from the US, Japan, the EU and other high-income, high-consuming countries.

Plastic waste trade data shows a reduction in plastic waste exports starting in 2017 due to China’s decision to ban plastic waste imports. However, due to data limitations, misreporting and illegal activity, it is likely that this does not reflect the full picture. The illegal trade in plastic waste and involvement of organised crime groups has surged since 2017 as criminal groups have sought to exploit the massive market disruption prompted by China’s trade policy. While some reduction in trade probably occurred at the outset, it is likely that the illegal plastic waste trade has resulted in significant under-reporting.

Below: Exporting countries need to pay greater attention to and take responsibility for the waste they produce.



Recommendations

The plastic waste crisis can only be solved through an holistic strategy that places the emphasis on upstream solutions to prevent unnecessary plastic production and consumption while collecting and treating that which is used.

The Environmental Investigation Agency (EIA) recommends the following measures:

- **Ban plastic waste exports.** National restrictions on imports are much more common than those on exports, but this should not be the sole responsibility of importing countries. High-income, exporting countries need to take responsibility for their own waste and introduce bans and other restrictions on exports.
- **Reduce waste generation and promote resource efficiency and a safe, non-toxic circular economy for plastics.** Along with restrictions on plastic waste exports, UN member states should implement an ambitious package of binding measures to significantly reduce plastic waste generation and leakage while promoting resource efficiency and a safe circular economy for plastics. To achieve this, governments should support the establishment of an Intergovernmental Negotiation Committee to negotiate a new plastic treaty under the UN Environment Assembly in February 2022 and engage fully in negotiations to secure caps on virgin plastic production.
- **Enact and implement strong national policy measures to reduce plastic waste, including:**
 - consistent waste collection
 - extended producer responsibility
 - deposit return schemes
 - plastic packaging taxes with increasing recycled content obligations
 - plastic and single-use item reduction targets and product reuse targets
 - incineration and landfilling moratoriums
- **Ensure traceability and transparency.** Traceability and transparency are critical to identifying and preventing leakage and environmentally unsound waste management. Parties to the Basel Convention should ensure data accuracy and monitoring through real-time reporting processes accessible to all stakeholders. Harmonised and standardised electronic systems would also avoid the burden of paper-based documentation.
- **Improve inspection and enforcement.** An INTERPOL review into serious and organised crime in the waste sector found that highport traffic or lack of enforcement capacity at ports, both in Asia and in Europe, have increasingly served to exacerbate the illegal trade. Adequate resourcing for enforcement agencies to properly monitor shipments and undertake multi-agency intelligence-led enforcement is required to ensure the timely prosecution of plastic waste crime.
- **Require Prior informed Consent (PIC) for all shipments.** In the context of the Basel Convention, Parties should pass an amendment to ensure notification and PIC procedures are mandatory for all plastic waste shipments (B3011 included) and work towards creating a universal digitised procedural system to streamline this process.

References

1. Cumulative virgin plastic production was approximately 8,300 million tonnes as of 2015 with 6300 MT (75.9%) of plastic waste generated – of this, 79% is estimated to end up in landfill or natural environment. Source: Geyer *et al.* (2017) Production, use and fate of all plastics ever made. [Available here](#). Plastic production from 2016 to 2019 was approximately 1,397 million tonnes. Source: [Plastics Europe](#). Assuming 2020 plastic production at an average of the previous 3 years (358 million) brings the total to 10,055 million. Note this does not include PS, PET or Poly acryl fibres from 2016 – 2019.”
2. China Notification to WTO (2017). [Available here](#).
3. Heinrich Boll Foundation. (2019). The Plastic Atlas. [Available here](#).
4. Labonté, & Stuckler (2016). The rise of neoliberalism: how bad economics imperils health and what to do about it. [Available here](#).
5. Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. [Available here](#).
6. Plastics Europe (2020). Plastic: the facts. [Available here](#). Note: PET-fibers, PA-fibres and Polyacryl-fibers not included.
7. See Ref 1.
8. Rochman *et al.* (2015). Anthropogenic debris in seafood: Plastic debris and fibers from textiles in fish and bivalves sold for human consumption. [Available here](#); also: Smith, M. *et al.*, (2018). Microplastics in seafood and the implications for human health. [Available here](#).
9. Blettler and Wantzen (2019). Threats underestimated in freshwater plastic pollution: mini-review. [Available here](#).
10. Piehl *et al.* (2018). Identification and quantification of macro-and microplastics on an agricultural farmland. [Available here](#).
11. Westerhoff *et al.* (2008). Antimony leaching from polyethylene terephthalate (PET) plastic used for bottled drinking water. [Available here](#); also: Oehlmann, J. (2011). Endocrine disruptors in bottled mineral water: estrogenic activity in the E-Screen. [Available here](#).
12. Kosuth, *et al.* (2018). Anthropogenic contamination of tap water, beer, and sea salt. [Available here](#).
13. Gasperi *et al.* (2018). Microplastics in air: are we breathing it in? [Available here](#).
14. Mason *et al.* (2016). Microplastic pollution is widely detected in US municipal wastewater treatment plant effluent. [Available here](#).
15. Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. [Available here](#).
16. Note: Plastic resin production data from Jambeck *et al.* (2015). Plastic waste export data from UN Comtrade. Slight difference in summation of resins due to round off from 4 resin types.
17. Wang *et al.* (2020). Structure of the global plastic waste trade network and the impact of China’s import Ban. [Available here](#).
18. Wang *et al.* (2020). Structure of the global plastic waste trade network and the impact of China’s import Ban. [Available here](#).
19. Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. [Available here](#).
20. Wang *et al.* (2020). Structure of the global plastic waste trade network and the impact of China’s import Ban. [Available here](#).
21. Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. Available here. Also: OECD (2019). Turkey Highlights 2019, p.5. OECD Environmental Performance Reviews. [Available here](#).
22. United Nations Comtrade Database (2021). [Available here](#).
23. United Nations Comtrade Database (2021). [Available here](#).
24. Geyer *et al.* (2017) Production, use and fate of all plastics ever made. [Available here](#).
25. Independent Commodity Intelligence Services (2021). Recycling Supply Tracker – Global. [Available here](#). also: Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. [Available here](#).
26. Independent Commodity Intelligence Services (2021). Recycling Supply Tracker – Global. [Available here](#).
27. Jambeck *et al.* (2015). Plastic waste inputs from land into the ocean. [Available here](#).
28. United Nations Comtrade Database (2021). [Available here](#).
29. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here](#).
30. GAIA (2019). DISCARDED: Communities on the Frontlines of the Global Plastic Crisis. [Available here](#).
31. CIEL (2019). Plastic & Health: The Hidden Costs of a Plastic Planet. [Available here](#).
32. GAIA (2019). DISCARDED: Communities on the Frontlines of the Global Plastic Crisis. [Available here](#).
33. Verma, *et al.* (2016). Toxic pollutants from plastic waste - a review. [Available here](#).
34. Wiedinmyer *et al.* (2014). Global Emissions of Trace Gases, Particulate Matter, and Hazardous Air Pollutants from Open Burning of Domestic Waste. [Available here](#).
35. Beaumont *et al.* (2019). Global ecological, social and economic impacts of marine plastic. [Available here](#).
36. Greenpeace (2020).The Recycling Myth 2.0. [Available here](#).
37. Lin, V. S. (2016). Research highlights: impacts of microplastics on plankton. [Available here](#).
38. Rech *et al.* (2016). Marine litter as a vector for non-native species: What we need to know. [Available here](#).
39. CIEL (2019). Plastic and Climate – Hidden Costs of a Plastic Planet. [Available here](#).
40. Royer *et al.* (2018). Production of methane and ethylene from plastic in the environment. [Available here](#).
41. Beaumont *et al.* (2019). Global ecological, social and economic impacts of marine plastic. [Available here](#).
42. Beaumont *et al.* (2019). Global ecological, social and economic impacts of marine plastic. [Available here](#).
43. Kershaw *et al.* (2020). Proceedings of the GESAMP International Workshop on assessing the risks associated with plastics and microplastics in the marine environment.
44. Deloitte (2019). The price tag of plastic pollution: an economic assessment of river plastic. [Available here](#).
45. Kershaw *et al.* (2020). Proceedings of the GESAMP International Workshop on assessing the risks associated with plastics and microplastics in the marine environment. [Available here](#).
46. Brouwer *et al.* (2017). The social costs of marine litter along European coasts. [Available here](#).
47. World Economic Forum (2019). This is what the world’s waste does to people in poorer countries. [Available here](#).
48. Koskei *et al.* (2021). Effects of increased plastic film residues on soil properties and crop productivity in agro-ecosystem. [Available here](#).
49. N.B. This was most recently and prominently seen after the X-Press Pearl disaster, which saw 11,000 tonnes of plastic pellets – the raw material for all plastic products – spilled off the coast of Colombo, Sri Lanka, prompting a fishing ban across most of the West coast.
50. Ruceskva *et al.* (2017). The Trade in Plastic Waste. GRID-Arendal. [Available here](#).
51. Chen *et al.* (2021). The plastic waste problem in Malaysia: management, recycling, and disposal of local and global plastic waste. [Available here](#).
52. Boyle *et al.* (2020). Polyvinyl chloride (PVC) plastic fragments release Pb additives that are bioavailable in zebrafish. [Available here](#). and: Food Packaging Forum (2020). Scientific consensus statement on food contact chemicals and human health. [Available here](#). and: CIEL (2019). Plastic & Health: The Hidden Costs of a Plastic Planet. [Available here](#).
53. Petrlik *et al.* (2019). Plastic waste flooding Indonesia leads to toxic chemical contamination of the food chain. [Available here](#).
54. Zettler *et al.* (2013). Life in the “plastisphere”: microbial communities on plastic marine debris. [Available here](#).
55. Ritch *et al.* (2009). Plastic bag politics: modifying consumer behaviour for sustainable development. [Available here](#). and: The Wall Street Journal (2015). Ghana’s Growth Spurs Uncontrollable Trash. [Available here](#).
56. Cho (2005). Challenges to marine debris management in Korea. [Available here](#).
57. N.B. A significant amount is rejected and sent to landfill or incineration due to high levels of contamination.
58. N.B. For instance, the notification document for transboundary movements/ shipments of waste for EU waste can be found in [Annex IA of the EU Waste Shipment Regulation](#).
59. Bishop *et al.* (2020). Recycling of European plastic is a pathway for plastic debris in the ocean. [Available here](#).
60. ‘Baling’ is a process that compresses material into a block (bale) which is secured by plastic or wire strapping. The process reduces the volume of the material which reduces loose waste on site and reduces transportation/ waste disposal. [Source](#).
61. WRAP (2020). Recovering value from MRFs. [Available here](#).
62. WRAP (2020). Recovering value from MRFs. [Available here](#).
63. WRAP (2020). Recovering value from MRFs. [Available here](#).
64. European Bioplastics (2020). Mechanical Recycling.
65. Plastics Europe (2020). Recycling and Energy Recovery. [Available here](#).
66. Eunomia (2020). Chemical Recycling: State of Play. [Available here](#).
67. Plastics Europe (2020). Recycling and Energy Recovery. [Available here](#).
68. <https://www.clarity.eu.com/waste-to-fuel/what-is-rdf-srf/> and https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/284612/pb14130-energy-waste-201402.pdf
69. For instance, the notification document for transboundary movements/ shipments of waste for EU waste can be found in [Annex IA of the EU Waste Shipment Regulation](#).
70. N.B. For instance, as documented in [Malaysia and Turkey](#). which is causing [substantial human health issues](#).
71. Bishop *et al.* (2020). Recycling of European plastic is a pathway for plastic debris in the ocean. [Available here](#).
72. United Nations Comtrade Database (2021). [Available here](#).
73. N.B. Imports were calculated using total exports from EU28+UK+US+Japan+ETF. China and Hong Kong are not double counted.
74. European Commission (December 2020). News Announcement: Plastic Waste Shipments: New EU Rules on Importing and Exporting Plastic Waste.
75. CIEL (2021). Legal Analysis of the Consequences of the OECD Non-Consensus Determination on the Basel Plastic Amendment. [Available here](#).
76. Basel Secretariat (2021). Control system: Article 11 agreements. [Available here](#).
77. Pratt. (2011). A Revaluation of Toxic Waste Colonialism and the Global Management of Transboundary Hazardous Waste. [Available here](#).
78. Arkin. C (2019) Waste Exports: The rubbish dump is closed, Heinrich Böll Stiftung. [Available here](#) (September 2021) and Smith, L. (2021) House of Commons Library Briefing Paper Number 08515: Plastic Waste. [Available here](#).
79. Republic of Kenya Ministry of Environment & Forestry (2021) Basel Convention and Kenyan Entry in Force. [Available here](#) (September 2021) and Republic of Kenya Ministry of Environment & Forestry (2020) National Sustainable Waste Management Policy. [Available here](#). and Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here](#). (September 2021). And Centre for Environmental Justice and Development (CEJAD) (September 2021) Press release: CEJAD Kenya use wastebase tracking app to monitor plastic waste. [Available here](#).
80. Creech, L. Resource (2020) China to ban all imports of solid waste from 2021. [Available here](#). (September 2021) and: Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here](#). and: UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here](#).

References

81. Cockburn, H. The Independent (2019) India bans imports of waste plastic to tackle environmental crisis. [Available here.](#) and India Ministry of Environment, Forest and Climate Change (April, 2016) [Published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-Section (i)] Government of India Ministry of Environment, Forest and Climate Change Notification. [Available here.](#) and Vikaspedia (2016) Hazardous Waste Management Rules, 2016. [Available here.](#) and: (September, 2021) and Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
82. Institute of Scrap Recycling Industries, Inc. (ISRI) (August, 2020) Indonesia Scrap Import Regulations. [Available here.](#) (September, 2021) and: The Republic of Indonesia (2020) Implementation of import of non-hazardous and toxic material waste as raw material industry (unofficial translation for reference only). [Available here.](#) and: Minister of Trade of the Republic of Indonesia (2016) Regulation of the Minister of Trade of the Republic of Indonesia Number 31/M-DAG/PER/5/2016 Concerning Provisions on Importation of Non Hazardous and Toxic Wastes. [Available here.](#) and: Asian Network Annu Workshop (2019) Import regulation of plastic waste in Asian countries (provisional: as of March 2020). [Available here.](#) the Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here.](#) and: Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
83. Asian Network Annu Workshop (2019) Import regulation of plastic waste in Asian countries (provisional: as of March 2020). [Available here.](#) and: Japan Ministry for Environment (2021) Summary of the Criteria for distinguishing plastic wastes subject to control under the Japanese Basel Act from other wastes. [Available here.](#) and: Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here.](#) and: Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and: Ministry of Foreign Affairs of Japan (2019) The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. [Available here.](#)
84. Asian Network Annu Workshop (2019) Import regulation of plastic waste in Asian countries (provisional: as of March 2020). [Available here.](#) and the Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here.](#) and Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#) and: Malaysian National Solid Waste Management Department (2018) Syarat-Syarat Pengimportan Sisi Plastik HS KID 39.13 [Available here.](#)
85. PlastEurope (2018) Taiwan restricting imports of plastic waste. [Available here.](#) (September, 2021) and Chia-nan, L. Taipei Times (2018) New waste plastic, paper import rules to take effect. [Available here.](#) (September, 2021). and: UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
86. Asian Network Annu Workshop (2019) Import regulation of plastic waste in Asian countries (provisional: as of March 2020). [Available here.](#) and: the Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here.](#) and Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
87. Turkey Ministry of Commerce (May, 2021) Kept Under Control For The Protection Of The Environment Import Control Of Waste Communication (Product Safety And Audit: Communique On The Amendment Of 2021/3) Notification. [Available here.](#) Edie Newsroom (June, 2021) Turkey reverses ban on plastics imports for recycling. [Available here.](#) and: Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
88. Asian Network Annu Workshop (2019) Import regulation of plastic waste in Asian countries (provisional: as of March 2020). [Available here.](#) and the Secretariat of the Asian Network (2020) Asian Network Workshop 2020: Discussion of the previous workshops on plastic wastes and results of the questionnaire. [Available here.](#) and: Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021) and: UK Environment Agency (July 2021) International Waste Shipments Export of Plastic wastes. [Available here.](#)
89. Netherlands Human Environment and Transport Inspectorate (ILT) (2021) Waste Transport EVOA. [Available here.](#) Netherlands Human Environment and Transport Inspectorate (ILT) (2021) International shipment of waste. [Available here.](#) European Commission (2014) Commission Regulation (EC) No 1418/2007 of 29 November 2007. [Available here.](#) Netherlands Human Environment and Transport Inspectorate (ILT) (2021) Annex V Waste subject to the export prohibition in article 36. [Available here.](#) and: Netherlands Human Environment and Transport Inspectorate (ILT) (2021) National waste legislation. [Available here.](#) Netherlands Government Official Publications (2015) Policy rule of the State Secretary for Infrastructure and the Environment. EC No. 1013/2006 of the European Parliament and Council of 14 June 2006 on shipments of waste (OJEU 2006, L 190). [Available here.](#)
90. Norwegian Government (2019) Norway implements the 2019 “Basel amendments” on plastic waste. [Available here.](#) Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) (September 2021)
91. UK Government (2020) Guidance Importing and exporting plastic waste. [Available here.](#) and UK Government (2021) Policy paper: UK plan for shipments of waste. [Available here.](#) and UK Government (2021) Guidance: Waste exports control tool. [Available here.](#) (September 2021). and UK Government (2021) Guidance: Transporting goods between Great Britain and the EU by RoRo freight: guidance for hauliers. [Available here.](#) (September, 2021). and UK Government (2021) The Transfrontier Shipment of Waste Regulations 2007. [Available here.](#) and: UK Government (2021) Guidance: Packaging waste: apply to be an accredited reprocessor or exporter. [Available here.](#)
92. Government of Canada (2021) Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149). [Available here.](#) and Livingston International (2021) Basel Convention Amendment on International Movement of Plastic Waste Exported from Canada. [Available here.](#) (September, 2021)
93. Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#) and US International Trade Administration (October, 2020) Market Intelligence: Mexico Plastic Recyclables. [Available here.](#) (September, 2021) and Greenpeace Mexico (2021) México deberá cumplir disposiciones para movimientos transfronterizos de residuos peligrosos y plásticos. [Available here.](#) (September, 2021)
94. United States Environmental Protection Agency (Accessed September, 2021) New International Requirements for the Export and Import of Plastic Recyclables and Waste. [Available here.](#)
95. Picken, J. & Donovan, S. Australian Government (October, 2020) Exports of Australian waste-derived products and wastes in 2019-2020. [Available here.](#) and Australian Library of Congress (January, 2021) Australia: Bill Banning Export of Unprocessed Waste Enacted. [Available here.](#) and: WWF Australia (June, 2021) What do we do now our plastic waste exports are banned? Innovate! [Available here.](#) and Australian Government Department of Agriculture, Water and the Environment. (Accessed September, 2021) Waste exports. [Available here.](#) and: Australian Government Department of Agriculture, Water and the Environment. (Accessed September, 2021) Export of Plastic waste. [Available here.](#) and National Toxics Network Australia (December, 2020) Federal Recycling and Waste Reduction Bill approved today. [Available here.](#) and Parliament of Australia (June, 2021) Hazardous Waste (Regulation of Exports and Imports) Amendment Bill 2021. [Available here.](#) and Australian Government (2020) Recycling and Waste Reduction Act 2020. [Available here.](#) and Basel Convention (2021) Decisions to prohibit or restrict import or export of hazardous or other wastes. [Available here.](#)
96. <https://op.europa.eu/en/publication-detail/-/publication/ab3534a2-87a0-11eb-ac4c-01aa75ed71a1/language-en>
97. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
98. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
99. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
100. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
101. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
102. BBC (2020). Malaysia returns 42 containers of 'illegal' plastic waste to UK. [Available here.](#)
103. GAIA (2019). DISCARDED: Communities on the Frontlines of the Global Plastic Crisis. [Available here.](#)
104. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
105. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
106. CNA (2019). 265 containers of plastic waste found abandoned in Penang. [Available here.](#)
107. Ends Report (2018). Why packaging fraudsters are importing plastic waste from the Netherlands. [Available here.](#)
108. European Commission (2021). Plastic waste shipments. [Available here.](#)
109. DW (2021). Poland's growing problem with illegal European waste. [Available here.](#)
110. Environmental Investigation Agency (2011). System Failure: the UK's harmful trade in electronic waste. [Available here.](#)
111. INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
112. United Nations Comtrade Database (2021). [Available here.](#)
113. Basel Convention Secretariat (2020). Controlling transboundary movements of hazardous wastes. [Available here.](#) and: INTERPOL (2020). Strategic Analysis Report: Emerging Criminal Trends in the Global Plastic Waste Market Since January 2018. [Available here.](#)
114. Adelphi *et al.* (2019). No more Plastics in the Ocean. [Available here.](#)
115. World Economic Forum (2020). Trade barriers are slowing action on plastic pollution here's how to fix that. [Available here.](#)
116. Basel Convention side-event, 28 July 2021: Time to ENFORCE: Combatting an illegal traffic of hazardous and other wastes
117. N.B. The principle of proximity encourages processing, recycling, reuse or disposal of waste as near to the point of its production as possible.
118. N.B. Imports were calculated using total exports from EU28+UK+US+Japan+ETF. China and Hong Kong are not double counted.

