

The Global Environment Facility (GEF) Approved the Full-size Project “Reduction of POPs and PTS Release by Environmentally Sound Management throughout the Life Cycle of Electrical and Electronic Equipment and Associated Wastes in China”

**Research Report on Import
Management Policy of Electrical and
Electronic Waste and Used Electrical
and Electronic Equipment**

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Preface

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (hereinafter referred to as "Basel Convention") started drafting since 2008 and adopted on an interim basis *the technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste* under the Basel Convention (hereinafter referred to as "e-waste guidelines"). The technical guidelines provide guidance on transboundary movements of waste electrical and electronic equipment (hereinafter referred to as "e-waste") and used electrical and electronic equipment (hereinafter referred to as "used equipment") that may or may not be e-waste, in particular on the distinction between waste and non-waste. And in the e-waste guidelines, the exemption conditions of transboundary movements of used equipment for conducting failure analysis, repair and refurbishment may form a legalized way for transboundary movements of e-waste. Although the guidelines do not have legal compulsion, they may play a guiding role in the policies of various countries and have attracted worldwide attention.

As electrical and electronic equipment production and consumption power and one of the main destinations for the illegal transboundary movement of global e-waste, the Basel Convention e-waste guidelines will have an impact on the import management of e-waste and used equipment in China. Control of illegal transboundary movement of e-waste has been an important task for China to strengthen e-waste management. In general, China's e-waste and used equipment import management involves multisectoral cross-management which means management focus and lax and strict of the various departments are different and lack of unified consideration, resulting in the risk of e-waste import in the name of used equipment; e-waste and used equipment import management has not yet established clear identification standard, leading to customs and other law enforcement

departments are lack of work guidance and there is a big difficulty in the identification work.

Therefore, there is an urgent need to carry out China's import management research and capacity-building work related to e-waste and used equipment. The improvement of laws and regulations and the increase of law enforcement ability to strengthen the import management of China's e-waste and used equipment is of great significance to strengthen environmentally sound management of China's e-waste. Through carrying out the research on import management regulations and policies of e-waste and used equipment, and comparative analysis of management system of transboundary movements of e-waste and used equipment of the relevant international conventions and typical exporting countries such as the United States, Japan and the European Union and typical exporting countries such as Thailand, Malaysia and China, the report summed up management experience of countries, combined with China's e-waste and used equipment import management status, and put forward the relevant management policy recommendations, aiming to improve China's laws and regulations system.

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Chapter 1 Management Regulations of Transboundary Movements of E-waste and Used Equipment

1.1 Relevant Regulations of the Basel Convention

1.1.1 Control Requirements Related to Transboundary Movements

In order to address the global environmental problem that developing countries export hazardous wastes to developing countries, and to protect human health and the environment, in particular to protect the environmental interests of developing countries, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (hereinafter referred to as "Basel Convention") was adopted in 1989 and entered into force in 1992. The Basel Convention jurisdictions covers "hazardous wastes" and "other wastes", the former including hazardous wastes listed in Annexes I and VIII of the Convention, as well as hazardous wastes as determined by domestic legislation of the Parties, the latter including wastes collected from households and residues arising from the incineration of household wastes. The core mechanism of controlling transboundary movements of the Convention is Prior Informed Consent (PIC) procedure. The procedure stipulates that only when the State of export has notified in writing the competent authority of the State of import and State of transit in advance, and received written consent, can the transboundary movements of hazardous wastes and other wastes be carried out. At the same time, from the beginning of the transboundary movements to the disposal point, each shipment of hazardous wastes and other wastes must be accompanied by a transfer document, otherwise it is regarded as illegal traffic.

Prior Informed Consent (PIC) mainly includes the following procedures: 1) Prior notification. The State of export shall notify, or shall require the generator or exporter to notify, in writing, through the channel of the competent authority of the State of

export, the competent authority of the States concerned of any proposed transboundary movement of hazardous wastes or other wastes. 2) Allowing transit. The State of export shall not allow the commencing of the transboundary movement until it has received written consent of the State of import and there is evidence that the existence of a contract specifying environmentally sound management of the wastes in question. 3) Informed consent. The State of import shall respond to the notifier in writing, consenting to the movement with or without conditions, denying permission for the movement, or requesting additional information. A copy of the final response of the State of import shall be sent to the competent authorities of the States concerned which are Parties.

1.1.2 Applicability to E-waste and Used Equipment

The rapid growth of e-waste production and the problem that developed countries exporting e-waste to developing countries gradually attracted worldwide attention. Since, 2002, Basel Convention started to solve the e-waste problem. Basel Convention launched the Mobile Phone Partnership Initiative (MPPI) and Partnership for Action on Computing Equipment (PACE) respectively in 2002 and 2008, in order to promote environmentally sound management of waste mobile phones and computing equipment. Under the working mechanism, MPPI and PACE carried out the formulation of technical guidelines for the transboundary movements of waste mobile phones and computing equipment. In 2008, Basel Convention start developing the technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention (hereinafter referred to as "e-waste guidelines"). After the adoption of the e-waste guidelines, they have become the basis for formulation or revision of MPPI and PACE related guidelines.

According to the scope of application of Basel Convention, the control procedure does not apply to used electrical and electronic equipment, unless the countries related

to transboundary movements define or considered used electrical and electronic equipment to be hazardous wastes by the domestic legislation. And the applicability of the control procedure mainly depends on whether the specific e-waste belongs to hazardous waste covered by the Convention. Based on this, Annex VIII and Annex IX of the Convention list the controlled and uncontrolled e-waste related list, as shown in **Table 1-1**.

Table 1-1 E-waste List Specified in Annex VIII and Annex IX of Basel Convention

Code	Name of E-waste
Controlled List (Annex VIII of Basel Convention)	
A1150	Precious metal ash from incineration of printed circuit boards not included on list B.
A1160	Waste lead-acid batteries, whole or crushed.
A1170	Unsorted waste batteries excluding mixtures of only list B batteries. Waste batteries not specified on list B containing Annex I constituents to an extent to render them hazardous.
A1180	Waste electrical and electronic assemblies or scrap containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB capacitors, or contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they possess any of the characteristics contained in Annex III (note the related entry on list B B1110).
A2010	Glass waste from cathode-ray tubes and other activated glasses.
Uncontrolled List (Annex IX of Basel Convention)	
B1090	Waste batteries conforming to a specification, excluding those made with lead, cadmium or mercury.
B1110	Electrical and electronic assemblies: <ul style="list-style-type: none"> • Electronic assemblies consisting only of metals or alloys; • Waste electrical and electronic assemblies or scrap (including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and

	<p>PCB capacitors, or not contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Annex III (note the related entry on list A A1180);</p> <ul style="list-style-type: none"> • Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse, and not for recycling or final disposal.
B1160	Precious-metal ash from the incineration of printed circuit boards (note the related entry on list A A1150).
B4030	Used single-use cameras, with batteries not included on list A

1.2 Management System of Transboundary Movements of E-waste and Used Equipment of Typical Countries

1.2.1 Developed Countries and Regions

(1) United States of America

Although the United States of America signed the Basel Convention, it has not yet approved the Convention. The Resource Conservation and Recovery Act (RCRA) contains management provisions for both hazardous waste imports and exports. Currently, e-waste clearly administrated by RCRA import and export provisions only includes waste cathode ray tube (CRT), waste lead-acid batteries, and hazardous waste batteries, waste mercury lamp and waste equipment containing mercury (such as thermostat) listed in universal waste. For these hazardous e-wastes, the basic requirements of the RCRA include prior informed consent procedures, electronic export information submission, record keeping and reporting, etc. In case of import and export for recycling with the OECD countries, the OECD agreement shall be observed. Under RCRA, Regulation of Cathode Ray Tubes stipulates that, exporters shipping broken or unbroken CRTs to another country for recycling must notify EPA and receive written consent from the receiving country through EPA before shipments

can be made, and unprocessed CRT glass is considered to be broken CRT, which must comply export regulations. As for CRT glass exported for recycling, the processed CRT glass (for example, through the classification) doesn't need to comply export regulations, and the unclassified CRT glass will be considered to be broken CRT glass which must comply export regulations. As for used, intact CRTs exported for reuse, CRT exporters who export used, intact CRTs for reuse must send a notification to EPA, the notification must include the following information: contact information, a certification signed by the CRT exporter that states the used CRTs will be reused. As for used equipment import and export, the United States of America follows the principle of free trade without special control, except for the used, intact CRTs export for reuse is subject to RCRA control.

In 2011, the United States of America issued the "electronic products national strategy" and established a framework of electronic product lifecycle management starting from the point of waste management, aiming to promote the reuse, refurbishment and recycling of electronic products, which pays more attention to reuse of electronic products. As of import and export, the United States of America put forward the overall goal of reducing the export harm of waste and used electronic products in the "electronic products national strategy".

In addition, since 2009, the United States of America has started making the "Electronic Product Recycling Responsibility Act" on legislative agenda to restrict export of specific e-waste to developing countries. It stipulates that the used electronic products that meet certain conditions are not in the scope of this regulation. However, the act has not yet been passed, mainly because some parliamentarians believe that export statistics do not indicate the need for legislation and the act may violate the WTO rules.

(2) Japan

1) Management System of E-waste Import and Export

Japan has no specifically laws and regulations for e-waste import and export. The two laws named "waste management and public cleaning law" (hereinafter referred to as the "Waste Treatment Law") and the "Law for the Control of Export,

Import and Others of Specified Hazardous Wastes and Other Wastes" (hereinafter referred to as the "Basel Law") manage import and export of waste and hazardous respectively. But the two laws do not have general provisions for e-waste import and export.

Table 1-2 Relative laws for management of waste import and export in Japan

Name of Laws and Regulations	Competent Department	Enactment Time and Version
Waste Treatment Law	Ministry of the Environment	Enactment time 1970, Latest amendment in 2001
Basel Law		Enactment time 1992, Latest amendment in 2005

Under the Waste Treatment Law, specially controlled municipal solid waste involves e-waste, including parts using PCB contained in discarded air-conditioners, discarded television receivers and discarded electronic ovens. Under the law, according to article 10 (Export of municipal solid waste), Any person intending to export municipal solid waste must obtain the confirmation of the Minister of the Environment that the export of municipal solid waste comes under the respective items in the following: 1) The municipal solid waste to be exported are deemed difficult to be treated of properly in Japan in the light of the available disposal equipment and technique for the said municipal solid waste in Japan; 2) The municipal solid waste to be exported are not of the preceding description but satisfy the standards specified in the Ordinance of the Ministry of the Environment as substances not hindering the proper disposal of municipal solid waste in Japan; 3) It is judged that the municipal solid waste to be exported will certainly be managed of in a manner not short of the municipal solid waste management standards (or the specially controlled municipal solid waste management standards if the said municipal solid waste fall under that category); 4) The application for the acknowledgment is made by the following authorities/person: Municipality or One specified by the Ordinance of the Ministry of the Environment. The Waste Treatment Law prohibits the export of

wastes for final disposal. Japan doesn't permit the export of the four home appliances (Air conditioners, Refrigerators, Televisions, Washing machines) listed in the Home Appliance Recycling Law.

Under the Basel Law, Japan's regulate of the import and export of e-waste depends on whether the specific e-waste is hazardous. If e-waste has hazardous characteristics, they are applicable to the Basel Law, such as printed circuit boards, lead-acid batteries, fluorescent tubes, and cathode ray tubes. Under the Basel Law, any person who intends to export hazardous e-wastes, shall be obliged to apply and obtain an export approval from the Ministry of Economy, Trade and Industry, and before the Ministry of Economy, Trade and Industry approves the export, it should receive the confirmation of environmental pollution prevention measures from Ministry of the Environment (Article 4). In terms of import, any person who intends to import hazardous e-wastes, shall be obliged to obtain an import approval from the Ministry of Economy, Trade and Industry; the Minister of the Environment may, where the Minister finds it necessary in order to prevent environmental pollution, request necessary explanations from and state opinions to the Minister of Economy, Trade and Industry in advance before the Minister of Economy, Trade and Industry approves the import (Article 8). Moreover, any person importing and exporting waste must carry the movement document during transportation. In addition, the Basel law stipulates the take back contents under the circumstances of not properly exported (Order for Measures) two import under the illegal export situation (that is, "measures directive"), and determined the responsibility the exporter.

2) Management System of Used Equipment Import and Export

For the import and export of used equipment, Japan's management attitude is only to meet the market trading rules. However, it frequently occurred that used electrical and electronic equipment (UEEE) which is actually not suitable for the reuse is disguised as second-hand goods for export, causing adverse effects of health and the environment of export destination.

In view of this situation, Ministry of the Environment issued a notice that judging whether the used home appliance is waste through related characteristic to the

local government in March 19, 2012. The notice required that characteristic of used home appliance should be judged before export. The notice put forward that, judging whether used home appliance is waste, the government should not only to see whether it belongs to valuable material, but also to make comprehensive judgment from the factors including characteristic and status, emission, treatment form as well as the owner's wishes. In addition, the "Home Appliance Recycling Classification Criteria" (including the Guide A and Guide B) stipulates that home appliance concluded in Guide A are waste. The Guide A is for the promotion of recycling, such as air-conditioning of more than 15 years since produced, Guide B is used to promote the direct reuse of products, such as air-conditioning within 7 years since produced.

In addition, in the export process, Japan has established prior consultation system, that is, enterprises and institutions make prior consultation and confirmation to Ministry of the Environment to determine whether their goods are regulated. However, this system is administrative service rather than obligatory, consulting materials are submitted by fax, email meaning the goods in question are not real confirmed, and information about the goods exported to China is not communicated with Chinese relevant departments, which to a certain extent, weakened the effect of prior consultation system.

In order to further clarify the judgement conditions of used equipment and implement relevant requirements of the "Basel Convention", combined with draft technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment under the Basel Convention, Japan developed the "Judgement Standard of Eliminated Electrical and Electronic Equipment when Exported as Used Equipment (hereinafter referred to as "Judgement Standard"), and came into force on April 2014.

(3) The European Union

Under the "Regulation on Shipments of Waste", European Union establishes relatively strict procedures and control regimes for the shipment of waste, including classification management system, prior written notification and consent procedure, information requirements, financial guarantee system, contract system etc. According

to the "Regulation on Shipments of Waste", e-waste shall be subject to the procedure of prior written notification and consent if destined for disposal operations; e-waste listed in Annex III ('Green' Listed Waste) destined for recovery shall be subject to the general information requirements (submitting related information) if the amount of waste shipped exceeds 20 kg; e-waste not listed in Annex III destined for recovery shall be subject to the procedure of prior written notification and consent. The "Regulation on Shipments of Waste" divides wastes into "'Green' Listed Waste" and "'Amber' Listed Waste", and waste listed in the "'Amber' Listed Waste" is hazardous waste. Only "'Green' Listed Waste" lists some e-wastes, which including electrical assemblies consisting only of metals or alloys, and electronic scrap (e.g. printed circuit boards, electronic components, wire, etc.) and reclaimed electronic components suitable for base and precious metal recovery, unless this e-wastes are contaminated by other substances to possess hazardous characteristics or can not be recycled in an environmentally sound way. The "'Amber' Listed Waste" doesn't list specific e-waste list yet.

The European Union is stricter in the management of waste exports to non OECD countries. On the one hand, the "Regulation on Shipments of Waste" sets out a list of wastes prohibited of exporting to non OECD countries, including the e-waste list A1180 listed in Annex VIII of the Basel Convention. On the other hand, as to the "'Green' Listed Waste" for recycling, the EU has made more strict regulations (Regulations EC 1418/2007): ①to prohibit the export of waste, hazardous waste, and waste prohibited by importing countries to non OECD countries for disposal; ②to allow the export of waste listed in the "'Green' Listed Waste" to non OECD countries, and decide whether to implement the prior notification and licensing procedures, or implement procedures required by the domestic law of import countries according to the regulations of importing countries.

Under the "Directive on Waste Electrical and Electronic Equipment (WEEE)" paragraph 2 of article 23, member States shall ensure that shipments of used EEE suspected to be WEEE are carried out in accordance with the minimum requirements in Annex VI and shall monitor such shipments accordingly. Annex VI lists minimum

requirements for shipments, including evidence that used EEE is not WEEE, tested, record keeping, and used EEE accompanied by a relevant transport document, etc. It is also stipulated that, the member state shall consider used EEE as waste when there is no evidence that the used EEE is not a waste, which constitutes illegal traffic.

The EU has no restrictions on transboundary movements of used equipment. In order to explain the applicability of the "Regulation on Shipments of Waste" to e-waste, and to provide guidance for the distinguish between e-waste and used equipment, referred to EU "Directive on Waste Electrical and Electronic Equipment (WEEE)" and e-waste guidelines under Basel Convention, EU adopted the "Waste Electrical and Electronic Equipment Shipment Standards" on February 3, 2017, and came come into force in April 3, 2017.

1.2.2 Developing Countries

(1) Thailand

Thailand implements the license management system for the import and export of waste electrical and electronic equipment (UEEE) and their components, of which the major legal basis is the "Hazardous Substance Act". The competent department in charge of licensing is the Industrial Works Department. According to the Act, UEEE and their components belong to the third kinds of dangerous substances. On this basis, Thailand issued a notice on the examination and approval of the import and export of waste electrical and electronic equipment, which put forward requirements for UEEE import to reuse, maintenance, renovation, and dismantling. In addition, for the purpose of dismantling to recycling, the import of UEEE (considered as e-waste) must subject to the prior informed consent control procedure under Basel convention.

(2) Malaysia

According to "Environmental Quality Act" and "Environmental Quality Regulations", specific e-wastes are controlled waste (namely hazardous waste), including waste electrical and electronic components, glass containing batteries, mercury switch, cathode ray tube glass and other radioactive glass, PCB capacitors, or

substance contaminated by cadmium, mercury and lead, nickel, chromium, copper, lithium, silver, manganese or PCBs. According to "Environmental Quality Act" and related import and export Acts of Customs, import and export and transport of the above e-waste must receive prior written consent of environmental quality department.

For used equipment, Malaysia implemented the "Classification Standards of Used Electrical and Electronic Equipment" and updated the Standards in 2010, which put forward the identification standard of waste and used electrical and electronic equipment, and stipulated that only import or export of used equipment to directly use is allowed, and importer or exporter are required to submit the application documents to department of the environment.

1.3 Management System of Transboundary Movements of E-waste and Used Equipment of China

1.3.1 Mainland China

(1) Management System of E-waste Import

China's management strategy of e-waste is strict import and loose export. In terms of import, the management policy is universal prohibition of import and limited import, and the main legal basis is "Measures on the Administration of Import of Solid Waste" and "Management Catalog of Imported Solid Waste".

According to "Management Catalog of Imported Solid Waste" (2015), waste mechanical, electrical and electronic products and equipment and their parts and components, disassembled parts, shattered pieces and smashed pieces (unless otherwise specified by the state) are solid wastes prohibited from importation. These solid wastes include waste computing machine and office electronic equipment; waste household electrical and electronic appliance; waste telecommunication equipment; waste products for the purpose of recording or reproducing sound or images and radio and television equipment and signal devices; waste electrical and electronic

equipment for game and leisure; waste lighting equipment; waste electrical and electronic component; waste medical instrument and appliance, and waste radiation apparatus; other waste mechanical, electrical and electronic products and apparatus.

Waste electric motors and waste wires and cables for recycling iron and steel are solid waste of import restricted. The Ministry of Environmental Protection carry out license management and inspection and quarantine institutions carry out pre-shipment inspection and arrival inspection.

(2) Management System of Used Equipment Import

For used equipment (belonging to the "used mechanical, electrical and electronic products"), China implemented classification management policy which includes prohibited import, restricted import and free import (part of the import implementing automatic license management), of which the main legal basis is the "Measures for the Administration of Import of Mechanical, Electrical and Electronic Products" of which the department in charge is Ministry of Commerce. The import of used equipment to return maintenance within the warranty period is not within the scope of this regulation, because in this regard, China Customs has a special service. Details of the management regulations are as follows.

1) For Reuse (including refurbishment and remanufacturing)

The ministry of commerce is responsible for the implementation of classification management policies for the import of used mechanical, electrical and electronic products. The ministry of commerce is the competent department of import of used mechanical, electrical and electronic products, according to "Measures for the Administration of Import of Mechanical, Electrical and Electronic Products", to implement the classification management policies that prohibit the importation, restriction of import and free importation (automatic licensing of partial free importation) for used mechanical, electrical and electronic products, and released "Catalogue of Prohibited Imports of Used Mechanical, Electrical and Electronic Products", "Catalogue on Import of Key Used Mechanical and Electronic Products" and "Catalogue of Products Subject to Automatic Import Licensing" (including used mechanical, electrical and electronic products but excluding key used mechanical and

electronic products).

Definition of used mechanical, electrical and electronic products

Scope: mechanical, electrical and electronic products in the "Measures for the Administration of Import of Mechanical, Electrical and Electronic Products" not only include electrical and electronic equipment and their parts and components, but also include mechanical equipment, electrical equipment, transportation tools, instruments, metal products and their components and parts, etc.

Definition: used mechanical, electrical and electronic products refers to: 1) has been used (not including the equipment tested and adjusted before use), but still have the basic functions and certain use value; 2) unused, but exceeding the quality guarantee period (non warranty period); 3) unused, but kept for too long time, and components have obvious physical loss; 4) mixed packaging of new and used components; 5) mechanical, electrical and electronic products after the renovation.

(i) Prohibit to Import

The Ministry of Commerce and other departments issued the "Catalogue of Prohibited Imports of Used Mechanical, Electrical and Electronic Products" with other documents, which made clear the catalogue or scope of used mechanical, electrical and electronic products that are prohibited to import. There are 4 types, as shown in **Table 1-3**.

Table 1-3 Used Mechanical, Electrical and Electronic Products That Are Prohibited to Import

No.	Catalogue or Scope of Products	Related Documents
1	Unlisted tapes recorders and other sound recording equipment; unlisted video recording or playback equipment; used medical equipment; used video game machine, etc.	MOFCOM, GACC, GAQSIQ, Announcement No.37 of 2001 on "Catalogue of Prohibited Imports of Used Mechanical, Electrical and Electronic Products"
2	Used glass bulb; used picture tube; used	Annex of GAQSIQ, GACC, NDRC,

	reproducing picture tube; used TV set	etc. Announcement No.134 of 2005
3	Used mechanical, electrical and electronic products with the industrial and commercial use of refrigerant compressor with CFCs for cryogen: compression engine with large motor driven air conditioner (large motor means power rating exceeding 5 kW); frozen or refrigerated equipment with large motor driven (large motor means power rating exceeding 5 kW),. etc.	For the questions of implementing Vienna Convention for Protection of the Ozone Layer, Annex of MOFCOM, GAQSIQ, GACC, MEP Announcement No.117 of 2005
4	Used home appliances with CFCs as cryogen and foaming agent, and used mechanical, electrical and electronic products with home appliances compression engine with CFCs as cryogen including refrigerator, freezer, ice machine, ice cream machine, water heater, refrigeration compressor etc.	MEP, NDRC, MOFCOM, GACC, GAQSIQ, Announcement No.200 of 2007 on prohibiting produce, sale, import and export of home appliances with CFCs as cryogen and foaming agent.

In addition, the "Catalogue of Commodity Prohibited Import to Processing Trade" (MOFCOM, GACC Announcement No.90 of 2014) also lists used mechanical, electrical and electronic products prohibited to import for processing trade, including 184 specific items which are air conditioners, refrigerators and other refrigeration equipment, printers, copiers, fax machines, computers, microwave oven, electric cooker, telephones, video recorders, camera, monitor, projector, TV receiver, printed circuit, kinescope, etc.

(ii) Restrict to Import

Under the Measures for Administration of Import of Key Used Mechanical and Electronic Products and Catalogue on Import of Key Used Mechanical and Electronic Products, China implement the restriction policy of import of key used mechanical and electronic products, of which, MOFCOM is responsible for the import license

management, and GAQSIQ is responsible for relevant inspection. The key used mechanical and electrical products refers to the used mechanical and electrical products that involve national security, social and public interests, health or safety of the people, the life or health of animals and plants, and pollute the environment.

The restricted import of used mechanical and electrical products mainly include: large industrial machinery and equipment, revolved electrical and electronic products that are mainly certain categories of office used printing machine, printing machine, copycat, etc. Pursue to article 7, applications for import of key used mechanical and electronic products shall be submitted by final users, and those for import of key used mechanical and electronic products that are used for refurbishment (including remanufacture) shall be submitted by entities with qualifications of renovation business. In terms of licensing management, MOFCOM restricts the licensing through restricting the number and quantity of imports and requiring providing the number of manufacturing years. For the imports for refurbishment, MOFCOM will decide whether to approve through check the economy and feasibility (the "success rate of regeneration") of refurbishment.

(iii) Automatic licensing

According to Measures for Implementation of the Automatic Import License of Mechanical and Electronic Products (MOFCOM, GACC, Announcement No.6 of 2008), import entities shall apply for Automatic Import License from the MOFCOM or its authorized agencies before handling of clearance procedures, if imports are mechanical and electronic products subject to automatic import license. Pre-inspection report of import products issued by inspection and quarantine agencies authorized or approved by the General Administration of Quality Supervision, Inspection and Quarantine PRC shall be provided if used mechanical and electronic products are to be imported. Relevant evidentiary materials concerning approval of renovation businesses shall be provided if the used mechanical and electronic products to be imported are used for refurbishment (including remanufacturing, similarly hereafter). The China Compulsory Certification or the Certificate of Exemption of China Compulsory Certification shall be provided if the mechanical and

electronic products to be imported are subject to state compulsory certification.

According to 2015 Catalogue of Products Subject to Automatic Import Licensing, the used electric and electronic equipment which are automatic import include: hand-held radio telephones, satellite radio and television equipment and their key components, and Quota Licensing Bureau of MOFCOM shall issue the automatic import licenses.

Material Required When Entities Applying for Import	
Restricted import of key used mechanical and electronic products	Automatic import of used mechanical and electronic products
<ul style="list-style-type: none"> • Explanations of purposes of the key used mechanical and electronic products applied for import. • The Application Form for Import of Mechanical and Electronic Products • Business License (duplicates) • Certificate of manufacturing time of the key used mechanical and electronic products applied for import. • Descriptions of the equipment situation by the entities applying for import. • Other documents required by other relevant laws and administrative regulations. • Entities involved in renovation business of imported key used mechanical and electronic products shall, if there is a requirement for qualification by the state, provide qualification certification documents. 	<ul style="list-style-type: none"> • An application form of import of mechanical and electronic products • A duplicate of the business license • Contracts for import of goods • The China Compulsory Certification or the Certificate of Exemption of China Compulsory Certification shall be provided if the mechanical and electronic products to be imported are subject to state compulsory certification. • Pre-inspection report of import products • Relevant evidentiary materials concerning approval of renovation businesses shall be provided if the used mechanical and electronic products to be imported are used for renovation (including remanufacturing, similarly hereafter) • Other materials required by the MOFCOM

In addition, under the measures for the inspection and supervision of imported used mechanical and electrical products, AQSIQ is responsible for the implementation of port inspection, destination inspection and supervision and management of imported used mechanical and electrical products. For those used mechanical and electrical products (except the original manufacturer after-sale repair service) included in "Catalogue of Used Mechanical and Electrical Products Batch Implementing On-site Supervision", the port inspection and quarantine institutions gradually implement on-site supervision according to mandatory requirements of national technical specification. The catalogue lists 18 types of used mechanical and electrical products and components, which mainly are consumer electronics, appliances and components.

2) For Repair and Maintenance

Our country has made provision for the bonded repair activities of the used electronic and electrical equipment, such as re-export of importing after repair and maintenance, which are supervised by the customs. Such temporary import shall no longer apply to the Measures for the Administration of the Import of Mechanical and Electrical Products. The two documents, namely "Measures for the Administration of Taxation of Import and Export Goods in China", "Announcement on the General Supervision Provisions on Bonded Repair Business of Bonded Maintenance Businesses in the Special Customs Supervision Area", provide general provisions on bonded repair activities. The other three documents, namely "Temporary Measures on Processing Trade Administration in Export Processing Zone", The Measures on Bonded Logistics Park Management by Customs of the People's Republic of China, Interim Measures of the Customs of the People's Republic of China for the Administration of Bonded Port Areas also put forward specific requirements on repair business.

Overall, the entry repair of used electrical and electronic equipment don't need the relevant licensing documents, it only needs declaration procedures to the customs. When conducting the declaration procedures, enterprises should submit the repair contract (or the original export contract containing warranty provisions), and provide

the import tax guarantee or the customs shall implement the management in accordance with bonded goods. If you want to import raw materials and components and parts for repair, in addition to meet the above conditions, the enterprises should also provide customs entry declaration (except for that together import repair goods declaration), and the imported raw materials and components and parts are only for repairing imported goods. The imported materials and components and parts and their residue should re-export within the time limit (may apply for extension) required by the Customs.

For the management of waste produced during repair activities, according to the requirements of the Customs, damaged parts and scrap produced during repair activities, should be re-export in principle; and for those can not be re-export indeed, the enterprises can conduct relevant procedures to transport those outside the zones in China. The customs shall levy tax on the leftover materials and waste materials that have been applied for sale in the domestic market in accordance with the applicable tax rates and the approved prices, and the entry-exit inspection and quarantine institutions shall not conduct inspection and quarantine and exempt the relevant import license administration. Bad repair parts and scrap belongs to solid waste, if it belongs to solid waste restricted to import, its import don't need to submit related licenses import of solid waste, and the entry-exit inspection and quarantine agencies do not implement the inspection; if it belongs to solid wastes prohibited to import and will be use or dispose outside the zones, the producer and collection unit shall apply to the customs special supervision area management department and environmental protection departments of their located (city) level. It can be seen that there is no compulsory provisions that the waste produced by repair should re-export, and the supervision conditions for the entry of these wastes are also very loose.

Relative regulations on entry repair of Customs in special supervision areas

Temporary Measures on Processing Trade Administration in Export Processing

Zones:

Article 15 After-sale and repair service for exporting electromechanical products could be

developed in the export processing zones. Before the business of repairing mechanical, electrical and electronic products in the export processing zones, the enterprises shall submit written application on starting processing trade operation to the Committee, with related valid approval documents, including repaired products are originated in China, enterprises are the manufacturer of the product, or relevant documents and materials authorized or entrusted by the manufacturer to carry out the repair business.

Article 14 Disassembly or refurbishment services shall not be started in the export processing zones.

The Measures on Bonded Logistics Park Management by Customs of the People's Republic of China:

Article 39 The enterprises applying for operation of repair businesses in the Park shall be corporations and file at the competent customs in the Park. The products repaired by the enterprises in the Park and the parts thereof shall be from the overseas only, while the products and replaced parts and materials produced during the maintenance shall be reshipped out of the Park to the original outside borders.

Article 8 The Park shall not carry out commercial retail, processing and manufacturing, refurbishment, splitting and other businesses irrelevant to the Park

Interim Measures of the Customs of the People's Republic of China for the Administration of Bonded Port Areas:

Article 32 Any enterprise applying for carrying on repair and maintenance business within the bonded port area must have the incorporated enterprise status and must register with the competent Customs in the area. The repair and maintenance business within the area is restricted to the after-sale repair and maintenance service in respect to the mechanic or electronic products exported from China. The repaired products, the replaced components, accessories and the materials engendered in the process of repair and maintenance shall be transported out of the area.

1.3.2 Hong Kong, Special Administrative Regions (SAR) of the People's Republic of China

The legal basis for the administration of the import and export of wastes of Hong Kong, Special Administrative Regions (SAR) of the People's Republic of China (HKSAR) is mainly Waste Disposal Ordinance. Waste Disposal Ordinance divides the waste into two categories, namely non hazardous wastes can be recycled (Table 6) and hazardous waste (Table 7), and the latter need to apply for import and export license issued by the Environmental Protection Department. In addition, the import or export of "contaminated" waste and waste for the final disposal are also subject to licensing management. In terms of transboundary movement, if hazardous waste are loading and unloading in HKSAR, then the importer must hold waste import license and export license issued by the environmental protection department; if hazardous waste are not loading and unloading in HKSAR, then the importer will enjoy exemption permit management and only receive prior consent form the environmental protection department; waste not included in Table 6 and Table 7 of Waste Disposal Ordinance are management as hazardous waste. As China is one of the parties to the Basel convention, the Convention applies to HKSAR as well. In addition, the Convention's amendment was formally incorporated into the Waste Disposal Ordinance in April 2006 and became a law.

Therefore, when e-waste is a hazardous waste or for the purpose of disposal, its import and export apply to license management system. In 2006, HKSAR released the "Guideline on Import and Export of Used Electric and Electrical Products Containing Hazardous Components and Parts" and updated in 2016. The guideline further explicit the categories of e-waste by licensing control, including computer monitors using of different imaging technology, notebook computer (laptop computer), tablet computers and television (e.g. a cathode ray tube, liquid crystal display, light emitting diode and a plasma display), and battery, waste printed circuit boards (dismantling or destroyed), mercury switches, transformers and capacitors containing mineral oil or PCB, and waste electronic components turning into chemical waste due to any material

pollution.

With regard to the import and export of used electrical and electronic equipment, the Environmental Protection Department in HKSAR recommends that importers and exporters should determine whether they need to apply for waste import and export licenses before the import or export. It is pointed out that if the appliances and electronic goods are used directly in the import place, there is no need to apply for waste import and export licenses to Environmental Protection Department in HKSAR.

Chapter 2 Identification Standard of E-waste and Used Equipment

2.1 Identification Standard of E-waste and Used Equipment under Basel Convention

2.1.1 Development of Relevant Guidelines

(1) Technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention

The technical guidelines on transboundary movements of electrical and electronic waste and used electrical and electronic equipment, in particular regarding the distinction between waste and non-waste under the Basel Convention (hereinafter referred to as "e-waste guidelines"), was developed since the ninth meeting of the Conference of the Parties in 2008, and adopted, on an interim basis, at the twelfth meeting of the Conference of the Parties in 2015.

The contents of e-waste guidelines include seven parts and relevant Annexes. The first part introduces the scope of developing the e-waste guidelines. The second part introduces relevant provisions of definitions (such as waste, dispose, hazardous waste, etc.) and control procedure for transboundary movements of waste. The third

part is guidance on the distinction between waste and non-waste, which is the core of the e-waste guidelines. The fourth part provides guidance on how transboundary movements of e-waste apply to the control procedure and national legislation. The fifth part provides guidance on the enforcement of provisions regarding transboundary movements of e-waste and used equipment. The sixth part provides guidance to facilities for conducting failure analysis, repair and refurbishment. The seventh part introduces the further work needed.

In the process of developing the e-waste guidelines, as there are fundamental interest conflict of developed countries and developing countries respectively as output and input countries, there is no agreement on the identification standard of so called used e-waste equipment and components transboundary movements for conducting failure analysis, repair and refurbishment. At the twelfth meeting of the Conference of the Parties in 2015, the agreed terms were adopted on an interim basis, and the rest of terms failed to reach agreement were as remaining problems waiting for further review which included: the residual service life, waste and hazardous waste disposal responsibilities, outdated technology equipment etc. However, the interim e-waste guidelines deviate the original intention for protecting environment interests of the developing countries. It nominally aims to strengthen environment sound management of e-waste and prevent of illegal transboundary movement, but in fact, it intends to legalize the export of used equipment for conducting failure analysis, repair and refurbishment. At the thirteenth meeting of the conference of the parties in 2017, in order to protect the environmental interests of developing countries, China proposed as the lead country to continue to address the unsolved issues in the e-waste guidelines.

(2) Mobile Phone Partnership Initiative, MPPI

The Mobile Phone Partnership Initiative (MPPI) was launched in December 2002, when the sixth meeting of the Conference of the Parties to the Basel Convention established a working group consisting of experts from Parties and Signatories interested in a sustainable partnership on the environmentally sound management of end-of-life mobile telephones as well as representatives of mobile

phone manufacturers and the Secretariat of the Basel Convention. The overall objective of MPPI was to promote the objectives of the Basel Convention in the area of the environmentally sound management of end-of-life mobile phones. Under the MPPI five technical guidelines (awareness raising design considerations, collection of used and end-of-life mobile phones, transboundary movement of collected mobile phones, refurbishment of used mobile phones, and material recovery/recycling of end-of-life mobile phones) were developed. The guideline on transboundary movement of collected mobile phones provide relevant Criteria and relevant testing methods for used equipment identification.

(3) Partnership for Action on Computing Equipment, PACE

PACE was launched in June 2008 by the ninth meeting of the Conference of the Parties to the Basel Convention, with decision IX/9. The PACE is to promote the environmentally sound management of used and end-of-life computing equipment and to promote the sharing of life cycle related information. The range of computing devices covered by the PACE includes personal computers, monitors, printers and peripherals. Since PACE launched, it has compiled 3 guidelines and 2 reports on environmental sound management, transboundary movements procedures, etc. Guideline on environmentally sound testing, refurbishment and repair of used computing equipment and Guideline on transboundary movement procedures provide identification standard and testing methods for used computing equipment.

It is worth noting that, the adopted e-waste guidelines apply to all electrical and electronic equipment including computing equipment and mobile phones. Similarly, guidelines on the distinction between waste and non-waste of e-waste and used equipment apply to computing equipment and mobile phones. The following section will focus on the identification standard of used equipment, and electronic waste criteria, the identification standard for secondary products, and functionality testing method in PACE and MPPI guidelines.

2.1.2 E-waste Guidelines

(1) Relevant Definitions of E-waste

The definition of WEEE in e-waste guidelines is that: electrical or electronic equipment that is waste, including all components, sub-assemblies and consumables that are part of the equipment at the time the equipment becomes waste. The definition does not specify when equipment will become waste, which should be consistent with the waste definition under Basel Convention. Pursuant to article 2 of Basel Convention, wastes are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. Disposal means final disposal and recycling. Thus, under the framework of Basel Convention, the elements of the definition of e-waste include two points: one is final disposal, and the other one is to be disposed in accordance with national law.

(2) Identification Standard of E-waste and Used Equipment

For distinguish between e-waste and used equipment, article 30 of the e-waste guidelines stipulates the identification standard: used equipment is waste in a country if it is defined as or considered to be waste under the provisions of that country's national legislation; and used equipment should normally be considered waste if it meets one of the 10 conditions (See **Table 2-1**). The table divides the 10 conditions into the use of purpose, function, packaging and so on.

Table 2-1 Identification Standard of E-waste in E-waste Guidelines

Considering Elements	Criteria
Use of Purpose	1. The equipment is destined for disposal or recycling, instead of failure analysis or reuse, or its fate is uncertain
	9. The equipment is destined for disassembly and cannibalization (to gain spare parts)
Functionality	2. The equipment is not complete - essential parts are missing and the equipment cannot perform its key functions

Considering Elements	Criteria
	3. The equipment shows a defect that materially affects its functionality and fails relevant functionality tests
	4. The equipment shows physical damage that impairs its functionality or safety, as defined in relevant criteria, and cannot be repaired at a reasonable cost
Packaging	5. The protection against damage during transport, loading and unloading operations is inappropriate, e.g., the packaging or stacking of the load is insufficient
Appearance	6. The equipment is particularly worn or damaged in appearance and its appearance reduces its marketability
Hazardous Components	7. The equipment has among its constituent part(s) hazardous components that are required to be disposed of under national legislation or are prohibited to be exported or are prohibited for use in such equipment under national legislation
Market	8. There is no regular market for the equipment
Price	10. The price paid for the equipment is significantly lower than would be expected for fully functional equipment intended for reuse

Article 31 of the e-waste guidelines stipulates the identification standard that used equipment should normally not be considered waste, see **Table 2-2**.

Table 2-2 Criteria of Used Equipment for Reuse in E-waste Guidelines

Classification	Criteria
1. Direct reuse	1) A copy of the invoice and contract relating to the sale and/or transfer of ownership of the used equipment, and documentation accompanying the transboundary movement of equipment
	2) Evidence of evaluation or testing on equipment
	3) A declaration that none of the equipment is defined as or is considered to be waste in any of the countries involved in the transport
	4) Each piece of equipment is individually protected
2. Failure	1) The documentation accompanies the transboundary movement of equipment

Classification	Criteria
analysis, or for repair and refurbishment	2) A valid contract exists between the person who arranges the transport and the legal representative of the facility where the equipment is to be repaired or refurbished or undergo failure analysis
with the intention of	3) A declaration that none of the equipment is defined as or is considered to be waste in any of the countries involved in the transport
reuse	4) Each piece of equipment is individually protected

The first situation (31a) are equipment destined for direct reuse, or extended use by the original owner for the purpose for which it was originally intended and the following is provided or is in place both prior to and during transport.

- | |
|--|
| <ul style="list-style-type: none"> i) A copy of the invoice and contract relating to the sale and/or transfer of ownership of the used equipment, and documentation accompanying the equipment, including, inter alia, a signed declaration that indicates that the equipment has been tested and is destined for direct reuse and fully functional, and information on its future user or, where this is not possible, its retailer or distributor; ii) Evidence of evaluation or testing in the form of a copy of records (certificate of testing – proof of functionality) on every item within the shipment and a protocol containing all recorded information;; iii) A declaration made by the person who arranges the transport of the equipment that none of the equipment within the shipment is defined as or is considered to be waste in any of the countries involved in the transport (countries of export and import and, if applicable, countries of transit); iv) Each piece of equipment is individually protected against damage and to prevent hazards during transportation, loading and unloading, in particular through sufficient packaging and stacking of the load. |
|--|

The second situation (31b) is the equipment destined for failure analysis, or for repair and refurbishment with the intention of reuse, or extended use by the original owner, for its originally intended purpose, provided that the criteria set out in

sub-paragraphs (a) (iii) and (a) (iv) of paragraph 31 above and all of the following conditions are met.

- i) The documentation accompanies the equipment, including: name (including contact details) of the person who arranges the transport and of the person who receives the shipment at the receiving facility; description of the equipment; purpose of the transboundary transport; countries concerned; signed declaration by the person who has arranged the transport of the equipment etc;
- ii) A valid contract exists between the person who arranges the transport and the legal representative of the facility where the equipment is to be repaired or refurbished or undergo failure analysis. The contract should contain a minimum set of provisions, including the following: the intention of the transboundary transport; provisions on adherence to the principles of ESM for the treatment of any residual hazardous waste generated through the failure analysis, repair or refurbishment activities; a provision stating the responsibility of the person who arranges the transport to comply with applicable national legislation and international rules, standards and Basel Convention guidelines; a provision allocating responsibility to specific persons throughout the whole process, from export until the equipment is either analysed or repaired or refurbished to be fully functional, including cases where the equipment is not accepted by a facility and has to be taken back; a provision requiring the facility to provide the person who arranged the transport with a feedback report, if appropriate, the contract may include the possibility of a review of the feedback report by the person who arranged the transport, or by a third party;
- iii) A declaration made by the person who arranges the transport of the equipment that none of the equipment within the shipment is defined as or is considered to be waste in any of the countries involved in the transport (countries of export and import and, if applicable, countries of transit);

Each piece of equipment is individually protected against damage and to prevent hazards during transportation, loading and unloading, in particular through sufficient packaging and stacking of the load.

By comparing the two cases, it is found that the major difference between

e-waste and used equipment is whether functionality evidence is needed. Compared with identification standard of e-waste, the identification standard of used equipment mainly include the enterprise contract and the statement which is more relaxed, leaving the loopholes for the illegal traffic of export of e-waste in the name of used equipment.

2.1.3 MPPI Guidelines

The Mobile Phone Partnership Initiative (MPPI) provides guidance how the transboundary movement of collected mobile phones apply to Basel Convention. In the MPPI guidelines, the identification whether collected mobile phones are waste is the key problem. Section 2.2 of the Guideline for the Transboundary Movement of Collected Mobile Phones describes evaluation, testing and labelling of collected mobile phones. The Evaluation and/or Testing and Labelling decision point, whether functionality has been tested or not, may include evaluation and/or testing for defects that materially affect the mobile phones functionality, such as whether the device powers up, and or whether it performs an internal set-up routine and/or self-checks, and/or whether it communicates; physical damage that impairs functionality or safety may include but is not limited to whether the mobile phone screen is broken, cracked, heavily scratched or marked, or that the image is distorted. Used mobile phones des-tined for re-use, including repair, refurbishment or upgrading should be packaged in an appropriate protective manner.

For testing the functionality of a collected mobile phone the test numbers can be applied. At a minimum the following basic tests should be applied as an efficient minimum test procedure, see **Table 2-3**.

**Table 2-3 Functionality Testing Criteria of Collected Mobile Phone in MPPI
Guideline**

Testing Method	Method Description	Testing Result
"Air" or	The tester is to dial the	A response is received

"Ping" (automatic phone response) test	above-mentioned number, which will then "ping" a network and receive a customer service response from the nearest network. In North America the number is "611".	
"Loop back test"	The tester to blow or speak into the handset, whilst on a call	The equipment receives the signal which it sends out
Microphone and speaker test	The tester is to blow or speak into the microphone	The same input sound can be heard out of the speaker
Screen and keypad test	Turn on the phone, the keypad is punched	Numbers appear on the screen for each key
Battery test	Battery should be charged and tested with a volt meter to determine whether or not the battery is functional and hold an appropriate charge	The battery guarantees accepting and holding a charge and operate correctly under load of standard mobile phone, and guarantees protection circuit and functioning properly.

2.1.4 PACE Guidelines

In the Guideline on Environmentally Sound Testing, Refurbishment and Repair of Used Computing Equipment launch by PACE, section 3.1.11 provides testing of equipment and components (hardware) prior to reuse to ensure full functionality (see **Table 2-4**). Also, the guideline provides testing methods for functionality of batteries, including demonstration method (meet the minimum run time/charge of one hour) and self-managing the smart battery method (battery check programme, calculating run time).

Table 2-4 Functionality Testing Criteria of Computing Equipment in PACE Guideline

Computing Equipment	Test Method	Test Results
Central Processing Units (CPUs), including Desk Top PCs	Power on self test (POST)	Computer should boot up successfully; Computer should respond to keyboard and mouse input; Cooling fans should operate normally
Laptops/notebooks	Power on self test (POST)	Laptop should boot up successfully; Laptop should respond to keyboard and mouse input; Display turns on during boot up, Image should be clear and colors contrast and brightness correct with no screen burned images, scratches or cracks; Laptop Battery able to retain a minimum of 1 hour of run time
Keyboards	Connect to computer and ensure they successfully interface	Computer should respond to keyboard input; Keyboard should have no missing or non functioning keys.
Mouse	Assess mouse casing, cable and parts; Plug into computer or laptop to assess functionality.	Mouse should have all parts present (e.g., the roller ball); Computer should respond to mouse input; Visible cursor on screen should not shudder.
Cables and power cords	Assess cable insulation and inspect plugs	Cabling and plugs should be complete and free of damage, e.g., has no cracked insulation.

Computing Equipment	Test Method	Test Results
Display devices	Plug in display and test the picture quality for pixels, color, contrast and brightness; Software based diagnostic testing for display devices are readily available on line, and should be used; Visual inspection for screen burn (CRTs) or "image persistence" (flat screens), scratches or other damage to screen or housing; Cabling should be inspected and present	Display devices The picture should not be fuzzy, or have damaged pixels, or be too dark; LCD backlights should all function. Colors, brightness, hue and straightness of lines should be considered; The software diagnostic test should be positive; Cabling should free from damage.
Laser and inkjet printers	A test page can be successfully printed; This can be standalone but also from a computer or local area network to assess connectivity; For inkjet printers, check that the ink heads are not clogged with dry ink.	Printers should successfully print a test page and not jam, or produce smudged or incomplete copy.
Components (removed from equipment) including mother boards, other circuit boards, sound cards, graphics cards, hard drives, power supplies and cords/ cables	Components should be tested for functionality either before removal from the host computer or laptop, or by insertion in a test bench computer using diagnostic software, or a known working device as applicable.	Components should be fully functional; Power supplies and cords/ cables should be complete and free of damage, e.g., has no cracked insulation.

2.2 Identification Standard of E-waste and Used Equipment of Typical Countries

2.2.1 Developed Countries and Regions

(1) United States of America

1) Relevant Definitions of E-waste

America doesn't make a clear distinction between e-waste and used electronic equipment in Electronic Products National Strategy, but instead the term called "Used Electronic Products" to uniformly refer to both (namely used electronic equipment).

The working group of American electronic equipment management national strategy has explained the adoption of this term. "E-waste", "Electronic Trash", "Electronic Scrap" and "Expired Electronic Equipment" usually refers to electronic equipment discarded, donated or given to recyclers by users which are closely to their life span. "Used Electronic Equipment" can either be reused, refurbished and recycled or providing valuable parts or raw materials such as gold, copper and glass and return to supply chain to reduce the total generation of wastes. In order to emphasize the importance of reuse and responsible recycle, working group decided to adopt the term "Used Electronic Equipment", and "E-waste" is seen as part of it.

Meanwhile, Electronic Products National Strategy points out that according to its original purpose reused electronic equipment do not belong to "Waste" such as sold or donated electronic equipment to reuse, which are unregulated by Resource Conservation and Recovery Act (RCRA). RCRA is a basic law on waste management in USA and does not give a clear definition of e-waste.

2) Identification Standard of E-waste and Used Equipment

Certified recycle is a necessary part of Used Electronic Equipment Security Management in USA. Industry group forms two independent certification processes for industry participants: R2 certification and e-Stewards certification. These certification provide performance standards, responsibility system of chain of custody of acceptable material, equipment qualification criterion as well as used electronic

equipment facilities environment and human health standards, among which propose standard requirements for reuse, repair and refurbishment of used electronic equipment.

① Identification Standard of R2

R2 standard was first released in 2008 and updated in 2013. R2:2013 was made by multi-stakeholders—Technical Advisory Committee (TAC) in a public, transparent and consensus-based way and accords with commonly accepted consensus-based principle. TAC is composed of key stakeholder groups including recyclers, recall service consumers/users, specification and procurement service, electronic equipment manufacturers, downstream manufacturers and international-trade specialists. Formulation process consists of consulting public opinion, replying to opinions and appeal chances to dissidents in order to all stakeholders participating in revise process. After finishing this procedure, R2:2013 was examined and adopted via Sustainable Electronics Recycling International (SERI) board of directors. SERI is authoritative managers and owners of R2 standard.

The contained requirements of R2:2013 standard are very comprehensive and cover environmental health and safety management system, legal requirements, site environment, sanitation and security, as well as multi actual operation on critical materials. Article 6 stipulates conditions of reusable equipment and parts including three situations which need to satisfy respective conditions are as shown in **Table 2-5** below.

Table 2-5 R2: 2013 Standard on reused conditions of used electronic equipment

Classification	Standard Conditions
1. All functions is normal after tests, R2/ready to reuse	1) Using effective test methods to ensure all functions of equipments and parts normal and ready to reuse
	2) Executing written quality assurance plan and policy, verifying test methods and reserving test records
	3) Executing written equipment returned plan and policy, applying to final directions of equipments and parts

Classification	Standard Conditions
	4) Ensure all of equipments and parts clean without appearance defect
	5) Ensure all of equipments and parts accord with requirements of receivers
2. After key function tests, R2/ready to resale	1) Using effective test methods and test equipments to ensure the key functions of equipments and parts normal
	2) Executing written quality assurance plan and policy, verifying the accuracy of test methods and equipments and reserving test records
	3) Opening any key functions that do not work normally in a written form and providing appearance defect and introductions of missing parts of each batch of transported equipment
	4) Executing written equipment returned plan and policy, applying to final directions of equipments and parts
	5) Ensure all of equipments and parts accord with requirements of receivers or end users
3. Fail to work after assessment, R2/ready to repair	1) Executing written equipment returned plan and policy to assure the assessment of equipments and parts, ensure conditions of equipment or parts, functions as well as selling price that can be repaired and refurbished in terminal markets
	2) Confirming transportation to conditional recyclers or receivers by appropriate contractual agreement, detailed material traceability, records and audit of equipments and parts containing key materials
	3) Ensure all of equipments and parts accord with requirements of receivers

② Identification Standard of e-Stewards

Standards of e-Stewards electronic equipment responsible for recycle and reuse is in charge of BAN in formulation and release, which is updated to 2.0 version short for e-Stewards 2.0 standards. Leadership Council and technical committee of e-Stewards is made up of multi-Stakeholder including industry leaders, jointing experts on health and safety, battery, data security etc. to complete establishment and

emendation work together. In addition, revision of standards also covers public comment process, and all the public opinion shall be adopted upon deliberation and considered to incorporate into final standards. With advancements of industry and technology and further research confirmation, e-Stewards standards shall be revised in due course through persistence mechanism revised by multi-stakeholder. Among the main revised versions, project manager of e-Stewards will make a language clarification or formal modification on requirements according to authentic interpretation of e-Stewards to be published. All the certified companies must to satisfy e-Stewards standards and authentic interpretation of e-Stewards.

e-Stewards standard apply to engaging in recycle, refurbishment, asset management, treatment, refinement and other activity entity of electronic equipment. However, collectors, middlemen and transport companies are not in the scope of e-Stewards certification at present. Standard contents mainly include environmental management system requirements, health and security management system requirements as well as e-Stewards standards on specific industries. Article 4.4.6.2 proposes the following standards on reuse and refurbishment of electronic equipment (**Table 2-6**).

Table 2-6 e-Stewards on Reuse Conditions of Electronic Equipment

No.	Standard Conditions
1	Give a full test on electronic equipment and ensure functionally complete
2	Clear all the users data
3	Attach and list identification records for every electronic equipment
4	Provide protective packaging
5	Verify directly reused markets
6	Send back hazardous electronic equipment
7	Ensure responsibility management on generated e-waste
8	Control outsourcing of reuse activities

(2) Japan

1) Relevant Waste Definitions of E-waste

Japan does not give a clear definition on e-waste. In 2001, Home Appliance Recycling Law in Japan makes stipulations on four large household appliances: television, air-condition, refrigerator and freezer, dryer. Thereafter, in the issued Promotion Law on Effective Utilization of Resources, television, air-condition, refrigerator, washing machine, microwave oven, dryer and personal computer equipment are "specified province resource equipment" and "specified promoting reused equipment". Personal computer equipment and small-sized secondary battery are "specified resource regenerated equipment". In 2013, Small Home Appliance Recycling Act in Japan has come into effect, which makes stipulations on recycle of 28 types of small household appliances including cellphone, digital camera, game machine, telephone set and fax machine etc.

2) Identification Standard of E-waste and Used Equipment

"Identification Standard of Eliminated Electrical and Electronic Equipment when Exported as Used Equipment (hereinafter referred to as "Identification Standard") is aimed at providing objective identification standard to distinction between elimination electrical and electronic equipment and used equipment, which can prevent unsuitable reused elimination electrical and electronic equipment from entering the used equipment export market. It applies to home electronic equipment (or electrical and electronic equipment in general commercial activities) for export purpose.

Identification Standard includes five factors shown in **Table 2-7**.

Table 2-7 Export Criteria on Used Equipment in Japan

Evaluating Factors	Export Criteria on Used Equipment
Manufacture date and appearance	Confirm there is no breakage and scar, stain, confirmed styles etc.
Normal working performance	By functional tests, every parts can work normally.
Packaging and shipment conditions	Adopt appropriate packaging, shipment and protective measures.
Factual relationship of used equipment transaction	Confirm transaction factual relationship by contract.

Secondary market existing in importing countries	Confirm importing countries sell for secondary use
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Identification standard have special regulations on manufacture date and appearance of the following four domestic appliances: air-condition, television, refrigerator and freezer, washing machine.

Due to there exists unusable waste electrical and electronic equipment which can continue to use after repair in importing countries, it will cost on functional tests before export and Japan has not formed commercial mode, therefore Japan proposes alternative methods of functional tests. It means that establishing a mechanism under the condition that waste electrical and electronic equipment can't be repaired in importing countries to ensue to send back feasibly to Japan.

Some requirements on some requirements:

- 1) Sales status. In importing countries, waste electrical and electronic equipment must be as used equipment to enter markets and give an objective confirmation for sales status.
- 2) Maintenance. If waste electrical and electronic equipment can't be reused directly, they must be maintained in importing countries.
- 3) Send back to Japan. Ensure to send back feasibly to Japan under the condition that waste electrical and electronic equipment can't be reused and maintained in importing countries.
- 4) Confirmation methods. Executive condition of alternative methods must be confirmed easily.
- 5) Feasibility. Proposer of alternative methods must realize the proposed alternative methods completely.

The basic idea for alternative methods is as follows: Functional tests are to ensure waste electrical and electronic equipment in importing countries reuse and prevent improper disposal; It is necessary to take alternative measures to prevent waste electrical and electronic equipment as wastes from disposing; Alternative measures must keep transparent and examine easily; All of alternative measures for

technical guidelines for transboundary movement of e-waste under framework of Basel Convention shall be disposed as interim measures before formal adoption.

(3) the European Union

1) Relevant Definitions of E-waste

According to WEEE directive of the EU, WEEE refers to waste electrical and electronic equipment including all components, subassemblies and consumables which are part of the product at the time of discarding on the basis of Decree Number 2008/98/EC Section 3(1). While the definition of "waste" substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of in Decree Number 2008/98/EC Section 3(1). EU resembles convention in definition form, but it has a different defined condition on waste. Elements for defining on waste is as an end for disposal in Convention while discarded by owner as a starting point in EU.

Waste Electrical and Electronic Equipment Shipment Standards points out the definition of waste: to judge an abandoned item whether belongs to waste should be analyzed on a case by case basis, and the court has the ultimate power of interpretation of the law.

2) Identification Standard of E-waste and Used Equipment

The specific identification standard on e-waste and directly reused equipment in Waste Electrical and Electronic Equipment Shipment Standards is in accordance with Basel Convention, here no longer etc. However, exemption clause with regard to failure analysis, repair and refurbishment is more specific in Waste Electrical and Electronic Equipment Shipment Standards than that of convention, including three conditions: ① For purpose of reuse, send back to producer or the third representative to repair during warranty period; ② For purpose of reuse, bring electrical and electronic equipment for old professional use to producers of OECD country or the third representative or third-party independent facilities under the valid contract to refurbish or repair; ③ Under the valid contract, bring electrical and electronic equipment for old professional use such as medical equipment or parts to producers of OECD country or the third representative to analyze malfunction on condition that

this kind of analyze can only be done by producers or the third representative.

2.2.2 Developing Countries

(1) Thailand

1) Relevant Definitions of E-waste

In the "Notice on the Examination and Approval of Import and Export of Waste Electrical and Electronic Equipment", Thailand makes a definition on waste electrical and electronic equipment: used electrical and electronic equipment that can continue to use or using for original purpose after repair, importation for dismantling, cleaning, classification or other disposal measures are defined as e-waste. Scope of application of notice includes 32 types of list of equipment and parts.

2) Identification Standard of E-waste and Used Equipment

Thailand has requirements on inlet conditions and importer qualification as followed:

- ① Used electrical and electronic equipment and parts for purpose of sale and reuse must possess same level with TIS (Thai Industrial Standards) and prove to continue to use or replace parts. Importers and users of electrical and electronic equipment must be the same legal person or enterprise, and imported equipment must be for self-use under special circumstances. Importers of parts must be manufacturers or agency, or electrical and electronic equipment distributors and possess repair service or send equipment to repair abroad.
- ② Importation for repair must make equipment recover to primary form to use for original purpose, including importation after repair from abroad as well. As for reimport after repair from abroad, importer and exporter must be the same person or legal person, and show paper proof copy issued by customs department. Temporary import for purpose of repair, importer must be equipment or parts manufacturer and possess the corresponding repair service, and should be informed of time limit of repair, at the same time,

showing the security documents to indicate these equipment including un-reused damaged parts will be sent back to exporting countries. Also, importer should show documents of titled damaged parts in exported 30 days. The damaged parts made in own country do not require to send back but provide disposition plan.

- ③ Importation for purpose of refurbishment requires equipment possessing economically value, using no more than a certain year since manufacture date (except photocopier and its components, ink cartridge of the printer and fuser all are 3 years), and possessing same level with TIS (Thai Industrial Standards). Importer must possess registered factories capable of refurbishment and conduct refurbishment business in proprietary factory. In addition, providing disposition plan of produced waste regarding to damaged parts and refurbishment process, otherwise they must provide warranty of sending back these parts and waste to original exporting countries and written consent of the exporting countries.

Regulations mentioned above do not apply five following conditions: ① Short-term import of equipment (will be sent out in 6 months calculated from import data) excluding above conditions for purpose of repair; ② Import conditions for purpose of self-use or professional use within suitable quantity; ③ Import for privilege; ④ Import conditions for purpose of international conference use within suitable quantity;; ⑤ Import conditions for purpose of oil business operation according to relevant requirements in Petroleum Law.

(2) Malaysia

Classification Standards of Used Electrical and Electronic Equipment in Malaysia is aimed at guiding waste producer, transporter, importer and exporter as well as related administrative department to have identification and classification for used electrical and electronic equipment, and ensure that whether belonging to e-waste and first category waste in Environmental Quality (Controlled Waste) Regulations or other categories.

1) Relevant Definitions of E-waste

Criteria makes the definitions of "Direct re-use", "Recycling", "Recovery" and "Disposal". And the definition of e-waste is electrical and electronic equipment or components used for recycling, recovery or disposal, including electrical and electronic equipment or components such as television, air-condition, computer, refrigerator, washing machine, imported used electrical and electronic equipment or equipment as well as 25 categories of waste and equipment produced by recovery facilities.

2) Identification Standard of E-waste and Used Equipment

Criteria gives the definitions of the characteristics of e-waste, which can also judge whether used electrical and electronic equipment or components belong to e-waste. The characteristics of e-waste include the following 13 categories:

Characteristics of Electronic Waste

- (a) Defect that has an influence on function: such as cannot be recharged, mainboard cannot work etc; or
- (b) Physical damage resulted from damaged function or safety performance, including screen with burn mark or crush, input cable has been cut off etc; or
- (c) Hard disk drive, random access memory (RAM) or video card have defect; or
- (d) Un-rechargeable battery containing Pb, Hg, Cd, Li or Ni; or
- (e) To prevent the damage from transportation and handling procedure due to lack of sufficient packaging; or
- (f) The appearance of equipment or components are used or damaged to make the marketability reduce; or
- (g) Electrical and electronic equipment or components are used for recycling, recovery or disposal; or
- (h) Electrical and electronic equipment or components are discarded, intend to or require to discard; or
- (i) Used electrical and electronic equipment or components do not possess regular market; or
- (j) Used electrical and electronic equipment or components are old-fashioned or used for waste

- recycling; or
- (k) End-life electrical and electronic equipment; or
 - (l) For import, more than 3 years since manufacture date; or
 - (m) Equipment or commodities produced by local recycling facilities for electronic waste (versus fully recovered facilities).

According to criteria, Malaysia has requirements on used electrical and electronic equipment in import aspect as follows: Not used for recycling, recovery or disposal, equipment no more than 3 years since manufacture date, for direct use, good function after tests (test records are certified by competent authorities or certification authority of importing countries).

In addition, the following are not considered as e-waste: ① Unpolluted or nondispersive electrical and electronic components (such as metal or plastic casing of computer); ② Electrical and electronic components (including printed circuit board, electronic components and electric wire), less than 3 years since manufacture date, using directly not for recycling, recovery or disposal; ③ New and unused electrical and electronic equipment or components made in Malaysia should be sent back to importing countries as defect equipment; ④ New and unused electrical and electronic equipment or components made in Malaysia as defect equipment to send back to manufacturer to repair under guarantee for the purpose of re-export; ⑤ Blank chip, chip without mintmark or test chip; ⑥ Scraps of lead or copper framework unpolluted by Cd, Hg, Pb, Ni, Cr, Cu, Li, Ag, Mn and other heavy metal or polychlorinated biphenyls.

2.3 Identification Standard of E-waste and Used Equipment of China

2.3.1 Mainland China

(1) Relevant Definitions of E-waste

The following definitions are given for e-waste in article 25 of Administrative

Measures for the Prevention and Control of Environmental Pollution by E-waste: e-waste refers to discarded electrical and electronic equipment, electrical and electronic equipment (hereinafter referred to as equipment or equipment) and discarded components, parts as well as e-waste management items and materials approved by State Environmental Protection Administration (SEPA) in conjunction with the relevant departments. And it includes scrap product or equipment, scrapped semi-finished equipment and scraps produced by industrial production activities, scraped equipment produced by equipment or equipment repair, refurbishment, remanufacturing process, discarded equipment or equipment produced in daily life or in the process of providing services for daily life, as well as equipment or equipment prohibited by laws and regulations from production and importation.

In addition, the following definitions are given for used electrical and electronic equipment in article 2 of Administrative Measures for the Prevention and Control of Environmental Pollution by E-waste: used electrical and electronic equipment refer to equipment have flowed into the market places which still keep their total or part original use value, including refrigeration and air-conditioning appliances, cleaning appliances, kitchen utensils, ventilation equipment, heating ironing appliances, personal care appliances, health care appliances, entertainment appliances and other electric appliances and audio and video entertainment, information technology and other types of electronic equipment.

It can be seen from above definition that China's definition of e-waste starts from abandoned or discarded by owners; definition of used electrical and electronic equipment contains two elements: (1) flowing into the market places where exists markets. (2) possessing use value.

(2) Identification Standard of E-waste and Used Equipment

China has not made special standards on distinction between e-waste and used equipment. "Measures for the Administration of Import of Mechanical, Electrical and Electronic Products" lists several conditions that can be identified as used mechanical and electrical equipment, but its main purpose is to distinction between used equipment and new equipment which is not clear now. "It still has basic functions and

a certain value" is set as the main characteristics to distinction between used equipment and new equipment.

Environmental Protection Department issued Solid Waste Identification Guideline (trial) in 2006, which provides guidance for identification of solid and non-solid waste. Identification is divided into three levels by the above guideline: Firstly, to make Identification according to the definition of solid waste; Secondly, to make Identification according to the range of listed solid wastes; If it is still difficult to identify by definition and scope, to make Identification according to work mode and reason of waste, or material characteristic and influence.

The definition of waste in Solid Waste Pollution Prevention Law: Solid waste refers to solid, semisolid and gaseous item/matter produced by production, life and other activities that have lost original utilization value or not lost utilization value but have been abandoned or given up as well as item/matter managed by administrative laws and regulations. It can be seen that item or matter are abandoned will be regarded as waste.

When judged by the range of solid waste, guideline points out that waste collected from household, waste materials and scraped equipment produced from production, as well as waste material produced by the office etc, if not used for original purpose, it should be assigned to solid waste. On the contrary, any item or matter for original purpose are not solid waste.

When judged by work mode and reason of solid, if equipment lose their original function or can't be used for comprehensive utilization, storage and disposal, it should be assigned to solid waste.

When judged by characteristic and influence, the following factors should be considered:

- 1) General considerations. Whether interested in producing or possessing economic value etc.
- 2) Characteristic. Whether production possess quality control and satisfy related standards or criterion etc.
- 3) Environmental influence. Whether process of production and use is harmless for environment and human health, and contains objectionable constituents etc.
- 4) Use and end result. Whether it need further processing before use, directly use for production and commerce, just need minor repair, fit for original purpose etc.

Hereby, if some used electrical and electronic equipment have value, and are suitable for original use, no need for repair and processing before use, or need for minor repair and processing, then they can be identified as non-solid waste (used equipment). Meanwhile, guideline also points out that to evaluate matter whether belongs to solid waste, various factors should be taken into account, it is different for important factors to be considered according to different target of evaluation. Guideline do not give a clear guidance on distinction between e-waste and used equipment.

It is noteworthy that current Solid Waste Identification Guideline (trial) can't satisfy the current environmental management needs, our country is formulating identification standard with more instructional and maneuverable——General Rules for the Identification of Solid Wastes, to further refine and clarify judgment principles, procedure and methods of solid waste, which is good for waste identification, strengthening of import waste management, releasing environmental pressure and risk. General Rules for the Identification of Solid Wastes has been approved by the principle of the executive meeting of the ministry of environmental protection and will be issued to replace Solid Waste Identification Guideline (trial).

2.3.2 Hong Kong, Special Administrative Regions (SAR) of the People's Republic of China

(1) Relevant Definitions of E-waste

Guideline on Import and Export of Used Electric and Electrical Products Containing Hazardous Components and Parts points out: Waste Disposal Ordinance define "Waste" as any discarded matter or items and clarify any discarded or treated matter or items as waste are all presumed to be waste, until proved not to be waste. In terms of waste import and export control, any discarded objects or matter by owners no matter whether can be work or possess market value are considered as waste under Waste Disposal Ordinance. Thus, used electrical and electronic equipment containing harmful parts or components such as television, computer monitor and battery, which are likely to be regarded as waste to be control unless they can be originally designed for use in the case of no need for repair.

(2) Identification Standard of E-waste and Used Equipment

In order to avoid illegal importation of e-waste in the name of used equipment, HK Environmental Protection Department suggests that taking some measures to assist in the inspection of import and export before the import and export of used electrical and electronic equipment. These measures include equipment model and year, secondary market, function proof, repair and test records, independent packaging and identification, sales contract etc. Details are as follows.

- ① Only choose some electrical and electronic equipment with relative new modle and year which have real used market in local point of import. In any case, try to avoid select electrical and electronic equipment with production years exceed five years;
- ② Make proper inspection, repair, refurbishment and test for electrical and electronic equipment before export to make sure their good performance, and accord to local technology and safety requirement, and suitable for real-time consumer use. In any case, excluding any damaged or nonrunning electrical and electronic equipment;

- ③ Properly record inspection, repair and test results for each used electrical and electronic equipment, including their brand, model, serial number, productive year, discovered problems/damage, as well as repair, test, test eligibility date and result, to carry out the contact information for the test company, but the related tests must be conducted before two years prior to the date of export of the batch of electrical and electronic equipment. The above information should be inspected and verified by relative regulatory authorities;
- ④ Provide individual independent protective packaging for every electrical and electronic equipment to provide protection for all electrical and electronic equipment in case of the damage during transportation process. There should be no immediate contact among every electrical and electronic equipment, but used packing materials can bear the weight of the object on them. There should be clear volume labels or marks (if any unique serial number) to identify every electrical and electronic equipment. Send relative package photos to regulatory authorities to query opinions if needed;
- ⑤ Sign a contract with the relevant party in advance to ensure there are real used markets in local point of import to sell these electrical and electronic equipment; and to confirm from local regulatory authorities if it is allowed to import used electrical and electronic equipment, as well as if relative consignees or purchasers can legally import these electrical and electronic equipment as used equipment trading.

Chapter 3 Domestic and International Management

Comparative Analysis and Experience Summary

3.1 E-waste and Used Equipment Import Management System

Table 3-1 contrastively lists the control of transboundary movement for Basel

Convention and aforementioned typical countries.

Table3-1 The control of transboundary movement for Basel Convention and typical countries.

Convention/ Country	Hazardous E-waste			Non-hazardous E-waste				Used electrical and electronic equipment			Standard for waste identification
	Prohibit	Restrictions		Prohibit	Restrictions		No limit	Prohibit	Restrictions	No limit	
		Permission	PIC		Permission	PIC					
Convention			▲ △				▲ △			▲ △	▲△
America			▲ △ ¹				▲ △			▲ △	
Japan		▲△	▲ △	△ ²			▲ △			▲ △	△
EU	△ ³		▲ △	△ ⁴			▲ △			▲ △	▲△
Thailand		▲△	▲ △		▲△	▲ △ ⁵			▲△		▲
Malaysia		▲△	▲ △		▲△				▲△		▲△
China	▲		△	▲	▲			▲	▲	▲	▲ ⁶
Hong Kong, China		▲△	▲ △		▲△ ⁷		▲ △ ⁷			▲ △	▲△

Note: ▲import, △export.

¹ Resources Conservation & Recovery Act (RCRA) clearly stipulates that the e-waste only includes Cathode Ray Tube (CRT), waste lead acid battery, waste mercury lamp bubble/bulb and waste mercury equipment under import and export management requirements.

² Japan do not allow export four kinds of large recycled appliances specified in Home Electronics Recycled Law in principle: air-condition; television (CRT and LCD); Refrigerator and Freezer; washer and dryer.

³ EU prohibits export hazardous waste to non-OECD countries.

⁴ EU exporting non-hazardous waste to non-OECD countries should accord with legal provisions of non-OECD countries.

⁵ Thailand generally assigns all e-waste to the third hazardous substance under Hazardous Substance Act, which all need to follow PIC procedure of Basel Convention.

⁶ China has not the standard for identification on e-waste and used equipment, but Guidelines for The Identification of Solid Waste (trial) provides guidelines on distinction between solid waste and non-solid waste.

⁷ It depends on the use and pollution for import and export control of non-hazardous e-waste in Hong Kong. If non-hazardous e-waste do not have designated recycling uses or polluted by hazardous substance, they will be regulated by licensing system, otherwise licensing system will be exempted.

(1) E-waste

For e-waste, Basel Convention follows the principle of control the environmental risk of transboundary movement, which only control transboundary movement of e-waste belonging to hazardous waste. Developed countries and regions such as the United States, Japan and the European Union as well as Hong Kong have no difference with Basel Convention on control of e-waste. Japan and the European Union pay more attention to export management of e-waste, Japan prohibits export of partial e-waste in principle, EU reinforces e-waste export restriction to non-OECD countries. However, the United States generally has no control of exports on most e-waste. Relatively, Thailand, Malaysia, China and other developing countries as actual or potential import countries of e-waste (including illegal import), they generally carry out stricter import controls than the convention requires, and adopt policies that prohibits or restricts imports of all e-waste or classification.

(2) Used Electrical and Electronic Equipment

For control transboundary movement of e-waste, it is similar to e-waste, moreover, it is more likely to reflect the sharp opposition between developed and developing countries as the exporting countries and importing countries respectively. Developed countries and regions such as the United States, Japan and the European

Union are under call for protection of legitimate trade and promotion of reuse, and also expect to reduce the waste disposal burden through the export of used equipment, so there do not exist limitation on driving force of transboundary movement of used equipment, which will not be controlled. And developing countries such as Thailand, Malaysia and China as major importers usually adopt the policy of prohibiting or restricting the import in order to reduce the environmental risk and management burden brought by the illegal transboundary movement of e-waste, and expect to avoid the illegal importation of e-waste in the name of used electronic equipment by strictly restricting the import of used electrical and electronic equipment. Although Hong Kong do not regulate on the import and export of used equipment in principle, the import and export inspection is strict when as major transit, if importers and exporters cannot provide relative proof of used equipment, it will be controlled as e-waste.

3.2 Identification Standard of E-waste and Used Equipment

By comparison and analysis of the Basel convention and the definition and identification standard of e-waste and used equipment in typical countries, the transboundary movement of electronic equipment is usually used as the final judgment basis. Namely, if it is used for reuse in accordance with the original design of the equipment, it is a used equipment; if it is used for resources recovery, it is e-waste. Whether to use as the original design for reuse, this is the basic attribute of distinction between the used equipment and waste. However, whether to reuse the used equipment is not easy to judge during the import and export stage, only the tracking of the destination after the import can be confirmed which is difficult to administrate. Thus, in the import and export stage, the property or condition of the item itself becomes the general basis for the identification of used equipment and wastes.

Some of them with good function or basic functions are the most critical criteria. On the basis of whether the equipment is fully functional or basic functions, "reuse" is

divided into two conditions: "direct reuse" and "reuse after fault analysis, repair or refurbishment". According to above two conditions, **Table 3-2** list comparisons between the Basel convention and the identification standard of Japan, the European Union, Thailand and Malaysia on the considerations of used electrical and electronic equipment. These considerations can be divided into three categories: ① Related documentation requirements for merchandise trade; ② Requirements for used electrical and electronic equipment; ③ Requirements related to the importer. By analysis and comparison, developing countries have stricter or more operable Identification Standard of electronics in used electrical and electronic equipment.

Table 3-2 Considerations comparisons between the Basel convention and typical countries or regions on the identification of used electrical and electronic equipment.

Considerations	Direct use	Reuse after fault analysis, repair or refurbishment
1. Related documentation requirements for merchandise trade		
Sales contract	Convention, Japan, EU, Hong Kong	Convention, Japan, EU
Transport Documents	Convention, EU	Convention, EU
Non-waste statement	Convention, EU	Convention, EU
2. Requirements for used electrical and electronic equipment		
Function proof	Convention, Japan, EU, Thailand, Malaysia, Hong Kong	—
Appearance and packaging	Convention, Japan, EU, Malaysia, Hong Kong	Convention, Japan, EU, Malaysia
Manufacturing age limit	Japan, Malaysia, Hong Kong	Japan, Thailand, Malaysia
Hazardous ingredients ¹	Convention, EU	Convention, EU
Quality standard	Thailand, Hong Kong	Thailand
3. Requirements related to the importer		
Existence of used market	Convention, Japan, EU, Malaysia, Hong Kong	Convention, Japan, EU, Thailand, Malaysia

Considerations	Direct use	Reuse after fault analysis, repair or refurbishment
Importer qualification	Thailand	Thailand, Malaysia
Reexport	—	Thailand, Malaysia
Management of waste generation	—	Thailand

Note: ¹ Such as asbestos, polychlorinated biphenyls and chlorofluorocarbons. Certain uses of these substances have been phased out or prohibited in the context of multilateral environmental agreements or in accordance with national laws in some countries.

(1) Direct Reuse

If the used electrical and electronic equipment are used for direct reuse, Function proof, appearance, packaging and used market are more considerations are more adopted considerations. Related documentation requirements for merchandise trade are basically raised by developed countries, sales contracts and transport documents are basically belonging to the minimum conditions for merchandise trade, the declaration of non-waste reflects the convention's respect for the differences of world-legislative, as well as identification of transboundary movement responsibility, which is also a requirement for enterprise operation level. Moreover, the importing countries pay more attention to the market demand of the used electrical and electronic equipment and the quality of the used equipment themselves. Thereinto, manufacturing age limit reflects waste prevention awareness, the convention has not made a final conclusion, the existing standards vary greatly from country to country, for example, Japan has been demanding that manufacturing age limit of exported used air conditioners is no more than 15 years, while Malaysia requires no more than three years of all imported used electrical and electronic equipment. In addition, Japan requires a used market which reflects emphasis on actual import demands, the convention guidelines also reflect this in the e-waste criterion condition but it do not list in the used equipment criteria; Thailand requires to meet relevant quality specification or industrial standards, which reflects strict control and actual use requirements of used equipment quality, importers are also required to be users for used equipment which is the control of the flow direction after the equipment is

imported.

(2) Reuse after Fault Analysis, Repair or Refurbishment

For the case of reuse after fault analysis, repair or refurbishment, the main considerations on the identification of used electrical and electronic equipment are used market, appearance, packaging, manufacturing age limit and sales contracts. Compared with conventions and related standards in developed countries, the standard of developing countries as the importing country is more focused on the actual use and supervision after import.

It is worth noting that Thailand and Malaysia only allow defective or faulty equipment to be imported temporarily for depot repair purposes, which need to re-export within a certain period after repair. This situation belongs to the after-sales service category which is not just general trade practices. This is also true of the current regulations on import repair of mechanical and electrical equipment implemented in China.

The so-called reuse after repair or refurbishment in the convention guidelines refers to the reuse in the importing country after the repair or refurbishment in the importing country, which is the second sales behavior of the used electrical and electronic equipment, the disposal responsibility is transferred to the importing country once the equipment is abandoned. In this case, there may exist some countries to get rid of waste disposal responsibility, risk of unrepairable or nearly scrapped used electrical and electronic equipment to export in the name of repair, resulting in used electrical and electronic equipment not to be repaired or to be scrapped in the short term to become e-waste, thus increasing the burden of e-waste management in importing countries. The Japanese standard proposes to establish the returning safeguard mechanism for the used electrical and electronic equipment used for repair to ensure the used electrical and electronic equipment can be returned to Japan when the importing country cannot be repaired, but it does not clarify how this mechanism work.

3.3 Problems and Experience of the Basel Convention on E-waste Standards Implemented by Countries

The Asian network, which is supported by Japan's environment ministry to the protection of illegal transboundary movements of hazardous wastes, launched a questionnaire in 2016, it investigates the implementation of the status quo and problems of the Basel Convention on e-waste standards in major countries in Asia and Pacific region, the countries including Brunei, Cambodia, Japan, South Korea, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. Here are the main results of the survey.

(1) Implementation of the Problem of E-waste Standards

Table 3-3 lists the feedback of existing difficult problems in the standards implementation in the investigated countries. In addition to South Korea and Singapore, there is no special problems in their standards implementation, other countries indicated that if implementing the identification regulations in their countries, there may exist the following problems: UEEE and e-waste importer and exporter lack the understanding of identification guidelines; It is difficult for cooperation between government departments to implement guidelines; The competent authorities lack the ability to implement guidelines; The related personnel lack the ability to carry out the guidance. Thereinto, "UEEE and e-waste importer and exporter lack the understanding of identification guidelines" and "The related personnel lack the ability to carry out the guidance" are mentioned more frequently. In addition, Cambodia and Myanmar have proposed the difficulty in formulating national level identification technology guide, the Philippines points out that they are drafting national level identification technology guide.

Table 3-3 Difficulties in Implementing the Standards

	Brun ei	Cambodia	Japan	South Korea	Laos	Malaysia	Myan mar	The Phili ppines	Singapore	Thailand	Vietnam	Tot al
Difficult for cooperation between government departments to implement guidelines					√						√	2
The competent authorities lack the ability to implement guidelines	√		√			√					√	4
Importer and exporter lack the understanding of identification guidelines	√		√		√					√	√	5
The related personnel lack the ability to carry out the guidance	√				√	√				√	√	5
Others		√					√				√	3

(2) Conditions that are Difficult to Achieve in E-waste Standards

Table 3-4 lists the feedback of existing difficulties in practice in countries. Most countries agree that the conditions in the standards for functional tests and functional statement (short for "function proof"), which can be directly reused in used equipment, are difficult in practice. Malaysia says the institutions that test the integrity of the device need to be identified; South Korea and the Philippines say that it is unrealistic to check each used equipment, so the authenticity of the functional statement is also difficult to verify; Cambodia says the quality of functional tests is difficult to guarantee.

Individual countries also say, statement "the involved countries whose transloading equipment are not in the transfer process (importer, exporter, and transit countries) are defined as or as "waste" (hereinafter referred to as "non-waste statement"), the conditions of implementation has a certain difficulty. Malaysia said this article should take into account the different definitions of waste and non-waste. If a batch of UEEE is not recognized as e-waste by the exporting country and the importing country, but the transit country considers it to be the e-waste, so this shipment should not be carried out in accordance with the standards. But if the packaging is sound, the function is relatively complete, UEEE doesn't like the Basel Convention to restrict the transfer of hazardous waste to have a damage on transit countries, so whether should accord to the Basel Convention on limiting the transfer of hazardous waste the same as control of UEEE transshipment is also questionable.

In addition to the above "function proof" (Cambodia, Laos, Malaysia, Myanmar, the Philippines, South Korea, Vietnam) and "non-waste statement" (Cambodia, Malaysia, the Philippines, Vietnam) both repeatedly highlighted by countries, "UEEE sales and transfer related documents" (Cambodia, the Philippines) and "proper packaging" (Cambodia, the Philippines, Vietnam) are also mentioned by individual countries. Cambodia believes that because the transshipment cargo is shipped by container, customs enforcement officers can't make 100 per cent checks on whether UEEE packaging is appropriate. Vietnam says it is too time-consuming to pack for every UEEE and difficult to practice.

Table 3-4 Conditions that are Difficult to Achieve in Standards

	Brunei	Cambodia	Japan	South Korea	Laos	Malaysia	Myanmar	the Philippines	Singapore	Thailand	Vietnam	Total
Sales or transfer of related documents and contracts		√						√				2
Function proof		√	√	√	√	√	√	√			√	8
Non-waste statement		√				√		√		√	√	5
Packaging conditions		√						√				2
Others								√				1

(3) Management of Fault Analysis, Repair and Refurbishment Activities

In the surveyed countries, Malaysia, the Philippines, South Korea and Singapore say, there are the import of used electrical and electronic equipment for fault analysis, repair and refurbishment activities in their country, the treated equipment is used and reused for original purpose. Table 3-5 lists the management requirements of the surveyed countries for failure analysis, repair and refurbishment of the imports of used electrical and electronic equipment. The Philippines, South Korea, Singapore, and Cambodia all say they will set national guidelines or standards for the repair, refurbishment and fault analysis of UEEE or used parts based on the relevant clause. The countries with the exception of Brunei and Thailand say they will regulate the repair, refurbishment and fault analysis activities by issuing license files, regular inspections, and requiring agencies to report on time and other measures.

Table 3-5 Management of Fault Analysis, Repair and Refurbishment Activities

	Brunei	Cambodia	Japan	South Korea	Laos	Malaysia	Myanmar	the Philip pines	Singapore	Thailand	Vietnam	Tot al
To formulate the guidelines for the repair, refurbishment and fault analysis of import of used electrical and electronic equipment or parts		√		√				√	√			4
Require the importer possessing the documents issued by the competent authority		√						√				2
Conduct regular inspections of these facilities to ensure that they comply with the country's		√			√	√		√			√	5

	Brunei	Cambodia	Japan	South Korea	Laos	Malaysia	Myanmar	the Philip pines	Singapore	Thailand	Vietnam	Total
environmental regulations												
Require these facilities to record used electronic equipment for repair and refurbishment and report to the competent authorities regularly		√			√	√	√	√				5
Require facilities to submit waste information generated by repair activities and send waste to qualified waste management facilities		√		√	√	√		√	√		√	7

Chapter 4 The Import Environmental Risk of E-waste and Used Equipment and the Weak Links in China's Management

4.1 The Import Environmental Risk of E-waste and Used Equipment

(1) Toxic and Harmful Substances in Electrical and Electronic Equipment

Electrical and electronic equipment contain toxic and harmful substances, such as the circuit board contains lead, cadmium and mercury; CRT monitors contain lead and cadmium; the battery, the semiconductor, the patch resistance contain cadmium; the iron case and disk drive contain chromium. Lead, chromium, cadmium and so on are toxic substance, which are harmful for people, as lead can destroy the central nervous system, the brain neural system, the blood system, the kidneys and the reproductive system; cadmium can accumulate in the kidney; mercury can damage the brain and kidneys; chromium VI will have damages on DNA. PCB, plastic cover and wire contain polybrominated biphenyls (PBB) and polybrominated biphenyl ether (PBDE), which can affect the endocrine system and reproductive function.

(2) Health Hazard

Some e-waste and used equipment are not cleaned and repaired before shipment, which have oil pollution and poor sanitation. Some of the residues in the processing machinery even contain soil, seeds, or animal carcasses that are banned from entering the country. Used equipment is generally poorly packed, mostly nude, and most used equipment has a wooden tray underneath, If the equipment is imported from the forest disease and pest area, and the enterprise does not make an accurate declaration, it is possible for diseases and insect pests to enter the country with

wooden packing, posing a threat to our ecological environment.

(3) Environmental Risk

Potential environmental pollution includes environmental quality pollution and pollutant discharge. Environmental quality pollution has the mechanical industry oily waste water, environmental air pollution, factory boundary noise pollution; Pollutant discharge refers to "three wastes", namely industrial hazardous gas, industrial waste water, industrial solid waste. Many imported used equipment have long running time, large wear of transmission parts, the noise exceeding the specified limit at work, which not only harm the health of the operator but also cause noise pollution to the surrounding environment. Some used equipment is backward in production technology, belongs to elimination equipment of backward technology out of borders, which will cause serious pollution to environment in the production of dust, poisonous gas, and other poisonous and harmful substances, etc. In addition, there are many small cottage e-waste disposal enterprises in China, which are more difficult to regulate, the market management of used electrical and electronic equipment is not perfect, imports (including illegal import) of e-waste and used equipment are easy to flow to the end of unregulated treatment, resulting in environmental pollution.

(4) Risk of "Waste" as "Used" in Import Links

Our country prohibits the import of e-waste, but e-waste is still the main object of illegal smuggling, huge market interests, repeatedly forbidden, the regulation is more difficult. Similarly, the supervisory measures and tools are limited because of the difficulty of defining "waste" or "used", the use of "used" channels to import or entrainment of the prohibited e-waste has a greater risk which is driven by market interests. Some enterprises under the driven interests import defective and shoddy mechanical and electrical equipment with low value, and even the used mechanical and electrical equipment that may seriously endanger safety, sanitation and environmental protection by taking measures such as used as new, inferior as superior and falsification of documents. Some used mechanical and electrical equipment are very used and close to life, illegal enterprises in order to achieve the purpose of smooth import, by forging nameplate, change the manufacturing date, providing false

information to commercial fraud, resulting in huge economic losses to domestic consumer and production safety hazards. In addition, some of the "foreign garbage" mixed in the used mechanical and electrical equipment used in the export and re-import repair sneak into our country, especially for many used mechanical and electrical equipment that have poor sanitary conditions entered the country for re-manufacture.

(5) Certain Used Equipment Cannot Meet the Standard of Toxic and Hazardous Substances in Existing Equipment

In order to promote the environmental recycling and disposal of waste electrical and electronic equipment, and protect human health, all countries have issued relevant laws and regulations to restrict the use of harmful substances in electrical and electronic equipment. The European Union issued Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS directive) in 2002, which was updated and revised in 2011 and 2015. In 2006, China promulgated Measures for Control and Management of Electronic Information Equipment Pollution, and in 2016 released Measures for the Administration of the Restricted Use of the Hazardous Substances Contained in Electrical and Electronic Equipment, replacing the former. The update of these regulations, through the expansion of the scope of equipment application and the expansion of hazardous substances, all reflect the improvement of the limitation standards of toxic and hazardous substances. Thus, some used equipment with older manufacture years may not meet current standards, risk of environmental and human health are higher.

(6) The Waste Produced by the Import Repair Greatly Increases the Domestic Waste Disposal Burden

The amount of waste generated during the repair of used electrical and electronic equipment cannot be ignored, especially in the repair mode of replacement of parts. Take the example of a portable computer, the export volume of portable computers in China was about 300 million in 2015, according to estimate of the 5% annual back repair rate of mainboards, and production waste rate of 238kg/10,000 (take the investigation of a repair enterprise as an example), the entry repair of export of

portable computers in 2015 will produce about 350 tons of waste circuit board. China as the "world factory" will be the major exporter of electrical and electronic equipment in the world, and an increasing number of exports will return to China for repair or even multiple repair.

4.2 The Weak Links of China's E-waste and Used Equipment Import Management

With comparison of the import prohibition policy of e-waste (except for waste metal and electrical appliance scraps that has an import restrictions), China's import management policies for used electrical and electronic equipment are relatively complicated. On one hand, the ministry of commerce implements the classification management policy for the use of re-use (including refurbishment and remanufacturing), but most of the electrical and electronic equipment are not in the relevant catalogues of prohibition or permission, and the department of quality assurance mainly implements the technical limitation. On the other hand, to carry out bonded repair and detection for used equipment in customs special supervision area, charged by the customs department, the equipment and their parts after repair will be shipped out of the country, the waste generated from repair should also be shipped out of the country in principle, but there are more cases in the country.

In view of China's strict quality inspection standards and procedures for imported used electrical and electronic equipment, as well as low market demand, the number of secondary equipment imported for direct re-use is very small, which only limited to high-end brands or professional equipment with special needs, only a few types of used equipment imported for refurbishment and remanufacturing purposes, such as copiers, printers and cartridges. Relatively, the number of electrical and electronic equipment imported for repair and testing is considerable, especially China's global repair industry has developed rapidly in the past two years, it is likely to be explosive growth in the quantity of import repair of used equipment in the future, if the waste is not transported out of the country, it will significantly aggravate the domestic waste

management burden. That is to say, global repair in the name of repair is a disguised waste import, the international public opinion of "China imports waste in the name of global repair" is coming, which is a challenge to response.

Specifically, the problems of the import management of e-waste and used equipment in China are mainly as followed:

(1) The import management of e-waste and used equipment lacks department coordination and coordination, no clear distinction between e-waste and used equipment, there is a risk of illegal transboundary movement of e-waste. The temporary adoption of the Basel Convention on e-waste guidelines poses new challenges for China's e-waste management. The import of e-waste and used equipment in China involves the intersecting management of four departments (ministry of environmental protection, ministry of commerce, general administration of customs and general administration of quality supervision), which has a lack of overall consideration for the two aspects of waste management. The lack of clear distinction standards for e-waste and used equipment makes it difficult to identify the waste of electronic equipment, and the identification result is also difficult to be court evidence because of lack of clear legal basis, therefore, there is the risk of illegal transfer of e-waste from developed countries to China by means of "waste" as "used".

(2) Lack of consideration of responsibility for waste disposal after the importation of used equipment, increase the burden of e-waste disposal in China. In regulations and practical aspects of the import of used electrical and electronic equipment, for disposal of used equipment disposal after scrap and disposal of waste from repair, lack of consideration from the point of view of responsibility for disposal of waste from the exporter or generator, which makes the existence of developed countries to transfer e-waste disposal responsibility to our country through repair activities for the reason of producer responsibility (EPR) extension system, which can aggravate the problem of China's e-waste management burden. At present, the international community especially for the developed countries advocate the internationalization of producer responsibility, may lead to the increase of waste disposal burden in developing countries or global manufacturing centers, which is

worthy for our vigilance.

It can be seen that our country e-waste and used equipment management systems are relatively independent, involving intersecting management of multiple departments at the same time, lack of a clear identification standard of e-waste and used equipment, which is not conducive to the new situation to integrate international e-waste and used equipment management. Especially in legalized background of the international community's explicit use of used equipment transboundary movement for the purpose of repair and refurbishment, China's crackdown on e-waste smuggling and import repair management will face new challenges. Therefore, it is necessary to make overall consideration and complete the import management system of existing e-waste and used equipment in China.

Chapter 5 E-waste and Used Equipment Import

Management Policy Recommendations in China

Overall, it is suggested that MEP should coordinate with departments including MOFCOM, GACC about relevant e-wastes and used equipment imported waste management system, study and formulate the identification standard and relevant management measures on waste and used. Considering environmental risk control as the starting point and strictly limiting import of used equipment (especially consumer products) for reuse especially for repair, refurbishment and remanufacturing activities as principle, the management system establishes extended responsibility of produced wastes especially hazardous wastes, so as to promote the improvement of relevant regulations of the departments and implementation of departmental responsibilities division, realizing the consistent of laws and regulations for the import of e-waste and used equipment and seamless connection of each department management.

(1) Coordination of e-waste and used equipment import management, developing identification standards of waste and used as soon as possible, to avoid the management of gray areas.

It is suggested that MEP should coordinate with departments including MOFCOM, GACC, GAQSIQ to develop identification standards of e-waste and used equipment import, and to subdivide the industry and products. In order to avoid the e-waste imported to our country in the name of used equipment, the following measures should be taken: comprehensive evaluation of existing relevant policy documents, explicit waste characteristics, especially explicit for whether fault analysis, repair, refurbishment and remanufacturing which can't be directly used belongs to used equipment, and the conditions need to meet when it is defined as used equipment, and clearly defining the repair, refurbishment and remanufacturing and other related definitions. When importing declared used equipment, the specify identification departments (e.g. GAQSIQ) should first identify the characteristic of waste and used according to related identification standards: if the declared used equipment is e-waste, its importing shall be managed by MEP according to relevant regulations; if the declared used equipment is indeed used equipment, its importing shall be managed by MOFCOM, GACC will decide whether could let the waste pass according to identification results and related provisions.

(2) Exactly distinguish the two kinds of situations that the after-sale service of our country's manufacturing products and the repair to reuse in the Convention guidelines, and make clear the management policy of the latter in our country.

Inbound repair activities of manufacturing and exports products in China belong to after-sale service, which is genius different from activities of repair to reuse in the e-waste guidelines under Basel Convention, because the latter is kind of re-sale behavior. It is suggested that inbound repair activities of manufacturing and exports products in China should meet the related requirements of existed Customs bonded repair and other related provisions; and for the imported used equipment to repair and reuse, should be recognized as e-waste and prohibited to import, taking into account the maintainability of the standard is not easy to define, and there is a risk of e-waste imported in the name of used equipment.

(3) Through strengthening the supervision of domestic related

refurbishment and remanufacturing facilities, it should strictly restrict the import of used equipment and ensure environmentally sound management.

It is suggested that MEP jointly with the MIIT to strengthen the supervision of domestic related refurbishment and remanufacturing facilities, especially for the produced solid waste including e-waste from refurbishment and remanufacturing activities, establish environmentally sound management standard system, promote the standardization operation of refurbishment and remanufacturing facilities, employ the forced mechanism to strictly limit the import of used equipment, avoid the no-standardized refurbishment and remanufacturing activities of imported used equipment to polluted the environment.

(4) Strengthening the supervision of the flow of e-waste generated by repair imported used equipment which is manufactured and exported from china.

For the inbound repair of used equipment which manufactured and exported from china, it is suggested that MEP strengthen communication and cooperation with related departments including MOFCOM, GACC, and cooperate to issue documents which strengthen the supervision of flow of waste produced by repair. And it is also suggested that strictly carry out the principle of re-export the waste produced by repair to avoid a significant increase in the burden of waste treatment in China.

(5) Research on the treatment responsibility mechanism of e-waste produced by imported used equipment in China.

China is the big country of electrical and electronic products manufacturing. In response to the international situation that developed countries transfer the treatment responsibility to China through the extension of the production responsibility, it is suggested to carry out research on treatment responsibility and found of waste and hazardous waste produced from importing used equipment, to determine the waste treatment responsibility of used equipment exporter and producer.

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