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SPECIAL FEATURE: ORIGINAL ARTICLE

E-waste

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Status quo of e-waste management in mainland China

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Abstract In China, the use and obsolescence of both electronic and electrical equipment have increased rapidly in recent years. China has also begun to take measures to cope with this problem since it began experiencing a rapid process of industrialization and urbanization in the 1990s. In this paper, the profile of the electrical and electronic waste (e-waste) problem in China is depicted from such aspects as domestic e-waste and imported e-waste, along with their recycling systems, policies, and regulations. Based on statistics of the consumption of major household appliances and personal computers, a forecast is made of the numbers of obsolete major household appliances and personal computers. The results show that currently the number of electrical and electronic products in use in China is tremendous. An investigation on household appliances and personal computers in Beijing was made to assess the use and obsolescence of these products. Also, the legal issues relating to e-waste in China are summarized, and these will be the juristic foundation for the solution of e-waste problems.

Key words Electrical and electronic wastes · Amount of obsolescence · Recycling system · Legislation

Introduction

Electrical and electronic waste (or e-waste) is the most rapidly growing environmental problem in the world, and China is no exception. During the past two decades, the Chinese economy and society have experienced significant changes, as typical of an economy in transit. Lifestyles have notably changed and living standards have improved rapidly. With the fast development of the electronics industry, the use of electrical and electronic products has become commonplace in households, governments, institutes, organizations, and business sectors.[1]

In the 1980s, electrical and electronic products started to enter households in China.[2] More and more these household appliances (e.g., refrigerators, washing machines, air conditioners, and TV sets) do not work properly at present and have reached the end of their useful life. Also, with the rapid development of information technology, computer hardware and software is being updating at an amazing speed. These changes result in an accelerated obsolescence of information-based equipment, especially for computers and mobile phones.[3] The large number of end-of-life household appliances and electronic/electrical products has resulted in a rapidly increasing amount of e-waste in China in recent years. Moreover, as a developing country, the relatively lower labor costs and lax environmental and occupational laws and regulations make China one of the destinations to which some developed countries export their e-waste.[4]

Because of the large volume of e-waste and the fact that it contains hazardous substances, such as lead, cadmium, mercury, and brominated flame retardants, and also because of the rapid advancement of technology that increases the variety and complexity of electrical and electronic products, the treatment and disposal of e-waste is problematic for traditional municipal collection and recycling infrastructures.

In Europe, the European Parliament and Council released two directives in 2003. One was the Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS),[5] which aims at minimizing the risks and environmental impact during the treatment and disposal of electrical and electronic wastes. Its stated aim is to reduce the use of hazardous substances, such as lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs), and polybrominated diphenyl ethers (PBDEs), in electrical and electronic products by 2006. The other was the Directive on Waste Electrical and Electronic Equipment (WEEE),[6] which entered into force on August 13th, 2005, and its aim is to reduce the generation of, and encourage the reuse and recycling of, waste electrical and electronic

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equipment. This directive sets a series of recovery objectives for member states to implement by 2006. The two directives are establishing a regulatory foundation to solve the problem of e-waste within the Europe Union.

In Taiwan, China enforced the take-back legislation for four categories of household appliances (TV sets, air conditioners, washing machines, and refrigerators) in 1998.[7] In Japan, the Electric Household Appliance Recycle Law, covering the same products as the law in Taiwan, was enforced in April 2001. Another ministerial ordinance for voluntarily taking back and recycling personal computers from businesses and households, respectively, entered into force in April 2001 and October 2003 in Japan.[8]

In the United States, different stakeholders, including original equipment manufactures (OEMs), government agencies, environmental organizations, and others, are gathering together to come up with a joint nationwide plan for managing used electronics.[9] Some states, such as California, have issued similar regulation to that of the European Union.

Because electrical and electronic products come in such a wide range of varieties, such as household appliances, telecommunication and information technology equipment, toys, lighting equipment, and medical equipment, it would be far too complicated to address the problems arising from all electrical and electronic products here. Thus, this article chiefly is concerned with four categories of household appliances, i.e., TV sets, refrigerators, washing machines, and air conditioners, as well as personal computers from households and the offices of government, social institutes, the business sector, and other organizations.

Domestic e-waste stream

The electronic industry in mainland China (referred to as China from here onward) was one of the earlier industries oriented to the transformation from a planned economy to a market economy. Since the 1980s, the manufacturing industry of information technology products and telecommunication products has been growing dramatically. At the same time, China participates in a global manufacturing network of electronic and electrical products and is becoming a big production and consumption base for such products.

Production and consumption of electronic and electrical products

The levels of production and consumption of electronic and electrical products are important indicators illustrating the seriousness of this problem. From the late 1980s, the production and consumption of major household appliances and PCs have increased rapidly in China (Table 1).

It shows that the number of end-of-life household appliances and personal computers will rapidly increase in China

Table 1. Consumption of four categories of household appliances and personal computers in China (10000 units)

Year	Color television sets				Household refrigerators				Household washing machines				Air conditioners for rooms				Personal computers			
	Output	Export	Import	Domestic consumption	Output	Export	Import	Domestic consumption	Output	Export	Import	Domestic consumption	Output	Export	Import	Domestic consumption	Output	Export	Import	Domestic consumption
1989	940.02	207.00	8.37	741.39	670.79	23.21	28.80	676.38	825.40	23.14	0.10	802.36	37.47	0.75[a]	0.37[a]	37.09	7.54	0.53[a]	4.37[a]	11.38
1990	1033.04	362.12	3.70	674.62	463.06	38.65	6.84	431.25	662.68	29.30	0.47	633.85	24.07	0.48[a]	0.24[a]	23.83	8.21	0.57[a]	4.76[a]	12.40
1991	1205.06	340.26	5.02	869.82	469.94	23.25	0.15	446.84	687.17	38.37	0.01	648.81	63.03	1.26[a]	0.63[a]	62.40	16.25	1.14[a]	9.43[a]	24.54
1992	1333.08	317.44	7.06	1022.70	485.76	41.71	0.45	444.50	707.93	41.64	0.45	666.74	158.03	3.16[a]	1.58[a]	156.45	12.62	0.88[a]	7.28	19.02
1993	1435.76	310.79	7.60[a]	1132.57	596.66	19.20	0.55[a]	578.01	895.85	23.37	0.25[a]	872.73	346.41	6.93[a]	3.46[a]	342.94	14.66	1.03[a]	11.31	24.94
1994	1689.15	222.05	18.05[a]	1485.15	768.12	41.38	0.71[a]	727.45	1094.24	46.10	4.79[a]	1048.14	393.42	7.87[a]	3.93[a]	389.48	24.57	1.72[a]	7.56	30.41
1995	2057.74	517.50	33.08[a]	1573.32	918.54	54.06	5.08	869.56	948.41	49.83	5.18	903.76	682.56	14.59	8.46	676.43	83.57	5.85[a]	8.80	86.52
1996	2537.60	537.15	40.80	2041.25	979.65	58.16	2.73	924.22	1074.72	55.86	4.12	1022.98	786.21	19.67	4.65	771.19	138.83	9.44	2.12	131.51
1997	2711.33	428.96	42.26	2324.63	1044.43	79.36	1.74	966.81	1254.48	70.50	3.44	1187.42	974.01	51.38	1.05	923.68	206.55	17.97	2.33	190.91
1998	3497.00	438.82	30.34	3088.52	1060.00	88.19	1.64	973.45	1207.31	52.53	4.07	1158.85	1156.87	68.33	0.60	1089.14	291.40	24.81	4.95	271.54
1999	4262.00	568.92	25.67	3718.75	1210.00	124.34	1.33	1086.99	1342.17	64.05	2.42	1280.54	1337.64	106.38	3.76	1235.02	405.00	34.52	5.42	375.90
2000	3936.00	1031.80	8.92	2913.12	1279.00	218.04	0.67	1061.63	1442.98	100.70	3.49	1345.77	1826.67	178.00	3.49	1652.16	672.00	164.79	4.73	511.94
2001	4093.70	1179.16	6.28	2920.82	1351.26	319.42	0.71[a]	1032.55	1341.61	161.40	4.46	1184.67	2333.64	318.40	1.05	2016.29	877.65	55.46	3.08	825.27
2002	5155.00	1917.93	14.78	3251.85	1598.87	357.71	0.84[a]	1242.00	1595.76	224.40	3.01	1374.37	3135.11	611.63	0.92	2524.40	1463.51	89.24	2.15	1376.40
2003	7089.37	3268.00	96.51	3917.88	2207.50	493.88[a]	1.16[a]	1714.78	1942.64	273.18[a]	3.66[a]	1673.12	4812.50	938.87[a]	1.41[a]	3875.04	3083.94	9.35	4.53[a]	3079.10

Data from the China Statistical Yearbook and the Yearbook of China's Foreign Economic Relations and Trade

[a] In the absence of published data, the export or import data are estimated according to the proportion of the adjacent year's export or import to output

Table 2. Number of major household appliances owned per 100 households for city and town residents at the end of May 2004

Area	Color television sets	Household refrigerators	Household washing machines	Air conditioners for rooms
National Average	132.11	89.55	95.12	66.94
Beijing	147.06	101.69	100.45	132.05
Shanghai	176.00	103.30	95.10	156.30
Tianjin	134.93	98.40	95.00	94.00
Guangdong	153.27	93.41	96.91	152.32

Table 3. Number of major household appliances owned per 100 households at the end of 2002

Area	Color television sets	Household refrigerators	Household washing machines	Air conditioners for rooms
Urban households	126.38	87.38	92.9	51.1
Rural households	60.45	14.83	31.8	2.29
Rural households of twelve western provinces[a]	47.98	6.08	21.07	0.15

Data from China Statistical Yearbook

[a] Twelve western provinces refer to the twelve relatively underdeveloped provinces in west China

Table 4. Number of personal computers owned per 100 urban households in cities and towns

Year	National average	Beijing	Shanghai	Guangdong
1997	2.6	12.2	8.6	9.05
1998	3.78	15	13.2	12.34
1999	5.91	23.5	19.6	17.2
2000	9.72	32.1	25.6	25.78
2001	13.31	45.3	37.6	34.59
2002	20.63	55.54	47.25	44.7

Data from China Statistical Yearbook

in the coming years. By the year 2010, the number of obsolescent items among the four larger household appliances and personal computers will be as follows: color TV sets, more than 58 million units; refrigerators, more than 9 million units; washing machines, more than 11 million units; air conditioners, more than 12 million units; and personal computers, 70 million units. The number of end-of-life household appliances will keep increasing rapidly until the year 2015, at least.

Use of electronic and electrical products

The statistical data[10] in Table 2 show that at the national level there is more than one color television (TV) set per household for citizens living in cities and towns; the number may be higher in the big cities.

The economic and social differences between urban and rural areas, and between developed areas and developing areas, could support a large secondhand market. Data in Tables 3 and 4 indicate such differences.

E-waste generation

This study implemented an investigation using questionnaires from June to August 2005 to find out why residents discard household appliances; the results for household appliance and personal computers (PCs) are shown in Table 5, based on data from 127 families in Beijing. The survey covered the characteristics of residents' consumption and their viewpoints as well as the types of products.

It is difficult to estimate how much e-waste has been generated because it comes from millions of families. The Gompertz Curve[11,12] is used to simulate the increasing trend in the four categories of household appliances and PCs. The Gompertz model is as follow:

$$\hat{y} = ka^{b^t}$$

where $\hat{y}$ is the estimated value; k, a, and b are parameters to be fixed; and t is the number of years.

Based on the domestic consumption from 1989 to 2003 shown in Table 1, a forecast of the amount of end-of-life

Table 5. Reason for residents to discard their household appliances and personal computers in Beijing

Reasons	Residents in bungalows (%)	Residents in university (%)	Residents in new community (%)
Life span elapsed	4.5	10.8	10.3
Too old for satisfactory use and functions are inadequate	27.3	44.6	61.5
Instability and malfunction during use	40.9	23.1	12.8
High repair cost or cannot be repaired	27.3	12.3	10.3
New products are cheap	0.0	1.5	0.0
Moving to a new house	0.0	1.5	5.1
Continue to use old products	0.0	1.5	0.0
Donation	0.0	3.1	0.0

Table 6. Prediction of annual obsolescence of four categories of household appliances and personal computers in China

Year	Number of obsolete items (10000 units)				
	Color television sets	Household refrigerators	Household washing machines	Air conditioners for rooms	Personal computers
2004	1485.15	446.84	666.74	342.94	375.90
2005	1573.32	444.50	872.73	389.48	1337.21
2006	2041.25	578.01	1048.14	676.43	1376.40
2007	2324.63	727.45	903.76	771.19	3079.10
2008	3088.52	869.56	1022.98	923.68	3177.35
2009	3718.75	924.22	1187.42	1089.14	4782.64
2010	5833.94	966.81	1158.85	1235.02	7190.08
2011	3251.85	973.45	1280.54	3668.45	10796.10
2012	3917.88	1086.99	2530.44	2524.40	16190.75
2013	4041.73	2094.18	1374.37	3875.04	24251.37
2014	4251.48	1242.00	1673.12	2992.61	90491.88
2015	4449.13	1714.78	1519.46	3250.11	80904.88

items in the four categories of household appliances and PCs was made (Table 6). The results show that the number of obsolescent household appliances will increase rapidly from now on. In 2010, the number of obsolete household appliances and PCs will be: color TV sets, more than 58 million units; refrigerators more than 9 million units; washing machines, more than 11 million units; air conditioners, more than 12 million units; and PCs, 72 million units.

Sources of e-waste

In China, e-waste comes from three major sources: households; the offices of businesses, institutions, and governments; and the original equipment manufacturing process.

Households. E-waste, particularly the four categories of household appliances, are mainly generated by households. The questionnaire investigation of 127 families in Beijing on household TV sets, refrigerators, air conditioners, washing machines, and PCs conducted by the authors' team indicates that 58% of household TV sets, refrigerators, air conditioners and washing machines that are currently possessed by residents were bought between 2000 and 2005 and 30% of them were bought between 1995 and 1999. For PCs, 81% of those currently owned by residents were bought between 2000 and 2005, and 16% were bought between 1995 and 1999. From 1995, the residents in Beijing gradually started to update and replace their household appliances, and more so after 2000. Most residents had discarded at least one of the kinds of household appliances.

Businesses, institutions, and governments. Waste computers and other office equipments (e.g., copy machines and typewriters) are the major e-waste flows generated by the offices of businesses, institutions, and governments. The upgrade rate of computers from these offices is higher than that for households.

Original equipment manufactures (OEMs). OEMs generate e-waste when units from the production line don't meet the required quality standards. Some of the manufacturers contract with recycling companies or individuals to handle their e-waste and others handle the waste by themselves.

E-waste stream

According to the traditional economical custom, Chinese seldom discharge their used electrical and electronic products, even if these products are out of date or broken. The owners hope that their used or broken electrical and elec-

Table 7. Method of disposal of unwanted household appliances and personal computers wastes in Beijing

Method	Residents in bungalows (%)	Residents in university (%)	Residents in new community (%)
Discarding	0.0	9.9	16.2
Sale	81.8	26.8	18.9
Donation	12.1	38.0	45.9
Sending to recycling corporation	0.0	4.2	5.4
Sold to recycling corporation	6.1	15.5	13.5
Exchange of old for new	0.0	4.2	0.0
Sold to producer	0.0	1.4	0.0

tronic products might be useful in future or be sold to collectors.

Waste computers and other electronic equipment generated by state-owned businesses, institutes, and governments are usually stored in storehouses. Some of them are sent to formal sectors for recycling, some are sold to refurbishers for second-hand use, and some are provided to rural areas.[13]

It is very common that households and small businesses sell their e-waste to individual collectors. Our investigation of 127 families in Beijing is shown in Table 7. The majority of e-waste is repaired or refurbished and then sold to residents of rural areas. Take a used PC as an example; if its configuration is a Pentium IV processor, 128-MB (EMS) memory, and 10-GB hard disk, a collector has to pay about 1000 RMB (120.92 USD) to acquire it; a used TV set may be sold for 100–400 RMB, based on its year of production, function, and size.

Through trading in the secondhand market and through donations, e-waste flows from relatively developed areas to developing areas. This is a good reason to explain why, despite the number of used electrical and electronic products being great, the real quantity of discarded e-waste in China is not as large as has been estimated. It is difficult to find e-waste in the stream of municipal solid waste (MSW).

The majority of recycled e-waste is processed by informal sectors, individuals, small workshops, or backyard workshops in China. Then the parts, such as metal cases and frameworks, cathode ray tubes (CRTs), and printed circuit boards, are sold to different places for the recovery of materials. Two reports[4,14] describe the typical processing manner in informal recycling workshops located in Guangdong province and depict the associated economic, social, and environmental impacts.

E-waste imports

The dismantling and treatment industry for e-waste in China is in a difficult period because currently the import of e-waste, on which this paper focuses, is forbidden. However, this situation may change if the technology is updated and the environmental management is improved.

E-waste processing areas

The report Exporting Harm: The High-Tech Trashing of Asia laid out a detailed profile of e-waste exporting from developed countries to developing countries; especially, it emphasizes e-waste exports from the United States to China. A map of locations at which e-waste was imported or recycled at the end of the last century is shown in Fig. 1.

There are three primary economic motives for the flow of wastes from developed countries to China:

- The lower waste recycling cost. This is because environmental and occupational regulations are lax and the cost to enterprises of environmental management is low.
- The lower labor costs. The average salary per worker in recycling workshops is less than 30 RMB (3.63 USD) per day in China.[14]
- The larger demand of low-price secondary material in China.

To deal with the unsustainable and unjust effects of hazardous waste trades, the international treaty known as the Basel Convention was created in 1989. It was also for this purpose that the Basel Convention in 1994 agreed to adopt a total ban (called the Ban Amendment) on the export of hazardous wastes from developed countries to developing countries for any reason, even for recycling. However, the Ban Amendment has not yet been enforced.

The Chinese government is taking measures to manage and improve the ecoparks, industrial parks for environmental protection and waste processing. The import of e-waste by these professional parks may be permitted because of their environmentally sound dismantling techniques and further treatment.

Status of e-waste imports

China has become one of the countries importing large amounts of recyclable resources, as shown in Tables 8[15] and 9. Recyclable materials have become the main choice for raw materials in some areas of China.[16] This may be a reason why the import e-waste recycling workshops are "prosperous" in the areas showed in Fig. 1.

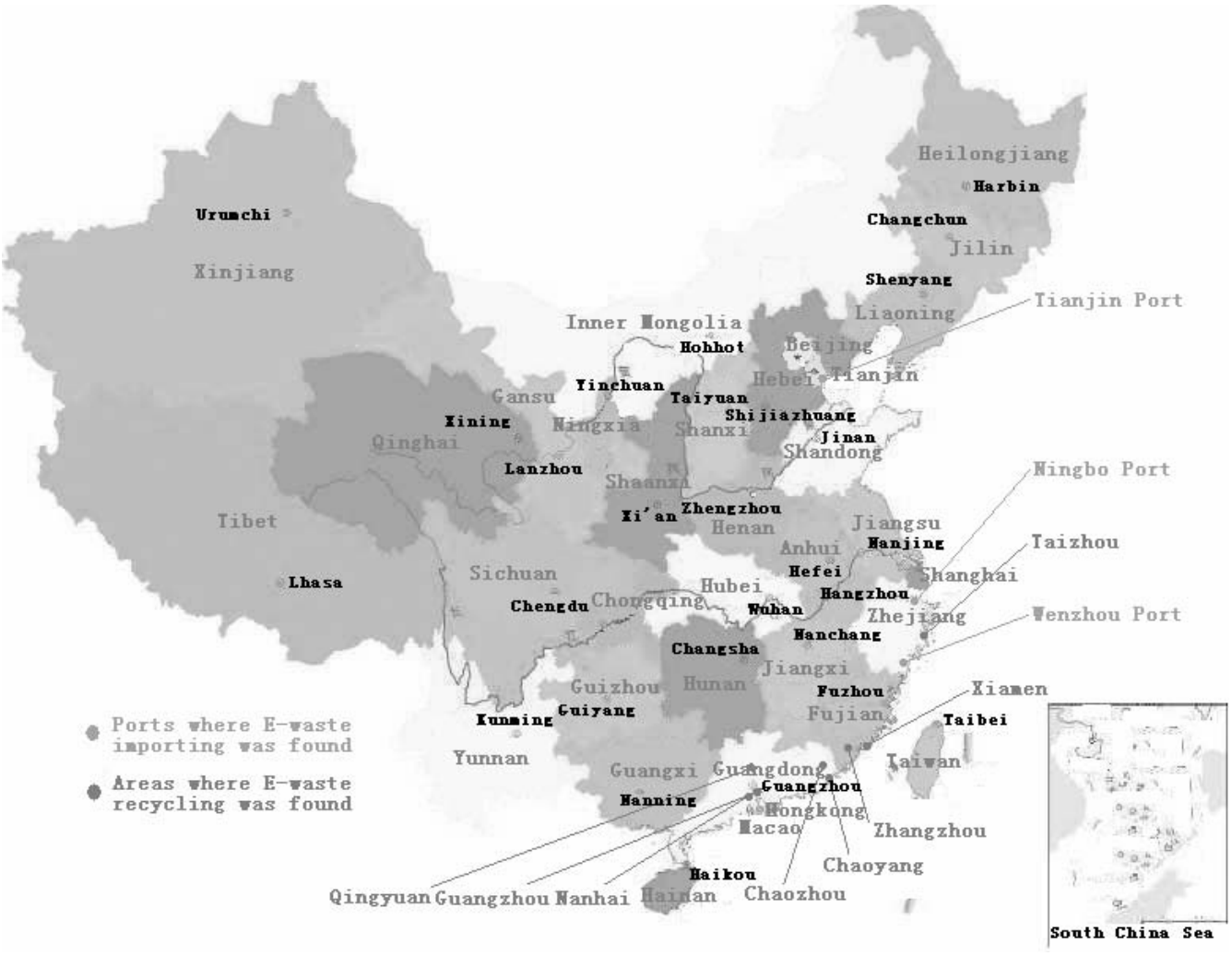

Fig. 1. Locations where e-waste is imported and recycling is carried out

Table 8. Amount and the value of waste imported into China

Year	1999	2000	2001	2002	2004
Amount (10^6 ton)	10.68	15.58	23.37	22.92	33.08
Value (10^9 USD)	1.72	3.32	4.0	3.77	93

USD, United States dollars

Table 9. Import of metal-related categories of waste into China (10000 tons)

Waste category	1999	2000	2001	2002
Steel and iron scrap	334	510	978	785
Copper scrap	170	250	333	308
Aluminum scrap	40	80	37	45

Based on Chinese regulations, the import of household appliances and PC waste is prohibited. However, the illegal traffic of e-waste still exists in some areas, and probably in some processing workshops, imported e-waste is the major material processed.

Policies and regulation of e-waste management

No special regulations or ordinances on e-waste management have been issued in China. However, it is clear that the government and research institutions have been focusing on the problem of e-waste and efforts have been made to resolve the problem.

Domestic e-waste management

In China, the current legal framework lacks a clear prescription on e-waste management. However, the legislative

spirit and some correlative principles are contained in the enforced laws and regulations.

There are still no special laws or regulations enacted dealing with the issue of e-waste in China. One basic law on solid waste, the Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste, was issued in 1996 and revised in December 2004. This law, in principle, regulates solid waste pollution and introduces basic concepts on pollution prevention and control: (a) the principle that solid wastes should be reduced, properly recycled, and disposed of in an environmentally sound manner and (b) the institutions and individuals who generate solid wastes should take proper measures to prevent and reduce the pollution caused by those wastes.

The Law of the People's Republic of China on the Promotion of Clean Production was issued in 2002. The law introduced the principle of the manufactures' responsibility of recycling their products at the end of their useful life. It especially stipulates that the manufacturers of products and packaging materials included in the mandatory recycle catalog, which is set by the government, have the responsibility to recycle their products and packaging materials at the end of life. According to article 27, the enterprises that produce or sell those products or packaging that are listed in the catalog shall reclaim the products and packaging after they have been discarded as useless or have been used. The catalog and specific measures for the obligatory reclamation of products and packaging shall be formulated by the administrative department of economy and trade of the State Council. The State Economic and Trade Commission (SETC) started to research and set up the Management Regulation for Obligatory Reclamation of Products and Packaging from 2003.

Management of e-waste imports

The official document concerning e-waste directly, The State Environmental Protection Administration (SEPA) Document 19/2000 – Notificaton on Import of the Seventh Category of Wastes, was promulgated in January 2000, and announced "From January 1, 2000, the seventh category of wastes approved by the State Environmental Protection Administration for import shall not include the following: waste televisions and picture tubes; waste refrigerators; waste air conditioners; waste microwave ovens; waste computers, monitors, and CRTs; waste copiers; waste video cameras; waste video games (except for processing for re-export); and waste telephones (except for pay-phones). From April 1, 2000, the Customs Administration will not allow the entry of the electrical appliances mentioned above."

Some other related regulations include the List of Goods Prohibited to be Imported (the first list), issued on December 30, 2001; the List of Goods Prohibited to be Imported (the fourth list), issued on August 25, 2002; the List of Goods Prohibited to be Imported (the fifth list), issued on July 3, 2002; and the Prohibited Goods Catalog for Processing and Trade, issued in 2004. The import of waste machinery and electrical equipment (including parts, dismantled components, and crushed pieces) such as air conditioners, refrigerators, computers, monitorss, printers, fax machines, mobile phones, and copy machines is thus prohibited.

Development of e-waste management

The policies and regulatory system on e-waste management in China are still being developed. Several regulations are in the process of being drafted or issued. These regulations will be issued soon because the ministerial coordination has been completed.

Under the direction of the National Development and Reform Commission (NRDC), the regulation named Ordinance on the Management of Waste or Used Household Appliances Recycling Treatment has been worked out and submitted to the State Council for issuing. The ordinance requires that producers take responsibility for recycling their waste and used products.

The Ordinance of Management of Pollution Prevention and Control of Electronic and Information Products by the Ministry of the Information Industry (MII) has been finished and is now in the process of being issued. The ordinance clearly requests the manufacturers of electronic and information products to adopt environmentally sound materials, techniques, and crafts; take relevant responsibility when their products are at the end of life; and reduce the use of hazardous substances.

SEPA is drafting another two ordinances on environmentally sound management of e-waste: one is the Technique Policy on Pollution Prevention and Control of Waste Electrical and Electronic Equipment, which will provide environmentally sound criteria on the remanufacture, reuse, and recycling of waste electrical and electronic equipment; the other is the Ordinance of Prevention and Control of Waste Electrical and Electronic Equipment Pollution to the Environment, which will bring forward specific measures for environmental management to reduce the problem of e-waste.

Measures of domestic e-waste management are primarily through restriction and induction. On the one hand, authorities severely prohibited and punished the activities of applying backward technologies and facilities to treat e-waste. On the other hand, the government supports and encourages enterprises to set up pilot projects for e-waste treatment to promote formal corporations to recycle and treat domestic e-waste.

The importing of waste is strictly restricted. The movement of almost all kinds of e-waste into China is banned. The authorities forbid the movement of e-waste into China through Chinese ports and severely punish illegal immigration activities related to e-waste nearby the ports.

In the future, the Chinese government will take a series of measures to control the recycling and treatment of e-waste through legislation such as Extended Producer Responsibility (EPR) and will set up a special fund for E-waste. It can be predicted that on the basis of improved laws

and effective implementation and supervision of relevant official administration, the market operation of recycling and treatment for e-waste will be the primary mechanism of e-waste management to protect the environment and human health from the problems associated with e-waste and to save resources.

Conclusions

The e-waste issue in China is drawing increasing attention as a result of the rapid course of industrialization and modernization. It can be concluded that the generation of end-of-life household appliances and personal computers will rapidly increase in China from now on. The number of end-of-life household appliances will increase rapidly until 2015, at least.

The major sources of e-waste are households, businesses, institutions, governments, and original equipment manufacturers. The Secondhand market and the donation of e-waste play a key role in distributing the huge amount of such wastes from developed areas to underdeveloped areas. A self-established distributing and recycling system exists in China. Door-to-door collectors and recycling workshops constitute the main force for recycling e-waste.

The majority of recycled e-waste, both domestically generated and imported, is processed in many small informal or illegal workshops. Economic motives, the demand for resources, and deficient legal systems support this situation.

The current legal framework is not concerned with the issues of e-waste specifically, but a series of regulations and ordinances on e-waste are in the process of being drafted or are about to be issued. These regulations and ordinances will provide a management system to deal with the e-waste problem. This should form a firm basis for solving the e-waste problem in China.

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