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Current situation, analysis and observations on waste control at borders by Customs

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Abstract

The Basel Convention governs transboundary movements of hazardous wastes in recognition of the adverse effects these pose to human health and the environment. Waste trade is complex and highly technical due to the multi-faceted nature of wastes.

Waste control at borders remains of importance to Customs and the emphasis on such control will only increase due to new emerging risks and control requirements.

The objective of this paper is to provide analysis and observations of the current situation regarding waste control at borders, especially from a Customs perspective.

Key words

Sustainable Development Goals (SDGs), hazardous waste, waste control at borders, waste trade, Customs control, Customs risk management, illegal transboundary movement, Basel Convention, Prior Informed Consent, Operation DEMETER.

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Introduction

The Basel Convention governs transboundary movements of hazardous wastes in recognition of the adverse effects these pose to human health and the environment. Waste controls at borders will contribute to human health, environmental protection and sustainable society, through achievement of the United Nations Sustainable Development Goals.

Waste trade is complex and highly technical due to the multi-faceted nature of wastes.

Waste control at borders is important and will become more so in future due to recent developments, such as the heightened import restriction on wastes since 2018 by Asian countries, and the major amendment of the Basel Convention, which is to be implemented from 2021 onwards and broadly expands its regulatory scope to cover plastic waste.

Given the crucial role Customs plays in this area, this paper deals with the issue of waste control at borders from a Customs perspective.

In the course of the research, the author gained insights from oral interviews with national environmental competent authorities, a national Customs administration, a prosecutor, industry organizations, private sector companies and the Secretariat of the Basel Convention, as well as from WCO meetings held in Brussels in 2019 and 2020, and from a workshop organized by the OECD in Paris in 2020. It was against this backdrop that the following resources were consulted and analysed:

- open-source publications by international governmental organizations, national governments, non-governmental organizations, and academics;
- the data on illegal trade in wastes seized by Customs and reported to the WCO CEN database for intelligence-sharing purposes; and
- the data on both illegal and legal transboundary movements of hazardous wastes, notified annually to the Basel Convention by national competent authorities and available on the Convention's website.

This paper has unique characteristics and perspectives, in that it:

- addresses the issue of waste control from a Customs perspective;
- is based on multiple datasets of the resources mentioned in the second and third bullet points above;
- captures the wide-ranging types of waste, including e-wastes, plastic wastes, metal wastes, municipal wastes, and many other types of waste, thus extensively covering the global situation;
- describes the technical realities of waste classification, and also captures the progressive improvements in the trade/enforcement environment;
- takes into account the facilitation of legitimate trade, while placing greater emphasis on combating illicit waste trade; and
- links the issue of waste control to WCO tools/concepts, such as the Single Window environment and the Authorized Economic Operator, which are familiar to Customs, other governmental agencies and businesses.

The first section of this paper gives a general background on waste trade. It describes the adverse effects posed by hazardous waste, and its multiple characteristics. The section explains recent developments and goes on to describe the long-term increasing trend in waste trade, and the recent possible decreasing trend.

The second section describes the global and regional legal framework for waste control at borders. It also explains Customs' role and contribution to waste control at borders, driven by the WCO Environment Programme.

The third section analyses the current situation on waste control at borders, using details of the aforementioned datasets. The data was analysed and sorted by exporting/importing region and types of waste, which pointed to the highly technical nature of waste control at borders.

The fourth section offers observations on the current situation and insights for Customs. After mentioning improvements in the trade/enforcement environment, the paper highlights the need to increase resources within Customs. It also highlights other possible measures to enhance Customs' risk management-based controls.

1. Overview of international waste trade

Adverse effects posed by hazardous wastes to human health and the environment

Literature is rich in pointing out the adverse effects which hazardous wastes have on human health and the environment. Literature also shows that wastes take various forms.

One example is an incident of illicit trafficking and dumping of hazardous chemical wastes in 2006.

The case involved a ship which was carrying gasoline mixed with hazardous chemical substances[1] en route from Europe to Africa, and which concealed the dangerous nature of the wastes at the time of departure. The hazardous wastes were unloaded and dumped in multiple locations in Côte d'Ivoire.

Subsequently, residents in close proximity to the dumping sites were exposed to the hazardous substances via direct exposure through skin contact and breathing, and secondary exposure through surface water, ground water, and food grown on/ extracted from contaminated land and water. More than 34,000 cases of exposure were reported, and more than 100,000 medical consultations resulting from the incident took place, in addition to the deaths of 15 people and hospitalization of 69 people[2] [3].

The incident has been sometimes mentioned by the United Nations Office of the High Commissioner for Human Rights (OHCHR) and the United Nations Environment Programme (UNEP).[4] This incident has also led to the WCO Recommendation in 2008 on Customs' combating cross-border environmental crimes, the designation of the WCO's theme for the year 2009 as 'Customs and the Environment: protecting our natural heritage' and the launch of the WCO Operation Demeter since 2009, which will be elaborated later in section 2.

Hazardous wastes are not limited to such chemical substances, but also include many constituents of manufactured products. For example, the Basel Ban Network et al. (2002) have described the situation where wastes generated from electrical and electronic equipment (hereinafter called 'e-waste'), imported into Asian countries in various forms[5], is causing harm to people involved in the work of extracting materials from the e-wastes or disposing of the e-wastes. The report has pointed out several hazardous substances[6] typically contained in such e-waste which could cause harm to human health, where there are no formal systems in place to recycle and dispose of old devices.

Potentially hazardous wastes are not limited to chemical wastes or e-wastes. Increasing amounts of 'marine plastic litter', which relate to plastic wastes abandoned by people and eventually ending up in the ocean, is causing harmful effects to marine life. The

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[1] The hazardous chemicals in question were chemical wastes using biocide. Technically, the biocide was liquid sodium hydroxide, also known as caustic soda.

[2] United Nations Human Rights Council, 2009 (A/HRC/12/26/Add.2).

[3] Rucevska, I. et al. (2015).

[4] Paper on: 'The Adverse Effects of the Movement and Dumping of Toxic and Dangerous Products and Wastes on the Enjoyment of Human Rights', presented at the High Level Expert Meeting on the New Future of Human Rights and Environment: Moving the Global Agenda Forward, Co-organized by UNEP and OHCHR.

[5] Examples include importation in the form of: wastes from circuit boards, monitor cathode ray tubes, screen monitors, computer batteries, capacitors, transformers, printed circuit boards, plastic casings, cables, and cable insulation.

[6] Examples of hazardous substances contained in e-wastes include: lead, cadmium, mercury, hexavalent chromium, plastics including polyvinyl chloride (PVC), brominated flame retardants, barium, beryllium, toners, and phosphor additives.

G7 and G20 summits have included this environmental issue in their action plans since 2015[7].

Hazardous wastes may be transported as a single material or substance, but they often come with multiple types of hazardous wastes mixed together or mixed in with non-hazardous wastes. This can further complicate detection, the handing of the waste and the legal situation. As a recent example[8], wastes consisting of different types of waste[9] weighing more than 7,000 MT were illegally exported from an Asian country and imported into Philippines in July 2018. Settlements for repatriation of the wastes took a long time, including further delays resulting from the COVID-19 pandemic, with repatriation eventually finished in August 2020. During this time, the storage of the waste was in an open-air environment in the importing country. Methane gas contained in the wastes caused fires, which not only led to death of trees and plants but also contaminated air, soil and ground water.

Control of transboundary movements of hazardous wastes

The 'Basel Convention on the control of transboundary movements of hazardous wastes and their disposal' (hereinafter called 'Basel Convention'), which is one of the multilateral environmental agreements (MEAs) related to trade, entered into force in 1992 and has been ratified by 187 Contracting Parties[10]. It recognizes the risk of damage to human health posed by wastes and gives the following as the opening points of its legal text's preamble.

> "Aware of the risk of damage to human health and the environment caused by hazardous wastes and other wastes and the transboundary movement thereof,
>
> Mindful of the growing threat to human health and the environment posed by the increased generation and complexity, and transboundary movement of hazardous wastes and other wastes,"

In line with the fundamental spirit of preventing transboundary movements of hazardous wastes, the Basel Convention lays down the Contracting Parties' obligations to minimize the generation of hazardous wastes; ensure the availability of disposal facilities within the export countries themselves before resorting to exports (the proximity principle and self-sufficiency principle); and minimize exports of hazardous wastes (the least transboundary movement principle)[11].

It is obvious, but nonetheless worth mentioning, that preventing transboundary movements of hazardous wastes will contribute to the United Nations Sustainable Development Goals (SDGs), for achievement by 2030[12], and in particular to the following:

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[7] 'G20 Implementation Framework for Actions on Marine Plastic Litter', G20 Japan 2019; 'G20 Action Plan on Marine Litter', G20 Germany 2017.
[8] Manila Bulletin (2020).
[9] In this case, the wastes consisted of decaying plastics, woods, papers and metal.
[10] The website of the Basel Convention (http://www.basel.int/?tabid=4499), last visited in August 2020
[11] Article 4.2 (a), (b), and (d) of the Basel Convention.
[12] SDGs are the total of 17 goals adopted by the United Nations member states in 2015 in the form of a 15-year plan for their achievement.

- Goal 12: Ensure sustainable consumption and production patterns. This Goal is directly relevant[13]. It will also help address the other SDGs related to environmental sustainability, and even sustainable economic growth[14], such as:
- Goal 3: Ensure healthy lives and promote well-being for all at all ages;
- Goal 6: Ensure availability and sustainable management of water and sanitation for all;
- Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable; and
- Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Wastes take various forms, such as the aforementioned chemical wastes, e-wastes, plastic wastes, and municipal wastes typically consisting of multiple types of wastes. The Basel Convention specifically designates 'hazardous wastes' and 'other wastes' in its annexes (Annex I, III, VIII and II which are shaded amber in Table 1-1), as opposed to wastes which are not hazardous (Annex IX, which is shaded green in Table 1-1)[15].

Table 1-1: List of main types of waste provided under the Basel Convention

Hazardous waste	Non-hazardous waste
Annex I (categories by waste streams or constituents)	-
Annex III (categories by hazardous characteristics)	
Annex VIII (designated hazardous waste)	Annex IX (waste which is not hazardous)
Metal and metal-bearing wastes e.g. e-waste (A1180); waste batteries (A1160); waste cables (A1190)	Metal and metal-bearing wastes e.g. e-waste (B1110); waste cables (B1115)
Wastes containing principally inorganic constituents e.g. glass waste (A2010); other chemical wastes	Wastes containing principally inorganic constituents
Wastes containing principally organic constituents e.g. chemical wastes; leather waste (A3090; A3100)	Wastes containing principally organic constituents e.g. plastic waste (B3010); paper waste (B3020); textile waste (B3030); leather waste (B3090; B3100)
Wastes which may contain either inorganic or organic constituents e.g. medical waste (A4010); waste oil/water (A4060); other chemical wastes such as waste from use of biocide (A4030)	Wastes which may contain either inorganic or organic constituents
Other waste	-
Annex II (categories requiring special consideration)	
household waste (Y46) (generally also known as 'municipal waste'); incineration ash from household waste (Y47)	

Source

Created by the author, based on the Basel Convention.

Note

- Examples of types of waste are written in general terms to aid reader's understanding.

Multiple characteristics of waste

'Waste' is generated from everything and all goods become wastes at the end of their life. Some goods become "waste" that are still regarded as products or materials with some

[13] BC-14/10 of the Basel Convention Contracting Parties

[14] Balde, C. P. et al (2017), 'The Global E-Waste Monitor 2017', United Nations University, International Telecommunications Union, the International Solid Waste Association.

[15] Article 1.1 and 1.2 of the Basel Convention.

economic value at the end of their life cycle, while other goods become waste with no economic value.

As in the case of e-wastes, which consumers still can use or from which key materials can be recovered by industrial process, the distinction between 'waste'[16] and 'product'/'commodities' becomes at issue even before going to identification of 'hazardous waste'. Many of the designated hazardous wastes under the Basel Convention are used for industrial production.[17] The Organization for Economic Co-operation and Development (OECD) (2010)[18] points out that the same material may be regarded as waste in one country but as a commodity or raw material in another country.

Given this inevitably 'multi-dimensional'[19] nature of wastes, the Basel Convention and regional rules referred to in section 2 are limiting the scope of wastes which are subject to their regulations.

Long-term increasing trend and recent decreasing trend

Many hazardous wastes come from industrial process. Thus hazardous wastes are endogenous to industrial production, and their trade volume naturally follow the general industrial trend.[20]

Apart from the adverse effects posed by them, some are of high economic value if subjected to proper recycling or recovery operations, for example by the recycling of waste paper into cardboard, the recovery of precious metals or by the conversion of waste to energy or heat.

Given the trend towards lower transportation and telecommunication costs, and the increasingly cross-border distribution of production networks[21], there has been a generally increasing trend in transboundary movements of hazardous wastes.

As can be seen in the Table 1-2, according to the Basel Convention Secretariat, reported exports of hazardous wastes were roughly 7 million MT annually during 2001-2003, and rose to approximately 10 million MT or more annually during 2016-2018. Reported imports also increased from roughly 6 million MT annually (during 2001-2003) to 12 million MT or more annually (during 2016-2018). The trend is observed even though several countries with possible high volume of waste[22] have not reported.

However, notably, a possible decreasing trend can be observed in the last couple of years.

[16] Art. 2.1 of the Basel Convention provides the definition of 'waste' as 'substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law'
[17] Yang., S (2020)
[18] OECD (2009)
[19] Khan, S.A. (2016).
[20] Yang, S. (2020)
[21] Id.
[22] The data is based on annual reporting by Contracting Parties of the Basel Convention. Countries which are not contracting to the Basel Convention, such as the United States, are not included. Reporting by such countries as China or India are not included in this database.

Recent developments in waste trade

There are two recent developments which have further added to the importance and urgency of waste control at borders.

One important development is the heightened import restriction by Asian countries, especially by China. China's prohibition on imports of several types of waste, which was announced in December 2017 as its 'National Sword' initiative[23] and which has since been implemented, broadly includes several types of plastic, textile, paper and metal waste[24]. However, China's gradual move towards prohibition of waste imports was known to the public since the start of its 'Green Fence' operation in 2013, which temporarily restricted imports of contaminated wastes.[25]

Of particular importance is the fact that China's import prohibition since December 2017 covers plastic wastes. Since imports of plastic waste into China had, based on trade statistics[26], accounted for nearly half of global trade in plastic waste, the import prohibition triggered the rerouting to other countries of plastic wastes which would otherwise have entered China in the previous regulatory environment. In South East Asian and Southern Asian countries particularly, import of plastic waste increased in the early months of 2018[27], and these countries also came to introduce stricter import restrictions on waste than before[28]. Many cases have been observed where the entry of regulated wastes into Asian countries constituted import-prohibited goods under their national regulations which were forcefully repatriated to source countries[29].

The other important development is the amendment of the Basel Convention, which was agreed on by the Contracting Parties in 2019.

Hitherto, solid plastic wastes have not been designated as either 'hazardous waste' or 'other wastes' that are regulated under the Basel Convention, unless contaminated or mixed with such regulated wastes or considered to be hazardous wastes by the domestic legislation.

However, an amendment, agreed upon by Contracting Parties in 2019 and entering into force in January 2021[30], will mean that almost all plastic wastes will become regulated wastes.

This move might be connected with the aforementioned import prohibition imposed by China. There was an observation that the lack of regulation of plastic waste led to the widespread practice of mixing contaminated, unrecyclable, and potentially hazardous wastes with non-hazardous recyclable materials[31].

Another aspect to this important development is the 'Ban Amendment'[32], which was adopted in 1995 and came into force in December 2019. The amended annex requires the Contracting Parties which are members of the OECD, the EU and Liechtenstein, and ratified

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[23] Parts, C. (2019) and Parajuly, K. et al. (2020).
[24] China's notification to the WTO in July 2017 (G/TBT/N/CHN/1211).
[25] Parts, C. (2019) and Parajuly, K. et al. (2020).
[26] Brooks, A. L. et al. (2018), and Parajuly, K. et al. (2020).
[27] Kojima, M. (2018).
[28] As at August 2020, many of these stricter import restrictions on waste trade have not been notified to the WTO.
[29] For example, see the Basel Action Network (2019).
[30] BC-14/12: Amendments to Annexes II, VIII and IX to the Basel Convention
[31] Khan, S.A. (2020).
[32] Annex VII to the Basel Convention.

the annex, to prohibit transboundary movements of hazardous wastes for disposal, or for reuse, recycling or recovery operations in non-OECD countries.

Waste trade possibly going underground

Trade volume of several types of wastes can be roughly understood by trade statistics, which are the accumulation of Customs declarations, although the figures do not necessarily correspond exactly to goods defined as ‘hazardous waste’ or ‘other waste’ by the relevant Competent Authorities (CA) which will be referred to in section 2. International classifications for wastes in the Harmonized System (HS) are not always suitable for determining whether a regulated waste is being traded. While some hazardous wastes are classified separately in the HS, and more will be in the forthcoming HS 2022, there are still some that are classified in the same provisions as non-hazardous waste.

In addition, some of the waste and scrap provisions in the HS can also contain goods that have economic value as presented and hence are not intended for disposal or recovery. These may not be determined as waste by CAs depending upon the definitions in use. This may complicate gathering statistical information on trade in waste. The situation in regard to HS codes and wastes, including the extensive work being done in this regard will be explained in section 2.

With such technical background on trade statistics, Table 1-3 shows that the trade volume of several types of waste (for example, plastic, paper, and municipal wastes) has registered an increasing trend generally, and a decreasing trend in the last couple of years. This decrease is consistent with the aforementioned recent developments in the regulatory situation since 2018.

The recent decrease in waste trade volumes might indicate a decrease in waste generation or increase in disposal in source countries. It might also indicate that some elements of waste trade are going underground, constituting illegal trade which circumvents the regulations.

2. Legal framework for waste control at borders and Customs' contribution

Legal framework for control of waste trade: PIC procedure and prohibition

When internationally traded, all goods are subject to Customs control for either import, export or transit. There are particular types of goods which require traders to obtain additional prior permissions from regulatory agencies other than Customs. 'Hazardous waste' and 'other waste'[33] under the Basel Convention (both shaded amber in Table 1-1), as well as any other wastes individually designated by countries (hereinafter called 'regulated waste'), are among such goods. When the transboundary movement of such regulated wastes is involved, a procedure called 'Prior Informed Consent' (PIC) comes into play, in addition to the usual Customs procedure. The PIC procedure is provided under the Basel Convention[34] [35].

Under the PIC procedure, the 'Competent Authority' (CA), usually a national environmental protection agency is designated by each of the Contracting Parties to the Basel Convention. The general procedural flow is shown in Figure 2-1. 'Notification' takes place when the exporter of the regulated waste notifies, through the CA of the exporting country, the CA of the importing country and the importer. If the export is considered to comply with the Convention and the importer (or facility) has capacity to accept the waste in an environmentally sound manner, 'consent' is sent by the CA of the importing country to the CA of the exporting country. Upon receiving the consent, the CA of the exporting country issues the exporter with a 'movement document' setting out the consented notification. The movement document should accompany the actual consignment. The movement document is typically submitted to CAs in importing countries in a paper form, and is not always required to be submitted to Customs depending on national legislation.

Traders located in one of the Basel Convention Contracting Parties can use this PIC procedure for their exports to or imports from another Basel Convention Contracting Party in the context of regulated wastes. Exports to or imports from non-Contracting Parties is simply prohibited, and in that case, the trade flow shown in Figure 2-1 does not apply. In this context, it might be appropriate to say that the legal framework provided by the Convention extends beyond the 187 Contracting Parties.

It is noteworthy that each Contracting Party to the Basel Convention may adopt additional regulations/prohibitions for wastes, in addition to the wastes designated under the Convention[36]. This will add to the types of regulated waste, depending on importing countries' policies (as is the case with heightened import restrictions imposed by Asian countries such as China since December 2017 – see section 1).

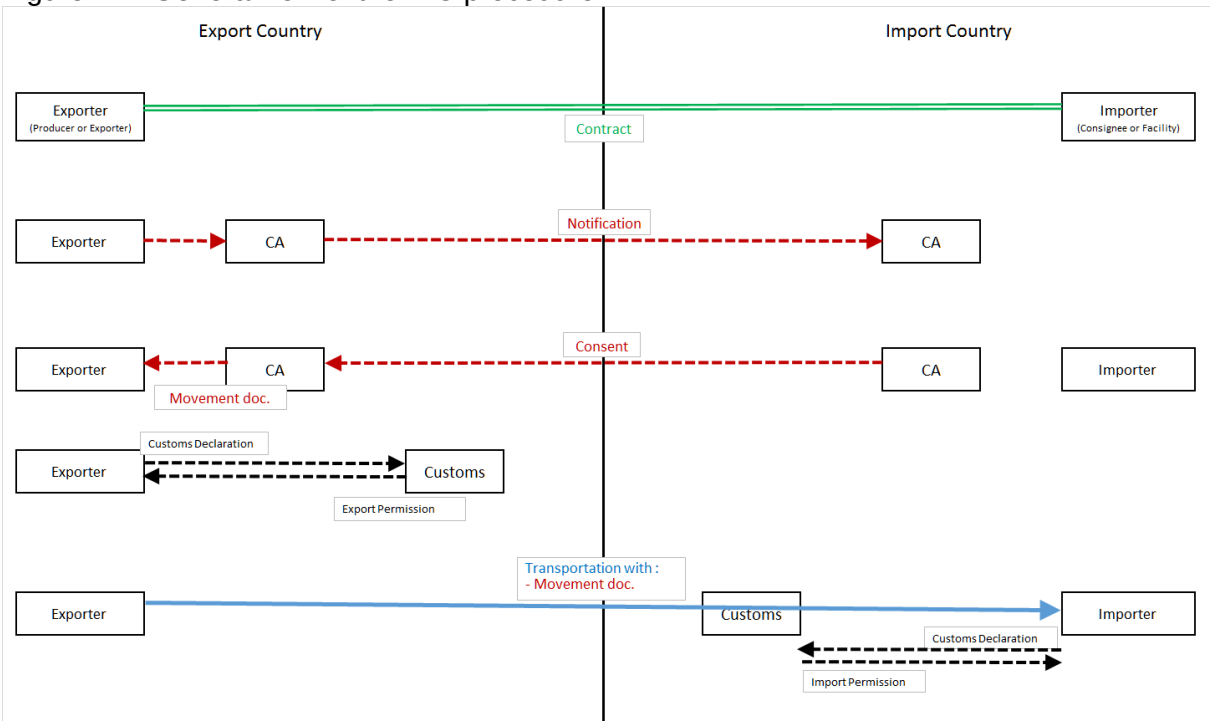
[33] Id.

[34] Article 6 of the Basel Convention.

[35] The PIC procedure has been adopted not only under the Basel Convention, but also under other trade-related MEAs, such as the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Stockholm Convention on Persistent Organic Pollutants (POPs).

[36] Article 4.10 of the Basel Convention.

Figure 2-1: General flow of the PIC procedure



Source

Created by the author, based on the Basel Convention and general knowledge of Customs procedures.

Abbreviations

- CA: Competent Authority

Legal framework for control of waste trade under international rules

It is appropriate to mention the various international and regional instruments governing international waste trade[37].

The Basel Convention, which entered into force in 1992 and which has been ratified by 187 Contracting Parties, is the sole global instrument regulating transboundary movements of hazardous wastes[38]. Its contents, both in terms of substance and procedure, have been copied and incorporated into the international and regional rules listed below.

The Bamako Convention, which has been in force since 1998 and has been ratified by 27 Contracting Parties on the African continent, prohibits imports of hazardous wastes into Africa from non-Contracting Parties to that Convention, including from non-African Contracting Parties to the Basel Convention[39]. The Bamako Convention covers radioactive wastes which are not covered by the Basel Convention.

The Waigani Convention, which has been in force since 2001 and has been ratified by 12 countries in the South Pacific area, is also a regional Convention, with provisions similar to those of the Bamako Convention, for preventing the entry of hazardous wastes into South Pacific island countries[40].

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[37] The raw data identified by the author in section 3 relates only to the Basel Convention, the OECD rules, and the EU Regulation.

[38] The Basel Convention website (http://www.basel.int/?tabid=4499), last visited in August 2020.

[39] United Nations Information Portal on Multilateral Environmental Agreements.

[40] Id.

The OECD Council Decision of 2001[41] lays down the intra-OECD rules governing transboundary movements of wastes destined for 'recovery'[42] only, as opposed to 'disposal'. These rules are the outcome of discussions whose history is even longer than those relating to the Basel Convention, and they apply to trade among the OECD countries only. The rules are based mainly on the Basel Convention's classification of 'hazardous' and 'non-hazardous' waste. The Decision classifies wastes as being subject to either 'amber control' or to 'green control', with specific adjustments so that there is greater simplification and the scope of the waste becomes clearer[43].

The European Union (EU) 'Waste Shipment Regulation'[44] implements the Basel Convention and lays down rules for transboundary movements of wastes destined for both 'recovery' and 'disposal'. The Regulation provides for trade among EU Member States, trade with non-EU Member countries, and trade with non-OECD countries. The Regulation also adopts the 'amber' and 'green' waste classification[45], based mainly on the Basel Convention classification and partly on the OECD classification. The Regulation provides that trade in wastes with non-OECD countries is prohibited. It develops the EU's unique classification of wastes into those subject to export prohibition to non-OECD countries, and those not subject to such prohibition. This part of the regulation implements the so-called 'Ban Amendment' of the Basel Convention (see section 1).

Table 2-2 provides an overview of these rules: for the designated types of waste, either the PIC or the prohibition applies, depending on the country from which the import or to which the export takes place.

Table 2-2: Summary of rules laid down in international/regional instruments

<table>
<tr><th>Export</th><th>Import</th></tr>
<tr><td>Basel Convention (to CP)
<table><tr><td></td><td>'Hazardous waste' or 'Other waste'</td><td>'Non-hazardous waste'</td></tr><tr><td>waste destined for 'recovery' or 'disposal' operation</td><td>PIC</td><td>-</td></tr></table></td><td>Basel Convention (from CP)
<table><tr><td></td><td>'Hazardous waste' or 'Other waste'</td><td>'Non-hazardous waste'</td></tr><tr><td>waste destined for 'recovery' or 'disposal' operation</td><td>PIC
(may designate additional wastes)</td><td>-</td></tr></table></td></tr>
<tr><td>Basel Convention (to non-CP)
<table><tr><td></td><td>'Hazardous waste' or 'Other waste'</td><td>'Non-hazardous waste'</td></tr><tr><td>waste destined for 'recovery' or 'disposal' operation</td><td>export-prohibited</td><td>-</td></tr></table></td><td>Basel Convention (from non-CP)
<table><tr><td></td><td>'Hazardous waste' or 'Other waste'</td><td>'Non-hazardous waste'</td></tr><tr><td>waste destined for 'recovery' or 'disposal' operation</td><td>import-prohibited</td><td>-</td></tr></table></td></tr>
</table>

[41] OECD Council Decision C (2001)107/FINAL, as last revised by OECD/LEGAL/0266 in 2020.
[42] Generally, recovery operations make use of resources as they will obtain some useful benefit from the waste, either by bringing it back into productive use or recovering energy from it ('Basel Convention Glossary of terms').
[43] OECD (2009).
[44] Regulation (EC) No 1013/2006.
[45] Strictly speaking, the meaning of 'green' differs between the EU and OECD rules. Under the EU rules, wastes classified as 'green' are still subject to 'general information requirements' in the exporting country. This is not the case for wastes classified as 'green' in the OECD rules, or for non-hazardous wastes under the Basel Convention.

Bamako/Waigani Convention (to CP)

	'Hazardous waste'	Not 'Hazardous waste'
waste destined for 'recovery' or 'disposal' operation	similar to PIC	-

Bamako/Waigani Convention (from CP)

	'Hazardous waste'	Not 'Hazardous waste'
waste destined for 'recovery' or 'disposal' operation	similar to PIC (may designate additional wastes)	-

Bamako/Waigani Convention (to non-CP)

	'Hazardous waste'	Not 'Hazardous waste'
waste destined for 'recovery' or 'disposal' operation	similar to PIC	-

Bamako/Waigani Convention (from non-CP)

	'Hazardous waste'	Not 'Hazardous waste'
waste destined for 'recovery' or 'disposal' operation	import-prohibited	-

OECD rules (to OECD countries)

	Waste for 'Amber' control	Waste for 'Green' control
waste destined for 'recovery' operation	PIC	-
waste destined for 'desposal' operation	(no provision)	(no provision)

OECD rules (from OECD countries)

	Waste for 'Amber' control	Waste for 'Green' control
waste destined for 'recovery' operation	PIC	-
waste destined for 'desposal' operation	(no provision)	(no provision)

EU rules (to non-EU countries)

	waste for export prohibition to non-OECD	Not 'waste for export prohibition to non-OECD'
waste destined for 'recovery' operation	export-prohibited (to non-OECD)	(general information requirement only)
waste destined for 'disposal' operation	export-prohibited	export-prohibited

EU rules (from non-EU countries)

	Waste for 'Amber' control	Waste for 'Green' control
waste destined for 'recovery' operation	PIC (from Basel or OECD) import-prohibited (from other)	- (from Basel or OECD) import-prohibited (from other)
waste destined for 'disposal' operation	PIC (from Basel) import-prohibited (from other)	- (from Basel) import-prohibited (from other)

Source

Created by the author, based on the legal texts for each item of legislation.

Note

- For the OECD rules and the EU Regulation, 'Amber' and 'Green' are shown visually.
- For the Basel Convention, the Bamako Convention, the Waigani Convention, and the EU Regulation (export prohibition to non-OECD), the colours amber and green are used to represent 'hazardous waste' and 'non-hazardous waste', respectively, for greater ease of understanding. Such wording is not provided in the items of legislation themselves.
- For the EU Regulation, trade with EU countries is not shown for the sake of simplicity, given that Customs' relevance to intra-EU trade in waste is relatively low.
- If no special procedure is required for trade in waste, this is denoted by a dash (-).

Abbreviations

- PIC: Prior Informed Consent procedure
- CP: Contracting Party

Customs' contribution to waste control at borders

In many countries, it is environmental protection agencies which are designated as CAs for administering the PIC procedure. Customs is therefore not a sender/recipient of the PIC information.

However, Customs' role is very important in implementing and enforcing waste control regulations at borders. Its main function with regard to waste control is to detect cargoes which are suspected of not having undergone the proper PIC procedure, or

suspected of having circumvented prohibition, and at the same time to facilitate legal consignments. Also, Customs imposes Customs duties/taxes and compiles trade statistics for all cargoes through applying tariff schedules. Almost all countries use the Harmonized System (HS)[46] as the basis for their tariff schedules, so they will have the same first six digits for the provisions. This enables the collection of international trade statistics.

When cargoes are suspected of being regulated wastes infringing the PIC rules or prohibition, Customs typically consults the country's CAs, and the latter make a substantive determination on whether or not the cargo constitutes regulated waste.

Identification through classification under the HS and national tariffs

The HS has multiple provisions for waste. HS has accommodated many specific hazardous wastes in its history. Below are such examples which have been in place since 2002:

- subheading 2620.21 for "lead gasoline sludge and leaded anti-knock compound sludge";
- subheading 2620.60 for "slag, ash and residues containing arsenic, mercury, thallium or their mixtures, of a kind used for the extraction of arsenic or those metals or for the manufacture of their chemical compounds"
- subheading 2710.91 and 92 for "waste oils"; and
- heading 38.25 for municipal waste.

In many cases, these specifically target hazardous wastes, for example, subheading 2620.21 covers "Leaded gasoline sludges and leaded anti-knock compound sludges". However, there are also waste headings that do not differentiate between hazardous and non-hazardous wastes. For example, when it comes to leather waste, subheading 4115.20 covers "Parings and other waste of leather or of composition leather, not suitable for the manufacture of leather articles; leather dust, powder and flour". This subheading would cover both hazardous leather wastes (A3090 and A3100 in Annex VIII of the Basel Convention) and non-hazardous leather wastes (B3090 and B3100 in Annex IX of the Basel Convention).(Table 1-1)

As a result of this variability in how closely the HS's Customs classifications reflect the current waste classifications, there is a corresponding variability in the usefulness of Customs classification for the identification of hazardous wastes and for deriving trade statistics on declared trade in such wastes. At the national level, identification and statistics can be improved by creating specific national sub-headings. However as international trade statistics from Customs classification are based on the six-digit classification, such national subheadings do not contribute to the global HS based statistics on the trade.

As to plastic wastes and e-wastes which are of concern to many countries, the HS 2017 edition (the HS current at the time of writing) have very limited treatment of plastic waste and does not identify e-wastes.

However, the HS is a living document, with a new edition released every five years. Refinement of the HS to enable better monitoring and assessment of trade in declared waste is generally undertaken during each review cycle at the WCO HS Committee, dependent upon the proposals received from WCO Members or relevant international organizations.

[46] The Harmonized Commodity Description and Coding System, generally referred to as 'Harmonized System' (HS) is a multipurpose international product nomenclature developed by the WCO.

The next HS version is called HS 2022, for which the amendments were finalised by June 2019 and the preparatory work has been going on at the international, regional and national levels to implement the version at the beginning of 2022.

HS 2022 changes

With regard to plastic waste, attempts at the HS Committee were unsuccessful to introduce the concept of biodegradable or compostable plastics, often suggested as environment-friendly. Agreement could not be reached for the HS 2022 edition, because they failed to find globally agreed definitions, universally accepted certifications or practical methods for testing biodegradation or composability at the border.

However, for e-waste, a major change was implemented with the introduction of new heading 85.49 for "**Electrical and electronic waste and scrap**" and its associated Note (Note 6 to Section XVI), its subheadings and the consequential changes. Once countries enact HS 2022 into their Customs tariffs, this will enable the electrical and electronic waste and scrap to be visible in the international trade statistics generated from Customs classifications.

Thus HS 2022 will greatly increase the knowledge of declared trade in such wastes once widely implemented.

Customs' enforcement contributions driven by the WCO Environmental Programmes

Given the important roles Customs play, the WCO has been an active partner in the 'Green Customs Initiative' (GCI) since 2001. The Initiative involves a series of collaborative activities by partner organizations, which are coordinated by the UNEP (to which the Secretariat of the Basel Convention belongs), and which are aimed at raising the awareness of Customs officers in relation to trade-related MEAs.

The incident of illicit trafficking of hazardous wastes to West Africa in 2006, which was explained in section 1, accelerated the WCO's efforts on environmental issues.

In 2008, the WCO Council, the WCO's highest decision-making body, consisting of the Member administrations, adopted a Recommendation concerning 'Actions against Cross-Border Environmental Offences', which includes waste control. The Recommendation outlined steps to be taken by Customs to enhance their capabilities in this area. These included: making cross-border environmental offences a priority; raising awareness of Customs officials; playing an active role in drafting legislation; including environmental programmes in training; conducting enhanced risk analysis and intelligence exchange; utilizing modern technological instruments; and increasing cooperation with national CAs and international MEA-related organizations.

It was in the context that the WCO's theme for the year 2009 was set as 'Customs and the Environment: protecting our natural heritage'

In 2009, the WCO started the enforcement initiatives called 'Operation DEMETER'. This is the well-known series of international joint operations coordinated by the WCO to combat transboundary movements of 'hazardous wastes' and 'other wastes'. Through the series of operations, Customs share intelligence, and apply risk assessment, profiling and targeting techniques to identify and control high-risk consignments shipped on all routes and

via all means of transport. Cooperation with CAs and other related government agencies has been increased through the intensive period of joint actions.

Operations have taken place six times so far (Table 2-3) and have all seen participation by national CAs, national police forces, the Secretariat of the Basel Convention, Interpol, and the EU Network for Implementation and Enforcement of Environmental Law (IMPEL)[47], among others. Regional offices of the intergovernmental organizations have also actively participated and cooperated.

Furthermore, in response to its Members' needs, in 2012 the WCO launched its 'Environment Programme' to help combat environmental crimes, in particular, the illegal wildlife trade, illegal trade in ozone depleting substances and illegal trade in timber, as well as the illegal trade in 'hazardous wastes' and 'other wastes'. The WCO's Illicit Trade Report provides information on the elements of the Environment Programme on an annual basis.

The WCO remains strongly committed to tackling with this environmental issue. For example, among other things, the WCO's theme for the year 2020 is set as 'Customs fostering Sustainability for People, Prosperity and the Planet'. As a concrete step to facilitateg cooperation between Customs and environmental protection agencies in fighting against illicit trafficking of hazardous and other wastes at the national level, the WCO became a member of the Basel Convention ENFORCE Network as described in the Observations in section 4.

Table 2-3 History and immediate results of the WCO's Operation DEMETER

Name of joint operation	Year	Coordinator	Participating Customs	Seizures reported
DEMETER I	March - May 2009	WCO	65 Customs administrations	56 seizures, more than 36,714 MT and 1,830 pieces of waste
DEMETER II	February - March 2012	WCO	77 Customs administrations	64 seizures, 2,385 MT and 5,416 pieces of waste
DEMETER III	October - November 2013	WCO	44 Customs administrations	more than 7,000 MT of waste
DEMETER IV	June - July 2018	WCO (Initiated by China Customs)	75 Customs administrations	326,133 MT and 54,782 pieces of waste
DEMETER V	September 2019	WCO (Initiated by China Customs)	83 Customs administrations	232 seizures, 4,584 MT and 59,983 pieces of waste
DEMETER VI	October 2020	WCO	73 Customs administrations	131 seizures, 99,000 MT and 78,000 pieces of waste

Source
The author's compilation, based on the WCO website.

[47] IMPEL is an international non-profit association of the environmental authorities of the European Union Member States, acceding and candidate countries of the EU, EEA and EFTA countries and potential candidates to join the European Community.

Figure 2-4 Photos illustrating some of the results of the WCO's Operation DEMETER

Plastic waste seized by France Customs in 2019

Waste vehicle parts seized by Poland Customs in 2019

Waste seized by China Customs in 2018

Waste seized by Argentina Customs in 2018

Waste seized by China Customs in 2013

Waste vehicle parts seized by Sweden Customs in 2012

3. Analysis of current situation on waste control at borders

Characteristics and limitations of data on waste trade

It is important to try to grasp how much waste exists, whether in terms of waste generation or of the international trade in waste, even if this is challenging.

The first approach, for international trade of wastes, would be to use trade statistics which are typically compilation of Customs declarations for exports/imports declared based on HS codes. Trade volume of many types of waste can be understood by trade statistics as was mentioned in section 1. This should be conditioned by the other issue mentioned, that the HS codes used in as the basis of Customs tariffs do not always separately identify goods determined as 'hazardous waste' or 'other waste'.

It is noteworthy that HS codes carry the function of providing the basis for Customs tariffs, which are used in the determination of national tariff rates and for implementing trade policy measures at the border, in addition to its function of compiling trade statistics. These multiple roles require a classification to be determinable technically at the border. Hence, for the sake of objectivity and verifiability, the codes are based on physical characteristics of goods that can be seen or tested at the time of importation. Thus, definitions of waste categories that rely on post-importation uses or actions, such as 'destined for recovery' or 'destined for disposal' pose challenges.

The second approach would be to use the figures reported by national CAs, which make substantive determinations on which goods constitute 'hazardous' and 'other' wastes[48]. For example, the report by the Secretariat of the Basel Convention[49], based on annual reporting by its Contracting Parties, shows that global generation of wastes in 2015 amounted to 393.7 million MT for 'hazardous' wastes and 1,596.3 million MT for 'other' wastes, whilst global export (which equals import) of wastes in 2015 amounted to 9.0 million MT for 'hazardous' wastes and 5.3 million MT for 'other' wastes. Another, more detailed, example is the Eurostat statistics[50]. These show that export of 'hazardous' wastes by EU Member States to destinations within the EU or to OECD member countries amounted to 6.5 million MT.

The third approach would be to estimate figures statistically by applying certain assumptions and adjustments to real data in order to address the absence or incompleteness of that data. For example, the 'E-Waste Monitor'[51] estimated that approximately 53.6 MT of e-wastes were generated during 2019. The estimated figure was arrived at by identifying the sales volume of electronic equipment. This included nationally reported sales figures and estimated net import figures, based on trade statistics and the life duration of products[52].

In this paper, the author has taken an approach similar to the second one described above and has dealt with the raw data only, with a view to capturing the complexity and the highly technical nature of waste control at borders.

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[48] 'Other' wastes means wastes from households and their incineration ash. The wastes are subject to the PIC procedure in the same way as are 'hazardous' wastes, based on Article 4.1 (a) and Annex II to the Basel Convention.

[49] UNEP (2018).

[50] Eurostat, 'Waste shipment statistics based on the European list of waste codes', last visited in March 2020.

[51] Forti, V. et al (2020), 'The Global E-Waste Monitor 2020'.

[52] Balde, C. P. et al (2017), 'The Global E-Waste Monitor 2017'.

Data used for this paper and its limitations

Part of the current situation regarding international waste trade can be observed by using the data stored in the WCO's Customs Enforcement Network (CEN)[53], and the data which is open to the public and which is annually reported by national CAs to the Basel Convention.

It is important to note the limitations of the data. WCO Member administrations report their seizures of illicit trade to the CEN database on a voluntary basis for intelligence-sharing purposes. For the approximately nine-year period from January 2011 to March 2020, 41 countries[54] reported approximately 1,300 seizures of regulated wastes at borders (990 seizures after the author had excluded intra-European Union trade[55]).

A similar limitation also applies to the second database on 'illegal' transboundary movements of wastes, which is reported annually to the Basel Convention by the CAs of its Contracting Parties. It is noteworthy that such reporting is not mandatory under the Convention either. For the three-year period from 2016 to 2018, 35 countries[56] made a total of approximately 2,200 reports of illegal transboundary movements of wastes (approximately 1,600 reports, once intra-EU trade is excluded).

As to the third database on 'legal' (i.e. 'pre-consented') transboundary movements of waste, this is part of the mandatory reporting by the CAs of the Contracting Parties to the Convention[57]. The author compiled the data for the three-year period covering 2016 to 2018. For that period, 102 countries made a total of approximately 11,700 reports of pre-consented transboundary movements of wastes (again, once intra-EU trade is excluded).

Given the voluntary nature of reporting, and even in the case of mandatory reporting in the above third database, the completeness of reporting is not considered high[58]. In particular, countries in Asian and African regions are considered to have vastly more cases than have actually been reported to the second and third database. In addition, countries which are not Contracting Parties to the Basel Convention do not have reporting obligations. Nonetheless, even with such data limitations, it is possible to observe at least some characteristics. These are described briefly below.

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[53] The WCO CEN was developed to assist the global Customs enforcement community in gathering data and information for intelligence purposes. This database acts as a central depository for enforcement-related information and depends on the voluntary steady flow of quality data provided by WCO Members. For more information, please refer to: http://www.wcoomd.org/en/topics/enforcement-and-compliance/instruments-and-tools/cen-suite/cen.aspx.

[54] The number of WCO Member administrations is 183 as of August 2020.

[55] Throughout this section (section 3), the data concerning intra-European Union trade (in which both the exporting and importing countries are located in the EU) is excluded. This is because the free movement of goods means that Customs declarations and subsequent formalities are not required for such trade.

[56] The number of Contracting Parties to the Basel Convention is 187 as of August 2020.

[57] Article 13 of the Basel Convention.

[58] 'Waste without frontiers II', compiled by the Secretariat of the Basel Convention, also explains the limitations, and makes necessary adjustments and additions.

Global nature of illegal waste trade: WCO CEN database

The below is the quick analysis of data on Customs seizures relating to international trade in regulated wastes at borders recorded in the WCO CEN database.

Table 3-1 shows that A/P region countries as destination countries reported by far the largest number of seizures. It is observed from Tables 3-2 and 3-3 that, both in terms of number of seizures (85.5%) and quantity seized (98.0%), the A/P region reported the largest quantity of seizures of waste by far the most frequently.

Table 3-2 (a) shows that the A/P region received waste imports not only from within the A/P region, but also from the other regions. It also shows that the A/P region itself, Europe region, and AMS region are the most frequent departure countries for such wastes coming into the A/P region.

Approximately 14% (140 seizures) out of the total seizures (990 seizures) involved transit countries (Table 3-2(c)). The fact that the A/P region tends to be the final destination does not change, regardless of transit country involvement. In relation to transit, it is noteworthy that the use of 'free zones' for illicit trade in waste, typically by re-routing cargoes when they are in free zones located in transit countries, has been pointed out by numerous publications[59].

Global nature of illegal waste trade (data notified annually by the Competent Authorities under the Basel Convention)

Below is the quick analysis of the data notified annually by national CAs under the Basel Convention.

It is observed from Table 3-4 that European region countries reported illegal transboundary movements of waste by far the most frequently. European region countries account for the majority (84.0%) of the total number of reports. Similarly, in terms of quantity of illegal transboundary movements of waste (Table 3-4(c)), Europe region countries as departure countries still reported the largest quantity of waste (60.9%).

Table 3-4 shows that the destination countries are not as dominated by the A/P region countries (22.5% in number, 56.1% in quantity) as was the case with the CEN database. Rather, the WCA region countries constitute the largest part, accounting for approximately half (47.4%) of the destination countries, although the WCA countries are hardly observed as reporters in the notification data (Table 3-4(a)) or in the CEN database (Tables 3-1, 3-3).

Table 3-4(c) (quantity) shows that, as departure countries in terms of quantity, after Europe region, AMS region countries account for the second largest proportion (35.3%) of illegal transboundary movements of wastes. This is more visible than the number of reports in Table 3-4(b) (4.1%). As to destination countries, Table 3-4(c) shows that the A/P region becomes visible in terms of quantity (56.1%) relative to the number of reports (22.5%) in Table 3-4(b). The WCA region becomes less visible in terms of quantity (23.5%) relative to the number of reports (47.4%). The large volume of wastes in terms of quantity in Asia Pacific might be related to the industrial usage of the waste.

[59] For example, UNODC (2013), Rucevska, I. et al. (2015), and INTERPOL (2020).

Legal movements of wastes (data notified annually by the Competent Authorities under the Basel Convention)

Since all goods become waste at the end of its life, the volume of 'legal' transboundary movements of regulated wastes is considered tremendously large.

The report compiled by the Secretariat of the Basel Convention[60] includes information on 'legal' transboundary movements of 'hazardous' and 'other' wastes reported annually by Contracting Parties.

For 'legal' transboundary movements of wastes, it is observed from Table 3-5 that the Europe region is again the largest reporter. It is also observed that, in terms of departure country, Europe region still accounts for the largest proportion (64.3%) of total 'legal' transboundary movements of waste, followed by the AMS region (18.3%) and A/P region (12.0%).

It is observed from Table 3-5 that, in terms of destination country, Europe region accounts for a substantial proportion (63.6%) of the total 'legal' imports. This is in contrast to Europe region's 16.4% share in 'illegal' imports in Table 3-4. In this legal domain of transboundary movements of wastes, the A/P region (12.0%) and WCA region (0.0%) are much smaller importers of waste. The WCA region's zero legal importation of wastes might result from the import prohibition on hazardous wastes coming from non-African countries under the regional convention, as well as from data limitations. The 'legal' movements of wastes coming into the Europe region might indicate that this trade in waste tends to utilize the recycling facilities with relatively high capacities located in the Europe region.

It is notable that the reported 34 million MT[61] of 'legal' international trade in wastes (Table 3-5) is overwhelmingly larger than the 0.224 million MT of 'illegal' international trade in wastes (Table 3-4). 'Illegal' wastes are visible and significant, but far less than the 'legal' international trade in wastes, and account for less than 1% of the 'legal' wastes. This implies that a small proportion of wastes has been transported illegally. It may further suggest how challenging it will be to detect goods suspected of being regulated wastes.

Regional nature of illegal waste trade

It is noteworthy that some elements of illegal trade are taking place in the same WCO region.

It is observed from the CEN data that, for approximately 47% of the number of seizures (Table 3-2(a)) and 15% of quantity of seizures (Table 3-3(b)), both export and import countries are in the same region. Likewise, from the notification data to the Basel Convention on illegal transboundary movements, 21% of the number of reports (Table 3-4(a)) and 16% of the quantity (Table 3-4(b)) are intra-regional cases.

Wide variety of wastes

Often, the simple word 'waste' does not capture the complicated reality, because of the multidimensional nature of wastes (see section 1). In this respect, waste is different from other regulated goods, such as narcotics or weapons.

[60] UNEP (2018). The data basically shows the raw data notified as part of national reporting, with some necessary adjustments to address the insufficiency/lack of national reporting.

[61] 43 million MT when based on 'Waste without frontiers II', which does not exclude intra-EU trade.

Based on the CEN database, Table 3-6 shows the very wide variety of wastes seized by Customs. Waste is not limited to the more obvious municipal waste which typically arises from households. Even after putting municipal waste to one side, the seized wastes are still broad in scope, ranging from e-wastes (computers, phones, displays, printed circuit boards, refrigerators), electronic or metal cables/wires, vehicles (whole bodies, parts, tyres, spent catalysts), batteries, metals (ferrous metals, lead, zinc, copper, aluminium, and others with hazardous characteristics, such as mercury), plastics, ink/dye/pigment, textile, paper, rubber, oil, water, leather, woods, agro-food, medical and construction, to other chemical wastes, and mixed wastes of multiple types.

Table 3-7, which is based on the author's compilation of the data notified annually under the Basel Convention by its Contracting Parties, also shows the very wide variety of wastes.

The trend is quite different between both sources of data, but this is partly due to the incompleteness of reporting. Still, it is worth pointing out that several types of waste are particularly frequently observed: e-wastes such as computers, phones, displays, or batteries are the most notable examples, followed by vehicles, plastic, metal, municipal wastes and mixed wastes.

It should be noted that duplicate data has been recorded for types of waste. Consequently, the adding together of all types of waste will not equal the total. For one instance of reporting which involved multiple types of waste, the data was recorded both for the types of waste, and under mixed waste of multiple types. This points to the limitations of data quality, and at the same time reflects the complicated reality. For example, in many instances, both e-wastes and end-of-life vehicles are reported as one case. That trend is consistent with the existing findings[62] that large and small e-wastes or household wastes are often stuffed inside vehicles[63].

It is notable that the most frequently observed type of illegal trafficking of wastes is still e-waste, even after duplicate recording is taken into account and mixed waste of multiple types is subtracted from e-waste.

It is also notable that plastic waste is frequently seen in this data covering the period 2016 to 2018. As the period from 2016 to 2017 did not cover the import restriction implemented by China or other Asian countries since 2018, the current reality is that plastic waste will be a more visible type of waste than is indicated in this data. This will be even more the case in coming years, once plastic wastes become regulated wastes under the Basel Convention.

Highly technical nature of waste trade

Table 3-8 lists examples of the waste codes which were actually observed in the data, especially in the aforementioned data notified by national CAs.

The area shaded green means that the goods are listed in Annex IX to the Basel Convention and thus is not subject to the PIC procedure. The area shaded amber means that the goods are listed in either Annex II or VIII and thus is regulated waste subject to the PIC procedure. In Table 3-8, the author has further added OECD waste codes and codes

[62] Odeyingbo, O. et al (2017).

[63] For example, wastes such as photocopiers, refrigerators, washing machines, televisions, displays, electronic kettles, vehicle spare parts, cloth, or small furniture, are stuffed in an end-of-life vehicle such as a car, bus, or truck.

unique to European Union rules governing export prohibition to non-OECD countries, classifying them as ‘green’ or ‘amber’[64].

As can be observed, there are many types of ‘amber’ waste and many types of ‘green’ waste. For several goods, differentiating between the two is considered to require highly technical knowledge.

It is worthwhile mentioning that several codes are located on the ‘green’ side of the table (where ‘green’ generally means that there is no need to go through the PIC procedure), but written in red (red font denoting the existence of actual cases of illegal trade). The following was frequently observed:

- The waste is classified as ‘non-hazardous’ in the exporting country, but classified as ‘hazardous’ in the importing country; the waste was regarded as illegal trade which failed to go through the due PIC procedure (or failed to comply with prohibition) and had to be repatriated to the exporting country. The exporting country reported the data.
- Even for waste classified as ‘non-hazardous’, if the importing country prohibits it or designates it as ‘hazardous’ (in addition to waste designated under the internationally agreed rules), then this waste becomes regulated waste. This may occur as a result of the importing country’s national policies and/or under the regional conventions to which the importing country is a party. The exporting country reported the data.
- As far as reporting by EU Member States is concerned, even for wastes not subject to the export prohibition to non-OECD countries under the EU rules, such goods exported to non-OECD countries should be destined for ‘recovery’ facilities instead of ‘disposal’ facilities.

It is inferred that discrepancies sometimes occur on whether the goods are hazardous wastes between the notifier (which means the producer or exporter), the CA in exporting country, and the CA in importing country. Given this situation, the differentiation of the goods status will take on further importance and is often a matter of a highly technical nature.

[64] The terms ‘green’ and ‘amber’ are not used for Basel Convention codes or codes unique to EU rules. The author has classified these as green or amber to aid reader understanding.

4. Observations

(1) Progressively enhancing clarity regarding waste trade: technical guidelines of the Basel Convention

Despite the highly complex and technical aspects of waste trade, improved clarity has been given to the system for the international trade in waste.

This is especially the case with the illegal trade in 'e-waste' which tends to take place most frequently. The technical guidelines on differentiating between 'e-waste' and 'used equipment' were adopted in 2015 at the fora of the Basel Convention, after discussions of more than five years[65]. The guidelines have been in the process of amendment on the remaining issues since 2015.

The technical guidelines clarified the requirements to be met in order for waste to be classified as 'used equipment'[66] instead of e-waste. Goods suspected of being waste which do not have accompanying certificates, etc. cannot be regarded as 'used equipment' and will be regarded as 'waste'.

Similarly, revision of the existing technical guidelines on plastic waste is ongoing for the plastic wastes which will fall within the scope of 'hazardous' and 'other' wastes in 2021[67].

The improvements to the Basel Convention technical guidelines will bring enhanced clarity and significantly improve the trade and enforcement situation. Although the guidelines are legally non-binding and have been adopted by only some of the Contracting Parties, they are nonetheless the sole standards internationally agreed by the Contracting Parties on this controversial issue, and everyone can consult them on the Basel Convention website.

(2) Progressively enhancing clarity regarding waste trade: HS

As preciously highlighted, the HS, one of the WCO's flagship instruments, serves a very important function in relation to the identification of goods including wastes. Its work in this area has been the subject of ongoing development over many HS review cycles. For example, a heading for 'municipal waste'[68] was introduced in 2002 (HS 2002) which enabled identification of this particularly complicated waste in trade.

The latest version of HS, HS 2022 which was adopted by the WCO Council in 2019 and will be implemented from 2022 onward, makes significant improvements when it comes to identification of wastes. (Figure 3-1) as discussed in section 2 in this document.

Especially for e-wastes which are the most frequently-observed types of illicitly-traded wastes, HS 2022 addressed major concerns: 'wastes' are sometimes declared as 'used' equipment and thereby possibly circumventing the detection either unintentionally or

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[65] 'Technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention' (UNEP/CHW.14/7/Add.6/Rev.1).

[66] Such requirements include: the waste is 'destined for direct reuse, or extended use by the original owner for the purpose for which it was originally intended'; the necessary evidence of evaluation or testing is provided, such as a certificate of testing or proof of functionality, and a declaration is provided; and each piece of equipment is individually protected against damage during the transportation.

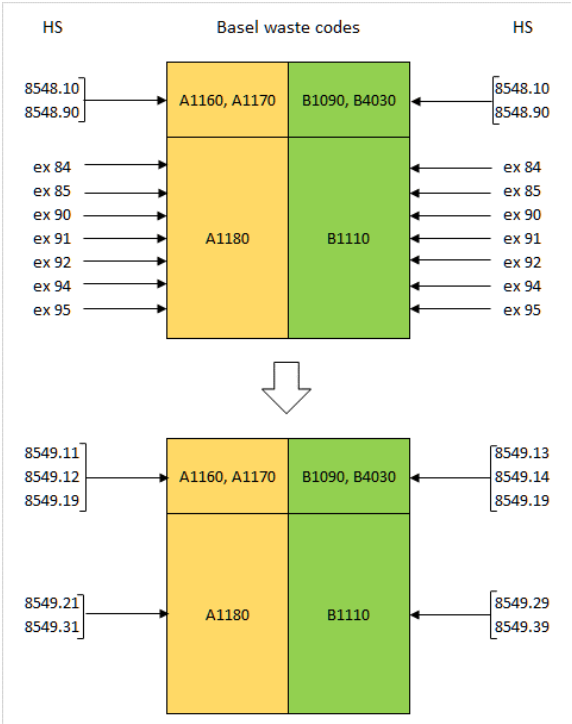
[67] http://www.basel.int/Implementation/Plasticwaste/PlasticWasteAmendments/FAQs/tabid/8427/Default.aspx.

[68] Heading 3825

intentionally; and the quantity of internationally-traded hazardous or non-hazardous wastes is unknown. This significant improvement resulted from approximately six years of extensive negotiations between the representatives of the Customs administrations of Contracting Parties to the WCO HS Convention at the WCO's Harmonized System Committee, the Review Sub-Committee and the Scientific Sub-Committee starting with an original proposal from the secretariat of the Basel Convention, representing its Contracting Parties. The original proposal were subjected to many changes and revisions before being finally accepted by all parties.

E-waste was not a separate explicit category in the previous or current (HS 2017) versions of HS. E-waste could be variously classified under scrap metal classifications or under the classifications for the original goods, e.g. refrigerators or televisions, and a one-to-one relationship between HS and waste codes was hardly seen. Commodities corresponding to 'waste electrical and electronic assemblies or scrap …' (A1180) or 'electrical and electronic assemblies' (B1110) were covered mainly by commodities in Chapters 84, 85 or 90[69] and many other Chapters. Also such commodities containing hazardous substances[70] and commodities not containing them were not distinguished in the provisions. The HS 2022 materially resolved these concerns for e-wastes, and resulted in further clarification of scope of 'other waste'.(Figure 4-1) The new provisions by HS2022 provide more detailed identification on what is declared and will facilitate risk assessment for enforcement purposes as well as providing a better view of what is being traded.

Figure 4-1 Relationship between selected waste codes and the HS: Before and After HS2022



[69] HS Chapter 84: 'Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof'
Chapter 85:'Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles'
Chapter 90: 'Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof

[70] For example, cadmium, mercury, lead or polychlorinated biphenyls (PCB)

Source
Created by the author, based on the items below:

- WCO, 'Amendments to the Nomenclature Appended as an Annex to the Convention accepted pursuant to the Recommendation of 28 June 2019 of the Customs Co-operation Council'.
- WCO, 'Correlation between the product coverage of selected international conventions and the Harmonized System'.
- Forti, V. et al. (2018), 'E-waste statistics: Guidelines on classification, reporting and indicators: Second Edition'.

Note

- The 'HS' columns in this figure list the HS Chapters, Headings or Subheadings which the author considers to correspond to the Basel waste codes for e-waste listed in the boxes.
- 'ex': only part of the HS Chapter covers the goods referred to in the Basel waste codes.

Another important advance that this new change introduces is the first attempt to include a large percentage of 'end-of-life' electrical goods as waste and scrap. The new provisions given in Note 6 to Section XVI for electrical and electronic waste and scrap introduced the concept of economically unsuitable for repair refurbishment or renovation, but added a safeguard against misuse by requiring the packing or shipping to be suited only to waste or scrap. This enabled this type of end-of-life concept to be introduced to the HS for the first time.

On the other hand, it would be unrealistic to expect HS to *completely* mirror the waste codes because of the difference of purposes: the HS exists essentially for the purpose of taxation and statistics, and waste codes exist for the specific purpose of determination of hazardous wastes. In addition, post-importation usage[71] criteria used for waste categorisation do not generally provide objective criteria at the importation stage.

Also, the pace of change is relevant. The HS is reviewed on five year cycles, with each change needing to be finalised at least two and a half years prior to implementation. For complex changes, this generally means starting negotiations between five to eight years in advance. Added to the lengthy periods it may take to get agreement under other international Convention on classes of waste and their definitions that should be put forward for HS amendments, this does mean that the HS amendments will usually occur a substantially long time after the need has been identified.

The next HS edition after the HS 2022 edition will be the HS 2027 edition, coming into force on 1 January 2027. Negotiations are already underway and must be finalised by the end of the HSC meeting in March 2024. If the HS 2027 edition is to go even further in improving the quality and quantity of international information on the trade in wastes, then sound proposals, either from Members or from the Secretariats for the relevant Conventions, that are practical for use at borders will be required. Further increasing coverage is challenging, but there is increasing willingness of Contracting Parties to work innovatively to find solutions

(3) Need for securing resources and capacity within Customs

While the trade and enforcement environment has been improved by international rules and this should progressively continue, the most important factor is to secure suitable resources and capacity within national law enforcement organizations[72].

[71] For example, 'destined for recovery/disposal', 'destined for direct reuse, and not for recycling or final disposal (B1110 for e-waste) , 'prepared to a specification' (B3010 for plastic waste before amendment, B3011 for textile waste) , or 'destined for recycling in an environmentally sound manner'(B3011 for plastic waste after amendment)

[72] For example, Rucevska, I. et al. (2015).

As shown in section 1, the general macro-level trend for the past twenty years has been for the trade volume of 'waste' to increase, given developments in global distribution of production networks and lowered transportation/telecommunication costs.

Recent developments surrounding waste control might have forced some elements of waste into going underground as illicit trade, and may yet do so (see section 1). Heightened import restrictions by China and other Asian countries since 2018 will accelerate the increase in illicitly traded volumes of wastes, especially plastic wastes. Regulation under the Basel Convention, which will be expanded to include plastic wastes from 2021 onwards, will entail the highly technical work of detection and determination of hazardous and non-hazardous wastes and significantly consume the resource of CAs and Customs officers. Globally, law enforcement agencies will need more resources on waste control.

Not only is it necessary to secure resources within CAs, but resources also need to be available within Customs. Customs officers are at the front line when it comes to detecting goods which are suspected of being 'hazardous wastes' from among the infinitely wide-ranging types of goods crossing borders. Customs officers will be exposed to hazardous wastes more often at the front line when they need to conduct physical inspections.

(4) Knowing the 'legal' element of trade in hazardous wastes

In addition to securing increased resources, it is important to enhance the risk management-based approach by Customs.

Although waste control is highly technical, it could potentially be made simpler, as explored below.

Greater familiarity with the 'legal' element of trade in regulated wastes will significantly help the detection of suspected 'illegal' goods. Under the Basel Convention, when it comes to PIC procedure, 'illegal traffic' in hazardous waste means any transboundary movement of hazardous wastes or other wastes without performance of the due PIC procedure (notification and consent)[73]. To put it simply, everything other than 'legal' is 'illegal'. This being the case, knowing what constitutes the 'legal' element of trade in hazardous wastes would help Customs narrow down the scope of their targeting and make waste control at borders more risk management-based and efficient[74].

In this connection, the move towards electronic transmission of notification/movement documents, as proposed and discussed among Basel Convention Contracting Parties[75], might fit well. Customs are tasked to monitor all flow of cargoes, and for the sake of allowing trade facilitation, Customs need to identify high risk cargoes by utilizing IT systems. Electronic declarations account for more than 90% of export/import declarations for many Customs administrations, and more than half of Customs administrations have some form of cross-border regulatory Single Window (SW) system in operation (Table 4-2). If the waste controls come into this national collaborative SW scheme among cross border regulatory agencies through the utilization of IT systems, such as the WCO Data Model[76] or some

[73] Article 9.1 (a)- (c) of the Basel Convention.

[74] Here, the situation is simplified by focusing on the existence of a consented notification corresponding to a Customs declaration.

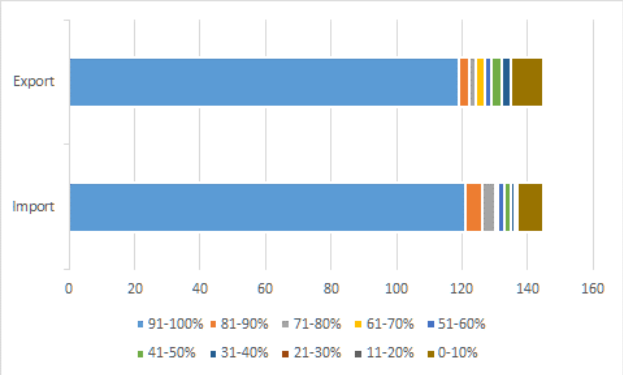
[75] 'Control system: electronic approaches to the notification and movement documents', (UNEP/CHW/CC.12/11/Add.2).

[76] The WCO Data Model is a compilation of clearly structured, harmonized, standardized and reusable sets of data definitions and electronic messages designed to meet operational and legal requirements of cross-border regulatory agencies (CBRAs), including Customs. Originally, it was handed over to the WCO by the G7

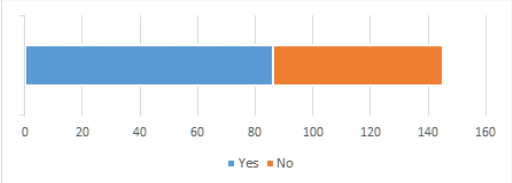
other system, then that will significantly contribute to the effectiveness and efficiency of waste control at borders. Availability of certification documents (such as movement documents) to Customs in electronic forms through SW system would not only lead to enhanced risk management-based controls but could assist in the better identification of trade volumes of legally-traded wastes for trade statistics.

Table 4-2

(a) Electronic declaration rate (Unit: number of Customs administrations)



(b) National Single Window system actually connected to any other government agencies (Unit: number of Customs administrations)



Source

Created by the author, based on the WCO Annual Report 2019-2020.

Note

- A total of 145 WCO Member administrations responded.
- In Figure (a), numerical percentage figures provided by administrations were sorted by each percentile.
- In Figure (a), 'electronic declaration rate' corresponds to the number of electronic declarations, divided by the total number of declarations.
- Figure (b) shows the number of administrations stating that the national Single Window system, of which Customs is a constituent part, is actually connected to other governmental agencies issuing export/import permits.

Similarly, application of the 'Authorized Economic Operator' (AEO) concept, which is based on the WCO SAFE Framework of Standards and has been widely adopted, will contribute to familiarity with the 'legal' element of hazardous wastes. Due to the nature of wastes, expansion of the scope of regulated wastes will affect not only illicit trade, but also inevitably affect licit traders.

The shipment of hazardous wastes is sometimes described as time-consuming in terms of trade facilitation. Although evidence is anecdotal, private recycling companies interviewed by the author have stated that it is usual for a shipment of hazardous wastes from a European country to an Asian country (not intra-OECD trade) to take nearly half a year (for example, two to three months to obtain consent, one month on the ship, and one month in the importing country), and stated that the lengthy timespan slows down their cash conversion cycle and prevents small and medium sized companies from entering the industry. Therefore trade facilitation matters, especially in those countries where recycling industries are expected to grow as an alternative sector to the traditional industries such as mining. It was revealed at a workshop held by the OECD that a global corporation spent as

initiative in 2002 to standardize and simplify Customs data requirements for a wider Customs community than the G7, and has evolved and adapted to the SW environment.

many as 20 months on an international shipment of hazardous wastes under the Basel Convention[77].

The lengthy time spent on the PIC procedure is not considered to be solely negative, as the policy objective behind the Basel Convention is protection of human health and the environment. The decision on whether the exported/imported goods are regulated waste is highly technical and necessitates several interactions with the notifier[78]. In this context, trade facilitation involves avoiding unnecessary trade restrictiveness, building upon effective controls.

In order for Customs to address the aspects both of compliance and trade facilitation, applying the AEO concept would be useful in identifying compliant traders in the field of waste trade.

(5) Enhanced intelligence exchange

Exchange of information is important, both in terms of learning from the past, and of learning from other administrations/government agencies.

WCO tools based on the guiding principles of the WCO's Globally Networked Customs (GNC) for facilitating the systematic international exchange of data among Customs[79] have played a vital role and will continue to do so. The WCO provides the platform for the CEN, the database to which Customs report seizure data and from which they can access data and extract intelligence (see section 3). Customs will need to further utilize and feed input to the CEN database in order to globally and jointly tackle illegal waste trade. The WCO's CENcomm system has been well utilized in joint operations and will continue to help international intelligence exchange among Customs in a secure format.

Joint operations organized by the WCO as part of Operation DEMETER (see section 2) will continue to provide meaningful opportunities for Customs to exchange intelligence targeted on waste control during the designated operation period. These operations provide intensive opportunities for deepening the collaboration with national CAs, the police and regional bodies of the intergovernmental organizations.

Joint risk assessments by Customs and CAs would be a step ahead to enhancing risk management-based control at national level. For example, in one major port inside the EU, Customs and a CA conduct joint risk analysis for the purpose of waste control through the targeting suggestions they give to each other at regular meetings. This is in addition to their usual micro-level communication, when they share and communicate suspicions concerning particular shipments.

(6) Regional dialogue

Some illegal trade in waste is taking place intra-regionally, with both the export and import countries located in the same WCO regions (see section 3). For example, in the anecdotal case described in section 1, involving 7,000 MT of illegally traded waste, both the exporting and importing country were located in the same A/P region. Against this backdrop,

[77] Workshop on Trade and Circular Economy, held on 26-27 February 2020.

[78] For example, the OECD decision on intra-OECD trade set a deadline of seven working days (thirty days in exceptional cases) by which CAs need to convey any objection to the proposed transboundary shipment of waste to pre-consented facilities.

[79] The WCO initiative 'Globally Networked Customs' (GNC) is a set of guiding principles governing the exchange of information among Customs. It embraces the use of WCO tools such as CENcomm (a secure format for international intelligence exchange), CEN, Single Window, and the WCO Data Model.

close dialogue and intelligence exchange within the same WCO regions will also facilitate the Customs community's efforts towards effective and efficient detection of illegal trade.

(7) Enhanced Customs control related to free zones

Some illegal trade in waste is taking place via transit countries, and utilization of 'free zones' for illegal trade of waste involving re-routing at transit phase, as has been pointed out by numerous publications, as was described in section 3. Thus, enhanced Customs involvement and control of cargoes and companies related to/located in free zones will be necessary to prevent and detect illicit trade.

(8) Enhanced capacity to address highly technical matters

Given the highly technical nature of waste control, it will also inevitably be necessary to provide training to Customs officers. In this regard, the 'Green Customs Initiative' has been organized by the UNEP, in cooperation with the WCO. The Initiative offers materials and opportunities for Customs officers to learn about the technical elements of enforcement of trade-related MEAs, including the Basel Convention. As part of the Initiative, several practical manuals/guides on highly technical aspects have been issued[80].

Specifically on combatting illegal traffic in hazardous wastes, the WCO has been a member of the 'Environmental Network for Optimizing Regulatory Compliance on Illegal Traffic' (ENFORCE)[81] which has been organized by the secretariat of the Basel Convention since November 2020. The network will enhance cooperation and coordination between relevant entities through delivering enforcement capacity building activities and tools.

Providing sufficient opportunities for training, such as workshops, will be pertinent. By involving experts such as national CAs and regional bodies of intergovernmental organizations, these will allow Customs officers to convert their familiarity with daily enforcement into systematic knowledge which can be applied to complicated realities.

[80] For example, 'The Green Customs Guide to Multilateral Environmental Agreements'; 'Guidance on the implementation of the Basel Convention provisions dealing with illegal traffic (paragraphs 2, 3 and 4 of Article 9)'; 'Guidance Elements for Detection, Prevention and Control of Illegal Traffic in Hazardous Wastes'; and 'Instruction manual on the prosecution of illegal traffic of hazardous wastes or other wastes'.

[81] http://www.wcoomd.org/en/media/newsroom/2020/november/wco-becomes-a-member-of-the-basel-convention-enforce-network.aspx?p=1

Conclusions

Hazardous wastes pose a risk to human health and the environment. Cases involving the adverse effects of these wastes have been widely recognized. The Basel Convention governing transboundary movements of hazardous wastes provides the proximity principle, the self-sufficiency principle and the least transboundary movement principle. Waste controls at borders will contribute to the United Nations Sustainable Development Goals.

The multiple characteristics of waste means that differentiating between 'waste' and 'products'/'materials' sometimes becomes an issue. Customs, which are at the front line of waste control at borders and whose primary role is detection of goods suspected of being 'hazardous waste', are also part of this highly technical work at the detection stage.

Types of waste are not limited to the more obvious municipal wastes, but are various. They range from e-waste, batteries, vehicles, metal waste, plastic wastes, textile waste, paper waste and chemical waste to mixed wastes. E-wastes are the ones which have been most frequently observed in the recent enforcement data.

Wastes and hazardous wastes are endogenous to industrial production. Coupled with lower telecommunication and transportation costs, there is a long-term increasing trend in cross-border movements of hazardous wastes. A possible decreasing trend in the trade volume of wastes in the last couple of years might indicate that waste trade is about to go underground in order to circumvent the due regulations. Heightened import restrictions on hazardous wastes (mainly plastic waste), imposed by China and other Asian countries since 2018, will trigger illegal trade in hazardous wastes which would previously have entered these countries legally. The major amendment of the Basel Convention, which will be implemented from 2021 onwards and which expands the regulatory scope of hazardous wastes to include plastic wastes, will further add to the types of goods which should be monitored with care. Customs, as a frontline organization at the border, is embedded in this globally evolving situation.

Given this environment, it will be necessary to secure increased resources within Customs.

In addition to these extra resources, the author would point to the following possible measures for contributing to effective and efficient control at borders:

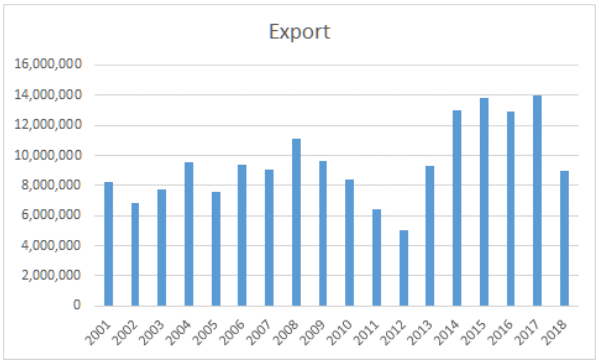
- Familiarity with the 'legal' element of waste trade, through application of the electronic system of a national Single Window among cross-border regulatory agencies, of which Customs is already a constituent part. The presence of CAs in the national Single Window, with the PIC information submitted, will bring efficiency and effectiveness to waste control at borders by enhancing risk management-based control.
- Familiarity with the 'legal' element of waste trade, through application of the WCO 'Authorized Economic Operator' concept to compliant traders. Given that, by its nature, waste has multiple characteristics, Customs will need to strike a balance between control and trade facilitation.
- Enhanced intelligence exchange nationally and internationally through further utilization of, and input into, the WCO CEN database. Use of the WCO CENcomm system will continue to facilitate intelligence exchange. The WCO's Operation DEMETER remains an important platform for cooperation with CAs, the police, and regional bodies of intergovernmental organizations.
- Cooperation, both globally and regionally.
- Enhanced capacity within Customs. It will be necessary to convert Customs officers' familiarity with daily enforcement into systematic knowledge which

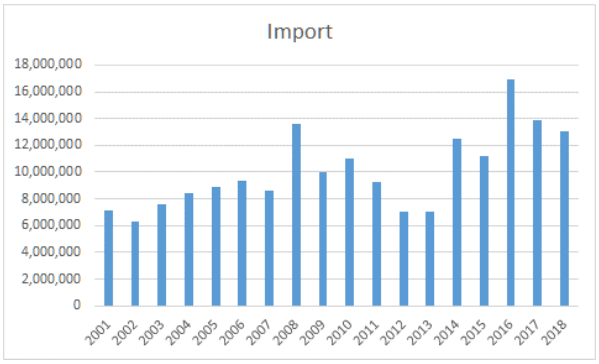
can be applied to this highly technical area, using the Green Customs Initiative.

Strengthening waste control at borders will not only contribute to sustainable production and consumption. Human life and environmental protection are also directly at stake. At the same time, it will allow legitimate economic flows. Effective and efficient waste control at borders by Customs will contribute to these areas.

Annex1: Tables of statistical data

Table 1-2 Reported transboundary movements of hazardous wastes (Unit: MT)





Source

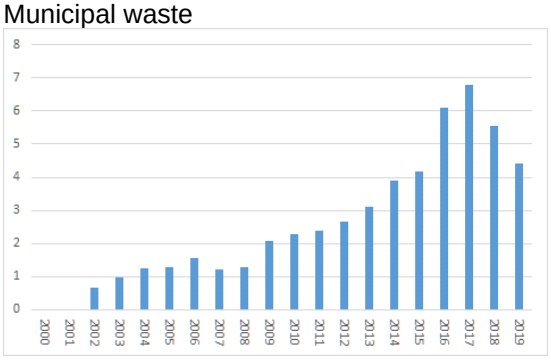
'Total Export of Hazardous Wastes and Other Wastes' and 'Total Import of Hazardous Wastes and Other Wastes' (Basel Convention website) for the period from 2001 to 2018.

Note

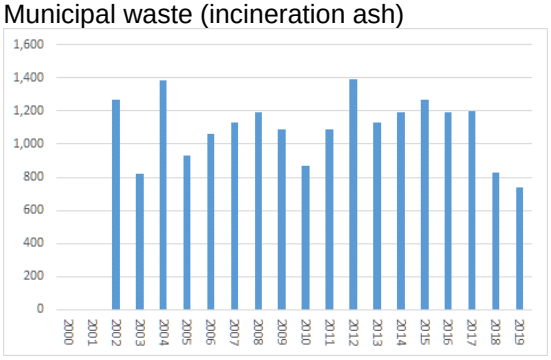
- This data concerns 'legal' transboundary movements of hazardous wastes.
- The author points out that reporting sometimes takes place several years after the year in question. Thus, the figures for recent years (e.g. 2018 or 2017) might increase.

Table 1-3 Trade volume of several types of waste per year (Unit: million MT)

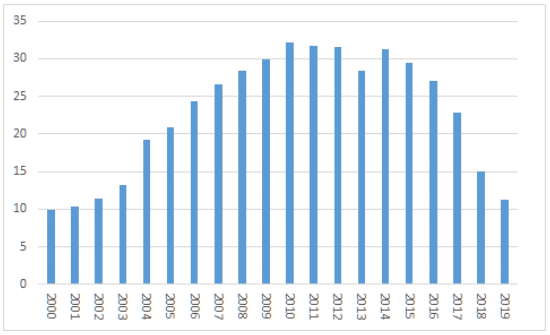
Municipal waste



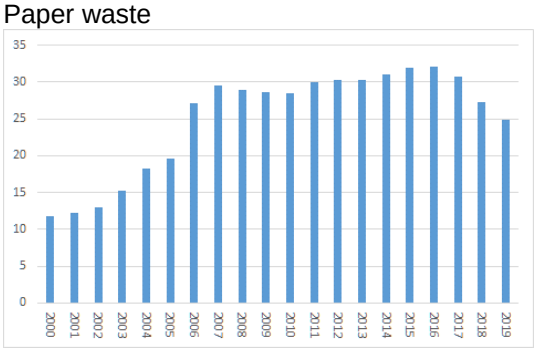
Municipal waste (incineration ash)



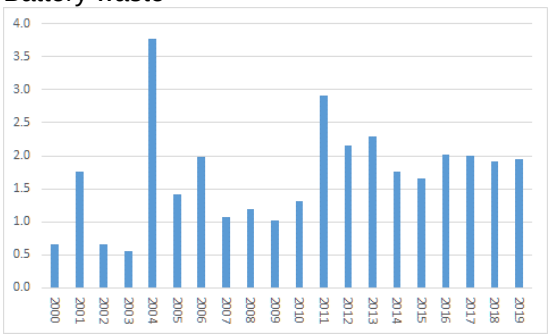
Plastic waste



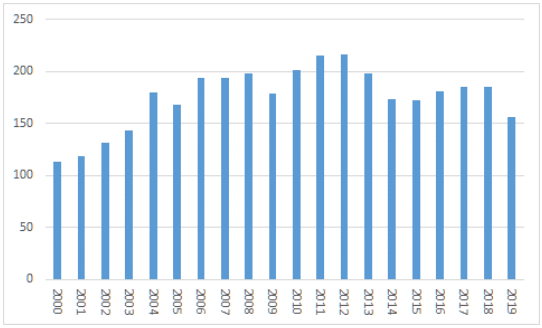
Paper waste



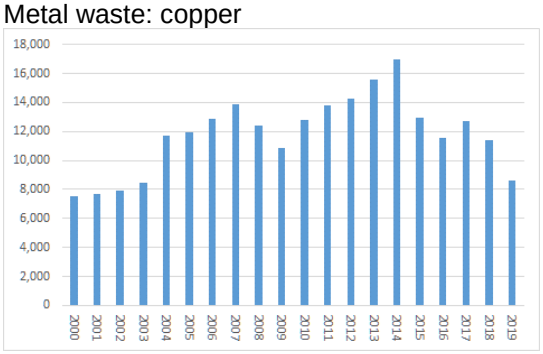
Battery waste



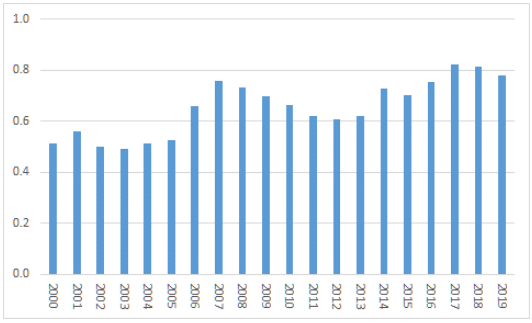
Metal waste: ferrous



Metal waste: copper



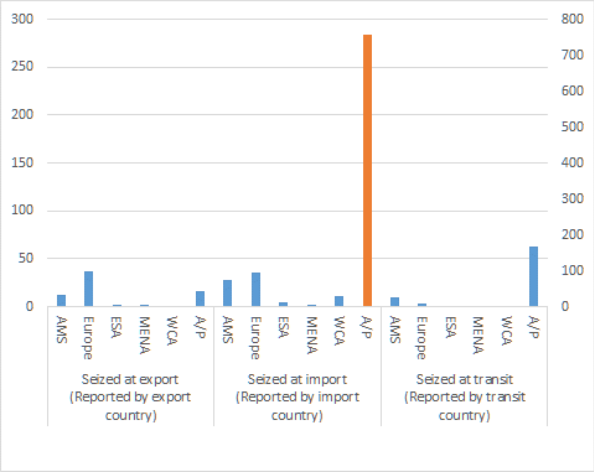
Metal waste: lead



Source
The author's compilation of trade statistics data extracted from UN Comtrade, last visited on 7 September 2020.

Note
- 'Trade volume' here means the sum of global export and import.
- The author captured each commodity by using the bracketed HS Headings or Subheadings: 'Municipal waste' (3825); 'Municipal waste: incineration ash' (2621.10); 'Plastic waste' (3915); 'Paper waste' (4707.90); 'Battery waste' (8548); 'Metal waste: ferrous' (7204); 'Metal waste: copper' (7404); 'Metal waste: lead' (7802).

Table 3-1 Number of seizures of wastes reported to the WCO CEN database, sorted by timing of seizures and by WCO region (Unit: number of seizures)



Source

WCO CEN data (2011- March 2020).

Note

- The left axis corresponds to the blue bars, and the right axis corresponds to the red bar.

Abbreviations

- AMS: South America, North America, Central America, and the Caribbean region
- Europe: Europe region
- ESA: East and South Africa region
- MENA: North of Africa, Near and Middle East region
- WCA: West and Central Africa region
- A/P: Far East, South, and South East Asia, Australasia, and the Pacific Islands region

Table 3-2

(a) Number of seizures of wastes reported to the WCO CEN database, sorted by WCO region to which departure and destination countries belong (Unit: number of seizures)

		Destination country							
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total
Departure country	AMS	19	2				165		186 (18.8%)
	Europe	2	35	1	2	4	111	7	162 (16.4%)
	ESA			2			15		17 (1.7%)
	MENA			1	2		65		68 (6.9%)
	WCA					19	16		35 (3.5%)
	A/P		2	2		3	387	4	398 (40.2%)
	unknown	27	2		2	3	87	3	124 (12.5%)
	Total	48 (4.8%)	41 (4.1%)	6 (0.6%)	6 (0.6%)	29 (2.9%)	846 (85.5%)	14 (1.4%)	990 (100%) (100%)

(b) Number of seizures of wastes reported to the WCO CEN database, sorted by WCO region to which departure and destination countries belong (excluding transit countries) (Unit: number of seizures)

		Destination country							
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total
Departure country	AMS	18					135		153
	Europe	1	30	1	2	4	100	3	141
	ESA			2			13		15
	MENA				2		59		61
	WCA					17	12		29
	A/P		1	2			348	1	352
	unknown	27	1				71		99
	Total	46	32	5	4	21	738	4	850

(c) Number of seizures of wastes reported to the WCO CEN database, sorted by WCO region to which departure, transit, and destination countries belong (including transit countries) (Unit: number of seizures)

		Transit country							
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total
Departure country	AMS	7		1	1		24		33
	Europe		13				8		21
	ESA						2		2
	MENA		1	1			5		7
	WCA		2	2		1	1		6
	A/P						43	3	46
	unknown		4				21		25
	Total	7	20	4	1	1	104	3	140

		Destination country							
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total
Transit country	AMS	1	2				4		7
	Europe	1	6			4	5	4	20
	ESA			1			3		4
	MENA						1		1
	WCA					1			1
	A/P		1		2	3	92	6	104
	unknown						3		3
	Total	2	9	1	2	8	108	10	140

Source

WCO CEN data (2011- March 2020).

Note

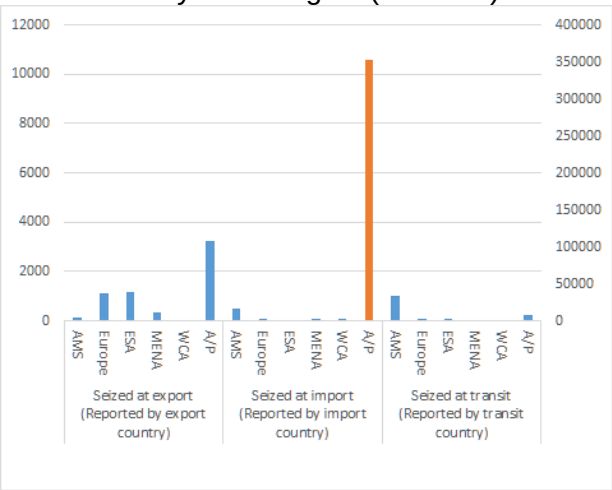
- Highlighted cells: intra-regional seizures where departure country, destination country, and transit country (if any) belong to the same WCO region. Non-highlighted cells: multi-regional seizures.

Abbreviations

As for Table 3-1

Table 3-3

(a) Quantity of seized wastes reported to the WCO CEN database, sorted by timing of seizures and by WCO region (Unit: MT)



(b) Quantity of seized wastes reported to the WCO CEN database, sorted by WCO region to which departure and destination countries belong (Unit: MT)

		Destination country								
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total	
Departure country	AMS	1,096	103				37,216		38,414	(9.7%)
	Europe	90	161		16	65	37,419	116	37,867	(9.6%)
	ESA			1			3,427		3,429	(0.9%)
	MENA				25		3,878		3,903	(1.0%)
	WCA					6	381		387	(0.1%)
	A/P					4	59,676	5,800	65,480	(16.6%)
	unknown	71	49				244,277	309	244,706	(62.1%)
	Total	1,257 (0.3%)	313 (0.1%)	1 (0.0%)	41 (0.0%)	75 (0.0%)	386,275 (98.0%)	6,225 (1.6%)	394,187 (100%)	(100%)

Source

WCO CEN data (2011- March 2020).

Note

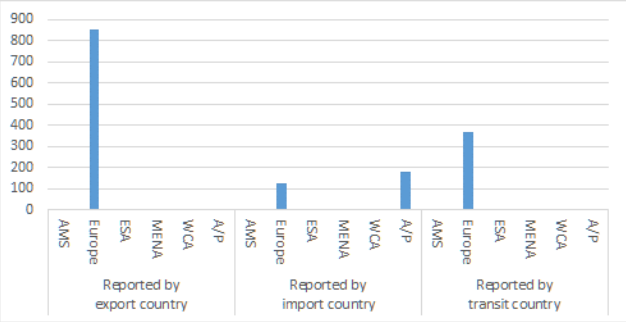
- For (a): the left axis corresponds to the blue bars, and the right axis corresponds to the red bar.
- Data reported in units other than weight (e.g. pieces) was not counted towards the figure in this table.
- Highlighted cells: intra-regional seizures where departure country, destination country, and transit country (if any) belong to the same WCO region. Non-highlighted cells: multi-regional seizures.

Abbreviations

As for Table 3-1

Table 3-4

(a) Number of reports of illegal transboundary movements of wastes, sorted by reporting country involvement and by WCO region to which the reporting countries belong (Unit: number of reports)



(b) Number of reports of illegal transboundary movements of wastes, sorted by WCO region to which departure and destination countries belong (Unit: number of reports)

		Destination country								
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total	
Departure country	AMS	5	16		1	1	42		65	(4.1%)
	Europe	14	218	38	128	739	182		1,319	(84.0%)
	ESA						1		1	(0.1%)
	MENA		10	1			19		30	(1.9%)
	WCA		8				5		13	(0.8%)
	A/P		7				103		110	(7.0%)
	unknown				17	4	1	11	33	(2.1%)
	Total	19 (1.2%)	259 (16.5%)	39 (2.5%)	146 (9.3%)	744 (47.4%)	353 (22.5%)	11 (0.7%)	1,571 (100%)	

(c) Reported quantity of wastes involving illegal transboundary movements, sorted by WCO region to which departure and destination countries belong (Unit: MT)

		Destination country								
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total	
Departure country	AMS	275	294		1	25	78,578		79,174	(35.3%)
	Europe	627	34,679	747	2,329	52,596	45,648		136,625	(60.9%)
	ESA						10		10	(0.0%)
	MENA		143	4,500			286		4,930	(2.2%)
	WCA		1,139				91		1,229	(0.5%)
	A/P		206	206			1,613		2,025	(0.9%)
	unknown					18	6	70	1,093	(0.5%)
	Total	902 (0.4%)	36,461 (16.4%)	5,453 (2.4%)	2,330 (1.0%)	52,639 (23.5%)	126,231 (56.1%)	429 (0.0%)	224,446 (100%)	

Source

The author's compilation of 'Cases of illegal traffic which have been closed in the reporting year' of the 'Basel Convention National Reports' (Basel Convention website) for the period from 2016 to 2018.

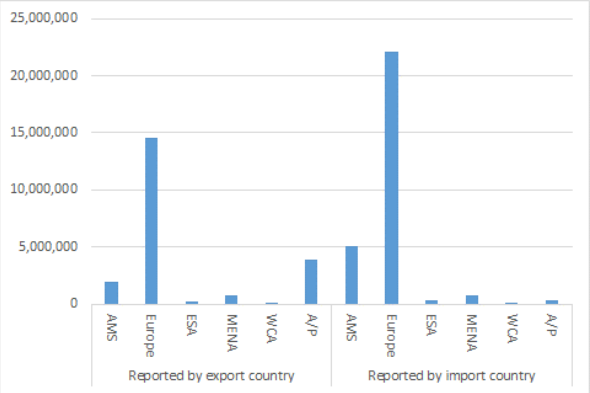
Note

- For Contracting Parties to the Basel Convention which are not WCO Members, the author has allocated WCO regions near these Contracting Parties' physical location.
- Highlighted cells: intra-regional cases where departure country and destination country belong to the same WCO region. Non-highlighted cells: multi-regional cases.

Abbreviations

As for Table 3-1

Table 3-5
(a) Quantity of reported legal (pre-consented) transboundary movements of wastes, sorted by reporting country involvement and by WCO region to which the reporting countries belong (Unit: MT)



(b) Quantity of reported legal (pre-consented) transboundary movements of wastes, sorted by WCO region to which departure and destination countries belong (Unit: MT)

		Destination country								
		AMS	Europe	ESA	MENA	WCA	A/P	unknown	Total	
Departure country	AMS	5,857,471	204,236			300	157,642		6,219,649	(18.3%)
	Europe	20,014	20,865,592	15,469	911,385	1,579	67,833		21,881,872	(64.3%)
	ESA		25,680	411,929			118,065		555,674	(1.6%)
	MENA	2,121	139,404	22,500	26,242		817,927		1,008,194	(3.0%)
	WCA	2,023	163,526	17,130		2,469	33,092		218,240	(0.6%)
	A/P	2,664	246,559		948,190		2,874,653	9,354	4,081,419	(12.0%)
	unknown				43,640				43,640	(0.1%)
	Total	5,884,293	27,644,997	467,028	1,929,457	4,348	4,069,212	9,354	34,008,688	(100%)
		(17.3%)	(63.6%)	(1.4%)	(5.7%)	(0.0%)	(12.0%)	(0.0%)	(100%)	

Source

The author's compilation of 'Exports (Imports) of hazardous wastes and other wastes' of the 'Basel Convention National Reports' (Basel Convention website) for the period from 2016 to 2018.

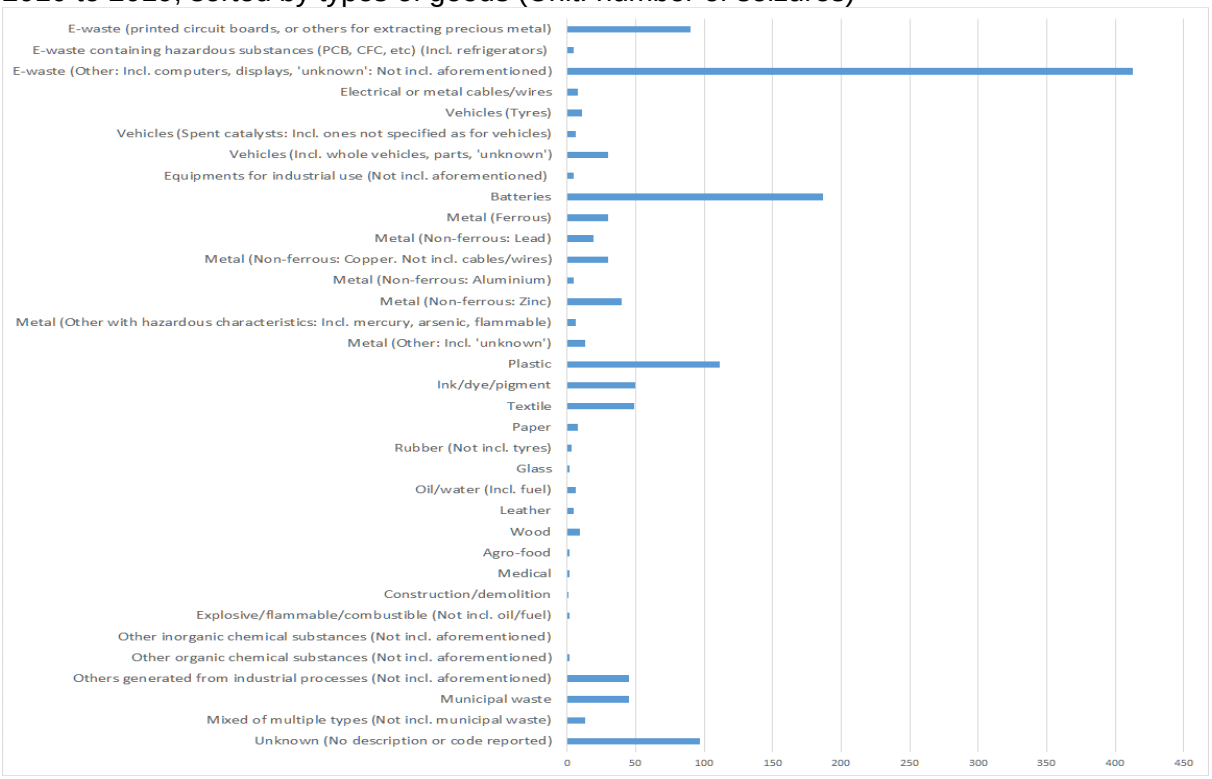
Note

- For Contracting parties to the Basel Convention which are not WCO Members, the author has allocated WCO regions near these Contracting Parties' physical location.
- Highlighted cells: intra-regional cases where departure country and destination country belong to the same WCO region. Non-highlighted cells: multi-regional cases.

Abbreviations
As for Table 3-1

Table 3-6

(a) Number of seizures of wastes reported to the WCO CEN database for the period from 2010 to 2019, sorted by types of goods (Unit: number of seizures)



(b) Quantity of seized wastes reported to the WCO CEN database, sorted by types of goods (Unit: MT)

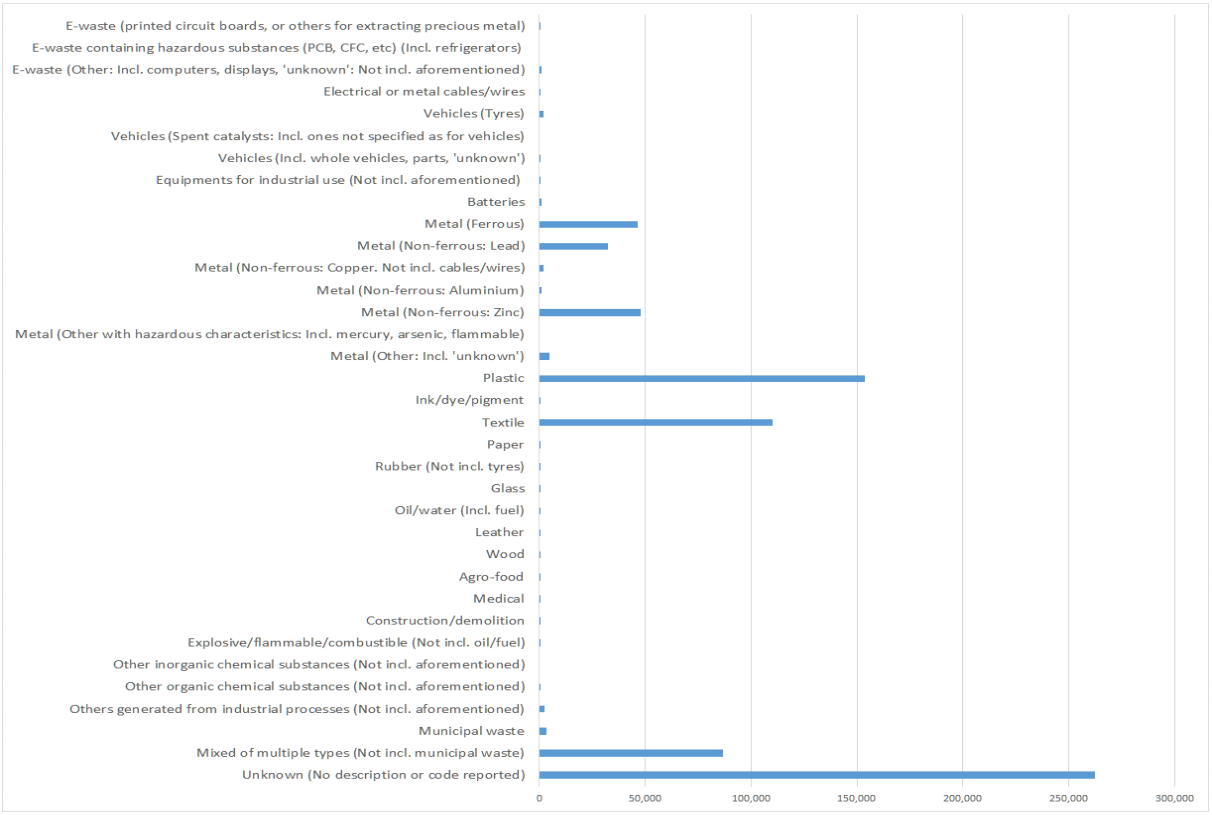
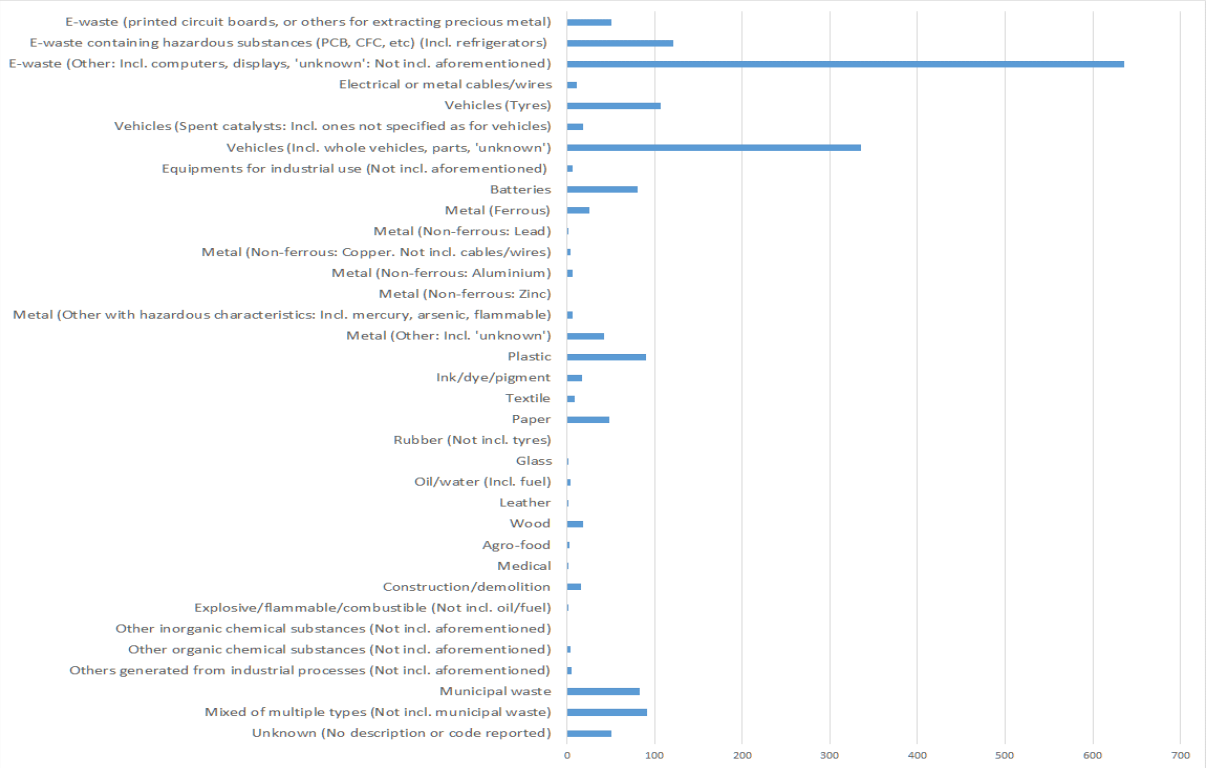
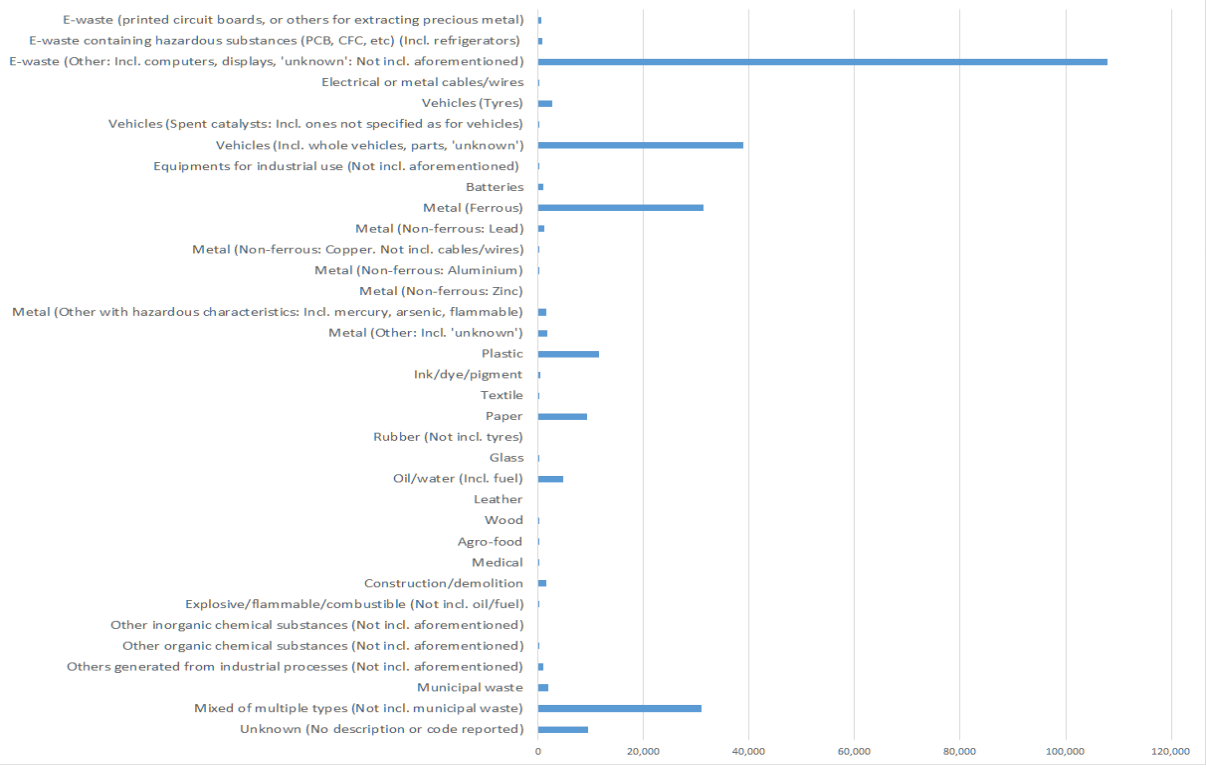


Table 3-7
(a) Number of reports of illegal transboundary movements of wastes for the period from 2016 to 2018, sorted by types of goods (Unit: number of reports)



(b) Quantity of illegal transboundary movements of wastes for the period from 2016 to 2018, sorted by types of goods (Unit: MT)



Source
- Table 3-6: WCO CEN data for the period from January 2011 to March 2020.
- Table 3-7: the author's compilation of 'Cases of illegal traffic which have been closed in the reporting year' of the 'Basel Convention National Reports' (Basel Convention website) for the period from 2016 to 2018.

Note
- The author's compilation based on reported data. For components of each type of goods, primary examples are shown in Table 3-8 in the form of waste codes.
- Duplicate data has been recorded for types of goods, unless 'Not incl.' is stated (e.g. if e-wastes and metal wastes were recorded in one instance of reporting, the information was recorded under each of 'e-waste', 'metal' and 'mixed').
- Classification of wastes in this table was selected by the author based on availability of reported data.
- For data on quantity (Tables 3-6(b) and 3-7(b)), data reported in units other than weight (e.g. pieces) was not counted towards the figure in the table. This is why seizures for several types of goods appear in (a) but not in (b).

Abbreviations
- 'PCB': polychlorinated biphenyls
- 'CFC': chlorofluorocarbons
- 'incl.': including

Table 3-8 Examples of waste codes observed in actual trade in wastes

Types of goods	Basel waste codes (Annex I, II III, & VIII to Basel Convention)	Codes in OECD rules for "amber controls"	Codes unique to EU rules for "export prohibition" to non-OECD countries	Basel waste codes (Annex IX to Basel Convention)	Codes in OECD rules for "green controls"	Codes unique to EU rules explicitly excluded from "export prohibition" to non-OECD countries
E-waste (printed circuit boards, or others for extracting precious metal)	A1010, A1020, A1180			B1110	GC020	
E-waste containing hazardous substances (PCB, CFC, etc) (Incl. refrigerators)	A1180, A1190	AC150, AC160	14 06 01*, 20 01 23*, 20 01 35*, 16 02	B1110		
E-waste (Other: Incl. computers, displays, "unknown": Not incl. aforementioned)	A1180		16 02 13*, 16 02 15*	B1110	GC010	16 02 14
Electrical or metal cables/wires	A1190	AA010	17 04 09*, 17 04 10*	B1115		16 02 16, 17 04 11
Vehicles (Tyres)				B3140		16 01 03
Vehicles (Spent catalysts: Incl. ones not specified as for vehicles)	A1030, A2030		16 08 02*, 16 08 05*, 16 08 06*, 16 08 07*	B1120, B1130		16 08 01, 16 08 03
Vehicles (Incl. whole vehicles, parts, 'unknown')	A3020, A4060		16 01 04*, 16 01 07*, 16 01 21*	B1250		16 01 06, 16 01 22
Equipments for industrial use (Not incl. aforementioned)	A1180		16 02	B1110	GC010	16 02 16
Batteries	Y26, Y29, Y31, Y34, A1160, A1170, A1180		16 06, 19 12 11*, 20 01 33*	B1090, B1110		20 01 34
Metal (Ferrous)	Y17, Y23		10 09 11*, 19 12 11*	B1010, B1200, B1210		12 01 02, 16 01 17, 17 04 05, 19 01 02, 19 10 01, 19 12 02
Metal (Non-ferrous: Lead)	Y31, A1020, A1030, A1040, A3030, A4060	AB070	10 04 01*, 10 04 02*, 15 02 02*, 16 03 03*, 17 04 09*, 19 12 11*			17 04 03
Metal (Non-ferrous: Copper. Not incl. cables/wires)	Y17, Y22, A1020, A1080, A1100, A1110, A1130, A1150, A2030	AB070	11 01 07*	B1010, B2040		11 02 06, 17 04 01
Metal (Non-ferrous: Aluminium)	Y17, Y18, A2030, A4050, A4060		10 03 08*, 10 03 09*, 10 03 15*, 16 11 01*	B1010, B1100		10 03 04, 12 01 03, 12 01 04, 17 04 02, 19 12 03, 19 12 11
Metal (Non-ferrous: Zinc)	Y23, A1080, A4100, A4140		10 05 10*, 11 01 15*, 11 02 02*, 19 02 05*	B1010		
Metal (Other with hazardous characteristics: Incl. mercury, arsenic, flammable)	Y24, Y26, Y27, Y29, Y45, A1010, A1020, A1030, A1040, A4050, A4090, A4140	AA190	06 04 04*, 06 04 05*, 10 03 15*, 17 04 09*, 19 12 11*, 20 01 21*			
Metal (Other: Incl. 'unknown')		AB030	12 01 20*	B1010		16 01 18, 19 12 03
Plastic	Y13, Y17, A3050	AA190, AB030	17 02 04*, 17 09 03*, 19 12 11*	B3010, B3026	GH013	02 01 04, 07 02 13, 15 01 02, 19 12 04, 20 01 39
Ink/dye/pigment	Y12, A4070		08 01 11*, 08 03 12*, 14 06 03*, 16 02 15*	B4010		08 03 18
Textile				B3030		19 12 08, 20 01 10, 20 01 11
Paper				B3020		03 03 05, 03 03 07, 15 01 01, 19 12 01, 20 01 01
Rubber (Not incl. tyres)				B3040, B3080		07 02 09, 19 12 04
Glass	A1180, A2010		17 02 04*, 17 09 03*			10 11 03
Oil/water (Incl. fuel)	Y8, Y9, A3180	AC060	10 03 27*, 12 01 07*, 12 01 10*, 13 03 01*, 19 02 07*, 19 12 11*, 13	B3065		19 12 10
Leather	Y33, A3100					
Wood		AC170	17 02 04*, 19 12 06*	B3050		17 02 01, 19 12 07, 20 01 37
Agro-food				B3060		
Medical	A4010, A4020		02 01 08*, 07 01 08*, 07 04 03*, 16 03 05*, 18 01 08*, 07 05			18 01 07, 18 01 09
Construction/demolition	Y36, A2050, A3180	AC170	17 01 06*, 17 02 04*, 17 04 09*, 17 04 10*, 17 09 01*, 17 09 02*, 17 09 03*	B2130		17 04 01, 17 05 04, 17 09 04
Explosive/flammable/combustible (Not incl. oil/fuel)	Y15, H1, H4.1, H5.1, A4080	AA190	10 03 15*, 10 05 10*, 16 05 04*, 19 02 08*, 19 02 09*, 16 04, 16 05			16 05
Other inorganic chemical substances (Not incl. aforementioned)	A2030		06			
Other organic chemical substances (Not incl. aforementioned)	Y6, Y42, A3030, A3040, A3140, A3150, A3160, A3180	AC150, AC160	07 06 08*, 07 06 99*, 14 06 01*			
Others generated from industrial processes (Not incl. aforementioned)	Y40, A4050, A4090, A4100, A4160		11 03 01*, 16 11 03*			19 12 12
Municipal waste	Y46, Y47		15, 20			15, 20
Mixed of multiple types (Not incl. municipal waste)						
Unknown (No description or code reported)						

Source

- Table 3-6: the author's compilation of WCO CEN data for the period from January 2011 to March 2020.
- Table 3-7: the author's compilation of 'Cases of illegal traffic which have been closed in the reporting year' of the 'Basel Convention National Reports' (Basel Convention website) for the period from 2016 to 2018.

Note

- Duplicate data has been recorded for types of goods, unless 'Not incl.' is stated (e.g. if e-wastes and metal wastes were recorded in one instance of reporting, the information was recorded under each of 'e-waste', 'metal' and 'mixed').

Abbreviations

- As for Tables 3-6 and 3-7

Annex 2: Abbreviations

AEO	Authorized Economic Operator
Basel Convention	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and tTheir Disposal
CA	Environmental Competent Authority
CEN	Customs Enforcement Network
CP	Contracting Party
EU	European Union
e-waste	Waste generated from electrical and electronicelectrical equipment
GNC	Globally Networked Customs
HS	Harmonized Commodity Description and Coding System
IMPEL	European Union Network for Implementation and Enforcement of Environmental Law
MEA	Multilateral Environmental Agreement
OECD	Organization for Economic Co-operation and Development
PIC	Prior Informed Consent
RKC	Revised Kyoto Convention (International Convention on the Simplification and Harmonization of Customs Procedures)
SDGs	United Nations Sustainable Development Goals
SW	Single Window
UNEP	United Nations Environment Programme
UN OHCHR	United Nations Office of the High Commissioner for Human Rights
WCO	World Customs Organization
WTO	World Trade Organization

(Abbreviations for WCO regions)

AMS	South America, North America, Central America, and the Caribbean region
A/P	Far East, South, and South East Asia, Australasia, and the Pacific Islands region
ESA	East and South Africa region
Europe	Europe region
MENA	North of Africa, Near and Middle East region
WCA	West and Central Africa region

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