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## Conference Paper

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

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# 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

Juha Hintsa and Melanie Wieting

## Abstract

The illegal trade and disposal of electronic waste – known as e-waste or waste electrical and electronic equipment (WEEE) – is increasingly becoming a threat to global environmental health and security. To enhance the capabilities of governments in the EU and beyond to combat this growing crime, INTERPOL, Cross-border Research Association (CBRA) and five other partners launched the 2-year Countering WEEE Illegal Trade (CWIT) project in September 2013, funded by the EU's 7th Framework Program. The purpose of this paper is to present a new case study protocol for harmonized collection of detailed data on several dozen illicit WEEE cases across the globe. The CWIT case study protocol aims to capture multiple aspects of WEEE violations: (i) What was done wrongfully in e-waste trade and how; (ii) Which WEEE products and fractions, geographies, and transport modes were involved; (iii) Who was involved in illicit acts; (iv) What were / would have been the illicit economic benefits, and negative socio-economic impacts; (v) How was detection and inspection carried out; and (vi) What is the up-to-date situation with investigations, prosecutions and punishments? The outcomes of three preliminary illicit WEEE cases - with non-sensitive, anonymized data - are included in the paper. It is anticipated that the illicit WEEE case studies will play a central role in the development of policy, enforcement, technology, training and other recommendations to combat more

effectively and efficiently the wide spectrum of regulatory violations in trade, logistics and disposal of WEEE in the future.

**Keywords:** environmental crime, WEEE, supply chain security, FP7-CWIT

## 1. Introduction

The need to identify a consistent and effective approach to the handling of waste electric and electrical equipment (WEEE) is increasingly important as the illicit handling and trade becomes more evident in the global supply chain. The negative environmental, safety and health impacts means it cannot be relegated as an industry problem or regulatory problem to be addressed, it needs broader engagement across sectors. The illegal handling and cross-border movement of electronic waste is proving to be one of the more complex crime types facing both law enforcement and regulatory bodies. Apart from the clandestine nature of any crime, the nature of the legitimate waste trade is already complex - add to it the illicit activity and the issues for enforcement are vast.

The definition of WEEE poses a problem in itself: there are variations of the definition. The European Union Directive on WEEE 2012/19/EU is the most frequently used and lists WEEE as 'electrical or electronic equipment which is waste including all components, subassemblies and consumables which are part of the product at the time of discarding'. Work done by the Solving the E-Waste Problem (Step) Initiative defines WEEE as 'a term used to cover items of all types of electrical and electronic equipment (EEE) and its parts that have been discarded by the owner as waste without the intention of re-use'.

The WEEE identified in illicit cross-border movements likely covers the entire spectrum of waste electrical equipment and is not necessarily limited to articles that have the highest potential resale or reuse value. For the purpose of this research paper practical categories in use at collection points have been chosen - Large Household Appliances; Cooling and Freezing Equipment; Small Household Appliances; Screens; Lamps; Professional Equipment and IT

Equipment - those vary from the ten categories as defined by the EU WEEE Directive.

The purpose of this paper is to begin to highlight the modus operandi, actors and geographies that have been identified in exploitation of the WEEE supply chain. The specific intention by the authors is to develop and test a consistent method of gathering such information from a wide cross section of government bodies that operate in different countries, with different resources, methods of training, legislative frameworks, and so forth.

The paper will follow the structure of providing first a brief overview of other research that has been done in the field of illicit WEEE trade and logistics activities. The content of the case study questionnaire will be detailed followed by examples of three preliminary cases collected through this method. The analysis of these cases studies will begin to identify trends which will be further expanded on during the CWIT Project. The last section of the paper covers discussions and conclusions, as well as suggestions for future research.

## **2. Literature review on illegal activities in WEEE**

As with most non-ideological crime types, financial gain is the major driver for the illegal e-waste trade. Academics have described the negative value of waste as being a key element in why this otherwise legitimate trade and industry incentivizes stakeholders to seek illegal avenues to deal with their waste (Bisschop 2012, p.235). Rather than a commodity being exchanged for money like in any traditional transaction, in the case of waste, a waste producer provides the waste to the recycler, together with the money. Beyond this, some electronic waste contains elements that are valuable enough to warrant recycling and treatment, leading ultimately to 'double profit motivation' – in the context of violations in trade, import/export and disposal regulations.

In developed countries, the practical cost of e-waste disposal has increased due to stricter law enforcement, making exports cheaper than domestic disposal (Ni and Zeng 2009, p. 3993). For instance, in the United States, it costs as much as

18 USD to safely remove lead from a CRT monitor (UNEP n.d., p.105). According to recent estimates, the improper disposal of CRTs generates an economic saving between 50-75%, compared to the cost of lawful recycling. Profitability of illicit electronic waste is increased by exploitation of existing, legitimate, shipping and international transport modes. As an example, after delivering goods to the United States from China, the empty shipping containers would normally be returned. However they have been used to transport electronic waste back to China rather than being returned empty (Schluep 2012, p.105). At the same time, brokers get doubly paid for moving e-waste across borders - for acquiring the e-waste and for further shipping it to the destination place. Further, poor migrants provide cheap labor and line the pockets of greedy entrepreneurs. Inadequate law enforcement in developing countries considerably adds to this problem (Ni and Zeng 2009, p.3993 & Bisschop 2012, p.235).

As an example, in Germany collection points are important sites for the illicit export trade where the waste equipment suitable for export is packed into sea containers and vehicles. The operator may act as an agent from whom the exporters purchase. In other cases the operator has no hand in the trade. A notable example is Hamburg which has a large cluster of such sites, where around 20 companies are involved in trading electrical equipment and some of those dealing exclusively in used equipment. Apart from Asia and Africa, Eastern European countries like Russia, Ukraine and Poland are common destination points. Experts estimate Germany to be hosting a few hundred or even a thousand such collection points. The exporters are often of foreign origin who come to Germany, procure a considerable amount of material for shipping, and then receive the same shipments in the country of destination in order to sell them off with lucrative profits (Sander and Schilling 2010, pp.62-65). Other players involved in this illicit trade include agents, forwarding agents, other service providers for logistics and formalities as well as shipping lines (Sander and Schilling 2010, pp. 61- 65). All the federal states of Germany have control and monitoring functions in place, with the export ports of Hamburg and Bremen being extended by a central control function

(Sander and Schilling 2010, p.85).

In the USA, supposedly legitimate recycling firms appear to be common culprits, who charge a recycling fee for safe disposal in accordance with the national law, but actually export it to developing countries. Moreover, a commonplace activity for buyers from developing countries- particularly from Africa- is to travel to OECD countries to secure consignments of e-waste and arrange for shipments. After successful importation, brokers sell the scrap to informal recycling centers as Guiyi. Once the dismantling process is over, the valuable components are resold to manufacturing companies or metal refineries by waste brokers operating in strong trade networks. Not much is known about the payment methods of e-waste buyers but there is evidence of the use of telex transfer or popular money transfer systems, such as Western Union. (UNEP n.d., pp. 108-109).

While the push factors for the illegal electronic waste trade are evident, destination countries and the pull factors are also considerable drivers in the illegal electronic waste trade. The need for metals to be used in manufacturing in Asia, China specifically, has contributed to China being one of the primary destination countries for electronic waste despite the year 2000 ban on import of used electronic and electrical equipment. Most of the waste is reportedly destined for informal recycling sectors e.g. in the province of Guangdong. The demand in this sector exists particularly for Cathode Ray Tube monitors and printed circuit boards (Schluep 2012, p.106). United Nations Office for Drugs and Crime, UNODC, estimates that 80% of e-waste generated globally is shipped to Asia – with 90% of that amount destined for China. The main sources of e-waste reaching China are the European Union, Japan and the United States. Such shipments are in breach of the law in the countries of export as well as in China (Schluep 2012, p.105).

Next to China, other leading recipient countries of e- waste appear to be India, Pakistan and Nigeria. All four countries are signatories to the Basel Convention and have national regulations in place to address the importation of hazardous waste, but the actors involved in this trade manage to circumvent the law and

export them as 'used goods' (Sthiannopkao and Wong 2012, p.4). In recent years, China and India have been making efforts in switching to more sophisticated systems for e-waste management. Both countries have established national registry records to keep track of domestically produced electronics, with the ultimate purpose of introducing producer take-back schemes. India has created an inventory system and has run several trials but is yet to reach a satisfactory level. China is at an early stage of designing an e-waste inventory. No visible signs of progress have been made in Pakistan in terms of government cataloging of domestically manufactured electronic goods. Collection points remain largely restricted to informal recycling centers in all developing countries. Some technological advancements have been made for the disposal of e-waste in China and India and to a lesser extent, in Pakistan. China possesses fairly large capacities of smelting furnaces for recycling non-ferrous substances and displays good potential of developing well-equipped and modern facilities. Notwithstanding these developments, the current state of play clearly indicates that the vast majority of e-waste will continue being recycled in informal sectors for many years to come (Sthiannopkao and Wong 2012, p. 6). The legitimate market of used electronic equipment also acts as a pull factor and complicates enforcement against the illegal trade where the "digital divide" is bridged between developed and developing countries (Schluiep 2012, p.107). West Africa is becoming an increasingly popular destination among illegal exporters from the EU and Japan, and legal exports from the USA (Bastiaan et al. 2009, p.422) and the reported figure of 80% of electronic waste going to Asia (UNEP n.d, p. 105) may need to be revised to account for this trend. The shortage of accurate data on used electronic and electrical equipment entering Africa is made more difficult as the distinction between used electronic and electrical equipment and waste electrical equipment is not made until after the goods arrive in the country and are dispersed. A 2009 study of the e-waste problem in Ghana estimated that around 30% of the used electrical and electronic equipment imported was determined to be non-functioning and should have been classified as electronic waste - half of this amount was repaired locally and sold to

consumers and the other half was unrepairable (G8 2013, p.8). The estimate of 30% being determined as non-functioning could be considered a conservative one.

Previous research has identified the most common method of concealment of illicit waste shipments was via mislabeling to avoid the necessary inspections or permits for the products to be transported internationally. A study by the G8 Roma/Lyon Group in 2013 analyzed the nature of the threat of global hazardous waste trafficking. This group sought information from member countries via questionnaires. The results identified some examples of the mislabeling mod operandi being used such as a case in France in which hazardous waste was labelled as raw material to avoid the application of the waste regulation, despite the fact that it never went through any recovery process. These materials contained dangerous components such as lead that were being sent to developing countries which are ill-equipped to deal with the associated hazards (G8 2013, p.7). The interplay between legislations that cover electronic and hazardous waste also complicate enforcement activities. For example, if a used computer is in working condition, it is not classified as hazardous waste and thus not covered by the Basel Convention. Mixing used working equipment with end of life electronic equipment is one way smugglers exploit this legislative ambiguity (Schluep 2012, p.107).

Identifying the actors involved in the illegal electronic waste trade, and their relationships to the legal waste trade as well as each other, is impeded by the confusion created by legitimate traders involved in illicit activity. The G8 assessment reported that some member countries identified organized crime groups (OCGs) as being active in waste trafficking. Using the Palermo convention as their framework for identifying organized crime, Italy, Japan and the United Kingdom cited organized crime as being at least part of their illegal waste trade problems. According to the report, quite often OCGs have a facilitating role in the trafficking of e-waste. They tend to make use of seemingly legitimate companies to mask their identities in this criminal activity. These companies are able to offer much lower prices to the consumers due to their non-

compliance with safety and environmental regulations. Falsification of documents is a common method employed to conceal the origin and actual composition of the material. E-waste is often shipped to Africa and Asia under the guise of second-hand computer or other mechanical parts. Illegal e-waste traders frequently exploit the services of specialists and experts with seasoned experience and technical knowledge of regulatory loopholes and disposal of trafficked e-waste. They are typically based in the countries of origin with strong networks in the destination countries. However, in some cases, criminal groups established in destination countries are the key drivers of trafficking activities in the source countries. According to a EUROPOL report OCGs are normally well-equipped to control the entire chain of waste processing activities, starting from pick up to transportation and the final disposal of waste (EUROPOL 2013, pp.6-10).

In addition to organized crime, opportunistic crime or crime that is committed out of ignorance of the controls was also reported (G8 2013, p.11). Previous work by INTERPOL has identified that electronic waste tends to be less formal or structured than the traditional hierarchical organized crime structure. Small groups of traders and brokers are those often identified in the illicit activity. This may be because their activities are less sophisticated than large-scale commercial traders and therefore more likely to be detected by enforcement or the professional traders do not want the reputational risk associated with the illicit activity. As also concluded in the e-waste to non OECD countries report, only companies that are responsible for import and export are recorded to law enforcement agencies. They might only facilitate transport and will not be the origin and final destination.

The detrimental environmental and human health impacts of illegal handling and dumping of electronic and hazardous waste would have reputational risks for companies involved in illicit dealings. The water, soil and/or air pollution that results from electronic waste being diverted from legitimate recycler centers and into illegal disposal such as incineration or burying has long term consequences (G8 2013, p.34). In a case identified by the G8 study, a waste shipment destined

for the Netherlands arrived in Rotterdam and it was identified that the contents was far more toxic than originally thought. The cost of proper treatment was high and as a result the owner of the goods identified a company in Abidjan who would 'treat' the waste at a price twenty times less than that quoted in the Netherlands. The waste was subsequently dumped in the area surrounding Abidjan poisoning the local population (G8 2013, p.6).

Finally, identifying points in the electronic waste supply chain which are vulnerable to criminal exploitation requires a thorough understanding of the actors, their relationships and the systems and methods in place for waste transport across all the countries involved in the supply chain. Only then can relevant opportunities for law enforcement intervention be identified in the supply chain to interdict the actors involved in the illicit activities. Understanding the criminality associated with the electronic waste stream requires an empirical approach however, the limited information available on this crime type from official sources makes this increasingly more difficult and identifies significant information gaps. The research that has been undertaken so far however can provide a basis for identifying trends and modus operandi that can be further supported through law enforcement data on the illicit cases. In order to reach next levels of knowledge and understanding of WEEE-illicit activities, the next section of this paper presents our new research protocol to collect information and data on illicit cases across the globe.

### **3. A new case study protocol**

Building on the literature review of "universe of illicit WEEE activities" in the previous section of this paper, as well as previous and parallel related work at INTERPOL and at CBRA (see e.g. Männistö et al. 2014, Hintsa et al. 2012, Hintsa 2011, Hintsa et al. 2011), we present next the new case study protocol for exploring and understanding the various factors and angles of the discipline in hand. Due to the dynamic real-world phenomenon with illicit WEEE, and the strive for a deep contextual understanding, the case study was selected as the

core research approach for our paper. This choice is consistent with Yin (2009, p. 18) who suggests that a case study is an appropriated strategy when investigating “contemporary phenomenon in depth and with its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.” The pragmatic case study approach helps to build rich, insightful case descriptions that underpin convincing interpretations, conclusions, and recommendations (Yin 2009).

The case study protocol has been developed as an iterative process within the CWIT-project consortium (Work package 5 team), during January - May 2014. Below is a visual overview of the protocol (Figure 1), followed by a table with all individual questions, 26 in total (Table 1).

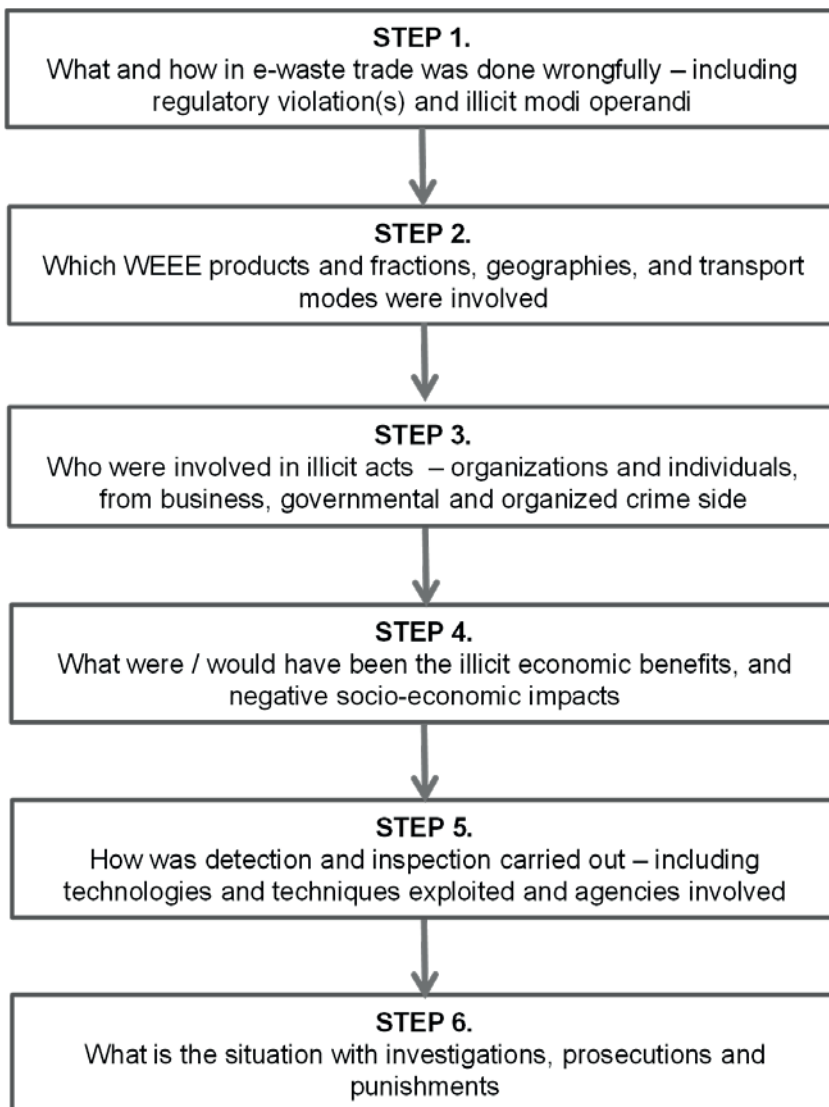


Fig. 1: Overview of the six-step case study protocol.

Next follows the table with all individual questions, grouped per research protocol steps.

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Nr.    Specific questions per case study step

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- 1    a) Which violations were identified? (6 options given + other)  
     b) What was the shipment declared as?  
     c) Were there violations regarding permits/licenses provided with the shipment of e-waste, including false documents and false declarations?  
     d) Was the e-waste concealed?  
     e) Was the shipment of e-waste combined with other illegal goods, such as narcotics, counterfeit goods, arms/weapons, etc.?
  - 2    f) What types of WEEE products were parts of this case? (7 options given + other; asking further details)  
     g) What types of WEEE fractions were parts of this case? (5 options given + other; asking further details)  
     h) How was the e-waste transported? (5 options given + other)  
     i) Were there companies involved in the movement of the e-waste - including the import, export and in-country transport/dumping?  
     j) Did this shipment contain both used electrical and electronic equipment and waste electrical and electronic equipment?
  - 3    k) Which parties were identified as being involved in the illegal transshipment of WEEE? (8 options given + other; asking further details)  
     l) Were any governmental agencies involved in the illicit acts of this case?  
     m) Primary person/s involved; Has the person/s previously been convicted for other crime(s) and/or other illegal trade? Is the person known to be linked to a criminal group? Did the persons involved make use of falsified identification documents (e.g. passports)? // Answers excluded from this conference paper, due to sensitivity reasons //
  - 4    n) Did the investigation reveal the motivation for the offence?  
     o) Please estimate criminal proceeds/illicit economic benefits of this offence.  
     p) What would have been the socio-economic damages in this case if it had not been intercepted? For example, loss of governmental revenues, environmental damages, human suffering, etc.
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Nr. Specific questions per case study step

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- 5
    - q) Date of detection?
    - r) How was the illegal shipment discovered? (3 options given, and asking for details)
    - s) Were any of the following detection and inspection techniques and technologies used? (4 options given, and asking for details)
    - t) At what stage was the shipment detected? (3 options given, and asking for details)
    - u) If governmental actors were involved in detection of this case, please identify which sectors and provide details of the activity. (6 options given + other)
    - v) Was there international collaboration linked to this e-waste case, including police, customs, environmental agency networks, judicial cooperation etc.
  
  - 6
    - w) If government actors were involved in investigation or prosecution of this case, please identify which sectors and provide details of the activity. (6 options given + other)
    - x) During the investigation, did you identify links between the e-waste offences and other crime(s)? (21 options + other; asking further details)
    - y) If this violation led to one or more court cases, please advise the categories and the official charges (3 options + other)
    - z) Which penalties were imposed as a result of this offence? (7 options + other)
- 

Tab. 1: Specific questions per case study step

The collection efforts were extended to Law Enforcement Authorities - in WEEE context that is Police, Customs and Environmental inspection authorities - across 89 countries, covering regions of Asia, Europe, North and South America, Africa, the Middle East and Oceania. INTERPOL National Contact Bureaus, NCBs, were the primary recipient of the study questionnaire.

## 4. Preliminary information on three cases

In this section preliminary information on three illicit cases - Case A, B and C - are presented, first one table per case (Tables 2, 3 and 4), followed by a brief cross-case analysis and summary.

### 4.1 ILLICIT CASE A. Export from Finland to Ghana and Cameroon by maritime transport

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Nr.	Case study findings
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- |   |  |
|---|--|
| 1 | <ul style="list-style-type: none"><li>• Violations were identified as follows: Customs procedures; reporting requirements; labelling and record keeping; and payment issues.</li><li>• Tax evasion and false accounting were part of the scheme.</li><li>• Goods were declared as used items.</li><li>• Charity was used as a frame / cover for the illicit activity</li></ul> |
| 2 | <ul style="list-style-type: none"><li>• WEEE-products were: Cooling and freezing; Small household appliance (SHAs); IT equipment; Screens (CRT TVs)</li><li>• WEEE-fractions were: Compressors, Batteries, Waste tires</li><li>• Various portions in different containers: one mostly WEEE, others about half WEEE.</li></ul>  |
| 3 | <ul style="list-style-type: none"><li>• Companies involved in the illicit acts: WEEE/dealers/brokers (import &amp; transit); same people arranging the export and import</li><li>• Wholesale trading company, situated in Finland.</li></ul>   |
| 4 | <ul style="list-style-type: none"><li>• Negative socio-economic impacts: Loss of governmental revenues, environmental effects in the receiving countries</li></ul>   |
| 5 | <ul style="list-style-type: none"><li>• Three containers were intercepted in export on 1.12.2011, 12.12.2011 and 2.4.2012</li><li>• This was a targeted operation:</li><li>• Both non-intrusive inspection (NII) technologies and manual inspection were exploited.</li></ul>  |
-

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Nr. Case study findings

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- 6
- Governmental agencies involved in investigation: Environmental Inspection (export) – expert opinion; Customs Administration (export) - investigation
  - Criminal court hearing starts in May 2014.
- 

Tab. 2: Illicit case A

## **4.2 ILLICIT CASE B. Import to Hong Kong from Spain**

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Nr. Case study findings

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- 1
- Regulatory violations with permit requirements.
  - Shipment declared as metal scrap.
- 2
- Import case, coming from Spain to Hong Kong, on 10 Sept 2012.
  - WEEE-products were: Screens (LCD panels)
- 3
- Companies involved: Trading company on waste materials in Hong Kong.
- 4
- Motivation for the illicit act: Done for trading purposes.
  - Negative socio-economic impacts: The environmental problems associated with improper disposal.
- 5
- Date of detection was 14 Sept 2012
  - It was an intelligence led operation.
  - Customs administration (import) took care of the detection.
  - Both non-intrusive inspection (NII) technologies and manual inspection were exploited.
- 6
- Criminal case: Maximum fine for first conviction is \$200,000 & to imprisonment for 6 months. Maximum fine for second and subsequent offence is \$500,000 and 2 years' imprisonment.
  - Environmental Inspection (import) took care of the investigation and prosecution
  - Court outcome: HKD 15,000 fine to company.
- 

Tab. 3: Illicit case B

### 4.3 ILLICIT CASE C. Transit by road from Serbia through Hungary to Germany

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Nr.	Case study findings
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- |   |   |
|---|---|
| 1 | <ul style="list-style-type: none"><li>• Permit requirements - The waste was amber listed according to the 1013/2006/EC Regulation and the exporter did not have permission for the transboundary shipment of this waste.</li><li>• Shipment was declared as green listed waste according to the 1013/2006/EC Regulation. The Inspectorate determined that the shipment was amber listed.</li></ul>  |
| 2 | <ul style="list-style-type: none"><li>• WEEE-products were: IT (printed circuit boards)</li><li>• WEEE-fractions were: printed circuit boards</li><li>• Total of 14,264 tons of electronic waste, EWC code 16 02 16</li></ul>   |
| 3 | <ul style="list-style-type: none"><li>• Companies involved in the illicit act were: Transport companies (transit); e-waste collection organizations (transit); and e-waste treatment facilities (transit)</li></ul>   |
| 4 | <ul style="list-style-type: none"><li>• na</li></ul>  |
| 5 | <ul style="list-style-type: none"><li>• Date of detection at the border crossing in Hungary, was 14 March 2012.</li><li>• Customs Administration (Transit) - The Customs stopped the shipment on the border crossing, inspected the documents and sent them to the Environmental Inspectorate.</li><li>• Manual inspection of the shipment, as well as inspection of documents, were carried out.</li><li>• Detection was part of systematic approach, namely an operation in conjunction with an International Organization.</li></ul> |
| 6 | <ul style="list-style-type: none"><li>• Environmental inspection (Transit) inspected the documents and the shipment and determined that the shipment is illegal.</li><li>• Customs Administration (Transit) participated in the investigation process.</li><li>• Criminal code was violated: The Environmental Inspectorate imposed a fine of 14.264.000 HUF to the exporter.</li></ul>   |
- 

Tab. 4: Illicit case C

## **4.4 Cross-case analysis and summary**

Lastly, a brief analysis and summary is provided, covering all the three cases from the previous sub-sections.

### **4.4.1 STEP 1. What was done wrongfully in e-waste trade and how – including regulatory violation(s) and illicit modi operandi?**

Regarding regulatory violations in these three cases, customs procedures as well as permit requirements were violated twice - the former in cases A and B, mis-declaration as 'used items' (A) and 'metal scrap'(B), and the latter in cases B and C. Next to those, case A contained following additional illicit acts: violations in reporting requirements; in labelling and record keeping; and in payment issues. Lastly, false accounting and tax evasion were also reported to have taken place in case A.

### **4.4.2 STEP 2. Which WEEE products and fractions, geographies, and transport modes were involved?**

WEEE-products and -fractions were reported as follows:

- Case A: WEEE-products were: Cooling and freezing; Small household appliance (SHAs); IT equipment; Screens (CRT TVs). WEEE-fractions were: Compressors, Batteries, Waste tires
- Case B: WEEE-products were: Screens (LCD panels)
- Case C: IT (printed circuit boards). WEEE-fractions were: printed circuit boards. Total of 14,264 tons of electronic waste

Transport modes were maritime for cases A and B, and road for case C.

Case A also reported: Various portions in different containers: one mostly WEEE, others about half WEEE.

#### **4.4.3 STEP 3. Who were involved in illicit acts – organizations and individuals, from business, governmental and organized crime side?**

Company participation in the illegal activities was identified and articulated in all three cases; while no references were made to participation of governmental agencies or organized crime groups in the illicit acts. Below is the summary of company participation, in each of the three cases:

- Case A: WEEE/dealers/brokers (import & transit; same people arranging the export and import); wholesale trading company in Finland.
- Case B: Trading company on waste materials in Hong Kong.
- Case C: Transport companies (transit); e-waste collection organizations (transit); and e-waste treatment facilities (transit)

(note: all nominal data regarding companies, people etc. has been removed here)

#### **4.4.4 STEP 4. What were / would have been the illicit economic benefits, and negative socio-economic impacts?**

When it comes to the negative socio-economic impacts of the three illicit cases - or, what would have been the negative impacts in case no governmental intervention took place - no quantified values were given. Instead, following qualitative remarks were provided in cases A and B:

- Case A: Loss of governmental revenues, and environmental effects in the receiving countries
- Case B: the environmental problems associated with improper disposal.

Regarding estimations on illicit economic benefits, no information was provided in any of the three cases.

#### **4.4.5 STEP 5. How was detection and inspection carried out – including technologies and techniques exploited and agencies involved?**

Firstly, all three cases included some sort of "target-oriented approach", versus being "purely random", as detailed below:

- Case A: Environmental authority and Customs conducted a joint operation
- Case B: An intelligence led operation.
- Case C: Detection was part of systematic approach an operation in conjunction with an International Organization.

Secondly, Customs administrations played a key role in shipment detection in all three cases. Intra-agency co-operation was highlighted in case C, where Customs agency was reported to have stopped the shipment on the border crossing, inspected the documents and sent them to the Environmental Inspectorate for the purpose of further evaluation.

Thirdly, two of the cases, A and B, included usage of Non-intrusive inspection (NII) technologies, which would normally be x-ray machines. Manual inspection was eventually used in all three cases. In addition, document inspection was reported in case C.

#### **4.4.6 STEP 6. What is the situation with investigations, prosecutions and punishments?**

All three cases include violations of the national criminal code, i.e. that of Finland (A), Hong Kong (B) and Hungary (C). Cases B and C have been finalized, each with a financial sanction, while case A is currently under court hearing (situation May 2014). Case B fine to the violator was around 1.400 euros (HKD 15.000) and case C fine to the exporter was around 47.000 euros (HUF 14.254.000) Following governmental agency participation in investigation and in prosecution was reported:

- Case A: Environmental Inspection (export) – expert opinion; Customs Administration (export) - investigation

- Case B: Environmental Inspection (import) took care of the investigation and prosecution (B)
- Case C: Environmental inspection (Transit) inspected the documents and the shipment and determined that the shipment is illegal; Customs Administration (Transit) participated in the investigation process.

## **5. Discussions and conclusions**

The purpose of this paper has been to present a consistent method for collecting information on illicit WEEE trade, logistics and treatment activities across jurisdictions and agencies. The research conducted through this method can be considered a starting point for gaining a comprehensive picture of the actors, the methods and drivers for the illegal exploitation of the WEEE supply chain - all this with the ultimate agenda to enhance capabilities to fight more effectively and efficiently against illicit WEEE activities in the future.

A case study protocol, in the form of a questionnaire was presented, and the outcomes of three preliminary case studies were shared and briefly analyzed. The analysis identified some commonality across the cases in particular with how the shipments were detected and identified as illicit and the categories of WEEE detected. Some of the preliminary case study findings presented in this paper correspond with previous literature, in particular findings on the use of mislabeling and mis-declaration as a method of concealment to avoid detection by border official intervention. At the same time, findings regarding the involvement of organized crime in these cases did not indicate so far the involvement of a known organized criminal network. The commonly held belief that organized crime is the principle actor involved in this illicit supply chain requires far more extensive research to fully substantiate this assertion. This research activity identified some trends and also identified the information gaps that are consistent across reporting countries. Information being returned commonly excluded data on the actors involved in the previous steps in the supply chain, suggesting that once the goods was detected and dealt with via

seizure and application of penalty, there was limited analysis on the broader network involved in the activity. This may be due to a lack of resources by the respective agencies, the knowledge of the respondent or the penalty being too minor to warrant further investigation.

A comprehensive analysis of all steps in the supply chain is not possible with the three cases reported in this paper in particular as the details of the locations and actors involved have been retained within the law enforcement sector due to their sensitivities. The analysis however was intended to provide a snapshot of the information known and unknown by authorities charged with detecting and enforcement of breaches. The information gaps identified, and held within the law enforcement sector, provide opportunities for improved information collection for example to identify targeting opportunities for enforcement authorities in the future.

Regarding future research topics, the authors make following two recommendations: (i) the current case study protocol should be expanded from written questionnaire to follow-up interviews, where additional in-depth information may be captured; and (ii) detailed understanding of the illicit economic gains linked to WEEE trade, logistics and disposal, in forms of illicit revenues, illicit cost savings etc. is crucial to target future policy, enforcement and other actions to "where it hurts the most", i.e. where the illicit actors have the biggest economic gains.

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