



OPERATIONAL FACILITY FOR FIGHTING ILLICIT WASTE TRAFFICKING

# CROSS-BORDER SHIPMENTS OF WASTE PILOT RESEARCH

Italy, Romania, Latvia, Spain and the Netherlands

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This project was funded by  
the European Union's  
Internal Security Fund - Police





OPERATIONAL FACILITY FOR  
**FIGHTING ILLICIT  
WASTE TRAFFICKING**

*27 April 2022*

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## List of abbreviations

CA	Competent Authority or Autonomous Community (in the case of Spain)
FIR	Formulario di identificazione dei rifiuti
ILT	Human Environment and Transport Inspectorate (the Netherlands)
ISPRA	Istituto Superiore per la Protezione e la Ricerca Ambientale
IWT	Illicit Waste Trafficking
LEAs	Law Enforcement Authorities
MITERD	Ministry for Ecological Transition and Demographic Challenge (Spain)
MUD	Modello unico di dichiarazione ambientale (Italy)
MS	Member State
OLAF	European Anti-Fraud Office
OPFA	Operational Facility
SAFE	Security and Freedom for Europe
SES	State Environmental Service (Latvia)
WEEE	Waste of Electrical and Electronic Equipment
WSR	Waste Shipment Regulation



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## OPERATIONAL FACILITY FOR FIGHTING ILLICIT WASTE TRAFFICKING

# 1. INTRODUCTION AND BACKGROUND

### About OPFA-Waste

OPFA-WASTE – Operational Facility for fighting Illicit Waste Trafficking (IWT) is an EU flagship operational project targeting Illicit Waste Trafficking funded by the Internal Security Fund - Police. The project is implemented by a consortium of specialised EU law enforcement agencies led by Italian Carabinieri Corps in partnership with the National Environmental Guard of Romania, the State Police of Republic of Latvia, and the non-profit Foundation SAFE (Security and Freedom for Europe), and open to all European Member States' law enforcement authorities (LEAs) for receiving financial support for on-going IWT investigations.

The Project aims at fostering international police cooperation and setting harmonised criminal investigation methodologies in the field of IWT. The target will be achieved by promoting a goal-oriented operational approach, integrated with Europol procedures and protocols.

The adverse impacts of waste shipments on the environment are directly related to an increase in waste production combined with a fast globalisation of the economy, leading to growing volumes of waste shipped across borders. Rules for transfrontier shipments of waste are regulated by the Basel Convention, the OECD Decision and implemented within the European Union through several Regulations. The enforcement and investigation of illegal waste trafficking is not harmonised at the EU level, but fall under the responsibility of individual EU member states. In this context, the OPFA WASTE Consortium partners together with the Spanish Guardia Civil – SEPRONA and the Dutch Human Environment and Transport Inspectorate (ILT), in close coordination with the European Anti-Fraud Office OLAF and Europol, expressed the need to carry out an analysis focused on transfrontier shipments of waste.

### Background to the Pilot Research Study

This pilot research study was conducted under the umbrella of the OPFA-Waste project. The European Waste Shipment Regulation (EC) No 1013/2006 (WSR) lays down procedures to ship waste across borders. Depending on the type of waste (non-





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hazardous or hazardous), the intended treatment operation and the country of destination, requirements may be in place (see also box 1 for further details). Monitoring of waste shipments are important to check if these shipments are in accordance with the rules. **The responsibilities to monitor, to inspect, and, in case of non-compliance, to investigate and prosecute are divided amongst different authorities in the Member States (MS).** The issuing of consent for shipments of hazardous waste is the responsibility of the Competent Authorities, which are mainly situated within the Ministry responsible for environmental affairs, or environmental agencies. The inspection and supervision is mainly at environmental inspectorates, either at national, regional or local level. The investigation of suspected cases of IWT, is mainly done by the police. And Customs administrations play a key role at the borders, where they verify if the customs declarations for import and export of goods, and in this case waste, are in accordance with applicable laws.

All these authorities carry out their own tasks when it comes to controlling shipments of waste.

### Risk Assessments

To identify trends in the waste shipment trade, target possible illegal behaviour and make smart use of limited resources at the institutional level, the performance of risk assessments<sup>1,2</sup> are considered a valuable tool to aid environmental law enforcement in their efforts. Risks assessments support prioritisation of the workflow of LEAs. It does so by identifying high risks waste streams, involved stakeholders, routes and modus operandi, to name some examples. **The collection of data and analysing of relevant data, is a critical part of the risk assessment.** This can for example be data based on historic findings or investigations related to IWT, import and export declarations submitted to Customs authorities, information on notified waste shipments, open-source information, complaints or changes in import or export requirements by countries or developments in the trade itself, such as prices for certain materials.

To the project's understanding, only national studies have been carried out by the involved authorities, while an inter-country or cross-border methodological and empirical analysis of (potential cases of) illegal waste shipments has not been implemented yet.

<sup>1</sup> Doing the Right Things for Shipment Inspections (IMPEL, 2012); link to report: <https://www.impel.eu/wp-content/uploads/2015/12/FR-2012-14-DTRT-TFS-Step-by-Step-Guidance-Book.pdf>

<sup>2</sup> Guidance on Effective Waste Shipment Inspection Planning (IMPEL, 2016); link to report: <https://www.impel.eu/wp-content/uploads/2016/12/Guidance-on-Effective-Waste-Shipment-Inspection-Planning.pdf>



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### Research Aims

The aims of this pilot were threefold. Firstly, it aimed to **collect data on waste shipments** from five EU countries and open-source data for analytical and cross-reference purposes and to trigger new investigations. Secondly it aimed **to identify best practices and gaps in data reporting and storing** within the participating member states and loopholes in the waste shipments procedures. And lastly, it aimed to **gain insight into cases of repatriation<sup>3</sup>** of illegally shipped waste and the effectivity of these returns.

### Participating Countries

In this pilot, five countries took part. Involved authorities were the police services of Italy, Latvia, and Spain. For Romania, the National Environmental Guard participated and on behalf of the Netherlands the Environmental Inspectorate. Besides providing some of their own data, they also served as a contact point for other national authorities, such as Customs or regional environmental agencies.

#### Legal Framework in Short

##### Procedures for shipments of waste

Regulation (EC) No. 1013/2006 of the European Parliament and of the Council, of June 14, 2016 (WSR), regulates transboundary waste shipments (WSR) and implements the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, in short, the Basel Convention.

The WSR contains several annexes listing entries of hazardous and non-hazardous waste. Under EU waste shipment law, shipments of hazardous waste and waste destined for disposal are prohibited to be shipped to non-OECD countries outside the EU (articles 34 and 36). Shipments of hazardous waste to OECD countries are generally subject to the prior notification and consent procedure (article 4) which requires the prior written consent of all relevant authorities of dispatch, transit, and destination.

According to article 18 of the WSR, shipments of the so-called “green-listed” non-hazardous wastes within the EU and OECD do not usually require the prior consent of the authorities, but information requirements apply - this information is also referred to as ‘Annex VII’ information. During transport the waste should be accompanied by the document contained in Annex VII of the WSR. Information on Annex VII may be required by Member States in national legislation, but this is not laid down at EU level. Whether Member States actively collect and store all Annex VII information therefore varies per Member State.

<sup>3</sup> Chapter 4 of the WSR deals with the take-back obligations when a shipment cannot be completed as intended or when a shipment is illegal.



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The rules and procedures for the export of non-hazardous, or the so-called “green-listed” waste, from the EU to non-OECD countries, is laid down in Regulation (EC) No 1418/2007 following article 37 of the WSR. Under this regulation, the destination countries will have to inform the EU if and under which conditions they can allow the import of non-hazardous waste for recovery.

In other words, the export procedures of waste depend on the type of waste, the intended treatment of the waste and the destination country.

### Waste statistics

EU regulations and directives on waste, such as the Waste Shipment Regulation, require the submission of data from Member States to the European Commission. The Waste Shipment Regulation stipulates a procedure of prior written notification and consent (notification procedure) before cross borders shipments of:

- all hazardous waste
- other types of waste, including certain non-hazardous wastes that are destined to certain non-OECD countries

These amounts are to be reported to the Basel Secretariat and to the European Commission. Shipments of so-called green listed waste for recovery operations do not have to be reported to the Basel Secretariat and to the European Commission.

The legal basis for the Waste Statistics Regulation was adopted by the European Parliament and the Council of the European Union on 25 November 2002 and was revised in 2010 by Commission Regulation (EU) No 849/2010 of 27 September 2010 amending Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics.

In 2005, an implementation measure was adopted, Commission Regulation (EC) No 1445/2005 of 5 September 2005 defining the proper quality evaluation criteria and the contents of the quality reports for waste statistics for the purposes of Waste Statistics Regulation.

### National reporting

According to article 13.3 of the Basel Convention, each calendar year every Member State should submit a report on the implementation of the Convention over the previous calendar year to the Convention Secretariat. A copy of this report (“the Basel report”) is also sent to the Commission, along with additional information in the form of a reply to an implementation questionnaire (“the EU questionnaire”). The reporting requirement to the Commission is laid down in paragraph 1 and 2 of article 51. Every three years, the Commission draws up an implementation report based on the Basel reports and the EU questionnaires.

*Box 1: Legal Framework in Short*





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## 2. RESEARCH SCOPE

The research reviewed waste shipments recording systems of five targeted MSs (Italy, Romania, Latvia, Spain and The Netherlands) and analysed data referred to the respective waste import/export flows, intra and extra EU, in order to define possible indicators and trends related to the different routes and countries of destination, as well as the waste repatriation paths with a focus on the quantity and type of waste not repatriated/lost.

The research covered data reported between 2018 to 2020. This was just before legislative changes came into effect following waste import bans by China and amendments to the Basel Convention related to plastic waste.

In terms of waste types, the research mainly focused on the waste in the box below.

List of Prioritized Waste Streams of this Research Study				
Waste stream	European list of waste codes	Basel codes <sup>4</sup>	OECD codes (if Basel does not apply)	
Metal waste / Batteries	160605	200133	A1160	
	191202	200134	A1170	
	191203	200140	A1190	
			B1090	
Plastic waste	020104	170203	B3010 <sup>5</sup>	
	070213	170204		
	120105	191204		
	150102	200139		
	160119			
Waste of Electrical and Electronic Equipment (WEEE)	160209	200123	A1180	GC010
	160212	200135	A2010	GC020
	160213	200136	B1110	
	200121			
Residues from waste treatment	191212			

*Box 2: Priority Waste Streams*

<sup>4</sup> Codes starting with an 'A' are considered hazardous waste. Codes starting with a 'B' are normally considered non-hazardous waste.

<sup>5</sup> This code for plastic waste under the Basel Convention was amended as per 1 January 2021. Code B3010 refers to the coding of non-hazardous plastic waste before the amendments entered into force.



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Based on the collected data and analysis, the research envisaged to answer the following questions:

- Is it possible to detect possible cases of non-compliance?
- What are common routes?
- What are modus operandi?
- Who are key players?
- Which type of waste is most illegally shipped?

At the outset of the research project, a template dataset was built. This example of dataset contained relevant information about shipments of waste that would potentially allow answering the abovementioned research questions. The methodology, and empirical strategies, is further explained in Annex I. This template was then shared with the participating countries to inform them about the data that needed to be collected and it tried standardizing the data collection process across the five countries.

Before the research started, the **expected challenges** included getting the required data both on hazardous and non-hazardous waste, the completeness of the data and its level of aggregation, the type of data (inspection data, investigation data, data on repatriations) and the storage systems of data at different organisations and levels. Chapter 3 further details the encountered difficulties and challenges and suggestions for improvement.

### Waste and Harmonised System Codes

#### Basel Codes

The coding system under the Basel Convention is based on general categories of waste, hazardous and wastes requiring special consideration – these are the Y-codes. The hazardous waste categories are further specified in Annex VIII of the Basel Convention, using the so-called A-codes. Non-hazardous waste streams are listed in Annex IX of the Basel Convention and are the B-codes.

#### EWC Codes

The European Waste Catalogue (EWC) is a hierarchical list of waste descriptions established by Commission decision 2000/532/EC. It is divided into twenty main chapters, most of which are industry-based but some of which are based on materials and processes. Each of these has a two-digit code between 01 and 20. Chapters have one or more subchapters (with four figure codes, the first two of which are the two digits of the chapter). Within these there are codes for individual wastes each of which is assigned a six-figure code. Hazardous wastes are signified by entries where the code is followed by an asterisk.



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### OECD Codes

Under the OECD Council Decision [OECD/LEGAL/0266], the OECD Control System for waste is based on two types of control procedures. The so-called Green Control Procedure: for wastes presenting low risk for human health and the environment and, therefore, are not subject to any other controls than those normally applied in commercial transactions. And secondly, the so-called Amber Control Procedure: for wastes presenting sufficient risk to justify their control. Wastes subject to these control procedures are listed in Appendices 3 and 4 to the OECD Council Decision: the Green and Amber lists of wastes. The OECD wastes codes for non-hazardous waste listed in Appendix 3 (Green list) start with a G and the hazardous waste under the OECD decision are listed in Appendix 4 and start with an A.

### WSR Codes

The annexes of the WSR listing the different categories and types of waste refer to the waste coding systems of the Basel Convention, the EWC and the OECD Decision. In addition, new codes to annex IIIA may be added for mixtures of 2 or more wastes listed in annex III of the WSR. New codes for non-hazardous waste may be included in annex IIIB for additional green listed waste.

### HS Codes

The Harmonized System (HS) is a standardized numerical method of classifying traded products. It is used by customs authorities around the world to identify products when assessing duties and taxes and for gathering statistics. The HS is administrated by the World Customs Organization (WCO) and is updated every five years. The HS assigns specific six-digit codes for varying classifications and commodities. Countries are allowed to add longer codes to the first six digits for further classification.

### Implications

While different system codes have different rationales and serve different purposes, there are significant complications connected to the use of such systems. The main being harmonizing this data when shipments of waste are being recorded using two or more of such code systems. First, it requires significant effort in translating codes from one system to the other. Second, and most importantly, there is not always a one-to-one match of codes from one system to the other. This implies that it is not possible to perfectly compare and analyse waste shipments recorded under different code systems. This problem arises mainly when analysing data across different countries and authorities (e.g., local competent authorities responsible for waste shipments inspections and customs).

*Box 3: Waste and Harmonised System Codes*



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Besides the data gathered from the national authorities, **open-source data** were also consulted.

### Basel Convention Data

Parties to the Basel Convention are required to transmit their national reports to the Secretariat of the Basel Convention (SBC) annually, pursuant to paragraph 3 of Article 13 of the Basel Convention. The report consists of two parts: Part I and Part II. Part II has two sections – Section A and Section B.

The information requested for reporting includes the amount of hazardous wastes and other wastes exported and imported, their category, characteristics, destination, any transit country and disposal method as stated on the response to notification. This information is reported in Part IIA, which includes three tables Table 4 (export), Table 5 (import), Table 6 (Total amount of hazardous waste and other wastes generated).

Reporting countries use the Electronic Reporting System of the Basel Convention to submit the information. The reporting is facilitated by means of a template report that countries are asked to follow when submitting the data. The structure of the report is based on the format of the revised questionnaire on 'transmission of information', which was adopted by the Conference of the Parties to the Basel Convention at its sixth meeting (December 2002). Countries submit the report annually containing the information requested for the previous calendar year.

Upon receipt of the completed questionnaires, the Secretariat carries out quality control of the data and information, to the extent possible, and sends queries asking for clarification when necessary.

### Eurostat Data

The WSR implements the Basel Convention and the OECD-Council Decision on the control of transboundary shipments of waste. According to the WSR, all wastes for disposal operations and for recovery operations, all hazardous waste as well as some problematic waste streams and other wastes defined by the WSR, must be notified to the authorities before they are allowed to be transboundary shipped.

Based on the above-mentioned notification system Member States report to the EU on the basis of Article 51 of the WSR. Article 51 point 2 requires Member States to send to the Commission before the end of each calendar year a copy of the report for the



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previous year in accordance with Article 13(3) of the Basel Convention, which is submitted to the Secretariat of that Convention.

### Open-Source Data Analysis

As described above, both datasets contain information on shipments of waste that require prior notification. Thus, for EU countries information submitted to both Basel and Eurostat should coincide. However, discrepancies across the two datasets can be found. This is because while Basel Convention reports the data sent by each reporting country as it is, Eurostat performs quality checks. In particular, they validate the data reporting countries submit using a variety of methods (time series analysis, consistency checks, etc.). Indeed, reporting mistakes and inconsistencies arise due to several reasons.

Importantly, given the way in which the data is being recorded, data is usually reported twice in both datasets (the same shipment is reported by the reporting country that is exporting the shipment by the country that is importing it). This implies that it is possible to assess the overall quality of the data by studying whether the data is matched across countries. Quality checks show that there are significant differences in imports-exports data. These may arise from a number of reasons: different usage of codes and code systems, timing between exports-imports, and omissions in reporting shipments. Moreover, given that the data is aggregated at the waste type level (and not, for instance, at the shipment level) it is challenging to identify where the gaps and differences in reporting come from.

It is noteworthy to underline that, regardless of the reporting obligations, not all countries submit their annual reports regularly. This holds true for both Basel and Eurostat datasets, limiting the possibility of studying the phenomenon of waste shipments on those countries and, by extension, on the countries they trade with.

Another potential concern is the timing of the report. The reporting countries tend to submit the report (containing information of the previous year) by the end of the calendar year, implying that potential assessments of trends and new developments exclude up-to-date information.





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### 3. CONCLUSIONS AND RECOMMENDATIONS

This chapter summarizes the main findings and conclusions of the research work, focusing on the quality of the data itself, the analysis, and the research questions posed at the start of the project.

#### 3.1 Research Data

##### 3.1.1 Quality of the Data

First, it can be concluded that the requested data following the provided template could not all be provided. One main reason for this is that **not all relevant information is being gathered and recorded**. An example is **missing information concerning Annex VII**. The WSR does not require MS to collect Annex VII information, however some have implemented national provisions requiring companies to report and submit Annex VII information to the responsible authorities.

Also, the **type of information** that is recorded by the various authorities in the pilot countries differs. One country for example held records on take-back shipments or type of violations, whilst others did not. This type of information is important to identify possible modus operandi and to monitor whether take-back shipments have actually been returned or have been shipped elsewhere.

Even when relevant information about shipments or inspections is recorded, it is common to find a significant proportion of them that **lacks relevant information** (e.g., type of waste being shipped, quantity, etc.) which significantly limits the quality of the data.

Data analysis, reporting, and sharing of relevant information **is not being conducted in a timely fashion**. This is crucial to uncover recent phenomena (e.g., current trends, modus operandi, etc.). This issue is also apparent in the national reports sent to the Basel Convention Secretariat, where there were certain years missing for some countries. These delays in reporting by the countries hinder an assessment of the most recent data, and thus recent trends.

Therefore, the data collected, to a certain extent, allowed to understand general information about shipments: country of departure and destination, date, waste



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transported, outcome of inspection, etc. However, relevant constraints on the information recorded (and not recorded) does not allow to properly make inferences about the universe of shipments of waste in that country. The aggregated level of reporting instead of at shipment level, made comparisons mostly impossible.

Regarding data reporting, a major problem in the recording of shipments of waste both across institutions and countries is the **use of different, non-matching waste codes**. What is reported with a certain waste code as waste export by one country, can be reported as waste import under another waste code by the importing country.<sup>6</sup> **Consistency in the use of waste codes** is a condition to properly compare and match data across authorities within a country and perform cross-check imports versus exports across different countries.

Similarly, the quality of inspections data gathered does not properly allow to make robust inferences regarding illegal waste shipments in the studied countries. Specifically, the information gathered is often times incomplete both in terms of whether an inspection had taken place and concerning the information gathered through the inspection.

### Recommendations

- Develop a commonly agreed dataset of fields/variables of information to be recorded, both at the national and international levels. Subsequently, ensure that the agreed upon information is properly and consistently inputted. The reported information should be as complete as possible.
- Relevant information about inspections of waste and the findings should be consistently recorded to facilitate data analysis (e.g., risk assessments, predictive analyses, etc.). In the collected datasets, it is often the case that pieces of information regarding a shipment are missing. If in practice it is not possible to gather all relevant information, an explanation for the missing data is required.
- All inspections data should be recorded and not only of those inspections that found some type of irregularity.

<sup>6</sup> The research project conducted an interview to Eurostat and OLAF on February 24th, 2022 to better understand open-source data procedures and practices. In the interview, it was noted that a major issue regards the use of different codes for waste streams, due to different interpretation of the codes or diverging views on the classification of the waste streams. Moreover, different authorities use different coding systems. These coding systems do not always coincide (see Box 3).



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- It is fundamental to record information of why the inspection is being carried out. For example, if it is the result of a random check or if it is based on risk analysis. This information is crucial to be able to make inferences about the overall phenomenon of illegal shipments of waste in a country.
- Countries should maintain a record on take-back shipments.
- In order to collect information on shipments of non-hazardous waste streams, it is recommended to MS to collect this information by requiring the submission of the Annex VII information.
- Standardization and improvements on the currently used international waste code systems should be considered a priority.

### 3.1.2 Storage and Data Collection

As the data related to waste shipments is stored in various manners and formats by the various countries and authorities, the **data gathering process is time-consuming**. Even when the requested data is collected, the data in some cases needs transposing into usable datasets (for example, extract data from .pdf files into excel sheets). And as no similar data could be collected from the five pilot countries, it was not possible to develop comparable datasets and perform a comprehensive analysis and perform insightful cross-checks and other related comparisons/analyses.

Even when data is collected by the competent authority, the information is usually **not recorded and stored in a structured manner**. In fact, it is often the case that shipment data is collected in the form of pdf, word files or even email exchanges. This implies that the data is either not used for further analysis, or if it is, then it requires a significant amount of effort to structure the data and analyse it.

#### Recommendations

- In order to enhance the data collection, a common understanding of best practices in terms of the storage and format is recommended, preferably in a centralised manner.
- At a minimum, the information should be collected and stored systematically in a digitalised way to facilitate the analysis of the data.



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### 3.2 Involved Authorities

Due to the **different mandates or responsibilities of authorities**, a range of data is generated at different points in the waste shipment chain. Aside from the type of data, the level of where data is collected varies from national level authorities to regional level authorities. Further the type of waste, hazardous or non-hazardous, and the route, intra-EU or extra-EU, may influence which authority is responsible. This distribution, impacts the data quality, storing and collection as well.

The research study also showed that there is not always communication happening between these authorities within a country, and also not between countries on data and findings.

#### Recommendations

- It is recommended to the countries to collect and store the information, per authority at least, in a centralised database.
- To facilitate the sharing of information between authorities, it is recommended to develop information sharing agreements to formalize the procedures.

### 3.3 Research Questions

Considering the challenges the research faced during the work, the question is whether answers can be provided to the original research questions:<sup>7</sup>

Is it possible to detect possible cases of non-compliance?

Inspection's data indeed **reveal possible cases of non-compliance**.<sup>8</sup> Records show for example waste exports of two of the pilot countries to a non-EU country or non-OECD country (e.g., China, Tunisia, Morocco, India, Turkey, etc.), with Basel codes for hazardous waste (such as A1150, A1010 and A3010), whilst at the same time using a EWC code for non-hazardous waste. This could either indicate a wrong use of the Basel code (intentionally or unintentionally) or an illegal export. These cases would require further investigation to verify the exports and their legality.

<sup>7</sup> See Annex II for a thorough description of the main empirical findings.

<sup>8</sup> Non-compliance is defined as actions with waste which are non-conform the provisions of the waste shipment regulation and related law – examples include waste shipments subject to export ban, no prior informed consent (PIC) obtained, waste movement form missing, waste not stated as in notification, waste wrongly declared or not in compliance with destination country's regulations/procedures.



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What are common routes?

**Common routes of shipments of waste depend heavily on the type of waste being shipped.** In particular, regarding extra-EU exports, the mostly shipped waste streams is metal waste and batteries that are mainly exported to Turkey. Other countries are China and India. Similarly, plastic waste is shipped to Turkey.

Intra-EU exports regarding metal waste and batteries are to Belgium and Germany, whereas exports of plastic waste destination countries represent Austria and Germany.

There exist also common routes that are idiosyncratic to each specific country determined by geographic and economic factors. For example, Latvia trades significant amount of waste with Lithuania and Estonia (metal, electronic and plastic waste), Romania with Moldova (metal waste), and Italy with Spain (e.g., residues from waste treatments).

What are modus operandi?

Based on the limited data on inspections, it can be concluded that **misdeclarations of waste** is the most common modus operandi identified. Waste is either not declared as waste at all, or hazardous waste is declared as non-hazardous waste. Another approach is that of **misreporting the destination country**.

Who are key players?

Given that not all countries shared information about the entities involved in waste shipments, a common trend or conclusion cannot be readily drawn. From what it is possible to determine, however, the market regarding shipments of waste (irrespective of whether they are legal or not) is relatively **concentrated** and based on the country and type of waste, plus there are a relatively small number of key players. This insight may be relevant for understanding the shipments' dynamics and in implementing measures to better identify and prevent cases of illegal shipments of waste.

Which type of waste is most illegally shipped?

Given the dataset constraints mentioned above, this pilot project is not properly suited to identify (suspicious) cases of illegal waste shipments. Moreover, even for the countries where inspections data was collected, for some countries there was no information about the waste that the illegal shipments were transporting. For those countries where inspections data also contained information on the waste being shipped (e.g. the Netherlands and Spain), it can be seen that the most frequent waste streams of





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shipments not in compliance are exports of metal waste from the Netherlands and exports of plastic and electrical waste to Hong Kong, Malaysia and Nigeria from the Netherlands and Spain.

### Recommendations

- To detect intercountry trends, comparable datasets need to be collected, preferably at the shipment level.
- To identify key players, both non-nominal as well as nominal data should be recorded and gathered.
- In order to perform a more in-depth analysis on illegal activity, additional data (and, specifically, richer data) on inspections would be required.

### 3.4 Conclusions

The rigorous analysis of data on waste shipments can be a powerful tool in the hands of law enforcement and relevant authorities in combatting illegal activity. Indeed, data informed choices can aid in preventing and opposing illegal activity through the production of risk assessments, by carrying out targeted inspections, and implementing other actions that effectively counter this phenomenon.

Nevertheless, at the current state, the type of questions that the data can properly answer are limited due to constraints in data collection, reporting and data storage. This also implies that developments in this domain should be considered a priority since they can provide significant and effective improvements in tackling illegal activity.

A follow-up activity is recommended to further develop and specify some of the recommendations concerning dataset templates, the exchange of information, the collection of Annex VII information and repatriations, including the identification of best practices and explaining the use of collecting and analysing certain data.



## ANNEX I. METHODOLOGY

### 1.1 Template Dataset

In light of the research aims, the starting point was to understand and study data collection and storage practices in the five countries that took place in this pilot research. Moreover, the collection of relevant information about hazardous and non-hazardous shipments of waste was also aimed at analysing the resulting data in view of the research questions described in Chapter 2. For this purpose, an ideal template dataset was built that allowed answering the research questions. This is a collection of pieces of information that needed to be gathered in each of the participating countries.

Importantly, to answer the research questions, the ideal information regarding waste movements should be gathered at the shipment level. That is, information should not be further aggregated, for example, on a per year basis, by country of destination, etc. Thus, for each shipment the following information was included in the template dataset:

Template Dataset	
<b>Shipment Details</b>	Shipment ID Broker/Dealer Name Broker/Dealer Address
<b>Producer of Waste</b>	Name Country of Origin Address
<b>Transportation Information</b>	Entity Organizing the Shipment Name Entity Organizing the Shipment Address Transporting Company Name Transporting Company Address Means of Transport Date of Departure
<b>Information at Destination</b>	Consignee Name Consignee Address Date of Arrival Treatment Planned at Destination Treatment Site at Destination
<b>Waste Transported</b>	Typology of waste (Waste code, Basel code, Customs HS codes) Quantity Shipped in tonnes (divided by Waste Typology)



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	Type of Trade (Hazardous, Non-Hazardous)	
<b>Inspection/Investigation</b>	Inspection Carried Out	
	Reason Inspection	
	Outcome Inspection	
	Action Taken after Inspection	
	Investigation Carried Out	
	Reason Investigation	
	Outcome Investigation	
	Action Taken after Investigation	

*Box 4: Dataset Fields/Variables*

Finally, and given the objectives of the project, the data to be collected was restricted to the countries that are part of this research project and corresponding to the 2018–2020-time interval.

## 1.2 Empirical Approach

The information contained in this ideal dataset would allow to answer the following questions:

- What are the most common routes?
- What are the modus operandi?
- Who are the key players?
- Which type of waste is mostly shipped?

By receiving data from ideally a different range of authorities, including environmental inspectorates, police and customs, in combination with data from several countries, links could be made to help answering these questions. Moreover, if a specific shipment of waste can be identified with one specific ‘ID-number’, its movement from start until final destination, could be tracked, leading to better insights and understanding of the routes.

Identifying key players would depend on whether the data collected includes company names and cases of non-compliance or IWT. The type of waste shipped can be identified by description of the waste and/or codes used to classify the waste.

Importantly, these questions can mainly be answered in relation to legally registered shipments of waste in each country. Illegal waste shipments cannot be identified without further information and analyses. Thus, to identify evidence of illegal shipments, two



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different and complementary empirical approaches were intended to be applied. These identification strategies are explained below.

### **Investigations/Inspections**

For several reasons, shipments of waste may be subject to inspections by the relevant authorities. This can be the result of risk assessments (e.g., based on waste shipment codes, inconsistencies in the self-reported declaration, etc.) or random checks. These exercises are crucial not only to detect specific cases of illegal waste trafficking, but it also allows to build informed expectations about the volume of illegal shipments overall.

Moreover, inspections and their findings, are the most direct way to properly identify illegal waste streams mostly shipped, common routes and key players. Similarly, modus operandi of IWT can be detected. Reasons may vary, but examples include lacking a notification for a shipment of hazardous waste, lacking Annex VII information for a shipment of non-hazardous waste, destined for a non-licensed facility, destined for a non-OECD country who has banned certain imports of waste, or wrongly classified waste.

### **Imports/Exports Crosschecks**

The international nature of the analysis allows analysing the consistency of exports/imports across two specific countries. For instance, it is possible to analyse whether the information in country A about a shipment exported from country A to country B matches the information of the imported data about this shipment from country B. Although not flawless, this analysis can theoretically identify both at the shipment level and an aggregate level suspicious cases of illegal waste shipments.

#### **1.3 Data Gathering**

National data analysts were in charge of gathering the abovementioned dataset by country. To do so, they contacted the relevant national authorities. Specifically, their task consisted of learning how each country handled data relative to the shipment of waste, collecting the data available, and performing data cleaning duties to harmonize the data consistently across the five countries.

The aim was to gather specifically the following types of waste shipments:

1. Intra-EU hazardous waste shipments
2. Extra-EU hazardous waste shipments
3. Intra-EU non-hazardous waste shipments
4. Extra-EU non-hazardous waste shipments



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5. Inspections/Investigations
6. Repatriations

The paragraphs below describe the data collection process and results for each of the five countries (in alphabetical order).

### 1.3.1 Italy

#### 1.3.1.1 *Hazardous and non-hazardous waste shipments*

In Italy, cross-border shipments of waste are governed by art. 194 of the Consolidated Environmental Law, Legislative Decree no. 152 of 2006, which refers to EC Regulation no. 1013/2006.

Hazardous waste shipments require prior notification and consent from the competent authorities (regions and autonomous provinces). Annex IA and IB are stored by these authorities (in general by the respective chambers of commerce within a region).

Annex VII data is not collected and registered as it is not mandatory to send them to the competent authorities. However, in Italy there is a system of instruments that allows to oversight shipments of waste. The system is based on three different documentation procedures that entities involved in shipments of waste must complete:

- Formulario di identificazione dei rifiuti – FIR (Waste Identification Form). A document that must accompany the shipment and specifies relevant information about the shipment itself.
- Registro di carico e scarico dei rifiuti (Waste Loading and Unloading Register). A physical register in which all received and sent shipments must be recorded.
- Modello unico di dichiarazione ambientale – MUD (Single Model of Environmental Declaration). Annual obligation that legal entities and companies need to meet every year indicating the amount and type of waste they have produced or handled in the previous year.

#### 1.3.1.2 *Inspections*

The police forces and the competent control bodies (Carabinieri, Traffic Police, Guardia di Finanza, Port authorities, Customs) carry out inspections on shipments of waste.

For shipments of hazardous waste, the Ministry of Ecological Transition handles a digital system (a web application) meant to collect information on inspections (SISPED). In particular, for each waste shipment that has been notified and approved the system automatically creates a form that specifies the planned journeys of the shipment and a





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form that the competent authorities – who have access to the system – can fill in in relation to the conducted inspections.

The system therefore allows the competent authorities to plan the inspections in advance, while at the same time centralising information on inspections, which in turn enables data analysis and reporting of inspections data.

### *1.3.1.3 Data Collected*

The data gathered was shared by ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale), which is an Italian public entity under the supervision of the Ministry of Ecological Transition. In particular, ISPRA holds data relative to the MUD. Therefore, the data contains information on both hazardous and non-hazardous waste shipments.

## 1.3.2 Latvia

### *1.3.2.1 Hazardous and non-hazardous waste shipments*

For hazardous waste shipments, the company in charge of the shipment should inform and receive an approval from State Environmental Service of the Republic of Latvia (SES) not less than 3 days before shipment departure date. For non-hazardous waste shipments, Annex VII is not mandatory to be sent to the competent authorities, but the paperwork needs to be attached to the shipment.

Regarding all waste shipments, in Latvia the Latvian Environment, Geology and Meteorology Center handles two different database systems:

- APUS – Waste Shipment Management System. It was introduced in 2018, and since 2020 it is mandatory to use it to register data on any kind of waste shipments. For non-hazardous waste shipments, with the information submitted, the system automatically creates the Annex VII document.
- “3-atkritumi pārskats” (3-waste overview), which is an open access database containing annual shipment information.

While Annex VII is not mandatory to be submitted, all companies are obliged to report all waste shipments (hazardous and non-hazardous) in both the APUS and “3-waste overview” systems.

The SES also stores hazardous waste shipment data collected directly by companies based on their internal approval process of hazardous waste shipments.



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### 1.3.2.2 Inspections

Inspections are conducted by both the Latvian State Police and by SES. All data about inspections is collected, maintained, and provided by SES. Inspection reports are in different forms and file formats.

### 1.3.2.3 Data Collected

The data contained in both the APUS system and the 3-waste overview was provided. Moreover, the SES shared hazardous waste shipment data and inspections data which required data entry and cleaning.

## 1.3.3 Netherlands

### 1.3.3.1 Hazardous and non-hazardous waste shipments

The Ministry of Infrastructure and Water Management issues the consent concerning notifications of hazardous waste. Three days before each shipment, the company must notify each shipment and report it to the Human Environment and Transport Inspectorate (ILT). The resulting data (TFS data) is stored by them. This information is gathered and, if necessary, corrected by them.

Annex VII data is not collected and registered as it is not mandatory to be submitted to the competent authorities. Nevertheless, the ILT holds data on these shipments through other sources:

- Eurostat data that gathers summarised information on certain non-hazardous waste streams, which is compiled by the Dutch National Statistical Bureau CBS<sup>9</sup>.
- For certain waste streams (WEEE and batteries) notification is required and the resulting data is collected and published online.
- Declaration data of the Dutch customs.

### 1.3.3.2 Inspections

In the Netherlands, different entities perform inspections: the ILT, police, and customs. The ILT gathers all this data on a yearly basis.

### 1.3.3.3 Data Collected

The data on waste shipments stored by the ILT (based on Eurostat and TFS data) for the period 2018-2020 was inaccessible due to a system migration issue. However, the ILT

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<sup>9</sup> Dutch companies must report to the National Statistical Bureau if they export material with a value of more than € 1.000.000. After processing this data and other research they send it to Eurostat.



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elaborated estimations of shipments of waste based on notifications. These estimations were shared for the purposes of this research. Similarly, waste shipments inspections data across the years 2018-2020 was shared together with repatriation shipments from the ILT.

### 1.3.4 Romania

#### 1.3.4.1 *Hazardous and non-hazardous waste shipments*

In Romania, the National Agency for Environmental Protection handles the authorisations of hazardous waste shipments. There is no structured dataset in which information about hazardous waste shipments is collected. In fact, this information is stored mainly in an unstructured format (pdf and word documents).

In Romania, there is no legal obligation to report shipments of non-hazardous waste. Moreover, there is no structured process that enables to collect and handle this data.

#### 1.3.4.2 *Inspections*

In Romania, the National Environmental Guard has the attributions regarding the verification of waste transfers together with the Border Police, Customs, and with the support of other public authorities according to their competences.

#### 1.3.4.3 *Data Collected*

For shipments of hazardous waste, the National Agency for Environmental Protection shared unstructured information about notifications and authorisations. Whereas for extra-EU waste shipments the Romanian customs shared the database in excel format. Inspection's data was not shared, although a summary of the number of inspections per year was provided.

### 1.3.5 Spain

In Spain, according to Art. 12 of the Waste and Contaminated Soils Act 22/2011, the authority in charge of authorisations, enforcing regulations, and data gathering depends on whether the waste is being transferred to non-EU countries (3<sup>rd</sup> Countries) or to EU member states.

#### 1.3.5.1 *Hazardous and non-hazardous waste shipments*

The Ministry for Ecological Transition and Demographic Challenge (MITERD) oversees transfers of waste from and to 3<sup>rd</sup> countries. For hazardous waste shipments, either the



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company in charge of carrying out the transfer or the competent authority of the country from where the waste is imported must present all the required documentation (Annex IA, Annex IB). These documents can be presented either scanned and sent via email or physically sent to the Subdirector General of Waste of the Ministry for the Ecological Transition and the Demographic Challenge.

The Autonomous Communities (CA) are in charge of handling the transfers of waste within the EU. According to the Spanish Constitutional System, each CA has its own rules in terms of how to handle, store, and share the information. For hazardous waste shipments, written notification and consent (Annex IA, Annex IB) must be obtained and attached during the shipment, while the CA must authorise it by written form before it happens. In relation to these shipments, CAs must report this data annually to MITERD in order to submit it to the Basel Convention Secretariat. For non-hazardous waste shipments each CA has implemented different rules in handling the related documentation. While some do not consistently gather and archive this data, others do and store the data in a structured fashion, making them readily available for inspection and analysis.

### *1.3.5.2 Inspections*

Inspections of land transports are carried out by SEPRONA (the environmental department of Guardia Civil), while inspections regarding maritime ports and airports are carried out by the Spanish customs authority.

### *1.3.5.3 Data Collected*

For extra-EU shipments, MITERD provided the data. For waste shipments up to the first half of 2019, data was partly digitalized and partly not (in pdf format related to Annex IB and Annex VII). Since the second half of 2019, the data is stored in an online platform. An exception being imports of both hazardous and non-hazardous waste shipments which are only available in pdf format. Based on research priorities and limited resources, a structured dataset of extra-EU exports only was generated.

For Intra-EU hazardous shipments, the data was collected from MITERD. In fact, the data was already centralised (from the CAs) for submission to the Basel Convention, although only for 2018 and 2019 (2020 data was not available yet).

For Intra-EU non-hazardous shipments, an official email request to every CA was sent by the Sub-directorate General of Waste of MITERD. 10 out of the 19 CAs replied:



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- Two indicated that the data would not be sent due to time constraints.
- Eight sent the requested data in different formats (excel and pdfs). Only three CAs shared this information in a structured format, which allowed to perform readily data analysis.

The inspection data was provided by Guardia Civil. The data comprised only those inspections in which the shipments were not in compliance. This information was stored in digital format in pdf and text documents. Thus, the data was then cleaned and structured based on the research needs.





## ANNEX II. EMPIRICAL RESULTS

This section summarizes the main insights that the data gathered on shipments of waste reveal. It first illustrates the overall amount of waste shipments by country and type of waste. Then, common routes and key players are identified. This information refers to recorded shipments of waste by the countries of interest and not specifically to illegal shipments. Therefore, in the final part of this section, analyses are conducted to try identifying instances of illegal waste shipments.<sup>10</sup>

### 2.1 Overall Shipments of Waste

#### 2.1.1 Italy

In the period considered, Italy has been a net importer of waste. Indeed, while it has exported almost 15 million tonnes of waste, it has imported around 26.5 million tonnes of waste. Regarding the specific waste streams of this research (metal waste, batteries, plastic waste, waste of electrical and electronic equipment (WEEE) and residues from waste treatment), a similar picture arises. Italy has exported 4.5 million tonnes of waste and imported 8 million tonnes.

However, disaggregating by waste streams, it can be seen that Italy mainly imports metal waste and batteries (7.544.141, 95% of all imports), while mainly exports plastic waste (1.954.328, 44% of all exports) and residues from waste treatment (1.637.706, 37% of all exports).

Both plastic waste and residues from waste treatment are mainly exported to EU countries. In fact, the share of these exports to EU countries correspond to 69% and 95%, respectively.

#### 2.1.2 Latvia

Overall, Latvian exports of waste shipments are relatively higher (1.413.055 tonnes) than its imports (1.141.032 tonnes). This difference significantly increases for the types of waste shipments under consideration (900.367 and 331.096 tonnes, respectively).

<sup>10</sup> This section is based on the data provided by the corresponding countries. The data may not correspond to the full universe of shipments of waste in that country. This may be due to data entry, recording, and sharing deficiencies. Moreover, the data is not readily comparable across countries since the shipments of waste have been classified according to different waste code systems (EWC for Italy, Latvia and Spain, while HS codes for the Netherlands and Romania). See box 4 for more information regarding waste system codes and their implication.



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Latvia mainly exports metal waste and batteries (838.894, 93% of total exports) and of these, the majority go to extra-EU countries (532.009 tonnes). Plastic waste is also exported but the amount is limited (59.586 tonnes).

Latvian imports mainly concern plastic waste (249.476 tonnes, 75% of total imports) and metal waste and batteries (66.788 tonnes, 20% of total imports). These imports come from both EU and Extra-EU countries. In fact, imports from EU countries represent 64% of all plastic waste imports and 58% of all metal waste and batteries imports.

### 2.1.3 The Netherlands

The Netherlands have seen approximately 45 million tonnes of imports of waste shipments and a similar amount of exports. These numbers are based on extrapolations of TFS data, combined with Eurostat.

Imports of plastic, electrical and metal waste account for approximately 13 million tonnes of shipped waste, whereas exports of such waste streams reach approximately 22 million tonnes.

The country imports almost 11 million of metal waste (89% from EU-countries) and 2 million tonnes of plastic (98% from EU-countries). The waste stream mostly exported is metal waste with almost 20 million of tonnes exported (43% to EU-countries).

The figure for electrical waste is based on an extrapolation of TFS data and therefore subject to a high uncertainty. Imports and exports of electrical waste were estimated to be somewhere between 100.000-250000 tonnes and 100.000-177.000 tonnes, respectively.

### 2.1.4 Romania

Romania has exported around 2.5 million tonnes of waste in the 2018-2020 period, and 92% of the exports are metal waste. Romanian imports instead reached only 63.909 tonnes in that period. Plastic and metal waste correspond to 36,71% (23.461 tonnes) and 28,38% (18.201 tonnes) of all imports.

### 2.1.5 Spain

In 2018 and 2019, Spain has exported 181.547 tonnes of notified waste<sup>11</sup>, whereas it has imported around 1.5 million tonnes. Among the exports, the mostly shipped waste stream is waste stream EWC 100207\* (solid wastes from gas treatment containing

<sup>11</sup> Notified waste including hazardous and other waste streams according to Basel Convention rules.



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hazardous substances/Combustion wastes). Spain's imports of residues from waste treatment (EWC 191212) accounts for 15.5% of all imports.

Regarding non-hazardous waste streams, in the period 2018-2020 Spain has exported 322.751 tonnes of waste to Extra-EU countries.<sup>12</sup> 61.6% of it is metal waste and batteries (198.359 tonnes).

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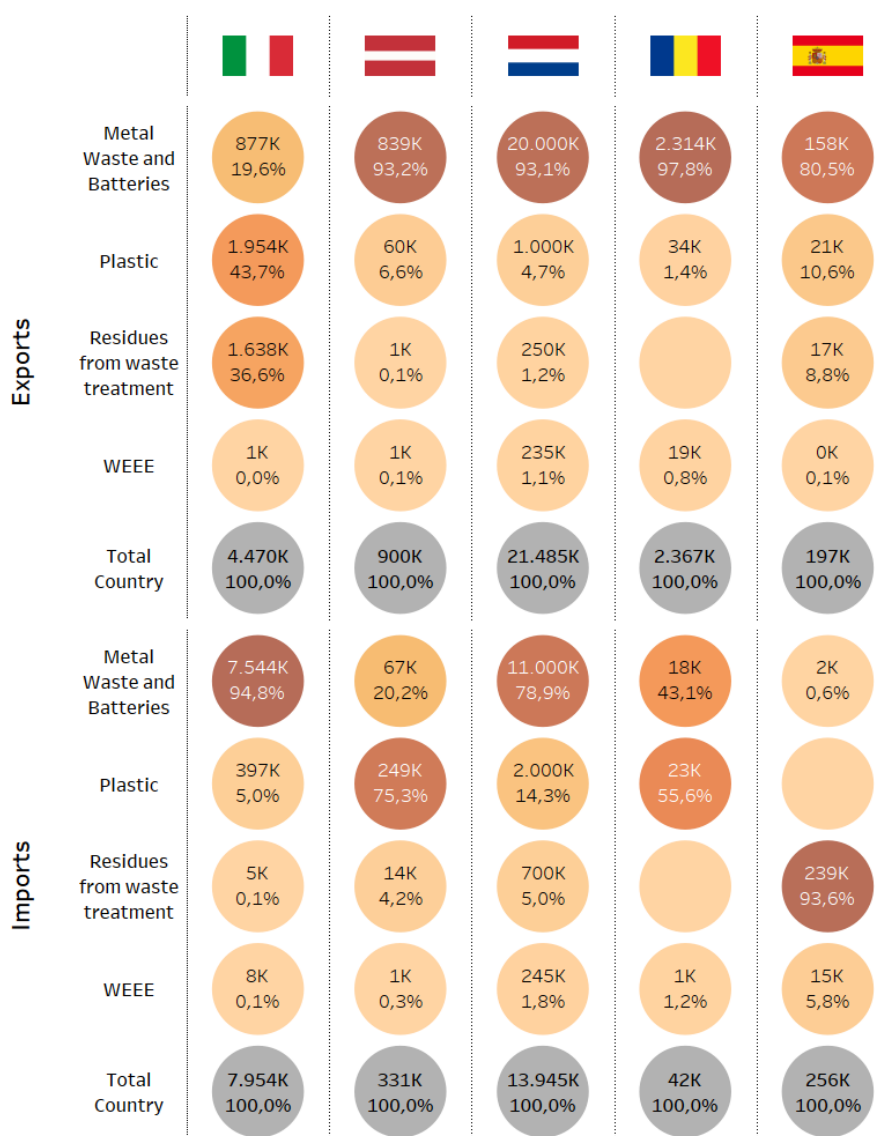
<sup>12</sup> This is based on Annex VII documentation shared. Thus, this gives a partial representation of total extra-EU exports in the period considered.



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## Summary: Shipments of Waste by Country and Waste Stream (2018-2020)

The chart below summarizes flows of waste shipments (both exports and imports) in tonnes, by country and type of waste for the period 2018-2020. In each cell it is therefore reported the quantity imported/exported relative to one country and one waste stream, while the percentage that this value corresponds to (relative to the four studied waste streams) is reported below.<sup>13</sup>



<sup>13</sup> As mentioned above, the reader should be careful when making comparisons across countries since the data is not always comparable for the reasons mentioned in Annex I.



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### *Box 5: Shipments of Waste by Country and Waste Stream*

#### 2.2 Common Routes

##### 2.2.1 Italy

Regarding metal waste and batteries, Italy mainly exports to Germany (15,70%) in the EU, whereas extra-EU exports are to the following countries: China (8,35%), Turkey (7,46%), and India (7,04%). Italy exports plastic waste to four countries mainly: Austria (15,85%), Turkey (15,54%), Germany (13,95%), and Slovenia (10,56%). Residues from waste shipments are mainly exported to EU countries: Portugal (25,64%), Austria (17,39%), and Spain (15,54%).

Metal waste and batteries are mainly imported from Germany (51,84%). Plastic waste imports, corresponding to a total of 396.626 tonnes, are imported mostly from France (40,22%) and Germany (15,69%).

##### 2.2.2 Latvia

The largest receiving countries of metal waste and batteries from Latvia are Turkey (346.126 tonnes), Estonia (211.134 tonnes), and Lithuania (105.213 tonnes). Lithuania is also the country in which is exported almost all electronic waste (595,6 tonnes, 91% of total). Finally, Lithuania, Estonia, and Poland are the countries receiving the most plastic waste (33.569 tonnes, 7.553 tonnes, and 6.994 tonnes, respectively).

Main countries that export metal waste and batteries and plastic waste to Latvia are Lithuania, Finland, and Estonia, exporting 18%, 15%, and 12% (respectively) across both types of waste.

##### 2.2.3 Netherlands

Not possible to analyse because the data shared did not include country level information.

##### 2.2.4 Romania

The main destination countries of metal waste shipments from Romania are Turkey (83,78%) and Moldova (10,83%). Imports mainly come from Romanian neighboring countries Moldova (21,46%, 13.717 tonnes), Serbia (16,38%, 10.465 tonnes), and North Macedonia (13,67%, 8.734 tonnes).





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### 2.2.5 Spain

For notified waste, main routes for both imports and exports are European countries like France, Italy, and Portugal. With respect to France, Spain mainly imports waste streams EWC 191207<sup>14</sup> (204.494 tonnes) and EWC 191004<sup>15</sup> (93.932 tonnes), whereas exports waste stream EWC 100207 (15.471 tonnes). Spain also mainly exports to Italy waste stream EWC 100207. This type of waste is, in turn, mainly imported from Portugal (65.555 tonnes). Italy instead exports to Spain residues of waste (EWC 191212, 126.364 tonnes) and waste stream EWC 191301<sup>16</sup> (82.182 tonnes).

For exports of waste streams that does not require notification, the main destination countries are China and India, absorbing almost 80% of these exports (62,17% and 15,23%, respectively). China received from Spain a total of 193.347 tonnes of metal waste and batteries.

#### Exports' Common Routes

The analysis of the destination countries has underlined the existence of common routes – countries that regularly import waste from the participating countries. The table below shows these common routes by waste stream.

	EU Countries	Extra-EU Countries
<b>Metal Waste and Batteries</b>	Belgium, Estonia, Slovenia	Germany, Lithuania China, India, Hong Kong, Moldova, Turkey
<b>Plastic Waste</b>	Austria, Estonia, Lithuania, Slovenia	Belgium, Germany, Poland Indonesia, Malaysia, Turkey, United Kingdom
<b>WEEE</b>	Belgium, Portugal	Germany Moldova, United Kingdom
<b>Residues of Waste Treatment</b>	Portugal, Spain	Austria

*Box 6: Exports' Common Routes by Waste Stream*

<sup>14</sup> EWC 191207: Wood other than that mentioned in 19 12 06.

<sup>15</sup> EWC 191004 fluff-light fraction and dust other than those mentioned in 19 10 03.

<sup>16</sup> EWC 191301 solid wastes from soil remediation containing hazardous substance.



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### 2.3 Key Players

#### 2.3.1 Italy

Italian key exporter players are usually waste collection and disposal companies, or companies tightly connected to the waste stream under study (e.g., technology companies for electronic waste or refineries for metal waste). Their counterparts - the importer entities – in the EU are mainly waste management and recycling companies. Importers, outside the EU, depend mainly on the waste stream. For electronic waste, importers are mainly represented by companies operating in this market and from India and Pakistan. For plastic waste, they are mainly Turkey-based manufacturers of cement. Whereas for metal waste, they are companies focused on the production of metal materials, parts, and items.

#### 2.3.2 Latvia

Latvian exporters of metal waste are mainly companies processing and recycling ferrous and non-ferrous scrap metal. 3 of these companies account for the 88% of all metal waste exports. Key receiving companies of metal waste are Lithuanian, Estonian and Turkish companies engaged in the metallurgic industry (e.g., selling scrap metal or producing different types of metal materials).

Latvian exporters of plastic waste are several companies that are focused on waste management and recycling raw materials and plastic. Receiving entities are mainly based in Lithuania operating in the plastic manufacturing industry.<sup>17</sup>

#### 2.3.3 Netherlands

The Netherlands do not hold detailed information on most non-hazardous waste shipments. However, for metal waste and batteries and WEEE waste a notification procedure is required and thus data (from 2019) on the players importing and exporting such waste streams is stored and publicly available online.

Main key players regarding movements of metal waste and batteries are Dutch companies that collect, treat, and recycle waste, and import/export them primarily from/to Austria, Belgian and German recycling companies of metal waste.

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<sup>17</sup> Several receiving entities of plastic waste have been anonymized for confidentiality reasons.



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Regarding WEEE waste, key players that export them are Belgian, Dutch, French, German companies that collect and treat waste and receivers of such waste are recycling companies in Belgium, Germany, and the Netherlands that mainly recycle electronic waste.

### 2.3.4 Romania

Main key players in Romanian exports are Turkish and Moldovan companies working in the steel and metallurgic industry. A variety of companies export waste to Romania, these are mainly waste and recycling facilities of neighboring countries.

### 2.3.5 Spain

For non-hazardous extra-EU shipments, exporting and importing companies of these shipments are mainly waste treatment and recycling plants and companies working in the metallurgic industry. For hazardous waste shipments, it is instead not possible to identify the main actors due to dataset limitations.

## 2.4 Analysis of Potential Cases of Illegal Trade

### Inspections

Inspections' data represent a direct instrument to identify cases of illegal trade of waste shipments and also permit drawing inferences on the volume of illegal trade that likely occurs in a country. In the following, inspections data for those countries that shared this information were analysed.

#### 2.4.1 Italy

Not possible to analyse because inspections' data was not gathered.

#### 2.4.2 Latvia

168 inspections were carried out in the 2018-2020 period. 57% of these were conducted for import shipments, 41% for export ones, while for 2% of these it was not possible to determine whether they were import or export shipments. Most of them (110) were conducted following scheduled interventions (routine or thematic inspections). The outcome of such inspections are the following: 110 inspections (65%) were in compliance whereas 46 inspections (27%) did not comply.<sup>18</sup> Outcome does not vary significantly by export/import status of the shipments.

<sup>18</sup> For the remaining 12 inspections (7%) it was not possible to assess the outcome given the documentation shared in this project.



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Of the 46 shipments that did not comply, 34 shipments regard instances that were not notified (e.g., they were not, not considered, or willingly omitted to be hazardous waste). The main reasons for non-compliance regard the lack of documentation (no prior written consent when required or lack of mandatory transportation documents), inconsistencies with it, or the introduction of prohibited waste materials. Unfortunately, information about waste shipped is not readily available and stored in the dataset, preventing the analysis of which waste materials are more likely not to be found in compliance.

Only 12 inspections related to hazardous shipments had previously obtained consent from the competent authority. Of these, 5 shipments did not comply (3 of them related to metal waste). Reasons for non-compliance related to discrepancies between the notified and shipped waste, and issues with documentation (e.g., the competent authority did not receive written confirmation of the shipment within 3 working days or movement documents (Annex IB) were not received at all=.

### 2.4.3 The Netherlands

The ILT performed 1.157 waste shipments' inspections in the covered period: 412 in 2018, 413 in 2019, and 332 in 2020, respectively. In 386 of them (corresponding to 33%) some sort of illegality was found.<sup>19</sup> The most frequent cases being that the required notification was missing (126 cases), Annex VII either missing or incomplete (88 cases), or the shipment was illegal due to export bans (49 cases).

When looking at waste streams, 60 cases of illegal shipments have been identified regarding plastic waste, 40 cases on metal waste and batteries, 36 cases on electronic waste, while only 7 cases on residues of waste treatment. For plastic waste the main reasons being either the notification missing (22) or Annex VII missing/incomplete (22). For metal waste the most frequent reason for no compliance is Annex VII missing/incomplete (16), while for WEEE waste it is export bans (18).

The illegal shipments inspected are almost equally split between exports and imports: 218 cases regard exports (56%), while 168 cases relate to imports (44%). For exports, main countries of destination are Turkey, Malaysia, and Hong Kong for plastic waste, whereas African countries (Nigeria, Guinea, and Ghana) for WEEE Waste. Regarding imports, across the different waste streams, they concern shipments coming mainly from EU countries.

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<sup>19</sup> This number corresponds to cases which have been closed during the reporting period (2018-2020).



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Interestingly, Dutch data also identifies the shipments that required repatriation (121 in total) and stores this data separately. While in many cases the reason for repatriation is not mentioned nor clearly described (39), the most common reasons for repatriation were that the shipments were prohibited based on the waste being transported and the destination countries (29) and the procedure of prior notification and consent was not carried out (46) or it contained incongruencies (8). Regarding the former, they are mainly due to export bans (e.g., hazardous waste being shipped to non-OECD countries). Regarding the latter, these are cases where the shipment required prior consent but either was not requested or the permission obtained was based on information not consistent with the waste shipped.

#### 2.4.4 Romania

Romania shared aggregated inspections data. In 2019, 475 inspections were carried out. Out of which, 8 resulted in criminal notifications and 22 in administrative sanctions. In 2020, 142 inspections were performed: 9 criminal notifications were made and 12 administrative sanctions.

#### 2.4.5 Spain

Spain shared inspections data when the shipments resulted not to be complying (53 shipments). Inspections are carried out following several reasons: random checks, accident-based checks, and risk-based. 75% (40) of the inspections are relative to exports. The most frequent countries of destination being Hong Kong (6), Malaysia (10) and Nigeria (10) and relative to plastic and electrical waste. The most common reason for non-compliance being that the shipments were not properly notified. Regarding imports, the 11 inspections not in compliance where from Portugal (8) and Nigeria.

#### Insights from Inspections Data

The analysis of inspections data reveals significant insights about illegal waste shipment activities. First, the proportion of inspections that find some sort of irregularity is particularly large (27% in Latvia and 33% in the Netherlands) and it does significantly vary by whether the shipment is exporting or importing waste. Second, the main motive behind non-compliance cases regard issues with shipment documentation (missing or incomplete documentation) and prohibitions (i.e., prohibited waste stream shipments). Third, illegal shipments can be identified mainly relative to plastic, metal, and WEEE waste. Finally, countries of destination of illegal shipments are African (e.g., Nigeria) and Asian countries (e.g., Hong Kong and Malaysia).

*Box 7: Insights from Inspections Data*





## OPERATIONAL FACILITY FOR FIGHTING ILLICIT WASTE TRAFFICKING

### Imports/Exports Crosschecks

Cross-checking information about imports and exports between two countries consists of an alternative method to uncover elements suggesting the presence of illegal shipments of waste. For this exercise to be robust, however, it is necessary that shipments of waste in both countries are properly recorded. Only in this fashion a missing shipment would give suggestive and informative evidence of illegal activity.

Before analysing the data gathered, an analysis of open-source data relative to hazardous waste shipments was conducted.<sup>20</sup> The analysis shows that aggregated quantities of imports and exports between two countries in a specific year do not usually coincide. Slight differences may rightly arise for several reasons (the shipment export and corresponding import may fall in two different years, differences in weight of the shipment due to the passing of time). However, the differences found, given their magnitude, may more likely be due to other factors. They are likely the result of reporting mistakes and omissions in a country and differences in code identification of waste across the exporting and importing countries.

Importantly, hazardous shipments of waste require prior notification and consent, which should result in minimizing reporting omissions. For non-hazardous waste shipments instead, since there is no legal obligation of notifying such shipments and Annex-VII (or related shipment information) it is usually not mandatory to report to the competent national authorities, it is even more unlikely that the universe of non-hazardous shipments will be reported and contained in the final dataset. Thus, this identification strategy to uncover suggestive evidence of illegal trade becomes ineffective.

Moreover, the quality of the data collected for the purposes of this research renders this analysis even more challenging. In fact, the data is aggregated at different levels across countries, it is often not complete or contain reporting mistakes, and use different waste codes. As a result of the above, and to avoid making inaccurate inferences, this type of analysis is omitted.

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<sup>20</sup> For information on open-source data see box 3.