



Countering WEEE Illegal Trade Summary Report

Market Analysis
Legal Analysis
Crime Analysis
Recommendations roadmap



UNITED NATIONS
UNIVERSITY
UNU-IAS
Institute for the Advanced Study
of Sustainability



INTERPOL



EXECUTIVE SUMMARY

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Contact information:

For enquiries about the project please contact the project coordinator via I.Botezatu@INTERPOL.INT

For enquiries about the publication please contact the corresponding author via: Huisman@UNU.EDU

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This document summarises the key findings from the CWIT project. Individual project deliverables containing all details are subject to final review by the end of October 2015. Some deliverables will be restricted to law enforcement agencies only.

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EXECUTIVE SUMMARY

The research undertaken by the Countering WEEE Illegal Trade (CWIT) project found that in Europe, only 35% (3.3 million tons) of all the e-waste discarded in 2012, ended up in the officially reported amounts of collection and recycling systems.

The other 65% (6.15 million tons) was either:

- exported (1.5 million tons),
- recycled under non-compliant conditions in Europe (3.15 million tons),
- scavenged for valuable parts (0.75 million tons)
- or simply thrown in waste bins (0.75 million tons).

1.3 million tons departed the EU in undocumented exports. These shipments are likely to be classified as illegal, where they do not adhere to the guidelines for differentiating used equipment from waste, such as the appropriate packaging of the items. Since the main economic driver behind these shipments is reuse and repair and not the dumping of e-waste; of this volume, an estimated 30% is e-waste. This finding matches extrapolated data from IMPEL on export ban violations, indicating 0.25 million tons as a minimum and 0.7 million tons as a maximum of illegal e-waste shipments.

Interestingly, some ten times that amount (4.65 million tons) is wrongfully mismanaged or illegally traded within Europe itself. The widespread scavenging of both products and components and the theft of valuable components such as circuit boards and

precious metals from e-waste, means that there is a serious economic loss of materials and resources directed to compliant e-waste processors in Europe.

Better guidelines and formal definitions are required to help authorities distinguish used, non-waste electronic and electrical equipment (such as equipment coming out of use or in post-use storage destined for collection or disposal) from WEEE. Penalties must be harmonised to simplify enforcement in trans-border cases.

Organised crime is involved in illegal waste supply chains in some Member States. However, suspicions of the involvement of organised crime in WEEE are not corroborated by current information. Increased intelligence will lead to a more comprehensive understanding of the issue.

Importantly, case analysis of illegal activities outlines that vulnerabilities exist throughout the entire WEEE supply chain (e.g. collection, consolidation, brokering, transport, and treatment). Offences include: inappropriate treatment, violations of WEEE trade regulations, theft, lack of required licenses/permits, smuggling, and false load declarations.

To address vulnerabilities more coherent multi-stakeholder cooperation is essential. For this purpose a recommendation roadmap with short, medium, and long term recommendations has been developed. These

recommendations aim to reduce illegal trade through specific actions for individual stakeholders; to improve national and international cooperation to combat illegal WEEE trade, actions such as:

- Increasing involvement, and improving awareness of users in the early stages of the e-waste chain;
- An EU-wide ban on cash transactions in the scrap metal trade;
- Mandatory treatment of WEEE according to approved standards, and dedicated mandatory reporting of treatment and de-pollution results;
- Better targeting, more upstream inspection, and national monitoring;
- An Operational Intelligence Management System (OIMS) to support intelligence-led enforcement and identify the risks associated with organised crime groups;
- A National Environmental Security Task Force (NEST), formed by different authorities and partners, to enable a law enforcement response that is collaborative and coordinated at national, regional, and international level; and
- Dedicated training of judges and prosecutors.

1. INTRODUCTION

The Countering WEEE Illegal Trade (CWIT) project provides a set of recommendations to the European Commission to assist various stakeholders in countering the illegal trade of WEEE, also known as ‘e-waste’, within and from Europe. Funded by the Framework Programme (FP)7, this two-year security research project brought together a unique group of experienced professionals from the WEEE industry, enforcement agencies, international organisations, lawyers, academia and consultants specialised in supply chain security. The project commenced in September 2013 and concluded in August 2015.

The consortium consisted of:

- Compliance & Risks Ltd.,
- Cross-Border Research Association,
- INTERPOL (coordinator),
- United Nations Interregional Crime and Justice Research Institute (UNICRI),
- United Nations University (UNU) (scientific coordinator),
- WEEE Forum, and,
- Zanasi & Partners.

WEEE contains hazardous substances such as mercury and cadmium. Therefore illegal WEEE handling, often in poorer countries, leads to significant adverse health issues and environmental pollution. At the same time, EU Member States are losing a vast amount of valuable rare earth metals and other important minerals due to increasing illicit activities, poor compliance rates, and limited enforcement activities in WEEE.

These issues called for increased attention and enhanced enforcement in the context of WEEE trade, transport and treatment. The CWIT project was established to identify the policy, regulatory, procedural and technical gaps as observed in today’s business environment, and to suggest tangible improvements. CWIT aims to assist WEEE-related industries, and governmental policy and enforcement actors, to enhance capabilities to seriously reduce illicit activities around WEEE in the future.

More specifically, the outputs of the CWIT project comprise a set of recommendations related to the European legal and policy framework, taking into account the objectives and constraints of all key government and business stakeholders. The project also provides a roadmap to assist in the implementation of all recommendations and ideas on future research and technologies that would contribute to the reduction of the illegal trade of WEEE.

In addition, the CWIT project established a multi-layer platform for information exchange among the various actors involved in countering WEEE illegal trade. Key stakeholders who have also greatly contributed to the project include: EU-level policy makers and regulators; national law enforcement agencies (including police, customs and environmental inspection agencies); producers of electronics and WEEE treatment industries. In achieving these objectives, the CWIT consortium, among other tasks:

- Estimated the volume of WEEE generated in Europe;

- Identified actors involved in the WEEE export market;
- Examined the legal framework related to WEEE and its implementation within and outside the EU;
- Analysed the involvement of organised crime in the global distribution of WEEE; and,
- Developed an understanding of the methods, destinations and routes used to

carry out illicit WEEE shipments.

The CWIT project Coordination and Support Action was developed in 7 Work Packages (WPs), with identified tasks and deliverables. Each WP was led by one of the consortium partners. The relationship between WPs was developed and highlighted in the deliverable reports. The following diagram shows a brief description of the Work Packages:

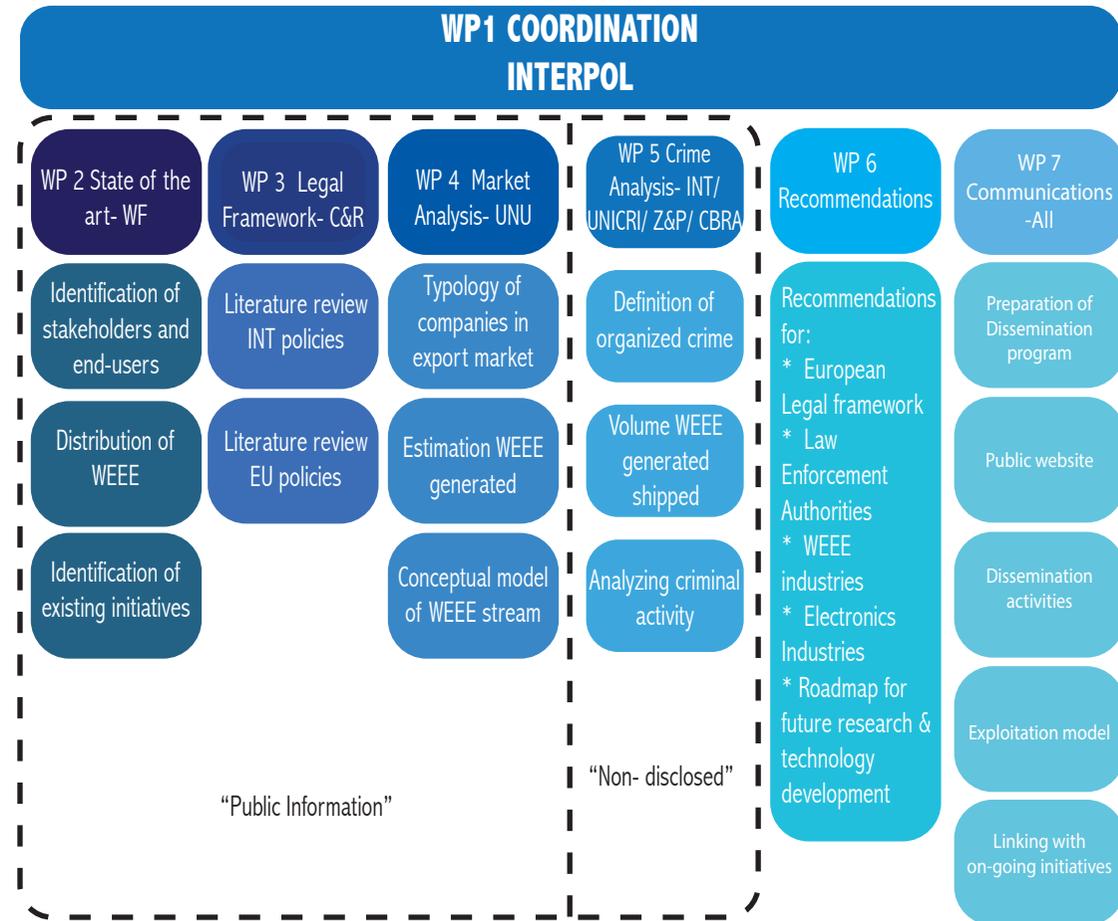


Figure XX CWIT project structure

WP1 – Management and Coordination (INTERPOL)

The objective of Work Package 1 was to coordinate and monitor the progress of the CWIT project and to ensure the achievement of the project objectives. A High-Level Advisory Board was set up to provide advice and support to the consortium (see: <http://www.cwitproject.eu/advisory-board/>).

WP2 – WEEE Actors and Amounts (WEEE Forum)

The objective of Work Package 2 was to produce an overview of the European WEEE industries and the relevant actors in these industries. There was a particular focus on the end-users involved in the fight against the illegal trade of WEEE. Activities included the mapping of all the relevant stakeholders; an analysis of the distribution of WEEE; and the gathering and analysis of existing initiatives, projects and studies to form the LibraWEEE. This information was made available to all project partners via the C2P information management system ('knowledge database') and served as input to all the other work packages.

WP3 – Legal Framework (Compliance & Risks Ltd.)

Work Package 3 built on the intelligence gathered in WP2 and its objective was to provide a global overview of the current legislation in place at international, European, and national levels. By engaging with stakeholders through questionnaires, WP3 comparatively evaluated the different national

political and regulatory environments on WEEE. WP3 also delivered input for recommendations on best policies that support actions countering the illegal trade of WEEE.

WP4 – Market Assessment (United Nations University)

The aim of Work Package 4 was to create an up-to-date and accurate picture of the industry built around the trade in WEEE. Based on the information and identification of the WEEE operators in WP2, this work package gathered all key facts and figures on the amounts of electrical and electronic equipment (EEE) placed on the EU market and the resulting WEEE flows.

The total volume of WEEE generated in Europe was estimated and a conceptual model of the WEEE stream was created, which included lifespans and destinations of the discarded equipment. The market assessment described all reported flows and the resulting gap analysis on missing quantities was the starting point for the crime analysis in WP5.

WP5 – Crime Analysis (INTERPOL)

The objectives of Work Package 5 were to conduct a comprehensive study of the involvement of organised crime groups in the global distribution of WEEE, identify the specific criminal activities and modus operandi associated with illegal WEEE shipments, and to provide an estimation of the volume of WEEE that is generated and illegally traded. Law enforcement and compliance gaps were analysed and a system of best practices to

mitigate the illegal trade in WEEE was developed.

WP6 – Recommendations (Cross-Border Research Association)

The objective of Work Package 6 was to provide a set of recommendations to policy makers, compliance and law enforcement authorities and industries. WP6 aims to heighten awareness of WEEE issues, facilitate discussions between stakeholders and increase the resilience of the WEEE industry against illegal trade. The recommendations are delivered in the form of reports specifically tailored to the target audience. A strategic roadmap was created to equip the European Commission with information to guide future research and technology development.

WP7 – Dissemination (WEEE Forum)

The objective of Work Package 7 was to ensure that the results of the project have a lasting impact on European society and that many international organisations can use these results. The dissemination has been achieved through a range of traditional and new media strategies.

2. MARKET ANALYSIS

One of the objectives of the CWIT project is to construct an accurate picture of the WEEE trade flows for Europe, with comprehensive facts and figures on the WEEE volumes. It is vitally important to understand the impact of market dynamics and economic drivers, so as to successfully intervene in the illicit trade in WEEE. The research focused on the analysis of:

- The WEEE actors and typology of the WEEE chain;
- The estimation of the volumes of WEEE generated and its destinations; and

- The economic drivers behind illicit trade.

2.1. The WEEE chain

A generic typology provides a standardised way of mapping WEEE flows and associated market behaviour. However, the actual market flows between various actors are country specific. There is a high degree of heterogeneity in terms of size, number and types of actors involved in these flows as visualised in Figure XX. More details are provided in Deliverable 2.1 Mapping of WEEE actors,

To better understand these actors and the many different data and literature sources, the consortium developed two support tools:

- Database of e-waste stakeholders: this is an online database providing an overview of the key actors per country, according to publicly available sources and official registers: <http://www.cwitproject.eu/reports-downloads/database-ewaste-stakeholders>.
- The LibraWEEE (<http://www.libraweee.eu/>) is a compilation of documents, studies and

initiatives dealing with or containing information on WEEE flows, market behaviour, guidelines and support documents for policy makers and enforcement agencies. There are currently 179 documents included in the LibraWEEE, which is publicly available. The repository also allows for additional contributions. More details can be found in Deliverable 2.4 Inventory of WEEE related research and in Deliverable 4.1 Typology of companies involved in the export market.

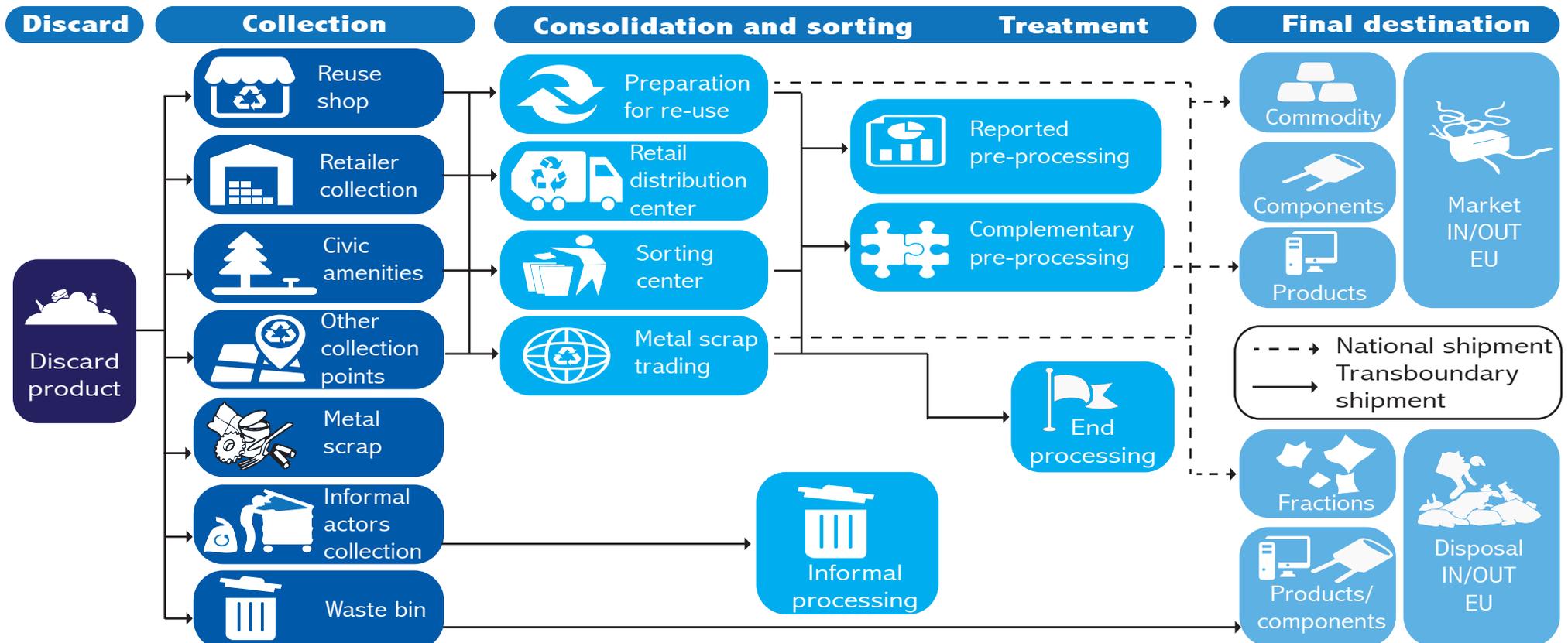


Figure xx, Actors in the WEEE chain

2.2 The WEEE volumes

In Figure xx the WEEE amounts documented in the market assessment for 2012 are presented.

For the EU-28 plus Norway and Switzerland (EU28+2), the total amount of WEEE generated is 9.45 million tons:

- 3.3 million tons are reported by Member States as collected and recycled;
- 0.75 million tons are estimated to end up in the waste bin and
- 2.2 million tons of WEEE are mixed with metal scrap.

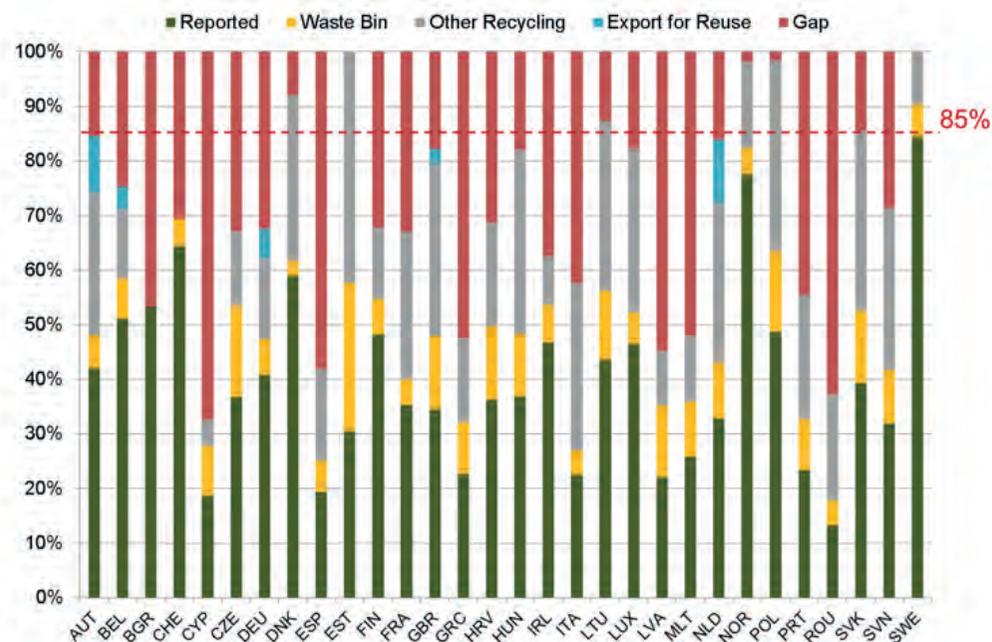


Figure XX 2012 EU WEEE amounts documented per Member State

The above numbers are grouped to total EU numbers and are visualised in a flow diagram in Figure XX.

The arrows represent the WEEE flows for the EU28+2 in 2012. The top part constitutes the WEEE generated, including potentially reusable appliances, being a total discarded amount of 9.45 million tons. These amounts are

determined by UNU in a report for the European Commission – DG Environment, on establishing a common methodology for the calculation of EEE placed on the market and the resulting WEEE generated for each Member State. The uncertainty with this calculated value is approximately 10%; this is due to assumptions around a product's residence time in the economy.

It should be noted that the diagram has been simplified by only showing the initial destinations. In reality, feedback loops and illegal activities occur with each flow, including from the officially reported flow. In total, 3.3 million tons are reported by Member States as collected and recycled. However, there are only a few Member States that have implemented conclusive reporting and monitoring of de-pollution and up-to-standard treatment conditions.

A number of producer compliance schemes voluntarily chose to put reporting/monitoring schemes in place. The expectation is that more Member States will make such schemes mandatory over the years, through the implementation of the CENELEC and WEEELABEX standards. However, it cannot be ruled out that there is subsequent trading of WEEE to other destinations from this supposedly secured flow.

Around 0.75 million tons of mainly small appliances end up in the waste bin, with varying amounts per country of between 1 and 2 kg per inhabitant per year. The literature review covered 15 countries that were grouped into low, middle and high-income countries and the data was then extrapolated to EU28+2 totals. It also revealed that data is presented in different formats covering different years. For wealthier or larger economies, there is more data available in the literature indicating kg of WEEE per inhabitant per year.

Where the data is available as a percentage of

residual household waste, it is multiplied with the total amount of residual household waste from households and services. All data is related to the total WEEE generated from both businesses and households and by combining the best compositional estimates, allocated to the individual collection categories. The weight based results are obviously predominated by small appliances (+/-60%) and small IT equipment (+25%) to the total waste bin amounts, which are easiest to throw into the waste bin due to their small size.

9.45 million tons is the total amount of WEEE generated by EU-28 plus Norway and Switzerland but only...

3.3 million tons are officially reported as collected and recycled

0.75 million tons are estimated to end up in the waste bin



Figure XX Example of WEEE in mixed metal scrap

A further conservatively estimated amount of 2.2 million tons of mainly steel dominated consumer appliances, is collected and processed under non-compliant and sub-standard conditions with other metal scrap. The amount is derived from various estimates of the concentration of WEEE in ferrous metal scrap, which again is not sampled in a regular and harmonised manner. In literature, information on this is also scarce. For the countries with available data, the

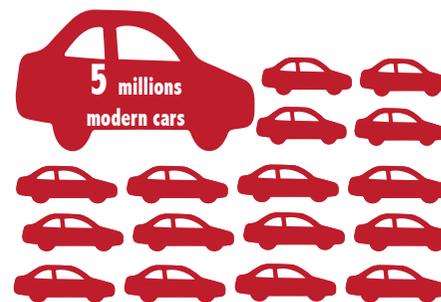
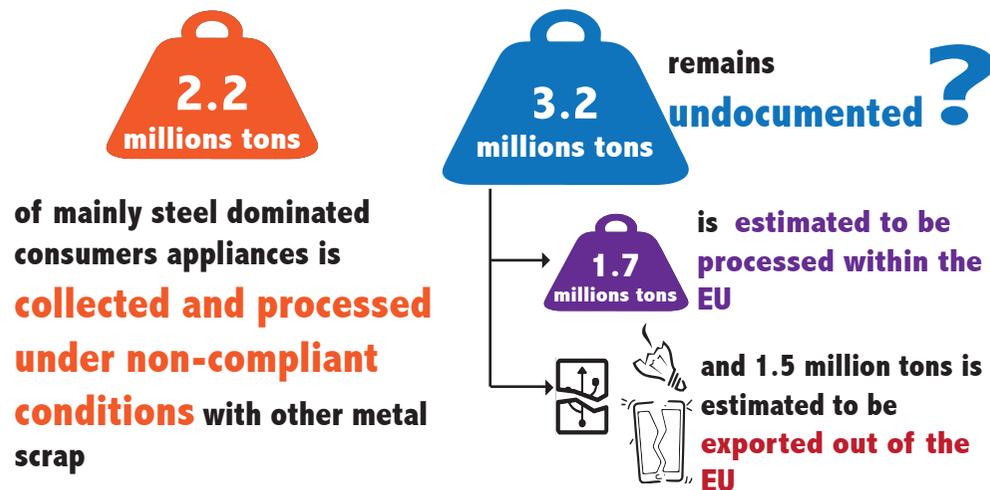
amount ranges between 2% and 4%. From these studies, it is estimated that the average concentration of WEEE in metal scrap in those countries is at least 2%. This conservative assumption is used to estimate the amounts of WEEE that are mixed with metal scrap, leaving upwards potential for higher amounts, for instance due to WEEE parts derived from professional appliances that are difficult to be characterised as WEEE when this flow is sampled.



Figure XX Example of WEEE in mixed metal scrap

The combined totals leave a gap of roughly 3.2 million tons. The further destinations are extrapolated and estimated from various information sources, the individual mass balances per collection category and the economic values and drivers behind the WEEE trade. It is estimated that a further 1.7 million tons are initially processed within the EU. Based on a market survey with contributions from members of the European Electronics Recyclers Association (EERA), it is estimated

that 0.75 million tons of valuable parts do not make it to the official collection points. This includes significant amounts of refrigerator compressors (84,000 tons out of 300,000 tons are scavenged, roughly equal to the annual CO2 emissions of 5 million cars!) and cable and IT components (180,000 tons), all of which are commonly exported to Asia, predominantly as material fractions for further separation.



0.3 million tonnes of fridge compressors are removed before collection, equals to the CO2 equivalent of 5 million modern passenger car on the road... Annually!



Figure XX Compressors removed from fridges

Another 0.95 million tons of additional non-compliant collection and treatment is estimated to take place out of sight, for instance professional appliances (heating and cooling installations, large IT equipment, large tools and compressors, medical equipment,

etc.), commonly processed by installation companies (up to 0.5 million tons), as well as lamps (90,000 tons) that are not observed at export destinations at all. These lamps likely end up in, for example, glass containers.



Figure XX From left to right: Professional Cooling appliances, difficult to identify WEEE in metal scrap, Cable removed prior to WEEE collection and treatment, PV panels

As a cross-check: The total sum of reported and non-compliant collection and recycling is also consistent with the reported treated volume of printed circuit boards received by the large smelters from the EU markets, following detailed surveying of EERA end-processors. The generated amount of waste printed circuit boards is determined by multiplying the percentage of printed circuit boards with the waste generation per UNU key. The result is around 50-55% of the printed circuit boards from Europe make it to end-processing. This confirms that more recycling is indeed taking place in Europe than is officially reported and matches with the individual mass balances of the related collection categories. Furthermore, the overall observation and ratios of amounts processed in the EU versus exported, is in line with the WEEE mass balances, and, trends in the more detailed country studies available for the Netherlands, Belgium, France, Italy, United Kingdom, and Germany.

In total, 1.5 million tons are leaving the EU. 200,000 tons are documented as UEEE exports. This figure is based on more detailed mass balances for five high income countries and covers the highest value portion of the export for reuse totals; being relatively well-tested and functioning (often IT) equipment. These devices typically have considerable remaining lifetime and thus reuse value and are commonly covered for example by professional refurbishers and/or charity organisations donating well-tested computers to educational institutes in Africa. This flow is

most likely also occurring for other rich EU countries, however this could not be quantified in this project.

The remaining 1.3 million tons is also predominantly UEEE, but is frequently mixed with WEEE and repairable items. The entire amount is a grey area subject to different legal interpretations and susceptible to export ban violations. At some point in these reuse activities; the originally discarded WEEE is no longer regarded as waste. This occurs where the items are refurbished, tested and properly packed for export.

However, the entire amount is a grey area since there are many more issues besides the distinction between WEEE versus UEEE. Shipments often include parts, functioning but very old UEEE with no real value or market anymore, or with very short remaining lifespans as well as WEEE which is repairable, and relatively new but non-functioning appliances ideal for harvesting of spare parts, etc. In any case, many shipments are not following the existing guidelines as sorting, testing and packaging in Europe comes at a cost.

The quality of a large part of these shipments of products needs to improve. The remaining 1.3 million tons (based on the most recent literature sources, and combined with inspection observations) is estimated to consist of around 70% as functioning second-hand items (0.9 million tons) and 30% of WEEE (400,000 tons), including repairable items. These values represent only the type of

products involved in indicated mixed types of shipments.

When it comes to the point in distinguishing whether a shipment is legal or illegal, the volumes estimated match with extrapolated data from IMPEL enforcement actions regarding the violations in WEEE shipments, which indicates that between 250,000 and 700,000 tons are the subject of WEEE violations annually. This includes shipments with missing documentation and incorrect notifications.

Finally, following national surveys by INTERPOL, only 2,000 tons are reported as seized illegal shipments, leading to some form of sentencing and/or administrative fines or civil penalties (minimum value). It appears that it is not a lack

of inspections, but rather the difficulty and lack of intelligence and evidence gathering prior to prosecution that hampers solid court cases and thus proper sentencing.

More details can be found in Deliverable 5.2 Estimation of the volume of WEEE illegally traded.

In short, mismanagement of discarded electronics within Europe involves ten times the volume of e-waste shipped to foreign shores in undocumented exports, as illustrated in Figure XX summing all flows.

More details on all flows can be found in Deliverable 4.2 WEEE Market Assessment and in Deliverable 4.3 Report on the dynamics of WEEE stream.

0.95 millions tons of additional non-compliant collection and treatment is estimated to take place out of sight

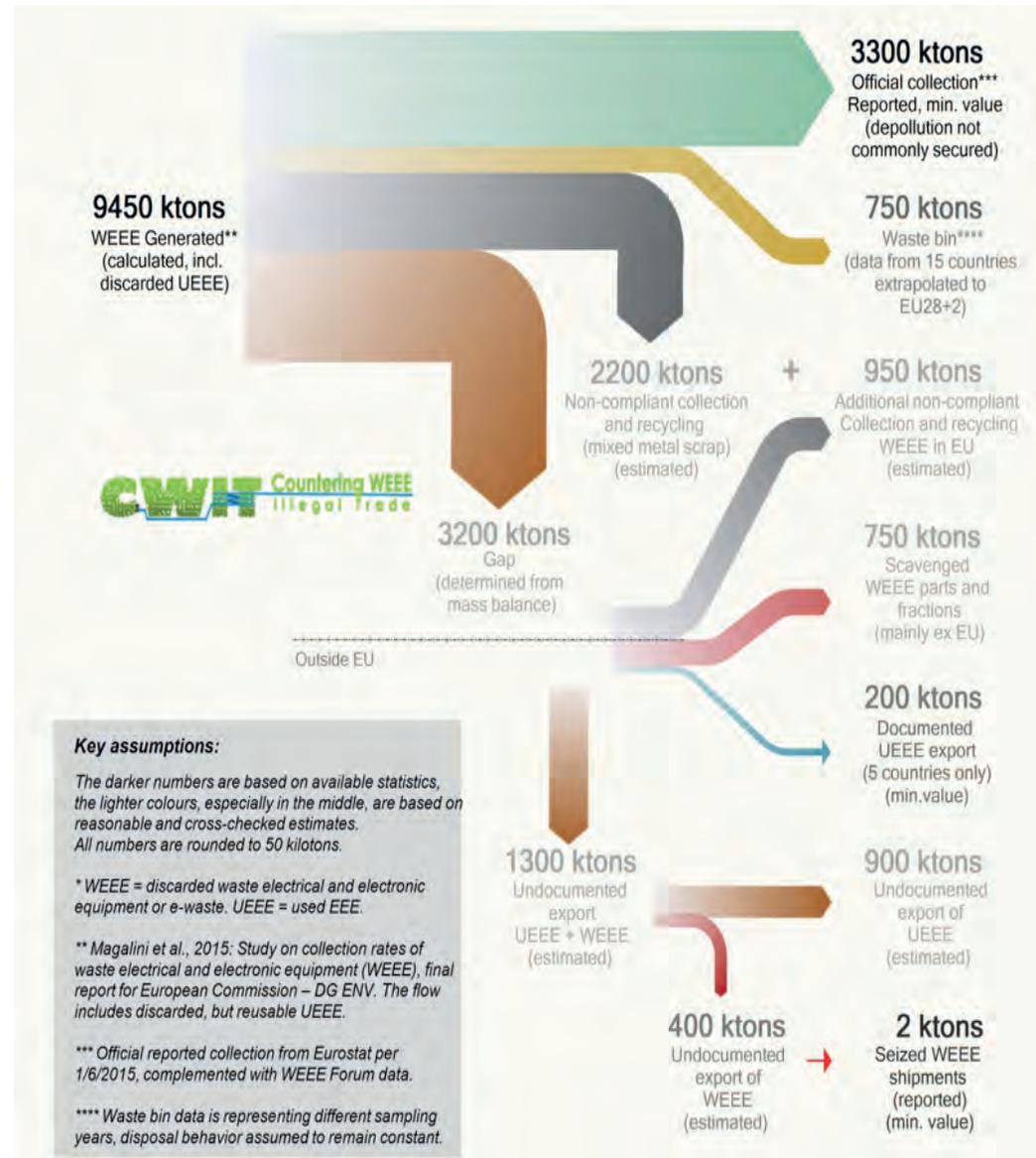
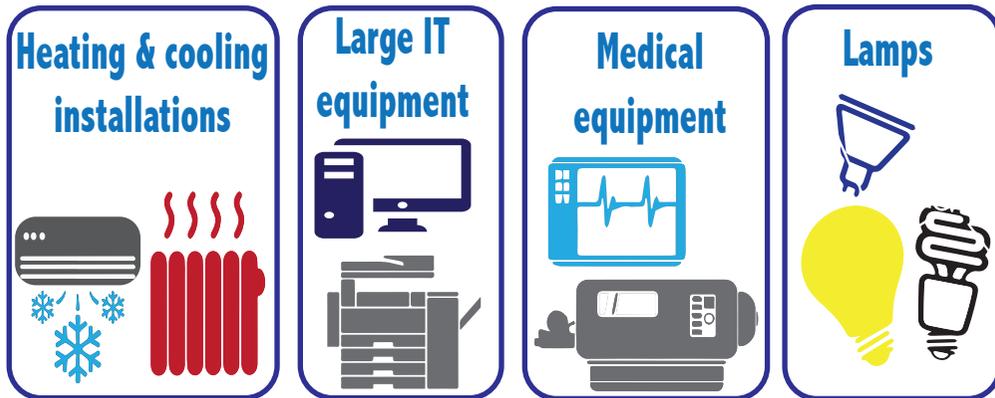


Figure XX The 2012 EU WEEE Flows

2.3 The economic drivers

To what extent does the mismanagement of volumes that occurs all along the WEEE chain damage the environment and the European economy at large? How does this affect the EU's vision to turn the linear economy into a circular economy?

In this respect, it should be noted again that the main driver behind exports is the reuse value combined with the avoided costs of sorting, testing and packaging. The economic values of the exports cannot be quantified in detail because there is no clear information. The exports involve too many individual appliance types and different price levels in the receiving countries.

The Environment Agency in the UK provides an example of a typical profit value of £8,000 for a container of mixed, unsorted and untested equipment sent to Africa. This indicates that the magnitude of the reuse value is multiple times the material value of the contents.

Secondly, the economic value is determined from rough calculations on the intrinsic economic value of flows based on values of copper, steel, aluminium, gold, silver, palladium and plastics that are not available for compliant treatment. This approach is chosen since net treatment costs are too specific per individual collection category and per individual markets and recyclers. Hence, a rough approach is taken to determine the order of magnitude of economic impacts due to loss in the entire WEEE chain:

- Amounts in the waste bin contribute

to roughly €300-600 million of lost material value due to poor disposal behaviour of consumers.

- Scavenging of valuable components, only considering compressors from temperature exchange equipment, hard disks, memory and other small IT components amounts to roughly €200-500 million. Scavenging is mainly happening at collection points, so the loss for the legitimate recycling industry can be tackled with more enforcement and control over the material collected and entering the recycling chain.
- The remaining portion in the gap amounts to another €300-600 million when excluding the value of WEEE in the export amounts.

In total, the intrinsic value of materials not available for compliant processing in Europe is between €800 million and €1,700 million. This value functions as a rough order of magnitude of the economic consequences of illegal trade and sub-standard behaviour. It should be noted that this does not necessarily represent the net value nor profit that can be recovered in practice, due to the actual handling nor the processing costs that also need to be accounted for as well as the less than 100% recovery levels in reality for the materials specified.

Interestingly, the CWIT estimations align with research recently conducted independently of the project. An external source estimates that the value of recycling of WEEE will be

€2.15-3.67bn by 2020. With the assessed size of the non-compliant (or illegal) WEEE stream, this means that the total value (compliant and unreported/illegal/exported) represent a minimum of €1.2bn and maximum of €2.6bn, in 2015, which falls in the range of this external reference.

A different environmental dimension and concern is the avoidance of compliance costs mainly related to de-pollution and other costs in order to operate up-to-standard. From analysis, these costs are of a lower order of magnitude compared to the materials value of around €150-600 million. These figures indicate very roughly the maximum potential loss for compliant processing activities and the EU economy at large.

The outcomes of the unique CWIT Market Assessment, for the first time covering the EU as a whole, clearly shows that despite the legislation, there are still considerable environmental and economic concerns. These relate to exports to developing countries and the quality of collection and treatment in Europe itself.



**€300-600
million**

**due to bad
disposal
behavior**



Scavenging of
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**€800-1,700
million**

**is the value that represents the
intrinsic material value
not available for
complaint processing in
Europe**

3. LEGAL ANALYSIS



One of the objectives of the CWIT project is the comparative overview of relevant legal policies and requirements relating to WEEE, and how these are implemented and enforced globally. Understanding the current legislative framework of each country is of crucial importance when analysing illegal trade in WEEE. Without a clear and comprehensive legislative base, enforcement authorities and prosecutors are powerless to address illegal WEEE flows.

The research consisted of questionnaires (directed at EU and non-EU countries) and the analysis of:

- The WEEE Directive articles affecting the illegal trade in WEEE,
- The implications of the Waste Shipment Regulation (which implements the provisions of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, as well as the OECD Decision concerning the Control of Transboundary Movements of Wastes Destined for Recovery Operations), and
- The UN Basel Convention on the Control of Transboundary Movements of Hazardous Wastes.

In particular, the project sought to establish a baseline of the general legal framework on WEEE such as the requirements for functionality testing, WEEE treatment conditions, packaging of used EEE, permits required (collection, transportation, storage, treatment).

The research also assessed the type of liability

(civil, criminal, administrative), the actors involved, and the severity of the penalties applied. More details can be found in Deliverable 3.1 Development and distribution of questionnaire.

3.1 Consistency of definitions

The study highlights the issues of consistency across the implementation of the WEEE Directive for EU Member States. EU countries were obliged to transpose the Directive into their national legislation by 14 February 2014. To date, 26 of the EU Member States have formally transposed the Directive.

Unclear definitions and misinterpretation of concepts complicated the transposition of the WEEE Directive in some countries and highlighted the need for uniformity at European level on the classification of waste. In certain countries, additional legislative instruments have yet to be enacted that would coordinate the responsibilities of other WEEE actors, for example the monitoring of the entire WEEE system in Italy.

In both the EU and non-EU countries, the broad definition of how waste is classified and in particular the differences between EEE and WEEE is a particularly fraught area. It is indicated that one of the proposed solutions to this ambiguity, functionality tests, could be economically unfeasible. Technical guidelines aimed at clarifying the distinction between used EEE (UEEE) and WEEE is under development under the Basel Convention, which, if adopted, would reflect global agreement on this issue.

At the recent Basel Convention COP 12, the adoption of technical guidelines on WEEE faced a number of objections from member countries with the result that the guidelines have been adopted on an interim basis, on the

understanding that they are of a non-legally binding nature and that the national legislation of a party prevails over the guidance provided within the technical guidelines.

Nevertheless, countries in the region currently follow a number of OECD guidelines concerning WEEE shipments. Clarity and the applicability of guidelines, definitions of WEEE and of what constitutes conclusive proof, appropriate protection, non-negligible quantities, offensive behaviour and functionality tests, is vital for all personnel engaged in the fight against illegal trade in WEEE. Examining the legal framework of WEEE and its implementation and enforcement enables authorities to focus on measures and strategies that will most effectively improve the detection and prosecution of WEEE violations.

More details can be found in Deliverable 3.2 Synthesis of responses and Deliverable 3.3 Comparative overview.



Unclear definitions and **misinterpretation** of concepts

3.2 Penalties

During the CWIT final conference in June 2015, the difference between the level of applicable sanctions and the average sanctions effectively imposed was stressed as a relevant indicator of legal implementation and enforcement. The penalties for the illegal trade in WEEE varied greatly in terms of prison durations and monetary fines. However, based on the data received from EU countries, there did not appear to be a relationship between the magnitude of the penalty and WEEE collection rates. Some Member States have high penalties in place yet show low official collection rates. Some countries punish WEEE crimes differently on the basis of whether or not organised criminal groups are involved.

Some Member States use an administrative approach to fight organised crime and other types of crime by empowering local and administrative authorities with effective measures such as the withdrawal of permits and licenses. These measures may avoid costly criminal procedures and be equally effective at creating a deterrent effect.

Merely increasing penalties in WEEE crimes is not practical in all EU countries. Therefore, an assessment of the legal versus the practical situation should be undertaken at national level in order to establish weaknesses and requirements related to the penalty levels in national legislation.

Harmonisation, including the harmonisation of the type of offences, the degree of severity and harmonising the definition of penalties, would

limit discrepancies among EU countries. Consequently, it would limit the shift of illegal activities among countries, and would facilitate investigations, prosecution and sentencing and thus, would create a true disincentive for offenders.

Some EU Member States also require further legislation to facilitate enforcement. For example, in some instances when a shipment is intercepted before it has left national borders, authorities are only able to classify the act as an “attempt” to ship. In some countries, this means that the penalty is much lower than for the actual act of illegally exporting WEEE, and in others, it may not be considered an offence at all.

At international level, it is suggested to harmonise the minimum standards on offences and provisions, such as the ban on cash transactions in the metal scrap trade. This would simplify enforcement in trans-border cases, and would prevent criminals from simply shifting their activities to lower-risk countries within the EU.

More details can be found in Deliverable 3.2 Synthesis of responses and Deliverable 3.3 Comparative overview.



Penalty
vrs
Crime

3.3 Best practices

The study highlights a number of instances where countries have developed detailed guidance documents for actors involved in the WEEE chain to help clarify and expedite inspections, monitoring, and reporting activities.

The CWIT project has developed the LibraWEEE, which is a collection of studies and initiatives focussing on understanding the dynamics of the WEEE industry, illegal flows of WEEE, and also the actors concerned with the fight against organised crime.

The project also outlined a number of best practices from EU countries such as:

- Combined codification system to simplify the collection of data on their national e-platform.
- A ban on cash transactions in France involving the purchase of metal is an important step in reducing the profitability of illegal trade. The success of this measure is evident in the displaced illegal activities across French borders into neighbouring countries in which the ban is not applicable. An extensive inspection campaign to spot unregulated activities will efficiently complement this measure as was mentioned during the CWIT final conference.

Participants at the CWIT final conference also noted the benefits of establishing a take back procedure to return illegally exported material to the country of origin.

The following diagram illustrates how the legal framework affects the law enforcement chain of events:

More details can be found in Deliverable 3.3 Comparative overview.

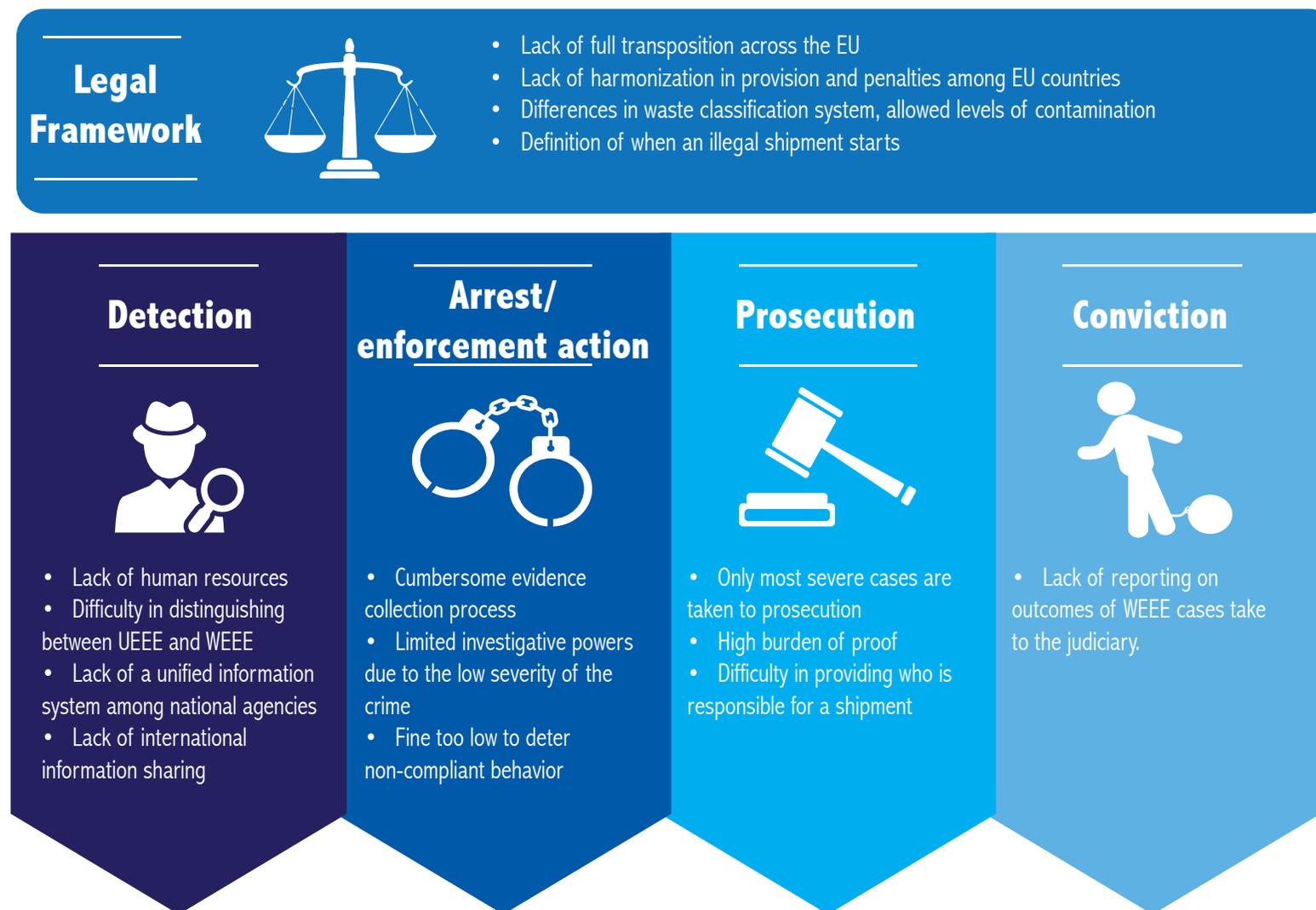


Figure XX The legal framework versus the law enforcement chain of events



The CWIT project conducted a comprehensive study of the involvement of organised crime groups in the global distribution of WEEE, to identify the specific criminal activities associated with illegal WEEE shipments, and to provide an estimation of the volume of WEEE that is generated and illegally traded. The study is based on extensive data collected through surveys, expert interviews and open source material.

4.1 Crime typology

In the illegal trade of WEEE, there is a varying degree of compliance and criminality that spans across a continuum ranging from minor unintentional violations or non-compliance by individuals to deliberate illegal activities following a criminal business model. The organisational structure differs by country and region, from individual traders to structured criminal groups. Current gaps, including legislative loopholes, inadequate enforcement, and the application of penalties that are too low to create a disincentive, result in an environment susceptible to the involvement of international crime groups.

In the WEEE offences officially reported by authorities in the context of the CWIT project, thirteen different types of actors are identified and grouped into five categories: collection, consolidation, brokering, treatment and transport. The distribution of cases indicates that vulnerabilities exist across all stages of the WEEE supply chain.

The offences included inappropriate treatment and violations of WEEE trade regulations, theft, lack of required licenses/permits, smuggling and false declaration of the load. WEEE offences in some cases are also connected with fraud, money laundering and tax evasion, demonstrating the links between WEEE offences and financial offences. The use of fraudulent documents also indicates that offenders are aware of the required authorisations and are simply circumventing them.

The close connection between the legal and illegal markets of WEEE has been underlined during the analysis, with many cases citing the involvement of registered companies, such as recyclers/end processors, sorting/consolidation sites, and freight forwarder/logistics operators in WEEE offences. Other actors cited in the cases reported to the CWIT project are informal collectors, WEEE brokers and internet traders.

Furthermore, there are instances where producer responsibility organisations, municipal employees, and NGOs are implicated in the offences. The most frequent destinations and routes of illegal WEEE trade are also explored. Cases analysed most commonly include WEEE detected in Europe and intended for export to Africa and Asia. The Middle East is reported to be a destination in a limited number of cases. Analysis was also carried out concerning WEEE transported from Western to Eastern Europe. More details can be found in Deliverable 5.1 Definition of organised crime applied to WEEE, Deliverable 5.2 Estimation of the volume of WEEE illegally, Deliverable 5.3 Evaluation matrix to codify crime types and Deliverable 5.5 Analysis of criminal activities associated with illegal WEEE trade.

4.2 Seized exports

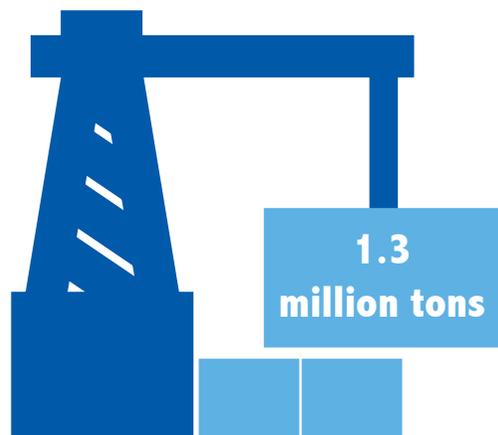
The CWIT project estimates that the total quantity of undocumented (UEEE+WEEE) exported from EU Member States to non-OECD countries is 1.3 million tons. Of this, 900,000 tons (70%) is estimated to be UEEE and 400,000 tons (30%) is estimated to be WEEE. The latter number corresponds with extrapolated data from IMPEL on export ban violations indicating that between 250,000 tons and 700,000 tons of WEEE was shipped to non-OECD countries in 2012.

However, it should be noted that such estimates are all subject to a number of limitations. The actual amount of WEEE reported as seized by law enforcement authorities, is 11,000 tons between 2009 and 2013, or an average of 2,000 tons per year. Of the WEEE seized, temperature exchange equipment and screens made up the majority of the volume.

More details can be found in Deliverable 5.2 Estimation of the volume of WEEE illegally traded.

Year	Nr of countries that reported	Quantity reported to be seized (t)
2009	5	700
2010	3	1400
2011	7	3500
2012	11	2500
2013	7	2700

Figure XX 2012 EU WEEE amounts documented per Member State



is the amount of **undocumented (UEEE+WEEE) export** from EU Member States to non-OECD countries

70% = UEEE

30% = WEEE

4.3 Concept of operations

The objective of a concept of operations (CONOPS) is to provide a vision of how a comprehensive law enforcement system, that effectively mitigates illegal WEEE trade would operate. The CONOPS is based on data gathering and analysis conducted during the first four steps of Work Package 5, and supplemented by open source information and law enforcement expertise.

An analysis of the current law enforcement system, consisting of an evaluation of its threats, opportunities, weaknesses, and strengths, demonstrated that cooperation and data management are essential elements to strengthen law enforcement in countering the illegal trade in WEEE. Therefore the CONOPS proposes to integrate and combine two systems:



Figure XX: Enforcement and prosecution cycle integrating the proposed systems

4.3.1 Operational Intelligence Management System

The first is an Operational Intelligence Management System that enables the secure input, management, development, analysis and dissemination of intelligence and critical information. This is particularly important during the planning of law enforcement actions. The objectives of this system are to promote and support intelligence-led enforcement, advance collective knowledge about the offences related to the illegal trade and

disposal of WEEE, to identify the risks associated with organised crime groups (OCG) and transnational organised crime groups (TOCG), and to recommend actions. Designing, developing and implementing an Operational Intelligence Management System (at the national and European level) can further mitigate the illegal trade and disposal of WEEE in the EU.



Figure XX: Data management and analysis aspects

4.3.2 National Environmental Security Task Force (NEST)

The second proposed system is a National Environmental Security Task Force (NEST) that fosters a coordinated multi-agency response to tackle the illegal trade in WEEE. The objective of this system is to enable a law enforcement response that is cooperative, collaborative and coordinated at national, regional and international levels, detailing the role of EU

stakeholders in the enforcement of WEEE regulations. Figure 3 illustrates the task force and its different stakeholders. By creating a team of experts, each with specialised skills, the NEST could ensure that all criminal activities related to the illegal trade in WEEE can be addressed.

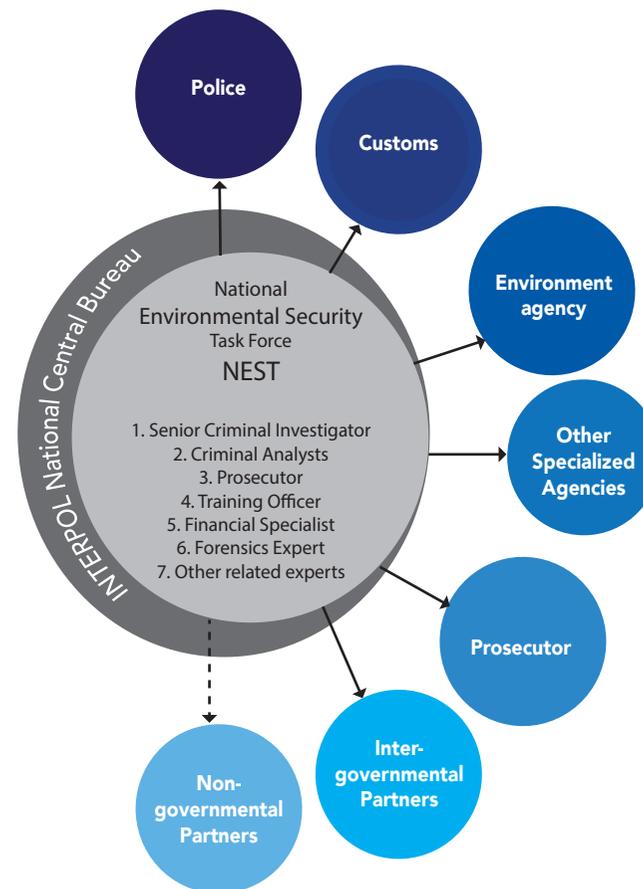


Figure XX3: INTERPOL model for National Environmental Security Task Force

More details can be found in Deliverable 5.6 Concept of Operations.

5. INDIVIDUAL RECOMMENDATIONS



5.1 Theme 1: Collect more, prevent leakage and monitor

The recommendations under Theme 1 concern the early stages of the WEEE chain and focus on: better prevention, increased separate collection, less leakages and improved monitoring.



CLUSTER 1.1 Educate consumers

Studies have revealed that many problems with regard to WEEE are related to the lack of public awareness. There is an information deficit on the part of consumers, many of whom do not know what a collection station is and resort to bad practices in disposing of WEEE. There is also a need for greater awareness on waste trafficking and the resulting environmental damage from the improper disposal of WEEE.

The suggested improvement actions are:

- Roll out communication campaigns for end users to raise awareness around the proper disposal of WEEE.
- Run attitudinal surveys to investigate

motivations and potential incentives for users in support of communication campaigns.

- Assess the possibility of running law enforcement campaigns for end users to tackle fly tipping and improper curbside disposal of WEEE.

More details can be found in Deliverable 6.4 Recommendations for the electronics industry.

CLUSTER 1.2 Improve collection

In many EU countries, collection facilities are exposed to thefts of the end-of-life product or of its valuable components. WEEE is frequently diverted from authorised collection points to

non-reported flows. Such malpractices reduce collection rates making it difficult to reach the legal and obliged collection targets. The existence of few and, sometimes, insufficiently accessible collection points may exacerbate the situation.

Improvement suggestions include:

- Make collection points more easily accessible and more visible.
- Increase the number of collection points or their territorial density.
- Improve security at collection points.
- Introduce a ban on cash transactions to reduce the profitability of unlawful activities and the viability of cash transfers related to WEEE illegal trade.

More details can be found in Deliverable 6.4 Recommendations for the electronics industry.

CLUSTER 1.3 National WEEE monitoring

In many cases, selling products for reuse or fractions for treatment acquired through informal collection are neither reported in official statistics nor traced. Furthermore, not all European countries place an obligation on pre-processors to report and record the amounts and destinations of all types of input and output fractions. Even the WEEE Directive contains no specific requirement on reporting the amounts of Annex VII components obtained from selective treatment or on the reporting of their destinations. And finally, informal collection activities do not appear in official statistics. Accurate mass balance calculations, based on reliable quantitative data, are crucial to determine progress towards achieving WEEE collection targets or the amounts of e-waste

that end up outside the official WEEE chain.

The proposed action steps are:

- Improve local monitoring and benchmarking in all collection points, including civic amenities and retail outlets.
- Improve access to information by creating specific lists for WEEE related companies, including the availability of contact details of the entity managing the register, and standardising terminology to describe different activities and actors.
- Develop a national WEEE monitoring strategy.
- Improve current methods for calculating e-waste indicators that form the basis for national mass balance calculations.

More details can be found in Deliverable 6.4 Recommendations for the electronics industry.

CLUSTER 1.4 All actors report

EU countries face the common problem of non-reporting, incorrect reporting and underreporting of collected and treated WEEE amounts. Non-reported and incorrectly reported WEEE flows are particularly prone to illegal trade and improper treatment. It has been observed that some compliance schemes only monitor and control a part of the WEEE collected and treated.

In addition to this, many holders and recyclers of WEEE already report, but not to a unified database on a national level. In some countries, producers and compliance schemes report WEEE collected to different competent bodies, sometimes using different and, worse,

incompatible codifications. Another recurring issue is the mixing of WEEE with mixed metal scrap. Improved reporting will enable more accurate country- and EU-level statistics and other monitoring linked in particular to estimating the “true amounts of illegal WEEE” shipped annually from Europe to developing countries.

The suggested improvement measures are:

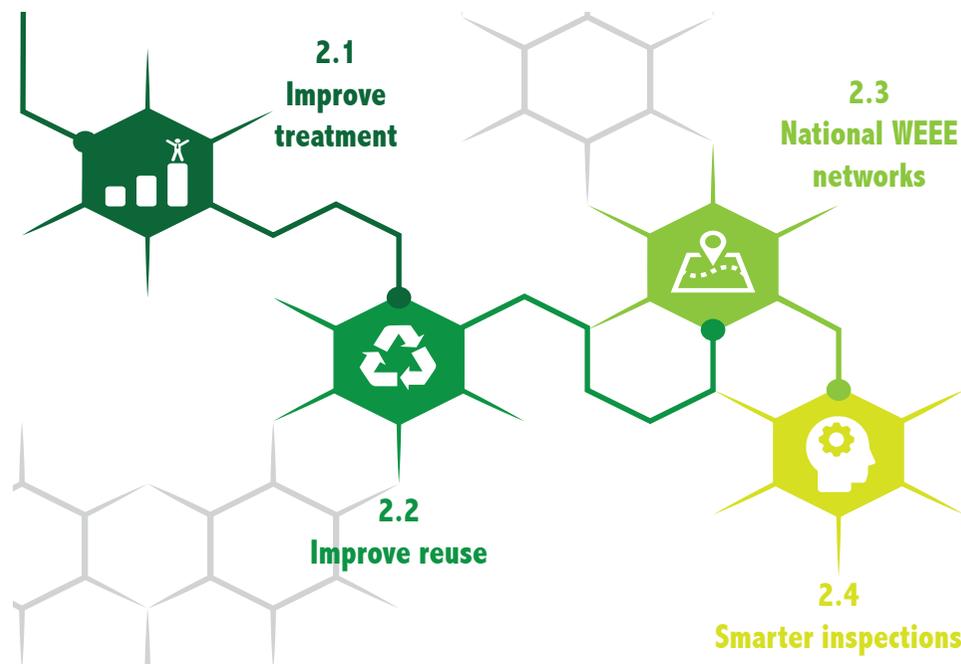
- Establish reporting obligations for all actors collecting WEEE products.
- Use an unequivocal description of WEEE that is understood by all actors reporting.
- Use the same codes or use codes that allow comparability in reporting processes.
- Establish a control system of data collected that will assess consistency and reliability of the data reported by actors.

More details can be found in Deliverable 6.1 Recommendations related to the EU Legal Framework.

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5.2 Theme 2: Trading, treatment and the economic drivers

The recommendations under Theme 2 concern the improvement of the performance of the WEEE recycling and reuse chains and, ultimately, the reduction of the amounts of waste mixed with used goods. Improving performance means improving treatment, training the WEEE trading industry, reducing shipments of WEEE mixed with used goods, and increasing the costs of non-compliant behaviour.



CLUSTER 2.1 Improve treatment

The core problem is the lack of quality standards in WEEE treatment. This is due to a lack of economic incentives, specific market conditions, unfair competition, insufficient quality control mechanisms, and gaps in monitoring and subsequent oversight by law enforcement authorities. While many laws already affect treatment in Europe, a specific challenge is that many of these requirements do not positively impact the legitimate industry over non-regulated players. As a consequence, unqualified treatment operators put

responsible recyclers at a disadvantage. Initiatives must therefore be designed to support the legitimate treatment industry.

Some of the improvement actions include:

- Implement (mandatory) WEEE standards.
- Improve reporting on treatment within and outside of Europe.
- Improve the economics of de-pollution.
- Improve treatment in developing countries.

More details can be found in Deliverable 6.3 Recommendations for the WEEE treatment industry.

CLUSTER 2.2 Improve reuse

A central issue with the illegal trade of WEEE is the diversity in shipments of end-of-life equipment, with used EEE (UEEE) of various types and age being exported. The reuse industry itself is very diverse – ranging from small traders, often including private individuals, to charity organisations and large specialised refurbishers. The legality of a shipment of UEEE is difficult to ascertain in every case. This is why it is necessary to have clarity on, and, awareness of how to implement the various guidelines. Ultimately there is an urgent need to develop measures on how to discriminate between, on the one hand, shipments for proper reuse contributing to bridging the digital divide, and on the other hand, those shipments of mixed quality with too many appliances of low or no remaining useful life.

The following actions are suggested to avoid or at least reduce low quality shipments:

- Use harmonised definitions for reuse, preparation for reuse and refurbishment.
- Develop and harmonise reuse standards and guidelines.
- Provide training and capacity building for the refurbishment/reuse industry.
- Establish green reuse channels and approved reuse centres.

More details can be found in Deliverable 6.3 Recommendations for the WEEE

treatment industry.

CLUSTER 2.3 National WEEE networks

Specialised environmental authorities have expertise on WEEE crimes, but often they do not have investigative powers. On the other hand, law enforcement authorities do have investigative powers but typically do not have specialised knowledge in WEEE related crimes. Poor cooperation results in difficulties for police to identify the environmental crimes and the type of evidence required for successful prosecution. Illegal WEEE shipments are often dealt with as administrative offences by the environmental protection agencies, which may not provide the necessary information to investigative authorities.

Two improvement actions have been recommended to strengthen cooperation and communication:

- Establish National Environmental Security Task Forces (NEST) to ensure a coordinated multi-agency response to tackle the illegal trade in WEEE.
- Enhance multi-stakeholder networks by involving different types of stakeholders in programmes aimed at tackling WEEE illegal trade.

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

CLUSTER 2.4 Smarter inspections and investigations

Several shortcomings related to inspections and investigations have been identified during

the course of the CWIT research activities. One example identified is the modus operandi to unlawfully label WEEE as UEEE in illegal export, underlining the importance of proper testing of equipment destined for export. According to the European Commission, only 2% of all the world's maritime containers are physically inspected by customs authorities and of the 2%, only a small number of inspections are done for WEEE shipments. As regards investigation procedures, there seems to be no general methodology for investigating environmental crimes and the numbers of investigated cases are limited.

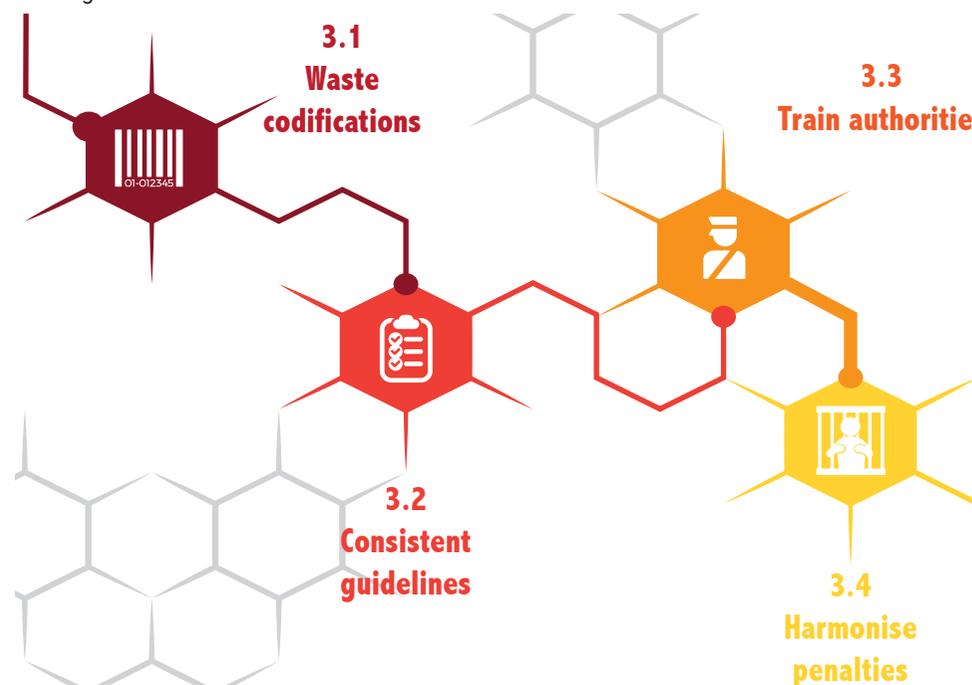
To address these issues a number of improvement suggestions have been made:

- Ensure more effective and successful inspections through targeted border inspections, intelligence-led risk assessments and improved detection techniques.
- Improve WEEE investigations through better investigative procedures.
- More and smarter upstream inspections of facilities in order to prevent illegal activities moving downstream.

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

5.3 Theme 3: Robust and uniform legal framework & implementation

Without a clear and comprehensive legislative base, enforcers and prosecutors are powerless to address illegal WEEE flows. At the very minimum, a clear and global definition of what constitutes WEEE is the basis for improving detection, inspection, and enforcement and sentencing rates related to illegal WEEE trade.



CLUSTER 3.1 Improve waste codifications

In the life cycle of EEE and WEEE, the commodities and waste are reported at various stages and in different classifications. When waste is being transported across borders and/or reported to different authorities, different codes could be also used for the same waste, which hampers traceability and hinders inspection and prosecution. Accurate and compatible codes are crucial to enable waste traceability. The following are the potential code classifications that may be used:

- UNU-KEYS

3.3 Train authorities

- Combined Nomenclature (CN Codes)
- Basel Codes / Waste Shipment Regulation
- EU List of Waste (LoW)
- Original EU WEEE Directive (6 categories) and Recast WEEE Directive (10 categories)

The suggested actions to improve the classification of WEEE are:

- Develop import/export codes for WEEE and second-hand commodities to differentiate between new and used

equipment and allow tracing of important types of WEEE such as monitors, TVs and refrigerators.

- Have a consistent interpretation of waste versus non-waste. A global definition of WEEE is essential for all actors involved in the fight against illegal trade in WEEE.
- Encourage collaboration and agreement between stakeholders to progress towards more harmonised WEEE classifications and definitions.
- Develop compatibility tables to allow for converting customs codes into Basel codes and vice-versa through the adoption of the UNU Keys. This would improve waste codification by connecting the various classifications of WEEE and commodities.

- Inspection and enforcement resources are not efficiently utilised.

Various definitions and guidelines related to WEEE exist at national, regional and international level including those developed by Basel, IMPEL, WCO, UNU, INTERPOL, StEP Initiative, OECD, and EU Member States including Austria, Belgium, Germany, Ireland, and the Nordic Waste Group etc.

It is important to conduct further research into understanding how these guidelines can be utilised in a complementary way to increase the capabilities of law enforcement agencies and prosecutors to fight cross-border WEEE crimes more effectively.

Suggested actions include:

- Improve the availability, awareness and understanding of existing guidelines.
- Provide sufficient support and training to authorities (see Cluster 3.3 below).
- Develop certification in the use of guidelines (e.g. ISO).
- Campaign for official endorsement of guidelines by relevant authorities.
- Identify and select the organisation(s) to own/sponsor new guidelines.

More details can be found in Deliverable 6.1 Recommendations related to the EU Legal Framework.

CLUSTER 3.3 Train authorities

The CWIT research shows that a lack of knowledge and expertise is a major impediment in the detection of WEEE violations and illegal

shipments. The successful detection of e-waste relies heavily on the ability of an official to distinguish between used EEE and WEEE. Insufficient guidance and training often prevents officers from proving the illegal nature of a shipment. This constitutes a fundamental challenge for law enforcement agencies during inspections in several countries.

Without adequate skills and knowledge, the officers struggle to detect, investigate and prosecute illegal e-waste activities, thus limiting the operational capacity of law enforcement. In order to equip personnel with specific skills and knowledge, it is highly recommended to provide more and better-quality training on e-waste issues than what is currently available for law enforcers, investigators, and prosecutors.

Suggested actions include:

- Establish centres of excellence and/or an EU waste agency.
- Provide specialised training for personnel (law enforcement, environmental inspectors, customs etc.).
- Facilitate cross-border inter-agency capacity training, between stakeholders involved in both the export and import of WEEE.
- Establish public-private partnership schemes (between LEAs and the WEEE industry).

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

CLUSTER 3.4 Harmonise and enhance penalty systems

The penalties for the illegal trade in e-waste vary greatly in terms of monetary fines and prison durations. In the current system, the participation in WEEE illegal activities does not appear risky to offenders due to the low probability of being prosecuted and sentenced. Even if cases are successfully prosecuted, the penalties foreseen in legislation and/or penalties applied in court decisions are typically low. In many cases, the fines imposed are less than the profits to be gained from one illegal shipment.

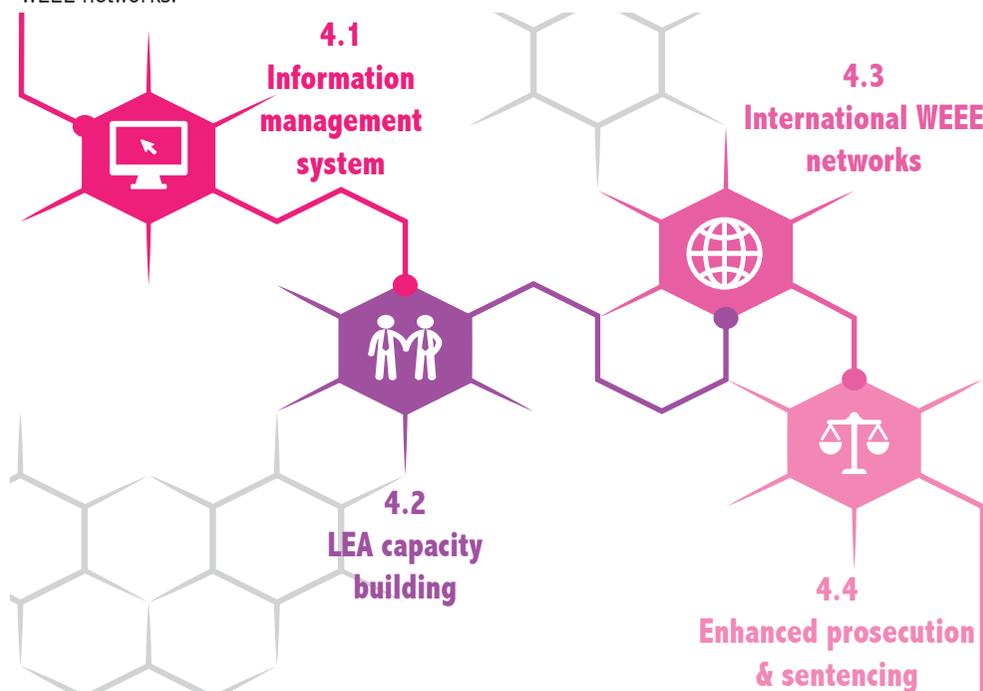
Suggested actions to harmonise and enhance penalty systems include:

- Assess the national penalty system to ascertain if sanctions are proportionate and dissuasive.
- Increase penalty levels for natural persons who are company representatives.
- Harmonise offences related to WEEE crimes at EU level (wording, definitions and severity).
- Harmonise penalty types at EU level.
- Adjust the penalty system related to organised crime (i.e. specific penalties to tackle organised crime involvement in WEEE illegal activities)

More details can be found in Deliverable 6.1 Recommendations related to the EU Legal Framework.

5.4 Theme 4: Best practices in enforcement and prosecution

The recommendations under Theme 4 are designed to improve current enforcement and prosecution practices concerning the illegal trade of WEEE. In order to address limitations and problems in this area, the recommendations concern the exchange of information and creation of WEEE networks.



CLUSTER 4.1 Enhance information management systems

In the law enforcement field, a lack of information exchange and lack of statistics about illegal WEEE activities has been reported. Multiple authorities concluded that there is currently a lack of structured information exchange both on the national and international level. Discrepancies have been identified in data reported by different authorities in the same country. In addition to the information exchange, in many countries, no specific statistics are available on illegal activities related to WEEE. Suggested actions to

counter the situation include:

- Put in place formalised agreements for the exchange of information between law enforcement, judicial authorities and the WEEE industry.
- Consolidate and implement an Operational Intelligence Management System (OIMS) that enables the secure input, management, development, analysis and dissemination of intelligence and critical information especially during the planning of law enforcement actions.
- Use intelligence to prioritise and direct resources towards the operations

and policies that will be most effective in combating crime.

- Build or consolidate a national intelligence model to implement a full set of best practices in intelligence-led policing and law enforcement, including a framework to better achieve the priorities highlighted in each country's public safety strategy.

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

CLUSTER 4.2: Invest in capacity building for law enforcement agencies

Law Enforcement Agencies (LEA) includes police, customs, and environmental agencies. Inadequate resources are the main impediment to proper enforcement actions by authorities. While countries face different implementation challenges across different sectors, a common bottleneck for poor implementation in most countries are limited resources and capacity. Many Member States lack the necessary financial, human and logistical capacity to undertake high quality investigation and inspection procedures to identify shipment violations and control WEEE flows. Some countries have even reported a shortage of technical equipment and storage capacity in customs facilities to test and store seized waste shipments.

The following measures have been proposed to enhance the capacity of law enforcement agencies:

- Provide human resources and equipment.
- Facilitate international cooperation and exchange of inspectors across competent authorities to enhance the exchange of best practices and information.
- Establish risk assessment processes and allocate staff to correspond with the expected risks identified.
- Strengthen the capacity of existing networks, such as Europol and INTERPOL, as an effective and cost-efficient capacity building initiative (instead of creating new networks).

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

CLUSTER 4.3 Improve international WEEE networks

There is a lack of cooperation between authorities, both on the national and on the international level. Synergies between customs and police forces of various European countries must be improved, in co-ordination with international organisations involved in the fight against organised crime. In fact, EUROJUST's Strategic Project on Environmental crime report, considers cross-border cooperation as the main challenge in the investigation and prosecution of cases of illegal waste trafficking.

To strengthen international cooperation in law enforcement, two actions are proposed:

6. RECOMMENDATIONS ROADMAP

- Participate in international waste operations and enforcement actions to achieve international co-operation at a global level by bringing together neighbouring countries to target waste and WEEE trade/operations.
- Create an EU waste implementation agency to support Member States through training and education, and to act as a platform to exchange knowledge and best practices.

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.

CLUSTER 4.4 Enhance prosecution and sentencing capabilities

Despite the growing concern about the environment, environmental crime seems to be an under-sentenced area. As an example, according to the French Government, only 60% of cases related to the environment can be prosecuted and a penal sentence can be applied in 88% of those cases.

A further example from a joint report based on eight national audits reveals that in 30% of the cases in the Netherlands, the public prosecution department decides not to prosecute infringements of the EU Waste Shipment Regulation. Thus, there appears to be a major gap between the number of WEEE violations and the number of successfully prosecuted cases across Europe.

Some proposed solutions include:

- Improve the capacity and resources

of prosecutors and judges.

- Improve communication and co-operation among prosecutors and judicial authorities in order to establish a database of information, contact points and joint investigation teams. This recommendation also suggests increasing the role of European/international networks such as EUROJUST.

More details can be found in Deliverable 6.2 Recommendations for law enforcement organisations.



6.2 The feedback process

The CWIT final conference took place on 25-26 June 2015 at the INTERPOL headquarters in Lyon, France. Around 120 people participated in the conference, including experts from the European Commission, national law enforcement authorities, the WEEE industry and academia. The conference participants were requested to give their personal views on the 16 recommendation clusters outlined by the CWIT consortium. To facilitate this process, feedback forms were distributed among the participants during the conference. 38 attendees completed and returned the forms during the course of the event. In addition, an electronic version of the feedback form was sent to the participants after the conference, resulting in four additional responses. The feedback campaign yielded a relatively good response rate with a total of 42 comprehensive replies from key experts in the field.

In the feedback form, 6 broad questions were outlined in relation to each of the 4 Themes

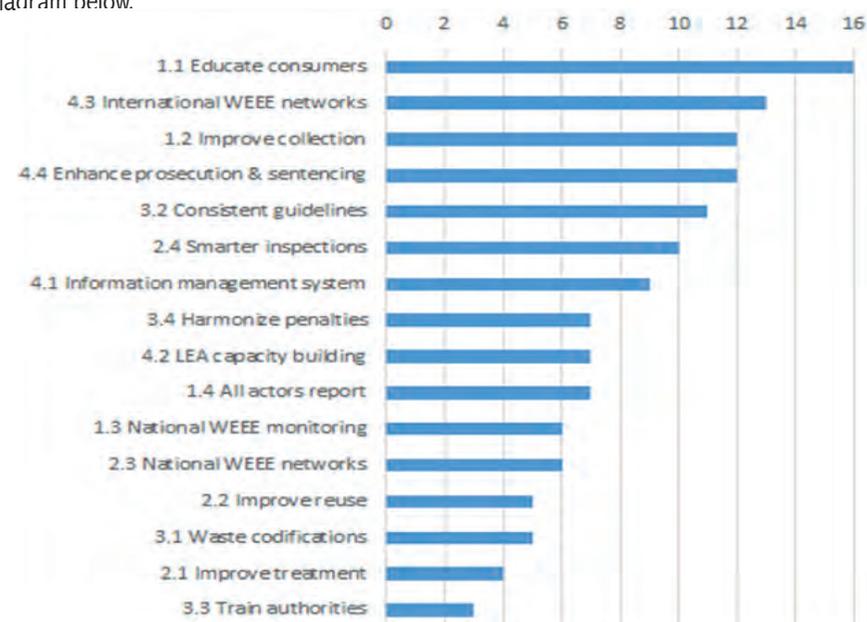
and 16 clusters of recommendations above. The respondents were asked to:

- Select clusters of recommendations with the highest benefit-cost ratio, as well as those with a high likelihood of enabling sustainable improvements, and provide a brief justification on these choices.
- Identify the least relevant recommendation clusters, e.g. high cost, low impact, high risk of failure in terms of sustainable results etc.
- Identify if there are other important recommendation cluster(s) missing from the list provided by the consortium, including a brief justification.
- Identify which of the 4 Themes is the most important, including a brief justification.
- Provide information about specific organisations and the role they could play in implementing the recommendations, as well as practical details and best practices.



6.3 Summary of the responses

The first question concerns ranking the most important recommendation clusters by asking each respondent to make three selections. A total of 133 votes were received, which are visualised in the diagram below.



- Recommendation cluster Educate consumers (1.1) appears to be the most popular with 16 votes;
- International WEEE networks cluster (4.3) has 13 votes;
- Improve collection (1.2) and Enhance prosecution and sentencing (4.4) are rated equally with 12 votes each;
- Consistent guidelines (3.2) follows next with 11 selections;
- Smarter inspections (2.4) received 10 votes;
- Information management system (4.1) has 9 votes;
- Harmonise penalties (3.2); LEA capacity building (4.2) and All actors report (1.4) received an equal number of votes with 7 each;
- Both National WEEE monitoring (1.3) and National WEEE networks (2.3) received 6;
- Improve reuse (2.2) and Waste codifications (3.1) received 5 votes each;
- Improve treatment (2.1) received 4 votes;
- Train authorities cluster (3.3) appears to be the least popular with only 3 selections.

The second question focused on understanding the rationale behind the most popular recommendations. The following table shows 4 sample justifications for each of the 6 most popular recommendations.

Recommendation

Justifications from the audience (not necessary representing the view of the CWIT consortium)

Educate consumers (16 votes)

- Education is the first step for initiating change.
- Consumers are the starting point for WEEE flows.
- The quickest win is achieved if consumers bring WEEE materials to the appropriate channels.
- Proper disposal by consumers will increase collection rates and prevent leakage.

WEEE networks (13 votes)

- WEEE thefts are cross-border (within the EU and beyond), and may involve organised crime. Therefore reinforcing international cooperation is essential.
- Co-operation among international agencies and governments is very important because the actions implemented within the European Union will be incomplete if no actions are taken in the destination countries of illegal WEEE shipments.
- It is crucial to coordinate internationally about the application of international regulations around WEEE.
- This is an important improvement measure, as it will assist in learning from each other's experiences.

Improve collection (12 votes)

- Leakages from collection points (private actors/shops) is highly visible and apparently the biggest vulnerability (at least in one Member State).
- It is the initial point in the process of disposal; securing these facilities is the basis to guarantee an efficient process.
- This is important to prevent thefts and acts as an obligation to guarantee to the consumer that the discarded equipment will be properly recycled and treated.
- Securing collection points is a relatively low-cost measure.

Prosecution and sentencing (12 votes)

- As a positive step to deter and combat crimes, it is important to inform potential perpetrators about the consequences of criminal actions. This is both a preventive and reactive improvement measure.
- There is a big gap in this area and the improvement will support some of the other recommendation measures.
- Currently there is a lack of awareness by judges and prosecutors, which is the reason behind the infrequent and low sentences.
- To achieve a level playing field, avoid port hopping, fight against fraud, forgery etc., it is necessary that the last link in the enforcement chain, prosecutors and judges are being well trained and are aware of the specific issues in this complex field.

Consistent guidelines (11 votes)

- Consistent clear guidelines will make inspections and prosecutions easier and thereby increase the likelihood of conviction.
- This measure is essential as currently there are a large number of diverse practices. The existing system is hard to understand and implement for many actors in the value chain.
- Following up on this recommendation will ensure a level playing field.
- Proper knowledge and training are important and to reach this goal consistent guidelines are essential.

Smarter inspections (10 votes)

- It is a key measure for smarter selection.
- Recycling companies in one EU Member State report they are never inspected.
- It is important for inspections to be targeted to (illegal) upstream waste sites for control purposes in order to prevent illegal activities going downstream.
- Due to limited resources available, this is a useful measure in terms of costs and benefits.

The participants of the CWIT final conference were also asked to suggest new recommendations, complementing those 16 recommendations shared with them at the beginning of conference. The outcomes of this exercise are shared below.

Suggestions that link directly to the existing set of recommendations (not necessary representing the view of the CWIT consortium):

- Acknowledge that illegal shipments and other inappropriate activities may also take place from some take-back systems and within established systems.
- In addition to securing collection, add the importance of the location of collection points, e.g. shops.
- Consider introducing a ban on cash transactions, because it is the best means to reduce theft at borders if adopted in the EU. Introduce a specific ban on cash payment for metals, as it is the first step in black market activities.
- Work with environmentally friendly treatment facilities outside the EU or in downstream activities.
- Make it more profitable to discard waste in the country or within the EU.
- Improve reuse of metals by producers. This is a difficult step in the circular economy because the reused material has to satisfy the producer and the product has to be competitive in comparison with new materials.
- Make sure that waste codifications make distinctions between UEEE and WEEE.

- Ensure clear systems and description of tasks across authorities. Include details on what type of information can be disseminated and on what basis.
- Share risk indicators among law enforcement agencies. Hold operational meetings for intelligence officers at EU level in order to discuss tactics, current cases etc.
- Discuss the issue of ‘victimless’ crime. Devise ways of exposing victims (from pollution or from former owners of discarded WEEE) to facilitate potential prosecutions.
- Collaborate with receiving countries, in order to address the problem of imports from the recipient countries’ perspective.
- Stress the issue of capacity building in receiving countries, although it is often a political decision.

Suggestions that do not directly link to the current set of recommendations:

- Consider ways to measure waste prevention.
- Consider how to facilitate flows within the supply chains between verified locations, e.g. establishing green lanes between pre-authorised or certified locations or put in place simplified procedures.
- Map downstream activities. Make unannounced audits of collectors to ascertain that the downstream activities map corresponds with what actually happens.

- Design policies in tandem with economic principles, as money talks.
- Mention the possibility of imposing a monitoring system considering the “polluter pays” principle.
- Due to the relatively high profits gained from illegal waste trade, economic incentives for proper waste collection and treatment are crucial. One example is establishing a deposit system for e-waste and batteries.
- Consider how to initiate the process of establishing a central repository for storing data, listing best practices, successful prosecutions, etc. that should be accessible to all enforcement authorities in the EU 28 Member States. The repository should be simple. Establish ownership for post-CWIT.

6.4 Prioritisation

Based on the above information and combined with the technical expertise of the CWIT consortium, the recommendations were prioritised and placed in chronological order. In addition to the order and preferences in the previous section, specific focus was placed on those recommendations that improve the monitoring and oversight of the WEEE chain in the relatively short term. The reason for this is the current weak monitoring on all the flows and types of trading in the WEEE chain.

For the medium term, the focus is on communication and co-operation between various actors in the chain. This will enable specific interventions, based on the results of improved monitoring of weak points in collection and recycling.

Finally, the focus for the long term is on improving sentencing and prosecution policies, which typically take longer to develop.



As identified in the previous section, all of the recommendations contribute to some extent to an improvement of the situation. However, several of these clusters of recommendations are merely of a supporting nature. As an end-result, those recommendations that need more attention or additional effort compared to current practices are selected:

6.4.1 Short term recommended actions:

Short-term actions are those envisaged to take between one and three years to develop and implement. To achieve these measures, it is recommended to take the following specific additional actions:

1. Improving collection (cluster 1.2). Increasing both the amounts and the quality of the WEEE collected is the main aim of this cluster. Securing facilities to avoid thefts and scavenging, making

collection points more easily accessible and more visible for consumers, increasing the number of collection points or their territorial density and banning cash transactions are part of the proposed actions in this cluster. Supporting actions from cluster 1.1 will create efficient synergies with the recommendations in this cluster.

2. Developing national WEEE monitoring (cluster 1.3): The principal reason is that better data management helps decision makers to better allocate resources. Some participants also stressed that it is important to ensure that all Member States have an independent national register in place where information such as “put on the market” volumes by producers, and treated WEEE volumes by recyclers, are also recorded to improve the harmonisation of such monitoring.

Reporting on a national level is required to obtain better quality data to enable sound decision-making processes. This recommendation also provides factual information to the following recommendation cluster.

3. Establishing the concept of the NEST and national WEEE networks (cluster 2.3). Building and strengthening national networks is necessary for information sharing and collaboration. Several experiences and best practices are identified, indicating that networking and bringing different types of stakeholders together is essential. This would lead to a better exchange of experiences and best practices resulting in more efficient and expanded actions in tackling illegal trade. This ultimately would lead to better implementation and decision-making.

6.4.2 Medium term recommended actions:

For the medium term, between three and five years from now, the CWIT consortium recommends to specifically invest in the following recommendations:

1. To implement the ‘all actors report-plus’ principle as a mandatory element for traders and processors when treating WEEE product flows. This should be included in the national transposition of the WEEE Directive in all countries (cluster 1.4). It should be noted that some Member States are already doing this or preparing to do this. The ‘plus’ refers to providing information

on de-pollution metrics. This would encourage processors who are compliant with the de-pollution standards, which are currently in development.

The market assessment specifically indicated the need to improve the control of complementary recycling flows. It is therefore paramount to take these further into account beyond the data reported by the take-back systems.

At the same time, some respondents stressed the point that it is necessary to find incentives for proper reporting, whilst not disrupting the functioning of the regular market by controlling the quality of WEEE treatment.

2. Smarter and targeted inspections: the previous clusters on improved monitoring, mandatory reporting, functioning WEEE networks and establishing NESTs should allow for smarter and more targeted inspections (cluster 2.4). The market assessment clearly highlights that there is not only a need for improved border inspections, but simultaneously also for inspections upstream at waste sites. This targeted approach would help to prevent illegal activities going further downstream. Some Member States report that many recycling companies are never inspected. As inspection resources are generally very limited, the word ‘targeted’ is essential: the previous clusters should generate sufficient information to use resources efficiently and effectively. Respondents also highlight that in later

6.5 Support measures

stages, others can use risk indicators developed in some countries. This also indicates the relationship with the next recommendation cluster.

3. Establishing international WEEE networks as the basis for better international knowledge and data exchange (cluster 4.3). Much of the illegal trade crosses multiple borders. The current situation, specifically between Member States and receiving non-OECD countries, is regarded as very poor and requires improvement. This positive step will also help to establish other recommendations and the sharing of information will result in the creation of best practices globally. One practical suggestion is to strengthen existing networks like INTERPOL, Envicrimenet, Europol and IMPEL TFS rather than developing new ones. The networks should specifically include police, prosecutors and customs. Beyond exchanging information, also the exchange of modus operandi and if possible nominal data will lead to improved intelligence led enforcement.

1. Improved sentencing and prosecution is both a preventative and reactive measure to deter and counter crimes. It is important to inform potential perpetrators about the consequences of criminal actions. This however requires an effective enforcement regime, with specialised prosecutors and judges who are educated on the issues around WEEE, in order to enable them to effectively deal with WEEE related offences. Most respondents classify this as the 'weakest link' in the law enforcement chain. Training should be provided on specific issues in this complex topic. Initiatives such as the IMPEL TFS prosecutors project, European Network of Prosecutors for the Environment, EUROJUST and European Union Forum of Judges for the Environment need to be supported. It is important that efforts are made to harmonise prosecution, sentencing and penalties relating to WEEE crimes within the EU.

6.4.3 Long term recommended actions

Finally, for the long term, between five to seven years from now, the CWIT consortium recommends that there should be investment in improving prosecution and sentencing (cluster 4.4). The development of these measures can start as soon as there is a sufficient basis resulting from the previous recommendations.

6.5.1 General support measures:

The above actions are prioritised and structured chronologically, however many of the other recommendation clusters may also be regarded as essential. These are classified as general support measures, policies, legislative adjustments and measures to enhance the law enforcement infrastructure.

1. Educate consumers (cluster 1.1). It all starts with prevention and awareness. Consumers are the starting point for WEEE flows and hence need to be convinced of the importance of returning end-of-life equipment to a legitimate collection point. Failure to do so will result in improper disposal of the e-waste and/or storage in household's attic or basement.

However, both the market assessment and the respondents also highlighted that the central problem is theft and scavenging from collection points. Therefore, flows are diverted after the initial collection, and thus, educating consumers will be of little help in

combatting theft.

2. Improve treatment (cluster 2.1) is regarded as key to minimising risks to health and damage to the environment. One practical suggestion is to make the CENELEC standard EN 50625- series legally binding. This could be achieved either by the European Commission through an implementing act, or through the authorisation of permits for take-back systems and collectors in the Member States. This concept is also included in the above 'all actors report plus' recommendation (cluster 1.4)

3. Improve reuse (cluster 2.2): The market assessment primarily raised concerns about mixed shipments and the avoidance of proper sorting and testing of reusable equipment. The respondents also highlighted that reuse is an upstream solution within Europe, which could be better achieved by prolonging the lifespan and better facilitating the reparability of products.



Support
measures

1.1 Educate consumers

2.1 Improve treatment

2.2 Improve reuse

6.5.2 Supporting policies, guidelines and adaptations to the legal framework

1. Improved codification (cluster 3.1): The cluster outlining more targeted inspections (cluster 2.4) also requires that transfrontier shipment (TFS) related

inspections are performed with better information in the customs declarations. This requires improving and checking compatibility of waste codes as a relatively simple and concrete task. Harmonisation of codes is intrinsic to

assisting in investigation and cross-collaboration between agencies and enforcement bodies and is critical to enable a distinction between EEE, UEEE and WEEE. Improvements in this area and better matching of codes with less room for interpretation will also facilitate prosecution and enforcement (cluster 4.4).

2. Coherent guidelines (cluster 3.2): Distinguishing between what is legal and what is illegal was identified as a significant problem in many cases. The majority of respondents agreed on the need to improve this. Coherent and clear guidelines will make inspection and prosecution easier and thereby increase the likelihood of conviction. The

guidelines should contain information for customs and exporters on how to distinguish between UEEE and WEEE.

3. Harmonisation of penalties (cluster 3.4): Many participants deem a coordinated and more harmonised approach among Member States necessary. WEEE trade is a global issue and therefore requires more harmonised responses. Penalties vary considerably across Europe depending on the location where illegal waste shipments are detected. Some contrasting views are also gathered, especially regarding the likelihood of this to happen: Member States may choose not to consent to this due to the fact that they have very different legal traditions.



Support policies

3.1 Waste codifications

3.2 Consistent guidelines

3.4 Harmonize penalties

6.5.3 Supporting measures to strengthen the law enforcement chain.

1. Training of law enforcement agencies (cluster 3.3): Despite this cluster having received the lowest priority from the respondents, there still is a significant knowledge gap in law enforcement agencies. Only a handful of specialists are operating in government administrations.

2. Information management system (cluster 4.1): A number of respondents indicated this to be the highest priority since combating illegal trade is an international issue and the management of international

information is therefore crucial. Its implementation requires a secure channel, which is easily accessible. According to the amendments of the EU Waste Shipment Regulation, Member States are now obliged to draft inspection plans based on risk assessments. This obligation is an opportunity to connect the data between law enforcement agencies and supervisory bodies. This supporting measure is a prerequisite for the central recommendation cluster 4.3: Without a properly functioning information management system, the WEEE networks and communication would not be possible.

3. Improving the capacity of law enforcement agencies: A considerable amount of respondents are in favour of this recommendation. Similarly, to cluster 3.3, this supporting measure is highlighted, as inspecting WEEE is particularly difficult and calls for more investment. There is agreement around the observation that law enforcement

agencies are under financial pressure, and that waste inspection (and other environmental crimes), do not feature as high priorities. It must also be noted that in comparison with the significant negative economic impacts of illegal WEEE trade, better cost/benefit analyses may result in a re-think of the situation.



3.3 Train authorities

4.2 Law Enforcements Agencies capacity building

4.1 Information management system

7. CONCLUSIONS

Coordinated by a consortium of seven partner organisations and funded by the European Union's Seventh Framework Programme, the two-year CWIT project was launched in September 2013 to identify the policy, regulatory, enforcement and technical gaps, which criminals exploit in order to illegally transport, trade and dispose of e-waste. It also sought to understand the economic drivers of sub-standard and illegal treatment and trade. The project puts forward recommendations for the European Commission, law enforcement agencies, lawmakers and electronics producers and e-waste treatment industries to assist them in countering the illegal trade of e-waste.

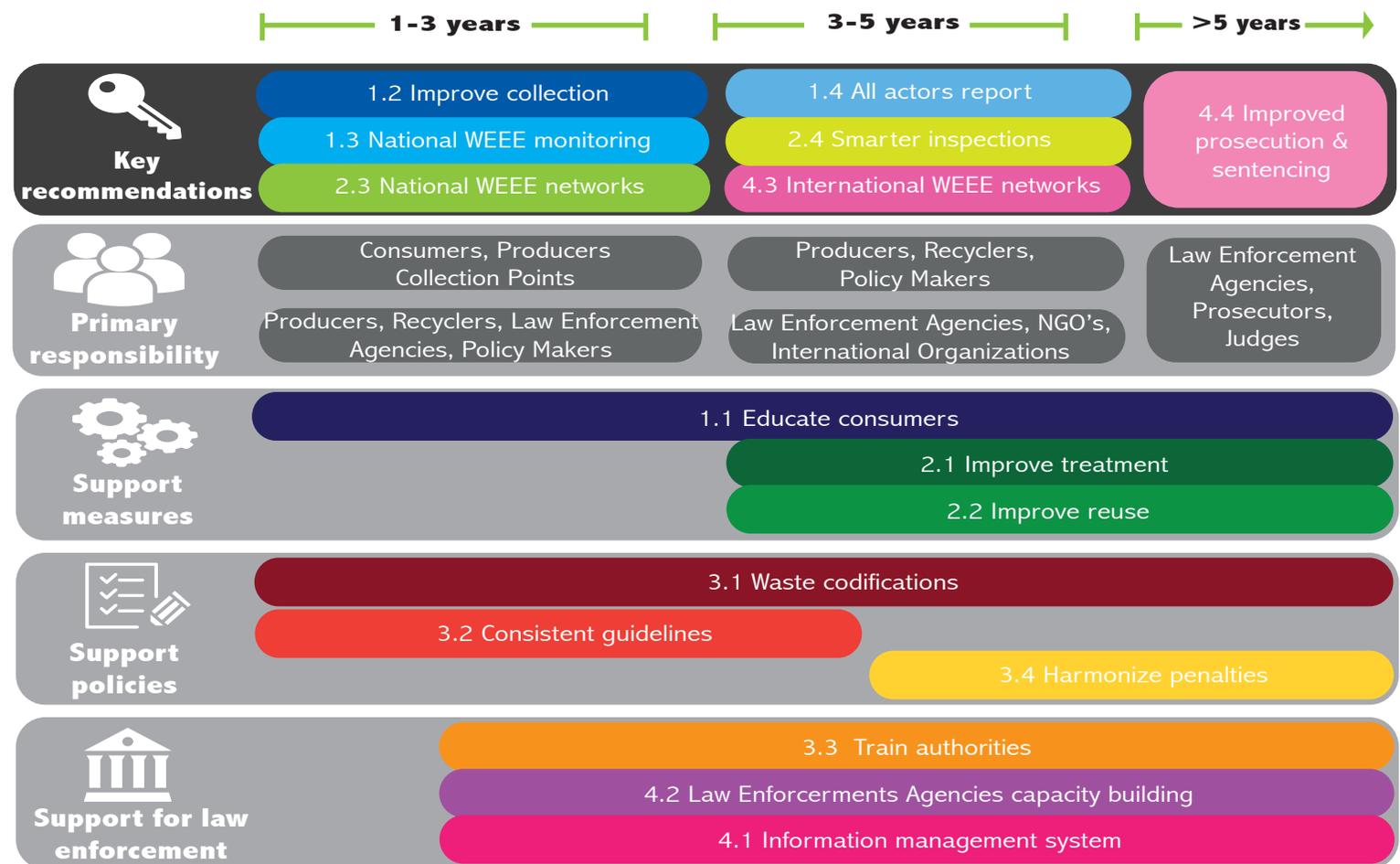
The project tapped into diverse sources of information. Specifically, it actively sought to involve partners and stakeholders representative of the entire WEEE value chain through the creation of a global information network. To capture the expertise held by this network, the project set up surveys, expert interviews and workshops. Extensive desk research was conducted to collate the existing information and statistics on WEEE.

With a multi-faceted insight into the current situation, a set of 16 clusters of recommendations was tailored for each of the relevant stakeholder groups. This approach ultimately led to the following roadmap that offers guidance on the measures needed to actively and holistically improve the e-waste industry. The roadmap is also aimed at offering potential avenues to adjust the necessary environmental and economic policies for the EU

economy at large.

The roadmap describes the 16 recommendation clusters, illustrating the time needed to implement these, the core recommendations and connected general support measures, support policies and law enforcement infrastructure development, as well as the actors that are primarily involved.

More details can be found in Deliverable 6.1 Recommendations related to the EU Legal Framework, Deliverable 6.2 Recommendations for law enforcement organisations, Deliverable 6.3 Recommendations for the WEEE treatment industry, Deliverable 6.4 Recommendations for the electronics industry.



8. ABBREVIATIONS

Basel Convention - UN Basel Convention on the Control of Transboundary Movements of Hazardous Wastes
Basel COP – UN Basel Convention Conference of the Parties
C2P – Compliance & Risks' information management system
CENELEC – European Committee for Electrotechnical Standardisation
CN Code – Combined Nomenclature
CONOPS - Concept of Operations
EEE – Electrical and Electronic Equipment
EERA – European Electronics Recyclers Association
ENPE – European Network of Prosecutors for the Environment
Envicrimenet – European Network for Environmental Crime
EUFJE – European Union Forum of Judges for the Environment
EUROJUST – EU Judicial Cooperation Agreement
Europol – European Police Office
IMPEL – EU Network for the Implementation and Enforcement of Environmental Law
ISO – International Organisation for Standardisation
LEA – Law Enforcement Authorities/Agencies
LibraWEEE – Library of WEEE related sources
LOW – EU List of Waste
NEST – National Environmental Security Task Force
OCG – Organised Crime Groups
OECD – Organisation for Economic Cooperation and Development
OIMS – Operational Intelligence Management System
StEP Initiative – Solving the E-waste Problem
TFS – Transfrontier Shipments
TOCG - Transnational Organised Crime Groups
UEEE – Used Electrical and Electronic Equipment
UNU-Keys – UNU system for classification of waste
WCO – World Customs Organisation
WEEE/e-waste – Waste Electrical and Electronic Equipment
WEEELABEX – WEEE Label of Excellence
WSR - Waste Shipment Regulation

9. REFERENCES

ADEME (2013), Project for the quantification of Waste Electrical and Electronic Equipment (WEEE) in France, OCAD3E-ADEME.
Algemene Rekenkamer (2012), Handhaving Europese regels voor afvaltransport. Tweede Kamer, vergaderjaar 2012-2013, 33, 418, nr. 2. Den Haag.
AMEC Environment & Infrastructure UK Limited (2012), The Economic Impact of Illegal Waste, Report for Environment Agency.
Aoki-Suzuki, C., Bengtsson, M., & Hotta, Y. (2012), Controlling Trade in Electronic Waste: An analysis of International Agreements and National Trade Policy in Asia. In Hieronymi, K., Kahhat, R. and Williams, E. (Eds.) E-waste Management from Waste to Resource.
Avfall Sverige AB (2013), HusHållsavfall i siffror - Kommun- och länsstatistik 2012.
Ayodeji (2011), Assessment of the flow and driving forces of used electrical and electronic equipment.
Balde, C.P., Kuehr, R., Blumenthal, K., Fondeur Gill, S., Kern, M., Micheli, P., Magpantay, E., Huisman, J. (2015), E-waste statistics: Guidelines on classifications, reporting and indicators.
Baldé, C.P., Wang, F., Kuehr, R., Huisman, J. (2015), The global e-waste monitor – 2014, United Nations University, IAS – SCYCLE, Bonn, Germany.
Bigum, M., C. Petersen, T. H. Christensen and C.Scheutz (2013), “WEEE and portable batteries in residual household waste: Quantification and characterisation of misplaced waste.”
BIO Intelligence Service (2013), Equivalent conditions for waste electrical and electronic equipment (WEEE) recycling operations taking place outside the European Union, Final Report prepared for European Commission – DG Environment.
Björn Appelqvist (2013), Waste trafficking, challenges and actions to be taken. ISWA World Congress, Vienna October 7th-11th.
Booz Allen & Hamilton Inc (Interagency OPSEC Support Staff) (1996), Operations Security intelligence threat handbook.
Breivik, K., Armitage, J.M., Wania, F., Jones, K.C. (2014), Tracking the global generation and exports of e-Waste. Do existing estimates add up? Environmental Science and Technology.
COUNCIL OF THE EUROPEAN UNION (2014), Report of the Strategic Meeting towards an enhanced coordination of environmental crime prosecutions across the EU: The role of Eurojust.
Cucchiella, F., et al, Recycling of WEEEs: An economic assessment of present and future e-waste streams, Renewable and Sustainable Energy Reviews 51 (2015) 263–272
Dutch WEEE Directive transposition: Regeling van de Staatssecretaris van Infrastructuur en Milieu, van 3 februari 2014, nr. IENM/BSK-2014/14758, houdende vaststelling regels met betrekking tot afgedankte elektrische en elektronische apparatuur (Regeling afgedankte elektrische en elektronische apparatuur)
David Newman, Stefano Amaducci & Mario Sunseri (2013), Smart Containers Breathing Life into Italian WEEE Collection. Waste management World article.
Dorn, N., Van Daele, S., & Vander Beken, T. (2007). Reducing vulnerabilities to crime of

the European waste management industry: the research base and the prospects for policy. *European Journal of Crime, Criminal Law and Criminal Justice*, 15(1). <http://www.brill.nl/eccl.Doxa> (ECODOM) (2013), *Apparecchi elettrici ed elettronici non più in uso presso le famiglie italiane*. http://www.ecodom.it/Portals/0/Documenti/studi_ricerche/IndagineDoxaGarageStory.pdf Drielak, Steven, C. (1998), *The Criminal Environmental Investigator*. <http://www.inece.org/5thvol1/drielak.pdf> Dvoršak, S., J. Varga, V. Brumec and V. Inglezakis (2011), *Municipal Solid Waste Composition in Romania and Bulgaria*. Maribor, Slovenia. EEA (2012), *Movements of waste across the EU's internal and external borders*. EERA and EuroMetaux (2014), *Standard on End-Processing of WEEE Fractions – Part I: Copper and precious metal containing fractions*, Arnhem, Netherlands. EFFACE (2015), *Fighting Environmental Crime in Italy: A Country Report*. <http://efface.eu/country-report-italy-0> EIA (2011), *System Failure: The UK's harmful trade in electronic waste*. EIA waste report. Environment and Social Development Organization-ESDO (2010), *Study on E-waste: Bangladesh Situation 2010* | © Copyright, ESDO. ESAET (2014), *Waste Crime: Tackling Britain's Dirty Secret*. <http://www.eunomia.co.uk/reports-tools/waste-crime-tackling-britains-dirty-secret/> ETC/SCP (2012), *Overview of the use of landfill taxes in Europe*.

EUROJUST (2014), *Strategic Project on Environmental crime report*. EUROJUST (2015), *Dutch-Hungarian human trafficking joint action aided by Eurojust and Europol*. Press release. European Commission (2007), *Revised Correspondents Guidelines No 1*. Retrieved January 2015 from http://ec.europa.eu/environment/waste/shipments/pdf/correspondents_guidelines_en.pdf European Commission (2009), *Study on the feasibility of the establishment of a Waste Implementation Agency*. http://ec.europa.eu/environment/waste/studies/pdf/report_waste_dec09.pdf European Commission (2013), *Impact Assessment*. Accompanying document to a legislative proposal and additional non-legislative measures strengthening the inspections and enforcement of Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. http://ec.europa.eu/environment/waste/shipments/pdf/sec_2013_268.pdf European Commission, M/518 *Mandate to the European standardisation organisations for standardisation in the field of Waste Electrical and Electronic Equipment (Directive 2012/19/EU (WEEE))*. European Commission (2014), *Report on the meeting of EU Waste Shipment Correspondents* 7 October 2014. http://ec.europa.eu/environment/waste/shipments/pdf/report_07_10_14.pdf European Environment Agency (2012), *EEA Report 7/2012 Movements of waste across*

the EU's internal and external borders. www.eea.europa.eu/publications/movements-of-waste-EU-2012 European Parliament (2006), *Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste*. European Parliament (2002), *Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE)*. European Parliament (2008), *Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste (Waste Framework Directive)*. European Parliament (2008), *Directive 2008/99/EC of the European Parliament and of the Council of 19 November 2008 on the protection of the environment through criminal law*. European Parliament (2012), *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)*. OJEU L 197/38 of 24.07.2012. Europol (2015), *Exploring tomorrow's organised crime*. Eurostat (2015), last accessed June 1, 2015. http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_waselee&lang=en EUROSAI Working group on environmental auditing (2013), *Coordinated audit on the enforcement of European Waste Shipment Regulation*. Joint report based on eight national audits. French Ministry of Justice (2015). *Mieux lutter contre les atteintes à l'environnement*.

Publication d'une circulaire de politique pénale adaptée aux enjeux locaux. <http://www.justice.gouv.fr/la-garde-des-sceaux-10016/mieux-lutter-contre-les-atteintes-a-l'environnement-28022.html> French WEEE Directive transposition: Arrêté du 8 octobre 2014 modifiant l'arrêté du 23 novembre 2005 relatif aux modalités de traitement des déchets d'équipements électriques et électroniques prévues à l'article 21 du décret n° 2005-829 du 20 juillet 2005 relatif à la composition des équipements électriques et électroniques et à l'élimination des déchets issus de ces équipements. F.Wang, J.Huisman, C.E.M.Meskers, M.Schluep, A.Stevens, C.Hagelüken (2012), *The Best-of-2-Worlds philosophy: Developing local dismantling and global infrastructure network for sustainable e-waste treatment in emerging economies*. Wang, F., (2014), *E-waste: collect more, treat better; Tracking take-back system performance for eco-efficient electronics recycling*, Doctoral Thesis. Delft University of Technology. G8 Roma/Lyon group (2013), *Fighting hazardous waste trafficking: analysing the nature of the threat*. Geeraerts, K., Illes, A. and Schweizer, J.P. (2015), *Illegal shipment of e-waste from the EU: A case study on illegal e-waste export from the EU to China*. EFFACE 2015. Green Electronics Council, retrieved from <http://greenelectronicscouncil.org/programs/standards-development/>; see there also for the "Policy on Qualification of Standards". Greenpeace (2008), *Not in our backyard*.

Hendriksen, T. (2009), Possession, disposal and purchasing of discharge lamps in Dutch households. Dongen, the Netherlands: GfK Panel Services Benelux.

Herbelot, N., (Ministere de l'ecologie, du developpement durable et de l'energie) (2015), presentation <http://www.cwitproject.eu/cwit-final-conference/>

Hints, J. and Wieting, M. (2014), "A new research protocol to develop multiple case studies on illicit activities in trade, logistics, processing and disposal of WEEE - waste in electrical and electronic equipment", Proceedings of the Hamburg International Conference of Logistics (HICL), September 18-19, 2014, Hamburg, pp. 291-312

HKEPD (2011), Progress of Work in 2010. The seventh working level conference on waste transfer of the Mainland - Hong Kong, 2011. Environmental Protection Department Hong Kong SAR Government (HKEPD).

Huijbregts, C. (2015), Senior Inspector, Inspectorate for Human Environment and Transport.

Huisman, J., M. van de Maesen, R. J. J. Eijsbouts, F. Wang, C. P. Baldé and C. A. Wielenga (2012), The Dutch WEEE Flows. Bonn, Germany, United Nations University, ISP-SCYCLE.

Huisman, J., F. Magalini, R. Kuehr, C. Maurer, S. Ogilvie, J. Poll, C. Delgado, E. Artim, J. Szlezak and A. Stevels (2008), Review of Directive 2002/96 on Waste Electrical and Electronic Equipment (WEEE). Bonn, Germany, United Nations University.

ILO (2012), The global impact of e-waste.

Addressing the challenge.

IMPEL-TFS (2004), Illegal waste shipments to developing countries, common practice.

IMPEL-TFS seaport project.

IMPEL-TFS (2005), The illegal shipment of waste among IMPEL member States. Project report.

IMPEL (2009), Practicability and Enforceability of the WEEE Directive Recast Proposal.

IMPEL (2013), Multi annual strategic programme.

IMPEL (2014), 20 years of working for a better environment. 2013. Conference on Implementation & Enforcement of Environmental legislation "Working together to Improve & Innovate". <http://impel.eu/news/impel-2013-conference-report-published/>

International Network for Environmental Compliance and Enforcement. Seaport Environmental Security Network (2009), the international hazardous waste trade through seaports.

INTERPOL (2009), Electronic waste and organized crime assessing the links. Retrieved April 2015 from <http://www.INTERPOL.int/Media/Files/Crime-areas/Environmental-crime/Electronic-Waste-and-Organized-Crime-Assessing-the-Links-2009>

INTERPOL (2011), Strategic analysis report on illegal export of Electronic waste to non-OECD countries.

INTERPOL (2012), Environmental Security Task Force Manual.

INTERPOL (2012), Intelligence-Led Enforcement Manual.

INTERPOL's Turn Back Crime Series (2015),

<https://www.youtube.com/watch?v=7BRFOLyp7BU>

INTERPOL & UNEP (2013), 1st international environmental compliance and enforcement conference. Nairobi, Kenya, 6 November 2013.

INTERPOL (2013), INTERPOL operation targets illegal trade of e-waste in Europe, Africa (article).

Irish WEEE Directive transposition: Statutory Instrument No. 149 of 2014.

ISWA (2011), Position Paper on Waste Trafficking http://www.iswa.org/index.php?eID=tx_bee4mememberships_download&fileUid=118

IPSOS Public Affairs (2011), L'atteggiamento degli italiani nei confronti del recupero e riciclaggio degli elettrodomestici, <http://www.ecodom.it/en-us/Studies-Research/The-IPSOS-Study>

Jerry Ratcliffe (2008), Intelligence led policing.

Juan Wang (2009), Transboundary shipment of E-waste: regulations, systems, stakeholders and solutions. Master thesis, Delft University of Technology.

Khan, S.A. (2014), Solving the E-Waste Problem (STEP) Green Paper: Differentiating EEE products and Wastes.

Kleemans, E. (2006), Monitor georganiseerde misdaad, The Hague: WODC.

Knut Sander & Stephanie Schilling (2010), Transboundary shipment of waste electrical and electronic equipment /electronic scrap, Umwelt Bundesamt.

Kopacek, B., (2013), Transwaste, (In)formal collection of e-waste – The Central Europe Project. Transwaste, Presentation for

Take-back conference, Prague, April 16, 2013.

Lepawsky & McNabb (2010), Mapping international flows of electronic waste.

Lepawsky, J. (2015), The changing geography of global trade in electronic discards: time to rethink the e-waste problem. *Geographical Journal*, 181: 147–159.

LfU (2012), Restmuellzusammensetzung in phasing out gebieten, Bayerisches landesamt fuer Umwelt.

Liu, X., M. Tanaka, and Y. Matsui (2006), Electrical and electronic waste management in China: progress and the barriers to overcome. *Waste Management & Research*, 2006.

Magalini, F., J. Huisman, F. Wang, R. Mosconi, A. Gobbi, M. Manzoni, N. Pagnoncelli, G. Scarcella, A. Alemanno and I. Monti (2012). Household WEEE Generated in Italy, Analysis on volumes & Consumer Disposal Behaviour for Waste Electric and Electronic Equipment. Bonn, Germany, United Nations University.

Mohanty, S., Vermeersch, E., Hints, J., Luda di Cortemiglia, V. and Liddane, M. (2015), "Weaknesses in European e-waste management", Proceedings of the Hamburg International Conference of Logistics (HICL), September 24-25, 2015, Hamburg.

Monier, V., M. Hestin, A. Chanoine, F. Witte and S. Guilcher (2013), Study on the quantification of waste of electrical and electronic equipment (WEEE) in France, BIO Intelligence Service S.A.S.

Moora, H. (2013), Eestis tekkinud segaolmejäätmete, eraldi kogutud paberija pakendijäätmete ning elektroonikaromu

koostise uuring (Sampling and analysis of the composition of mixed municipal waste, source separated paper waste, packaging waste and WEEE generated in Estonia), SEI Tallinna väljaanne.

O. Deubzer (2012), Solving the E-Waste Problem (StEP) Green Paper, Recommendations on Standards for Collection, Storage, Transport and Treatment of E-waste, Principles, Requirements and Conformity Assessment, UNU Bonn, Germany.

Öko-Institut e.V. (2010), Component 1: Flows of used and end-of life e-products from Germany, The Netherlands and Belgium.

Öko-Institut e.V. (2010), Gestión de Residuos Electrónicos en Colombia Diagnóstico de Computadores y Teléfonos Celulares.

Öko-Institut e.V. (2011), Informal e-waste management in Lagos, Nigeria – socio-economic impacts and feasibility of international recycling co-operations.

Ontario Electronic Stewardship (2009), Final Revised (Phase 1 and 2) Waste Electrical and Electronic Equipment (WEEE) Program Plan. www.ontarioelectronicstewardship.ca

OVAM (2012), Code of Good Practice for re-use of WEEE.

Sabaa A. Khan (2014), Solving the E-Waste Problem (StEP) Green Paper: Differentiating EEE products and Wastes.

Secretariat of the Basel Convention (2011), Benin e-Waste Country Assessment.

Secretariat of the Basel Convention (2011), Rapport technique d'étude de diagnostic sur la gestion des DEEE en Côte d'Ivoire.

Secretariat of the Basel Convention, (2011), Where are WEEE in Africa? Project report.

Secretariat of the Basel Convention (2012), E-Waste Africa project, E-Waste Country Assessment Nigeria.

Secretariat of the Basel Convention (2012), E-Waste Africa project, Used and end-of-life electrical and electronic equipment imported into Liberia.

StEP initiative (2013), E-waste Country Study Ethiopia.

StEP initiative (2013), Quantitative Characterization of Domestic and Transboundary Flows of Used Electronics. StEP initiative (2013), Transboundary Movements of Discarded Electrical and Electronic Equipment.

Stiftung Elektro-altgeräte Register, Composition of mixed collection groups. <https://www.stiftung-ear.de/en/service/figures/ordercomposition-of-mixed-collection-groups/>

Fitzpatrick (2015), Step Green Paper: Effect of Waste Legislation on Transboundary Movements of EEE Destined for Reuse: Impact of E-waste Regulations on Reuse Organisations and Proposed Recommendations for Improvement.

The Environmental Protection Agency (2009), a Study on the use of administrative sanctions for environmental offences in other comparable countries and assessment of their possible use in Ireland.

UEC (2013), Hausmüllmenge und mausmüllzusammensetzung in der Freien und Hansestadt Hamburg. Berlin, Germany, Umweltund Energie-Consult GmbH (UEC).

UK environment Agency, Northern Ireland Environment Agency, Scottish Environment

Protection Agency (2012), GN04: WEEE Evidence and National WEEE Protocols Guidance v2.

UK Department for Business, Innovation and Skills (2014), WEEE Regulations Government Guidance Notes

UNEP (2015), Waste crime – Waste risks gaps in meeting the global waste challenge. A rapid response assessment.

<http://www.grida.no/publications/rr/waste-crime/>

United Nations Convention against Transnational Organised Crime.

<http://www.unodc.org/unodc/treaties/CTOC/> UNODC (2009), Transnational trafficking and the rule of law in west Africa: A Threat Assessment.

UNODC (2011), Criminal intelligence. Manual for analysts.

UNODC (2012), Wildlife and Forest Crime Analytical Toolkit. New York, NY: United Nations.

UNODC (2013), Transnational Organized Crime in East Asia and the Pacific.

UNU-ISP (2013), e-waste in china: a country report.

United Nations University, Statistics Netherlands, BIO by Deloitte, Regional Environmental Centre (2015), Study on collection rates of waste electrical and electronic equipment (WEEE). Final report prepared for European Commission – DG Environment.

WEEE Forum (2013), WEEELABEX Standard: <http://www.weee-forum.org/weeelabex-0>

WEEE Forum (2013), WEEELABEX layman's report:

<http://www.weee-forum.org/news/weeelabex-laymans-report-2013>.

Wielenga, K., J. Huisman and C. P. Baldé (2013), (W)EEE Mass balance and market structure in Belgium, study for Recupel, Brussels, Belgium, Recupel.

WRAP (2012), Market Flows of Electronic Products & WEEE Materials, A model to estimate EEE products placed on the market and coming to the end of useful life. Summary data findings for 2009-2020.

WRAP (2013), Developing a methodology for assessment of non-obligated WEEE recycling in the UK, Project IMT002-015.

WRAP (2014), Evidence of Large Domestic Appliances recovered in the UK light iron stream, Quantification of non-obligated WEEE in the light iron stream, Project IMT002-020.

WRAP, Re-use protocols for electrical products. <http://www.wrap.org.uk/content/re-use-protocols-electrical-products>

Zonneveld, N. (2007), A treatise on the (illegal) export of WEEE, EERA.

10. CWIT CONSORTIUM



Founded in 2000, Irish-owned Compliance & Risks is one of the most trusted names in compliance knowledge management. Working across more than 120 countries, we help companies manage compliance requirements throughout the world via our knowledge management system, C2P, daily alerts, market access and other solutions, enabling them to

mitigate risk and focus on growth opportunities. The company is headquartered in Cork with offices in Brussels, California, London and New York.

More details of our services are available on our website: www.complianceandrisks.com.



11.1 Cross-Border Research Association

Cross-border Research Association, CBRA, formally established in Lausanne, Switzerland in 2005, is an independent research institute focusing on advanced supply chain security, crime prevention, risk management, cross-border trade and logistics, trade facilitation, coordinated border management, and public-private co-operation research, training and consulting – all this in the context of global supply chains and logistics systems. Other CBRA-competencies include international standardization work, particularly in the context of supply chain security management; development of quantitative economic models, including cost-benefit analysis; development of e-learning applications; as well as execution of scientific dissemination, particularly in the context of European FP7 and other research projects. The CBRA research team - consisting currently of four staff members (Aug.2015) - is collaborating closely with HEC University of Lausanne in Switzerland; Riga Technical University in Latvia; University of Costa Rica; Shanghai Customs College in China; and a handful other top Universities and training institutes on worldwide basis. CBRA works with both public sector and private sector actors, while carrying out this research, for the benefit of business and government practitioners, policy makers and academics alike.

CBRA's research activities: During the past ten years our team has carried out a multitude of research projects in supply chain security and trade facilitation, varying from a four month study on 21st century supply chain

models (with the World Customs Organization) to a three year research and development project on risk management in global container logistics systems (FP7-CASSANDRA –project). CBRA's role in these and many other research projects include literature reviews; methodology development; surveys and case studies; qualitative and quantitative modeling; metrics development and impact assessments; and so forth. Besides research projects with the World Customs Organization (e.g. in Customs risk management), and European Framework Program 7 (e.g. INTEGRITY, LOGSEC, FOCUS, SAFEPOST, CWIT and CORE), we have carried out projects funded by the Swiss Science Foundation (e.g. in Interplay between supply chain companies and authorities to improve supply chain security); with the World BASC Organization in Latin America (survey with BASC member companies); and the State Secretariat for Economic Affairs, SECO, in Switzerland (survey on e-customs services); just to name few examples.

CBRA's education and training activities: We deliver lectures in supply chain security and trade facilitation particularly for undergrad and postgrad students at various Universities and research institutes across the world. At our "home university" in Lausanne, Switzerland, we give one lecture each year for 3rd and 4th year masters students; and another lecture for the Executive MBA students – both lectures as part of Operations and Supply Chain Management –courses. At Riga Technical University we have a similar scheme both for part-time and for

full-time students, as part of their International Logistics and Customs Management -courses. On top of these, we deliver ad-hoc lectures across the globe, not only for academics, but also for industry and government practitioners – past examples include Shanghai Customs College in China; University of Costa Rica; Penn State Harrisburg in the US; and World FreeZones Association in Dubai, United Arab Emirates.

List of CBRA’s main projects since the year 2005:

- H2020-project SYNCHRO-NET: "Synchro-modal Supply Chain Eco-Net". SEP-210181876. Date: 1.5.2015-31.12.2018.
- Egypt Chemicals Supply Chain Security –project – Case study development and workshop facilitation. Project commissioned by the US State Department, Chemical Security Program. Date: 1.2-31.5.2015. <http://www.csp-state.net/>
- FP7-project CORE: "Consistently Optimized Resilient Secure Global Supply-Chains". Grant agreement no: 603993. Date: 1.5.2014-30.4.2018 CORE URL: <http://www.coreproject.eu/>
- FP7-project CWIT: "Countering WEEE illegal trade". Grant agreement no: 312605. Date: 1.9.2013-31.8.2015. CWIT URL: <http://www.cwitproject.eu/>
- Study on "Revenue and tax collection data model for Customs administrations globally". Study commissioned by the Swiss Customs Administration. 1.12.2014-31.8.2015.

- Study on "Future air cargo screening technologies and research funding opportunities". Study commissioned by the European Express Association. 1.10.2014-31.5.2015.
- Study on "The import VAT and duty de-minimis in the European Union – Where should they be and what will be the impact?". Study commissioned by the European Express Association. 15.3.2013–15.10.2014. Final report available at: <http://www.cross-border.org/images/reports/CDS-Report-Jan2015-publishing-final.pdf>
- Thailand Europe Cooperation TEC-II, PDSC. Implementation of international standards on supply chain security leading to a secure trade environment and to increased trade facilitation (Activity Code: TRA 4). AEO MRA project duration with CBRA: 1.11.2012-30.10.2013. Final report available at: <http://www.cross-border.org/images/reports/CBRA-Hintsa-RTC-AEO-MRA-study-final.pdf>
- Trade Facilitation Master Plan for Abu Dhabi Customs Administration. CBRA participated as the trade facilitation working group lead in ADLAP-project during years 2012-2013.
- FP7-project SAFEPOST: "Reuse and Development of Security Knowledge Assets for International Postal Supply Chains". Grant agreement no: 285104. Date: 1.4.2012-31.3.2016 SAFEPOST URL: <http://www.safepostproject.eu/>

- FP7-project CASSANDRA: "Common assessment and analysis of risk in global supply chains ". Grant agreement no: 261795. Date: 1.6.2011-31.5.2014 CASSANDRA URL: <http://www.cassandra-project.eu/>
- FP7-project FOCUS: "Foresight Security Scenarios: Mapping Research to a Comprehensive Approach to Exogenous EU Roles". Grant agreement no: 261633. Date: 1.4.2011-31.3.2013 FOCUS URL: <http://www.focusproject.eu/>
- Customs risk management study with the World Customs Organization, WCO (2009-2011).
- FP7-project LOGSEC: "Development of a strategic roadmap towards a large scale demonstration project in European logistics and supply chain security". Grant agreement no: 241676. Date: 1.4.2010-31.3.2011
- e-Customs study in Switzerland. Study Commissioned by the Swiss State Secretariat for Economic Affairs, SECO. (2010-2011)
- Supply chain security (SCS) standardization project in Europe – Case CEN. SCS standards feasibility study and SCS good practice guidebook (2008-2012).
- FP7-project INTEGRITY: "Intermodal Global door-to-door container supply chain visibility". Grant agreement no: 218588. Date: 1.6.2008-30.10.2011 INTEGRITY URL: <http://www.integrity-supplychain.eu/>
- World Bank Supply Chain Security

Guidebook (CBRA provided technical expertise for the guidebook) (2009). Guidebook available at: http://siteresources.worldbank.org/INTRAL/Resources/SCS_Guide_Final.pdf

- The 21st Century Supply Chain Model study for the World Customs Organization, WCO (2006-2007).
- Study on EU AEO-program and certification preparations at two consumer goods multinationals headquartered in Europe (2005-2008).
- Study on BASC- supply chain security program in Latin America, including Colombia, Costa Rica and six other countries (2005-2007).

For more information on CBRA, please visit our website: www.cross-border.org ; or, please contact us by email cbra@cross-border.org , or by phone, +41-76-5890967.



11.2 INTERPOL - ENVIRONMENTAL CRIME

INTERPOL is the world's largest international police organization, with 190 member countries.

Our role is to enable police around the world to work together to make the world a safer place. Our high-tech infrastructure of technical and operational support helps meet the growing challenges of fighting crime in the 21st century.

ENVIRONMENTAL CRIME AND SECURITY

Environmental crime is recognised as an international security issue, and one which takes many forms and crosses many sectors. The INTERPOL General Assembly of November 2014, passed a resolution urging member countries to fully utilize INTERPOL's operational tools and services in their efforts targeting environmental crimes. Environmental crimes cover biodiversity, natural resource and environmental quality issues around the world.

From the poaching of elephants and trade in their ivory to the illicit trafficking in waste; from illegal fishing in national and international waters to exploitation of forests, environmental security and the criminality that surrounds it directly and indirectly affects us all. It contributes to the instability of our global politics, it erodes our economic markets and directly affects our community's health and wellbeing.

A GLOBAL RESPONSE

INTERPOL member countries lead and participate in a number of innovative projects and operations designed to enhance environmental security. INTERPOL's

Environmental Security Unit publishes manuals and handbooks for frontline law enforcement officers on topics including intelligence-led enforcement, methods of smuggling and concealment, techniques for questioning wildlife smugglers, and the conducting of "controlled deliveries".

Additionally, INTERPOL encourages inter-agency cooperation and communication within and among countries through National Environmental Security Task Forces (NESTs). A NEST is a national cooperative of police, customs, environmental agencies, prosecutors, other specialized agencies, non-governmental and intergovernmental partners.

Finally, INTERPOL's Environmental Security Sub-Directorate is guided and advised by the member countries of the Environmental Compliance and Enforcement Committee and its Working Groups on Pollution, Fisheries and Wildlife Crime.

INFORMATION EXCHANGE

INTERPOL Notices are international alerts used by police to communicate information about crimes, criminals and threats to their counterparts around the world. The information disseminated via notices concerns, among others, individuals wanted for serious crimes, possible threats, and criminals' modus operandi. Notices offer high visibility for serious crimes or incidents. INTERPOL also publishes Environmental Alerts at the request of member countries to notify law enforcement authorities of events that may call for urgent monitoring.

PROJECTS - five long-term projects aim to protect threatened animal and plant species and preserve the integrity of the natural environment through training courses, operations, information exchange and intelligence analysis.

• **PROJECTS - five long-term projects** aim to protect threatened animal and plant species and preserve the integrity of the natural environment through training courses, operations, information exchange and intelligence analysis.

• **Project Eden** – to combat the illegal trade in waste, particularly electronic waste, through international operations, intelligence-led policing, and capacity building to improve detection and enforcement.

• **Project Leaf (Law Enforcement Assistance for Forests)** – to combat illegal logging and related crimes. Led by INTERPOL and the United Nations Environment Programme, it supports enforcement operations, provides training and tactical support, and improves intelligence gathering.

• **Project Predator** – to improve conservation efforts of the world's remaining Asian big cats, through enhanced communication of intelligence, development of a global picture of the criminal activity threatening Asian big cats, disruption of criminal networks, and apprehension of criminals.

• **Project Scale** – to identify, deter and disrupt transnational fisheries crime. It conducts region- or commodity-specific law enforcement operations, provides case-specific support and recommendations, and expands INTERPOL's international marine enforcement network.

• **Project Wisdom** – to combat elephant and rhinoceros poaching and the illegal trade in ivory and rhinoceros horn. It seeks to conserve these species through international operations, intelligence-led policing, increased public awareness and training of local police.

OPERATIONAL SUCCESS

INTERPOL's specialized units provide case-specific support through the deployment of Investigative Support Teams and Incident Response Teams. INTERPOL deploys teams with specialized forensics skills and crime area experience to support local and national authorities in investigations into large seizures and mass destruction events of wildlife and natural resources, and to identify avenues for international cooperation.

INTERPOL coordinates and supports law enforcement operations around the world, including some of our recent mobilizations:

Operation Enigma, Phase I – To combat the illegal trade of electronic waste. The operation resulted in the seizure of more than 240 tons

of electronic equipment and electrical goods and the launch of criminal investigations against some 40 companies.

Operation Spindrift – targeting the illegal transnational trade in abalone, or sea snails, through information and intelligence exchange among seven countries. Participating agencies recommended ways to improve reporting, monitoring and operational procedure.

Operation Putumayo – Led by the Peruvian Public Ministry and targeted illegal logging and illegal mining sites along the borders between Peru, Colombia and Brazil. The resulting seizures are estimated at 20,000 m³ of timber, with a value of around USD 31 million.

CONTACT INFORMATION:

Contact us via our website. For matters relating to specific crime cases, please contact your local police or the INTERPOL National Central Bureau in your country.

environmentalcrime@interpol.int

WWW.INTERPOL.INT

YouTube: INTERPOLHQ

Twitter: @INTERPOL_EC



11.3 United Nations Interregional Crime and Justice Research Institute (UNICRI)

The United Nations Interregional Crime and Justice Research Institute (UNICRI) supports governments and the international community at large in tackling the threats of crime to social peace, development and political stability. UNICRI is a United Nations entity established in 1967 and is mandated to assist intergovernmental, governmental and non-governmental organizations in formulating and implementing improved policies in the field of crime prevention and criminal justice.

In particular, UNICRI contributes to building global knowledge on emerging crimes and security threats by means of crime analysis and applied research programmes. Institutional and on-the-job training of specialized personnel forms an integral part of UNICRI activities. The activities of UNICRI aim to strengthen law enforcement's response to fighting organized and emerging forms of crime. As reported to the United Nations Commission on Crime Prevention and Criminal Justice, UNICRI has undertaken a number of projects addressing new and emerging security threats.

UNICRI considers environmental crime and its links with other serious crimes a clear and serious menace for sustainable development, global stability and security. Since 1991, the Institute has dealt with crimes against the environment and related emerging threats through applied research, awareness, and capacity-building initiatives. Today, countering environmental crime is an emerging priority for UNICRI.

In United Nations ECOSOC Resolution 2012/19 entitled "Strengthening international

cooperation in combating transnational organized crime in all its forms and manifestations", the Council "Invites the United Nations Interregional Crime and Justice Research Institute [...] to continue to conduct, in consultation with Member States and in cooperation with other competent international entities, research on different forms of transnational organized crime", including crimes against the environment.

Building on the CWIT project, UNICRI will coordinate the upcoming DOT.COM Waste project. The project seeks to increase the capabilities of law enforcement agencies, customs and port authorities, environmental agencies and prosecutors to fight cross-border waste crime more cost-effectively.

More information at:

<http://www.unicri.it/>

<http://www.unicri.it/topics/environmental/>

11.4 UNU – IAS SCYCLE

United Nations University (UNU)

The United Nations University is an international community of scholars engaged in research, postgraduate training and the dissemination of knowledge in furtherance of the purposes and principles of the United Nations, its Peoples and Member States. The University functions as a think tank for the United Nations system, contributes to capacity building, particularly in developing countries, and serves as a platform for new and innovative ideas and dialogue.

UNU Institute for the Advanced Study of Sustainability (UNU-IAS)

UNU-IAS is a new UNU institute, created in January 2014 by consolidating the former UNU Institute of Advanced Studies and UNU Institute for Sustainability and Peace (UNU-ISP). It is based at UNU Headquarters in Tokyo. The mission of UNU-IAS is to serve the international community through policy relevant research and capacity development focused on sustainability, including its social, economic and environmental dimensions. UNU-IAS applies advanced research methodologies and innovative approaches to challenge conventional thinking and develop creative solutions to emerging issues of global concern in these areas. The Institute's research, education and training combine expertise from a wide range of areas related to sustainability, and engage a global network of scholars and partner institutions. Through post-graduate teaching UNU-IAS develops international leaders with the interdisciplinary understanding and technical skills needed to advance creative

solutions to problems of sustainability.

UNU-IAS Operating Unit Sustainable Cycles (UNU-IAS-SCYCLE)

UNU-IAS-SCYCLE is an operating unit of UNU-IAS based in Bonn, Germany. Its activities are focused on the development of sustainable production, consumption and disposal scenarios for electrical and electronic equipment, as well as other ubiquitous goods. SCYCLE leads the global e-waste discussion and advances sustainable e-waste management strategies based on life-cycle thinking. Within this context UNU-IAS-SCYCLE:

- Conducts research on eco-structuring towards sustainable societies;
- Develops interdisciplinary and multi-stakeholder public-private partnerships;
- Assists governments in developing e-waste legislation and standards, meeting a growing need for such support;
- Undertakes education, training and capacity development; and
- Facilitates and disseminates practical, science-based recommendations to the United Nations and agencies, governments, scholars, industry and the public.



Figure XX 2009 E-waste Academy – Image credits: Gerard van Bree

11.5 WEEE Forum

The WEEE Forum (www.weee-forum.org) is a European not-for-profit association representing 32 electrical and electronic equipment waste (WEEE) producer compliance schemes – alternatively referred to as ‘producer responsibility organisations’ (PRO). It was set up in 2002. The 32 PROs are based in Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Ireland, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. It is the biggest organisation of its kind in the world. In 2014, its member organisations reported collection, proper de-pollution and recycling of more than 1.7 million tons of WEEE. Members in 2015 are: Amb3E, Appliances Recycling, Asekol, EAF, Eco-asimelec, Ecodom, Ecolec, Ecoped, Eco-systèmes, Ecotic, Eco Tic, EES-Ringlus, EGIO, ElektroEko, Elektrowin, El-Kretsen, elretur, el retur, Environ, Fotokiklosi, RAEcycle, Recupel, ReMedia, Repic, Retela, RoRec, SENS, SWICO, UFH, Wecycle, WEEE Ireland and Zeos. Here is the link to our ‘Services and projects’ page: <http://www.weee-forum.org/services/key-figure-s-platform>

More specifically:

WEEELABEX:

<http://www.weee-forum.org/weelabex-0>

ProSUM: <http://www.weee-forum.org/prosum-0>

Key Figures:

<http://www.weee-forum.org/services/key-figure-s-platform>



11.6 Zanasi & Partners (Z&P)

Zanasi & Partners (Z&P) is a research, advisory and training company specialised in security and intelligence. Its areas of expertise include:

- Intelligence: data mining, multi-language text mining, big data analytics;
- Critical infrastructure protection: secure information sharing, cyber-security;
- Border control: fight against the illicit traffic of dangerous waste and nuclear/radioactive material; improvement in the performance of border guards;
- Risk assessment: models and methodologies for assessing the terrorism risk;
- Transport security: railway, maritime and aviation domains;
- Human factor: mitigation of cognitive biases within intelligence and law enforcement activities;
- Serious games: simulations and training for the intelligence and security sectors;
- Support in the definition of security research strategies, including the request of EU funding for their development.

As an acknowledgment of its expertise, Z&P has been appointed member of ESRAB (European Security Research Advisory Board) and ESRIF (European Security Research and Innovation Forum) within the European Commission.

Research

In addition to the CWIT project, Zanasi &

Partners has developed a number of other research projects funded by the European Commission:

- **BODEGA** (Proactive Enhancement of Human Performance in Border Control);
- **CLOUDCERT** (Testbed Framework to Exercise Critical Infrastructure Protection);
- **CRISYS** (Critical Response in Security and Safety Emergencies);
- **iSAR+** (Online and Mobile Communications for Crisis Response and Search and Rescue);
- **LEILA** (Law Enforcement Intelligence Learning Application);
- **RECOBIA** (Reduction of Cognitive Biases in Intelligence Analysis);
- **SCADALAB** (SCADA Laboratory and Test Bed for Critical Infrastructure Protection);
- **SECRET** (Security of Railways against Electromagnetic Attacks);
- **SOTERIA** (Online and Mobile Communications for Emergencies);
- **THIS** (Transport Hub Intelligent Video System).

Zanasi & Partners has also contributed to:

- **CAMINO** (Comprehensive Approach to Cyber Roadmap Coordination and Development);
- **COMIFIN** (Communication Middleware for Monitoring Financial CIs);
- **CPSI** (Changing Perception of Security and Interventions);
- **PREDICT** (Preparing for the Domino effect in Crisis Situations);

- **SAFIRE** (Scientific Approach to Finding Indicators & Responses to Radicalisation);
- **SAVASA** (Standards Based Approach to Video Archive Search and Analysis).
Advisory

Z&P's advisory services have been used by:

- Booz & Company;
- Italian Aerospace Research Agency (CIRA);
- Consip;
- DigitPA;
- European Space Agency (ESA);
- ICSA Foundation;
- FRONTEX;
- EC's Joint Research Centre (IRC);
- Gruppo Editoriale L'Espresso (GELE);
- Italian Ministry of Communications;
- Italian Ministry of Economy and Finance;
- Politecnico di Milano.

In addition to the above entities, Z&P has advised several French and Italian SMEs and many public organisations in the European Union, Middle East and North Africa (covered by NDA).

Training

Z&P has provided training services in-house or through entities such as:

- Institute for Competitive Intelligence;
- Istituto Internazionale di Ricerca (IIR);
- Link Campus - University of Malta;
- Università della Calabria;

- SDA Bocconi School of Management;
- Alma Mater Studiorum University of Bologna;
- Università degli Studi di Modena e Reggio Emilia;
- Panthéon-Assas University;
- Wessex Institute of Technology.

Partners

Z&P has collaborated with partners such as:

- Atos;
- CEA LIST Institute;
- National Centre for the Protection of Critical Infrastructure (CNPIC);
- Fraunhofer;
- Instituto Nacional de Ciberseguridad (INCIBE);
- International Union of Railways;
- Istituto Affari Internazionali (IAI);
- Kemea;
- Poliisi;
- North Yorkshire Police Authority (NYPA);
- Swedish Ministry of the Interior;
- Société Nationale des Chemins de fer Français (SNCF);
- International Union of Railways.

Contact

Website: www.zanasi-alessandro.eu

E-mail: info@zanasi-alessandro.eu

Telephone: 39-349-4131718

Fax: +39-059-6137608

The logo for Zanasi & Partners, featuring the company name in a white, sans-serif font on a green rectangular background.