



“E-Waste Management in the Philippines”

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Department of Environment and Natural Resources



REGIONAL WORKSHOP ON E-WASTE MANAGEMENT

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**Republic Act (RA) 6969:
Toxic Substances and Hazardous and
Nuclear Waste Control of 1990**





Policy Statement of RA 6969

Regulates the importation, manufacture, processing, handling, storage, transportation, sale, distribution, use and disposal of chemical substances and mixtures in the Philippines including the entry, even in transit, as well as the storage and disposal of hazardous and nuclear wastes into the country for whatever purpose





RA 6969: Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990

DAO 92-29: The Implementing Rules and Regulations

- provides for the regulation of all chemical substances that may pose threat to public health and the environment whether through import, manufacture, sale, use, distribution, and disposal
- provides for the regulation of all hazardous wastes from generation, transport, storage, re-use/recycling, treatment and disposal





DAO 2004-36: Procedural Manual for Hazardous Waste Management

- Classification of Hazardous Wastes
- Registration of Hazardous Waste Generator
- Registration of Hazardous Waste Transporters
- Categories of Treatment, Storage and Disposal (TSD) Facilities





PRESCRIBED HAZARDOUS WASTES

Table 1-1 Classification of Hazardous Wastes

CLASS	WASTE NUMBER
■ Plating wastes (Waste with cyanide)	A101
■ Acid wastes	B201 to B299
■ Alkali wastes	C101 to C399
■ Wastes with Inorganic Chemical	D401 to D499
■ Reactive Chemical Wastes	E501 to E599
■ Paints/Resins/Latices/Inks/Dyes...	F601 to F699
■ Waste Organic Solvents	G703 to G704
■ Putrescible/Organic Wastes	H801 to H802
■ Oil	I101
■ Containers	J201
■ Immobilized Wastes	K301 to K303
■ Organic Chemicals	L401 to L499





PRESCRIBED HAZARDOUS WASTES

Table 1-1 Classification of Hazardous Wastes

CLASS

WASTE NUMBER

- Miscellaneous Wastes
 - Pathological or Infectious Wastes M501
 - Asbestos Wastes M502
 - Pharmaceuticals and Drugs M503
 - Pesticides M504
 - POPs (Persistent Organic Pollutants)
 - Pesticides M505
 - **Waste from Electrical and Electronic Equipment (WEEE) M506**





DENR Administrative Order No. 28, Series of 1994: THE INTERIM GUIDELINES ON THE IMPORTATION OF RECYCLABLE MATERIALS CONTAINING HAZARDOUS SUBSTANCES

- Allows the importation of the following recyclable materials:
 - scrap metals (lead acid batteries & metal bearing sludge)
 - solid plastic materials
 - **electronic assemblies and scraps**

- All importation must follow the requirements and procedures of the Basel Convention:
 - Notification and Consent between Parties
 - Wastes to be Imported must have a definite receiving facility with the essential environmental permits and clearance





IMPORT DATA





IMPORT CLEARANCE ISSUED - 2009

MATERIALS	DESCRIPTION	QUANTITY		SOURCE
		Volume	Unit	
Electrical and electronic assemblies	used mobile phones	9,000	pcs.	USA
Electrical and Electronic Assemblies	used mobile phone parts	50,000	pcs.	Korea
Electrical and Electronic Assemblies	used mobile phones	300,000	pcs.	Hongkong
Electrical and Electronic Assemblies	used mobile phones parts (LCD)	50,000	pcs.	Hongkong
Electrical and Electronic Assemblies and Scrap	assorted electrical and electronic components (A1180)	1,100	tons	Thailand
Electronic Scraps	used computer sets	10,000	sets	Seoul, Korea
Scrap Electronic and Electrical Appliances	Used monitors	12	pcs	Japan
Scrap Electronic and Electrical Appliances	Used television sets	10	pcs	Japan
Used electrical and electronic equipment	Used computer parts (motherboard, hard disk, memory)	40	boxes	Korea
Used electrical and electronic equipment	Used monitors (2-3 pcs/box)	500	boxes	Korea
Used electrical and electronic equipment	Used dektop computers (1pc/box)	560	boxes	Korea
Used Electrical and Electronic Equipment	used CPUs	290	boxes	Korea
Used Electrical and Electronic Equipment	used monitors	1,008	boxes	Korea
Used Electrical and Electronic Equipment	computer parts and accessories	58	boxes	Korea





IMPORT CLEARANCE ISSUED - 2008

MATERIALS	DESCRIPTION	QUANTITY		SOURCE
		Volume	Unit	
electrical and electronic assemblies or scraps (B1110)	assorted electrical and electronic components	200	MT	Thailand
electronic scraps	used computer sets	8,000	sets	Korea
used electrical and electronic equipment	used CPUs	3,000	units	Korea
used electrical and electronic equipment	used laptops	2,000	units	Korea
used electrical and electronic equipment	used monitors	2,500	units	Korea
used electronics and electrical appliances and equipment	used game machine	112	pcs	Japan
used electronics and electrical appliances and equipment	used LCD monitor	88	pcs	Japan
used electronics and electrical appliances and equipment	used PC	23	pcs	Japan
used electronics and electrical appliances and equipment	used PC parts	1	pc	Japan
used electronics and electrical appliances and equipment	used televisions	784	pcs	Japan
used electronics and electrical equipment and appliances	used television sets	409	pcs	Korea
used electronics and electrical equipment and appliances	used television sets and computers	3,000	pcs	Japan





IMPORT CLEARANCE ISSUED - 2007

MATERIALS	DESCRIPTION	QUANTITY		SOURCE
		Volume	Unit	
Scrap Electronics	Used computers	8,000	units	South Korea

IMPORT CLEARANCE ISSUED - 2006

MATERIALS	DESCRIPTION	QUANTITY		SOURCE
		Volume	Unit	
Electronic Scraps	Assorted electronic components/plastics/solder paste	2,000	MT	Thailand

IMPORT CLEARANCE ISSUED - 2005

MATERIALS	DESCRIPTION	QUANTITY		SOURCE
		Volume	Unit	
Plastic/Electronic Scrap	Recyclable VHS tapes	21.3	MT	Korea
Scrap Electronics	Used Computers units with accessories	240	Sets	Korea
Scrap Electronics	Used refrigerators	20	pcs.	Japan
Scrap Electronics	Used TV	66	units	Japan
Scrap Electronics	Used TV sets	472	pcs.	Japan





EXPORT DATA





EXPORT CLEARANCE ISSUED - 2009

Type of Material	Quantity		DESTINATION
	Volume	Unit	
electric assembly and scrap	1,000	MT	Japan
Scrap Printed Wiring Board (PWB) (Y22)	1,000	tons	Japan
Scrap printed wiring boards (Y31)	1,000	tons	Japan
semiconductor scrap with solder/lead	10,500	kgs.	Belgium
Used electrical/electronic parts and accessories (A1180)	800	tons	Singapore
Used xerox equipment (printer, copier, facsimile)	50,000	kgs	Thailand
used xerox supplies (toner/drum cartridge containing residual toner)	84,000	kgs.	Thailand

EXPORT CLEARANCE ISSUED - 2008

Type of Material	Quantity		DESTINATION
	Volume	Unit	
printed wiring board (PWB) edges/trimmings	70,000	kgs	South Korea
printed wiring board (PWB) with and without components	100,000	kgs	South Korea
scrap computer	30,000	kgs	South Korea
scrap printed wiring board (PWB) (Y22)	1,000,000	kgs	Japan
scrap printed wiring board (PWB) (Y31)	10,000	kgs	Japan
used electrical/electronic parts and accessories (A1180)	150	tons	Singapore
used xerox supplies containing residual toner	84,000	kgs	Thailand





EXPORT CLEARANCE ISSUED - 2007

Type of Material	Quantity		DESTINATION
	Volume	Unit	
Electronic Assembly and Ferrous Waste Scrap (D406/D499)	600	tons	Japan
Printed Circuit Board (PCB)	50,000	kgs	Japan
Printed wiring board (with or without components)	100,000	kgs	South Korea
PWB trimmings	70,000	kgs	South Korea
Scrap computer equipment	5,000	kgs	South Korea
Scrap Printing Wiring Board(PWB)(Y22)	1,000,000	kgs	Japan
Used Xerox Office Equipment	50,000	kgs	Thailand

EXPORT CLEARANCE ISSUED - 2006

MATERIALS	DESCRIPTION	QUANTITY		DESTINATION
		Volume	Unit	
Electronic Scraps	Assorted electronic components/plastics/solder paste	2,000	MT	Thailand

EXPORT CLEARANCE ISSUED - 2005

Type of Material	Quan		DESTINATION
	Volume	Unit	
Printed Circuit Board edges/trimmings, Printed circuit board with components and liquid crystal display	86,500	KGS	Korea
Printed Wiring Boards	800,000	KGS	Japan
Used xerox supplies (toner/drum cartridge, reclaim bottle, CRU) containing residual toners	84,000	KGS	Thailand





SUMMARY OF E-WASTE RECYCLERS AND IMPORTERS

	Y E A R											Total
	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	
TSD Facility	3	0	1	2	2	1	3	0	1	0	0	13
Importer	8	5	1	2	3	3	4	1	2	1	1	31





PROGRAMS/PROJECTS/STUDIES





Importation, Reuse and Disposal of Used Electronic Appliances in the Philippines

Melissa May F. Cardenas

Environmental and Sustainable Agri-Planners and Managers, Inc.
(SAGIP-Environment)





Figure 1.

Importation data processing
using threshold values

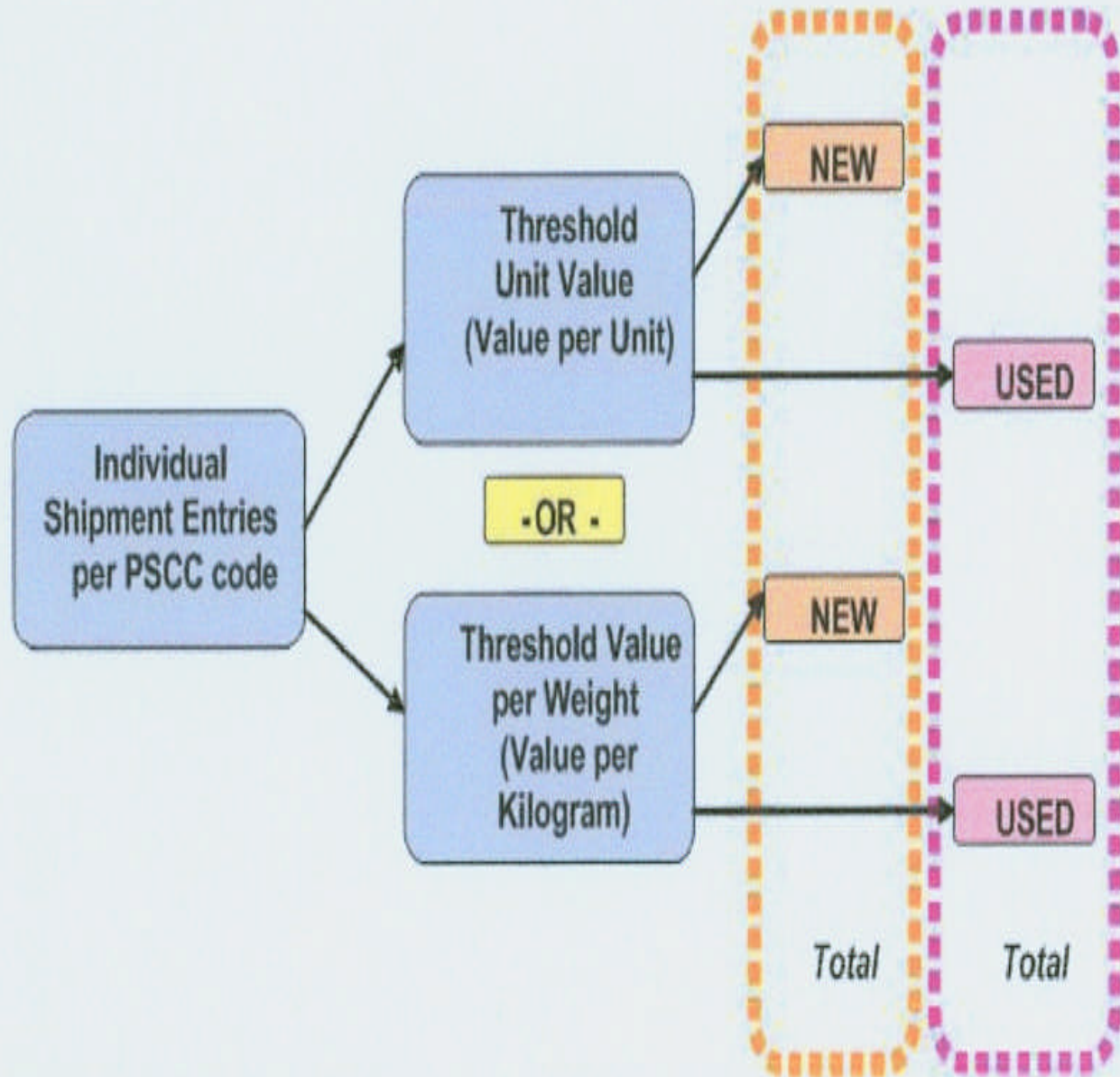




Figure 1.

Importation data processing
using threshold values

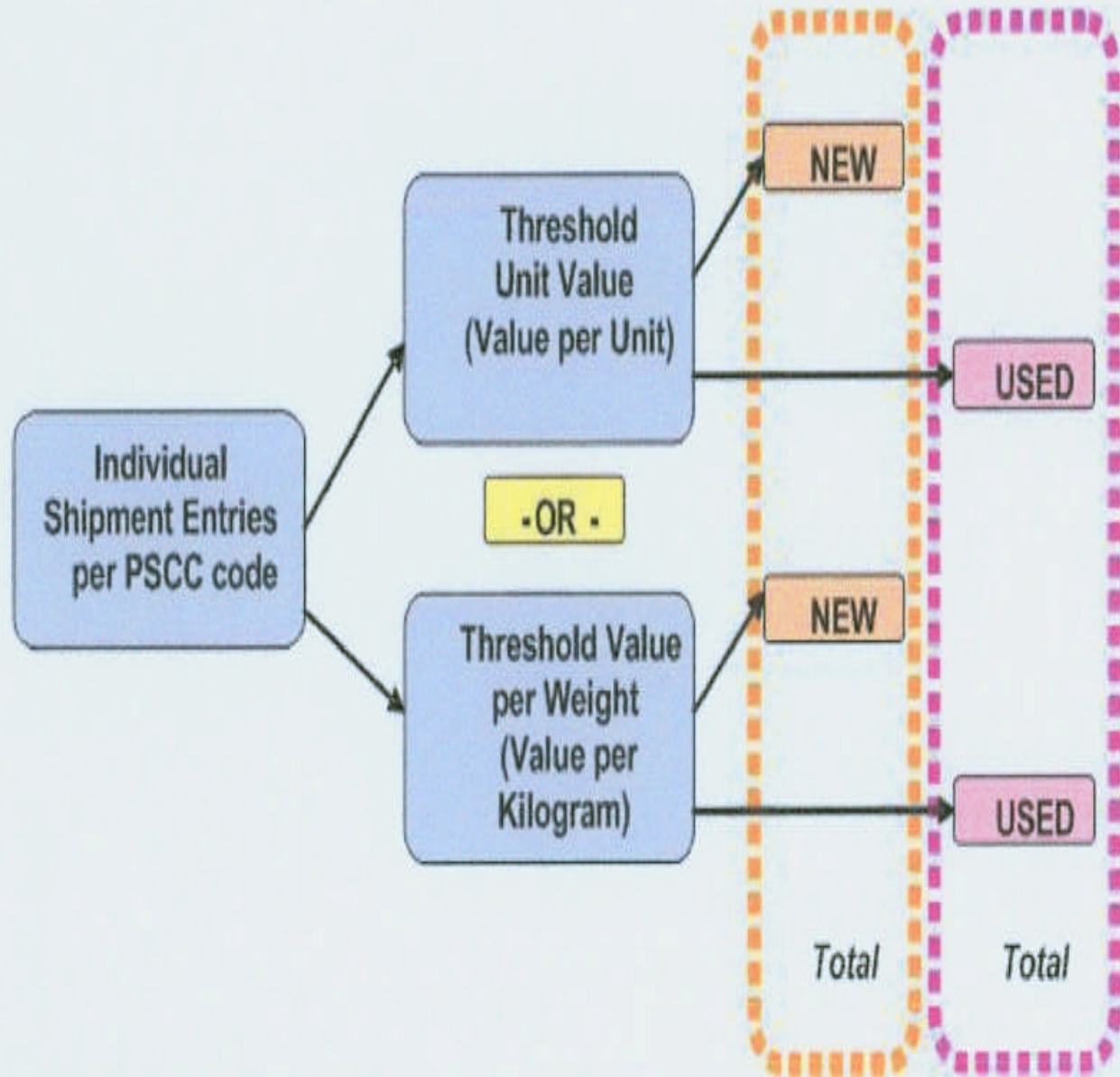




Table 2. Unit price for distinction of Brand New vs. Used EEE

EEE Type	Brand-new		Second-hand	
	Price/unit	Price/kg	Price/unit	Price/kg
Televisions (all types)	\$25-800+	\$3-11	\$2-7	\$0.11-2.9
Refrigerator	\$100 up	\$2 up	\$10-85	\$0.2-1.9
Personal Computer	\$300-7500	\$2-820	\$26-200	\$2 less
Washing Machines	\$ 61.9 - 144	\$ 8-10+	\$ 2-6	\$0.3 - 2+
Air conditioners	\$ 88-425	\$ 8-12	\$ 4-12	\$ 0.2 - 3+

Source: Foreign Trade Statistics Section, National Statistics Office. March & May 2007



Table 3. Importation of Used EEE, 2001-2005

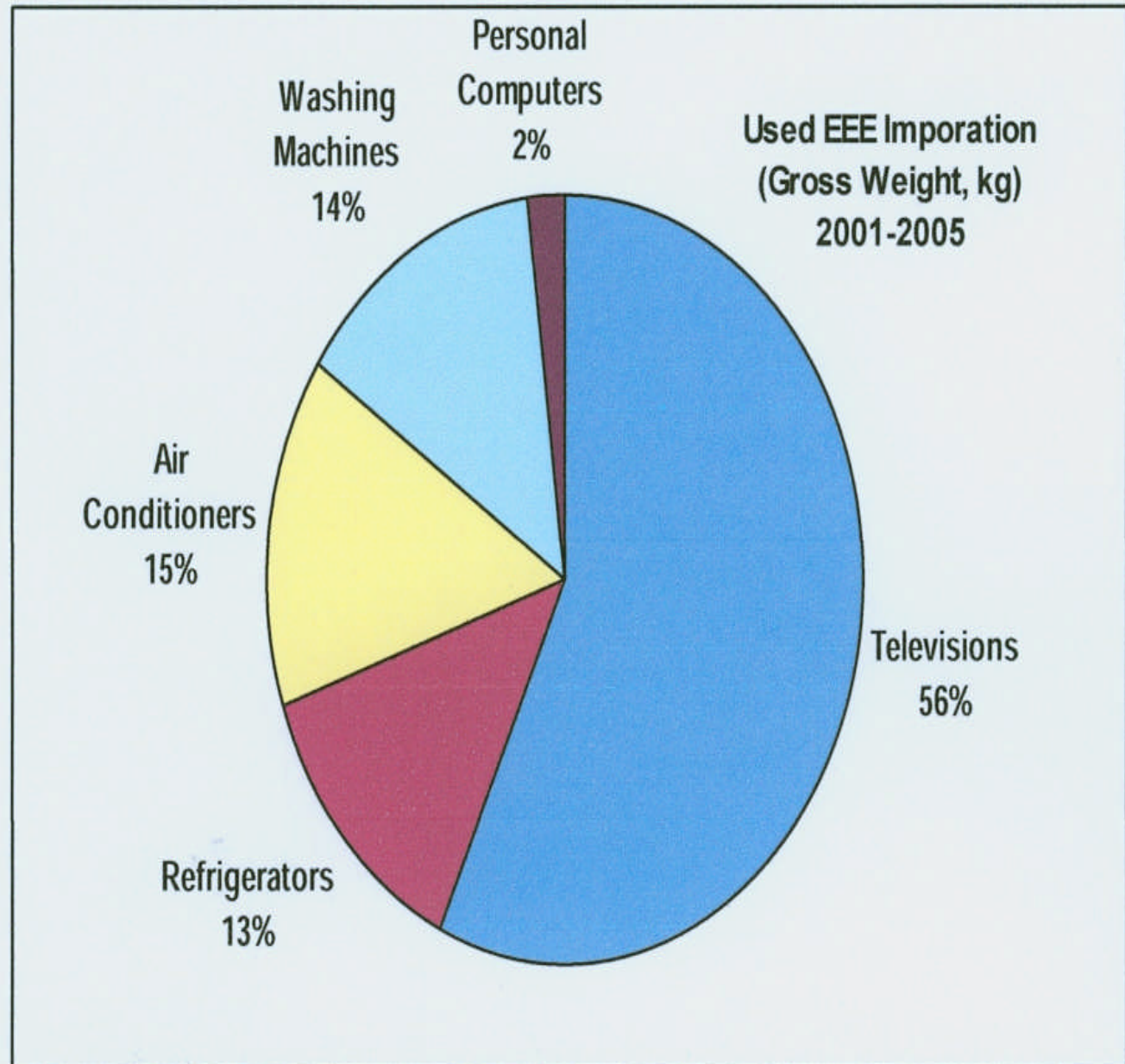
E-item	Gross Wt (kg)	% Gross WT	Quantity (units)	% Qty
Televisions	66,199,464	56.87	3,483,200	67.04
Refrigerators	14,928,630	12.83	419,848	8.08
Air Conditioners	17,104,068	14.69	463,894	8.93
Washing Machines	15,861,956	13.63	695,081	13.38
Personal Computers	2,308,028	1.98	133,707	2.57
Totals	116,402,146	100.00	5,195,730	100.00

Source: NSO data processed by SAGIP-Environment



Figure 2.

Distribution of Imported
Used EEE Types by Weight



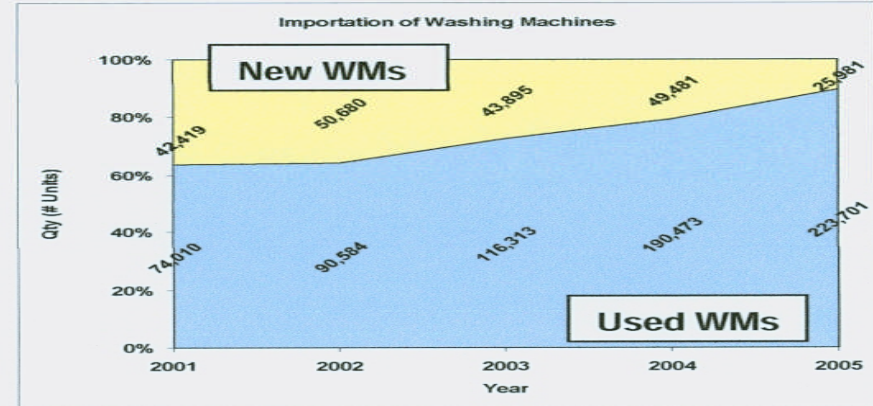
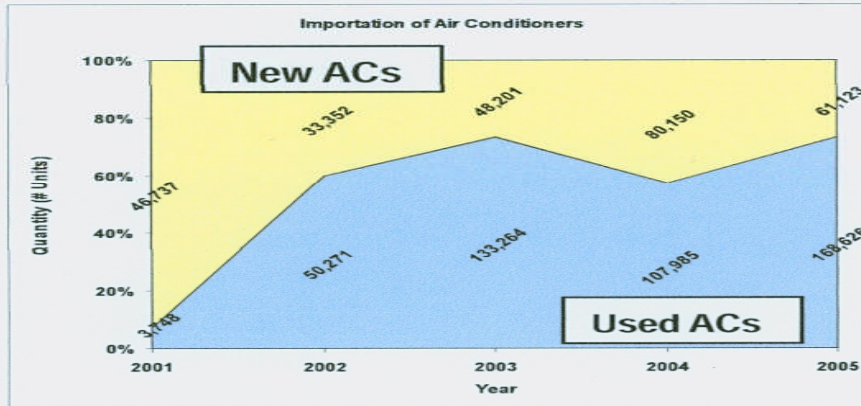
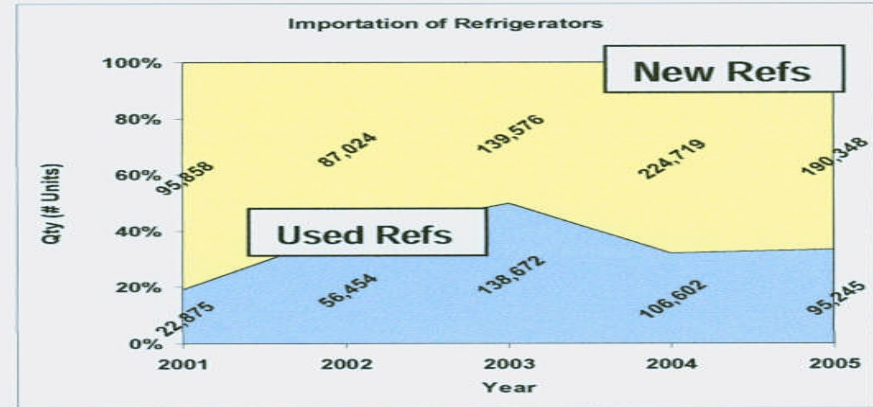
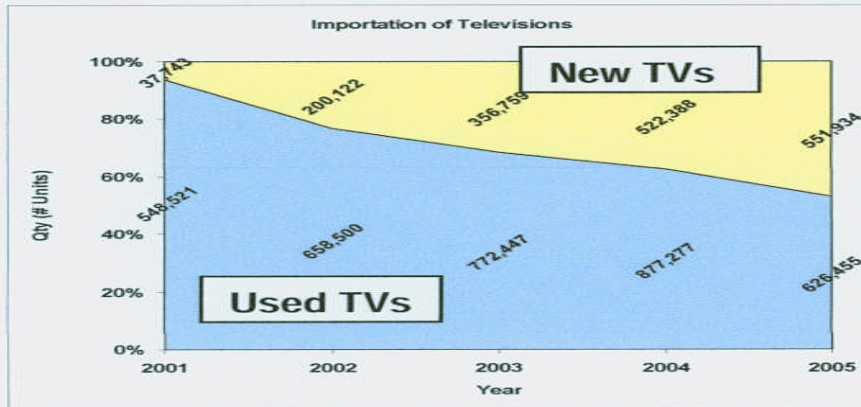


Figure 3. Importation of New vs. Used EEE

- a. Televisions
- b. Refrigerators
- c. Air conditioners
- d. Washing Machines
- e. Personal Computers

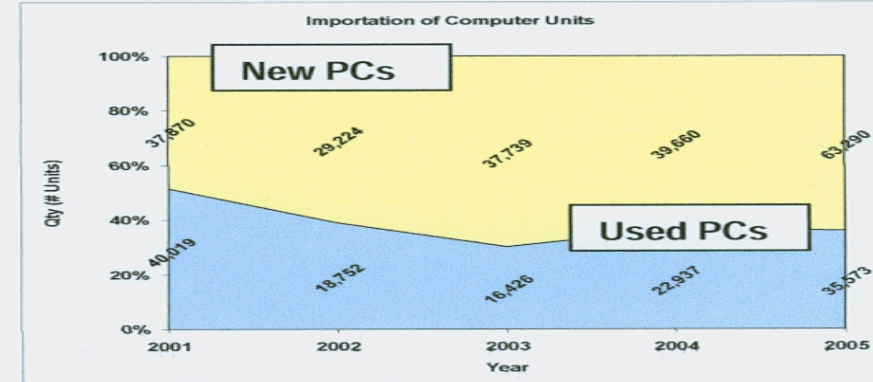




Table 4. Top 10 Countries of Origin for Used EEE, 2001-2005

Rank	2001		2002		2003		2004		2005	
	country	Wt (kg)	country	Wt (kg)	country	Wt (kg)	country	Wt (kg)	country	Wt (kg)
1	Japan	4,332,780	Japan	13,178,302	China	6,867,732	China	7,951,645	China	9,581,248
2	South Korea	3,611,893	South Korea	4,409,806	Japan	5,334,834	South Korea	7,474,198	South Korea	5,399,974
3	China	1,642,552	Hong Kong	2,383,901	South Korea	4,867,770	Japan	4,872,806	Japan	4,968,719
4	Hong Kong	1,167,605	China	2,374,698	Hong Kong	4,278,358	Hong Kong	3,950,155	Singapore	2,958,081
5	Thailand	309,543	Thailand	1,208,322	Indonesia	1,384,506	Singapore	1,839,378	Hong Kong	1,779,025
6	Australia	159,556	Singapore	410,633	Singapore	612,558	Thailand	677,558	Taiwan	1,132,334
7	USA	148,086	Indonesia	399,782	Thailand	579,828	India	432,165	Thailand	510,785
8	Taiwan	104,425	Taiwan	377,481	Taiwan	504,390	Taiwan	389,249	India	255,708
9	Malaysia	49,374	USA	244,998	Australia	134,986	Australia	53,362	USA	192,926
10	Indonesia	45,546	Australia	176,778	USA	75,484	USA	47,596	Australia	49,174
	Others	131,709	Others	153,893	Others	95,565	Others	47,814	Others	80,572
	Total	11,703,069	Total	25,318,594	Total	24,736,011	Total	27,735,926	Total	26,908,546
	% Wt (Top 10)	98.87	% Wt (Top 10)	99.39	% Wt (Top 10)	99.61	% Wt (Top 10)	99.83	% Wt (Top 10)	99.70
	% Wt (Top 5)	94.54	% Wt (Top 5)	93.03	% Wt (Top 5)	91.90	% Wt (Top 5)	94.06	% Wt (Top 5)	91.74

Source: NSO data processed by SAGIP-Environment



Distribution of Used EEE among Top 10 Countries of Origin

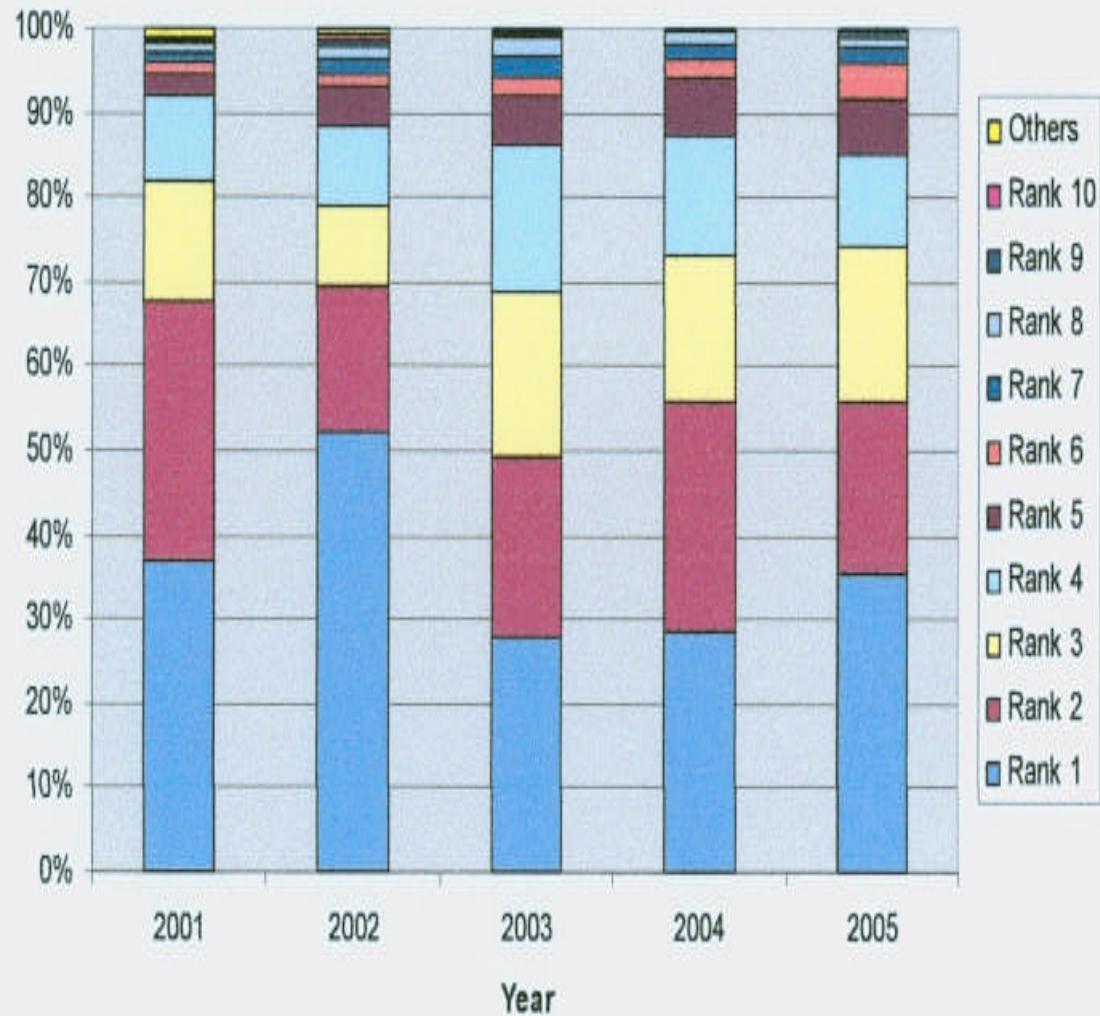


Figure 4.

Distribution of Used EEE among Top 10 Countries of Origin by Gross Weight, 2001-2005.

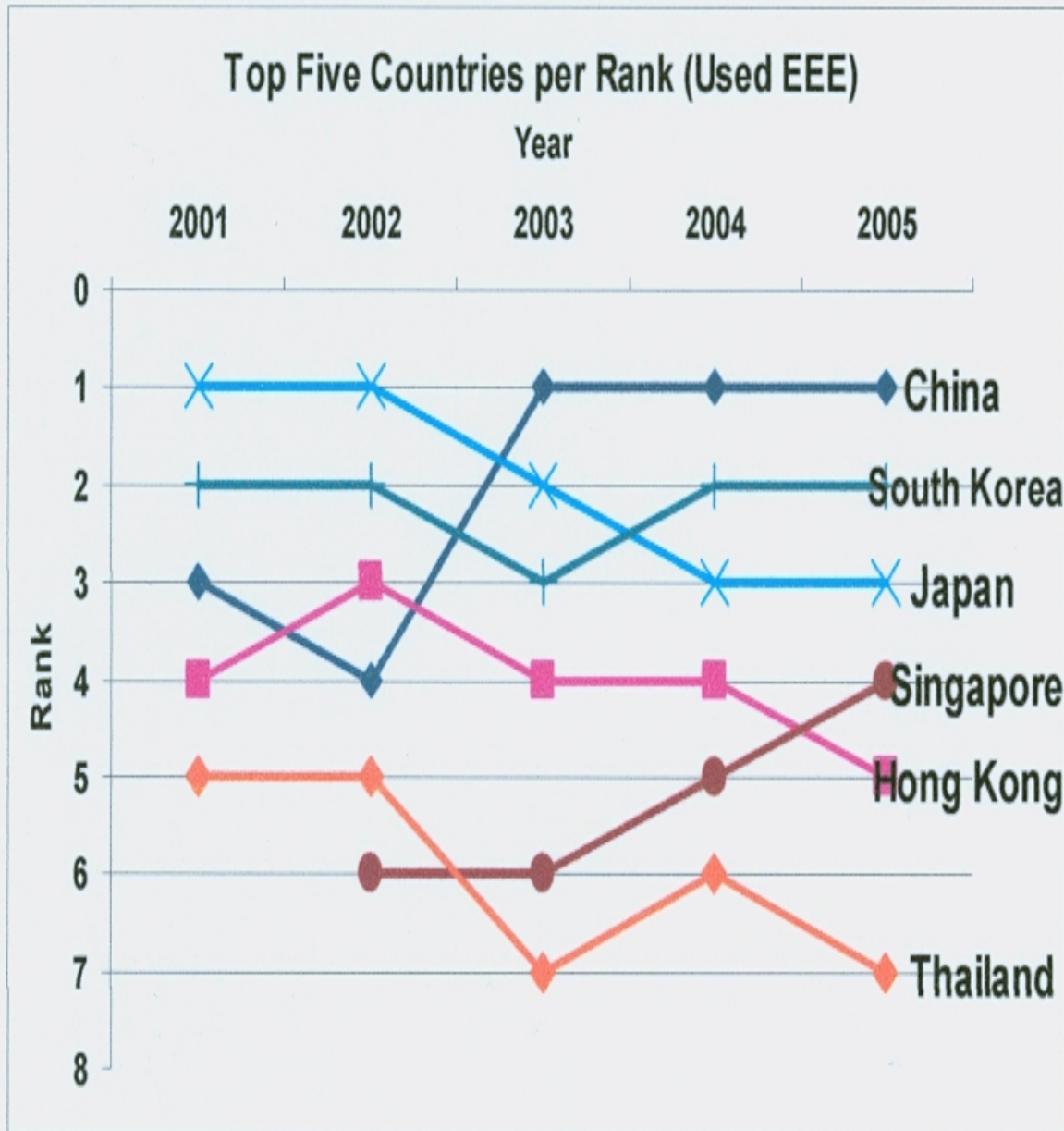


Figure 5.

Top Five Countries of Origin by Rank, 2001-2005.

Source:

NSO data processed by SAGIP-Environment

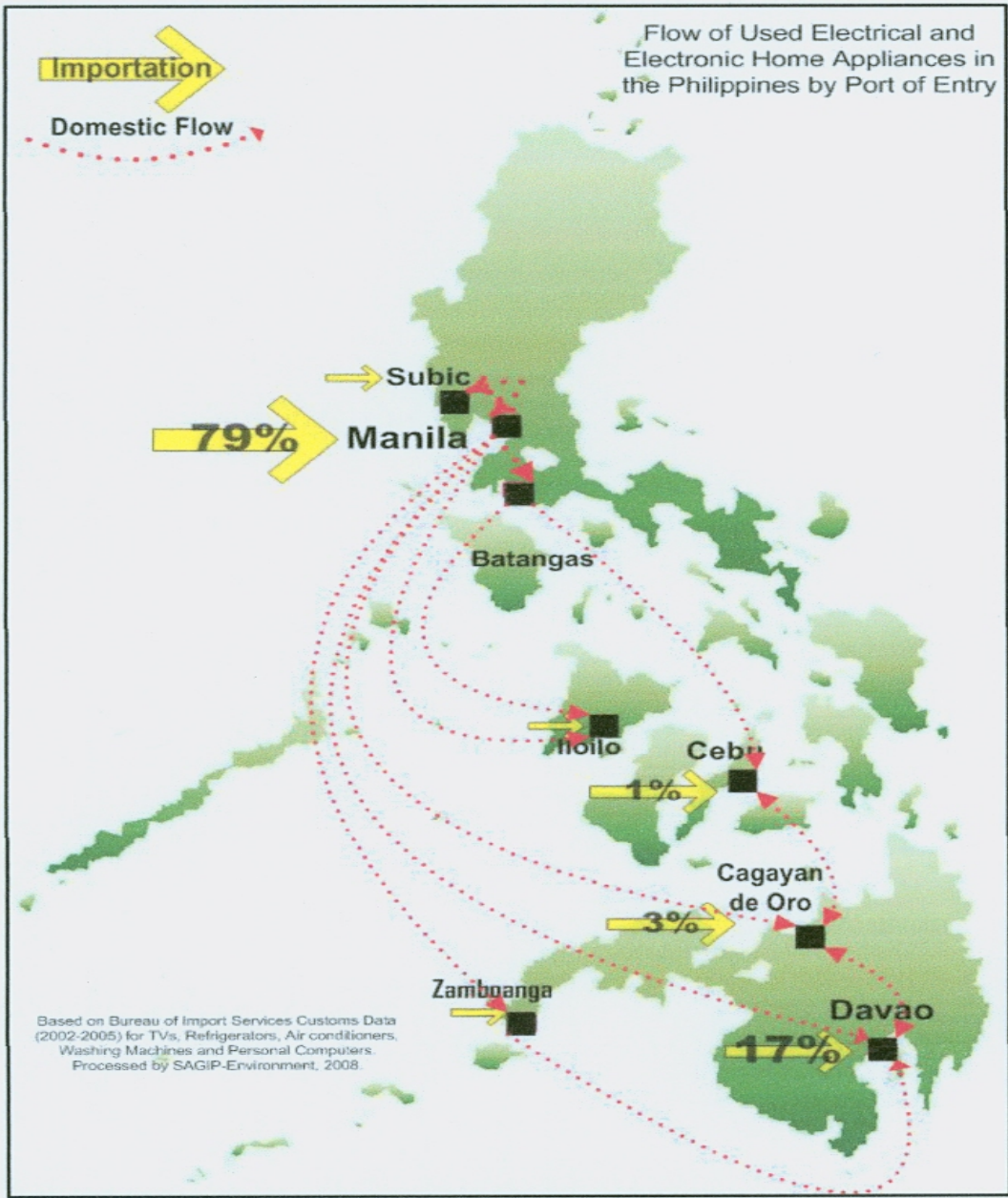
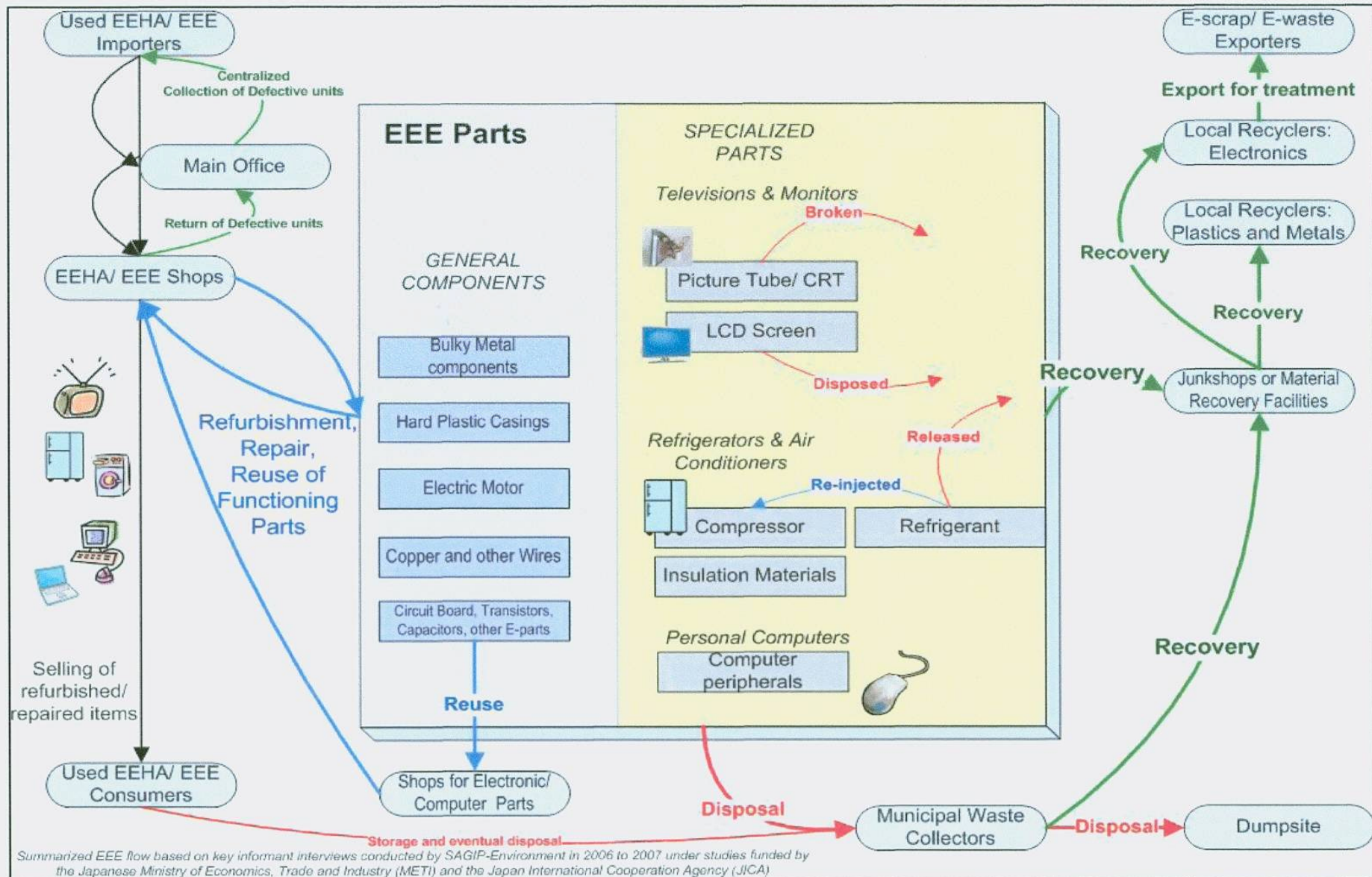


Figure 6.
Flow of Used EEHA by Port of Entry,
2002-2005
Source: BIS data processed by SAGIP-Environment



Figure 7. General Flow of Used EEHA: Importation, Repair, Recovery & Disposal





GTZ -AHT-Support Project
Solid Waste Management for Local Government Units
(SWM4LGUs)

Gathering Basic Data on Electronic Waste in Metro Cebu: A Case Study on the Philippine Setting

Presented by:

Engr. Consolacion I. Sumalinog
STE ,GTZ-AHT





Metropolitan Cebu E-Waste Situation and Data Research

Metropolitan Cebu Composition

- 4 Cities (Talisay, Cebu , Mandaue & Lapu-Lapu)

Market-based Inventory of E-Waste Collection as of 2009

Waste Class	Households Buyer A/B, Kg	Industry MEZ, SMR,Kg	Industry Treater, Kg	LGU, Kg	Total, T
ELECTRICAL & ELECTRONIC WASTE	60,692	22,476	21,374	3,213	108





Metro-Cebu Household Generation per Year (Cebu, Mandaue, Lapu-Lapu, Talisay)

Commodity	Average Weight, kg	Medium Life Span, yr	Obsolete Rate, yr/HH	# of Household	# of Eqpt/HH	Generation/yr. T/yr
Computers	27.00	10	8	317,855	1	6,866
Televisions	24.00	15	15	317,855	2	15,257
Refrigerators	30.00	10	10	317,855	1	9,536
Cellular Phones	0.10	5	3	317,855	3	57
FixedLines	0.20	10	8	317,855	1	51
Tube Lights	0.30	2	2	317,855	2	191
Bulbs	0.10	1	3	317,855	3	477
Total						32,434





Electronic Waste Management in Metro-Cebu

Major Players/ Sector Category

Households/Commercial
Business/Institutions

Management and Practices

- still resort to dumping as a common mode of garbage disposal even electronic wastes
(Data from WACS Mandaue & Cebu)
- Households keep obsolete or defective appliances and gadgets
- Waste pickers collect, sell & dispose garbage e-wastes
- MRF of Lapu-Lapu City is now operational
- none to low protection in handling e-waste





Electronic Waste Management in Metro-Cebu

Major Players/ Sector Category

Management and Practices

Industry Generators

- Data collection is reflected in PCO Self Monitoring Report (Mercury Bulbs) as disposed thru accredited TSD
- MEZ 1 reported 3.22T total generation of busted bulbs (*Data from MEZ 1 Annual Report 2009*),
- Households and other Commercial, Business Enterprises and Academe still considers Busted Bulbs as part of Garbage
- Most industries enters into lease contracts on IT & Telecommunication suppliers/service providers including upgrading & disposal at most every 2 years
- Industries in Cebu classify e-wastes under hazardous scraps and contracted with Buyers/Contractors





Electronic Waste Management in Metro-Cebu

Major Players/ Sector Category

Scrap Buyers/Contractors/
Repairers/ Refurbishers/
Recyclers

Management and Practices

- Data is based on mixed e-waste with IT & Telecommunication equipment topped the list followed by HH equipment and Consumer Goods
- Generally, scrap buyers conduct site dismantling but with minimum awareness on risk/hazard of specific waste
- Classifies dismantled wastes into plastics, metals, saleable to non-saleable
- Dismantled/recovered parts usable for same purpose goes to repairer for refurbishing registered or non-registered recyclers/repairers/refurbishers/recycler/ treater
- residues including busted bulbs with no commercial value ends up in illegal dumping or burying as means of disposal





Electronic Waste Management in Metro-Cebu

Major Players/ Sector Category

Scrap Buyers/ Contractors/
Repairers/ Refurbishers/
Recyclers

Management and Practices

- some key informants data and monitoring responses are based on sales and purchases in bulk, memory recall or trending
- Informants are aware of hazards of e-wastes. Receiving are common activity of workers but handling & protection is not given priority
- This sector normally cannot/will not give data; Some are not listed in EMB Region 7





Electronic Waste Management in Metro Cebu

Major Players/ Sector Category

Management and Practices

Informal Sector/Waste Pickers

- Collects classifies e-wastes but according to commercial value.
- Sells scraps direct to scrap buyer, do not maintain data
- E-wastes residuals with no commercial value as in busted bulbs remain in the pile of wastes





Electronic Waste Management in Metro Cebu

Major Players/ Sector Category

Management and Practices

Treatment Facility

- Repository or final disposal of electronic wastes containing hazardous substances
- Two facilities in the region that caters to hazardous substances and precious metals but only on residual parts with higher commercial value
- Data is hard to generate that will relate to electronic goods. Interview with key informants sector revealed e-waste collected goes to scrap buyers
- These treatment facilities are compliant with any environmental laws





Electronic Waste Recycling Challenges in Metro Cebu

Translating the Gaps into Project Management Tool

SWOT Analysis

Strengths

- low cost of service
- competent and professional membership and personnel
- accessibility to clients/customers
- DENR-EMB/ Businessmen/Stockholder's Support
- Maintained Data and Recording System

Weaknesses

- high cost of investment
- lack of access to e-waste recycling technologies
- limited area capacity
- limited operation personnel
- Accessibility and Cost of Final disposal of residual wastes

Opportunities

- Additional profit and growth
- foreign technical assistance on technologies
- enforcement of new regulations
- access to funding institutions

Threats

- emerging recycling/treatment facilities
- presence of scrap buyers of e-wastes and informal sectors
- Social Acceptability
- Insufficient regulation on e-waste
- Political Ascendancy
- Vulnerability of location to risks and hazards





**Environmentally Sound Management (ESM)
of Waste Electronic and Electrical
Equipment (WEEE) in the Philippines
(proposed to MOEJ & SBC)**





OBJECTIVES

- Develop a WEEE inventory in order to estimate types and amount of generation of WEEE in the target areas of the Philippines.
- Develop a guidebook for disseminating environmental risks and sound technologies for the management of WEEE.





Target WEEE

- Air conditioners
- Mobile phones
- Personal computers (PC) (including desktop and notebook computers)
- PC monitors [including cathode ray tube (CRT) and liquid crystal display (LCD)]
- TV sets (including CRT and LCD TV sets)
- Refrigerators
- Washing machines
- Waste batteries





Target Areas

- Metropolitan Manila
- CALABARZON
- Central Luzon
- Other areas to be identified





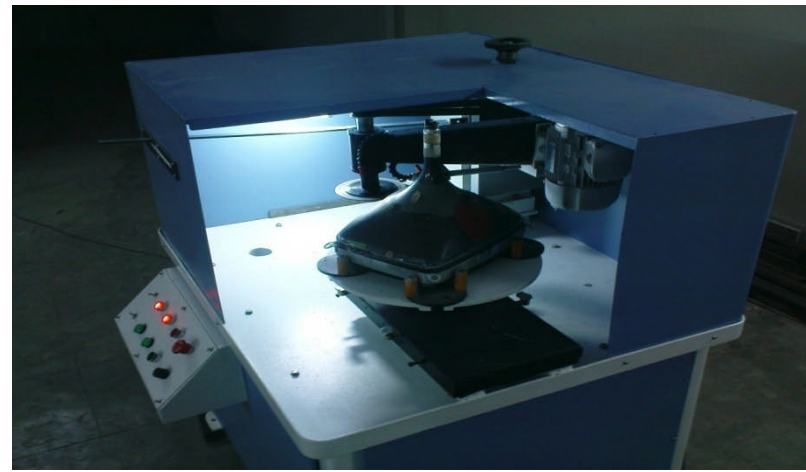
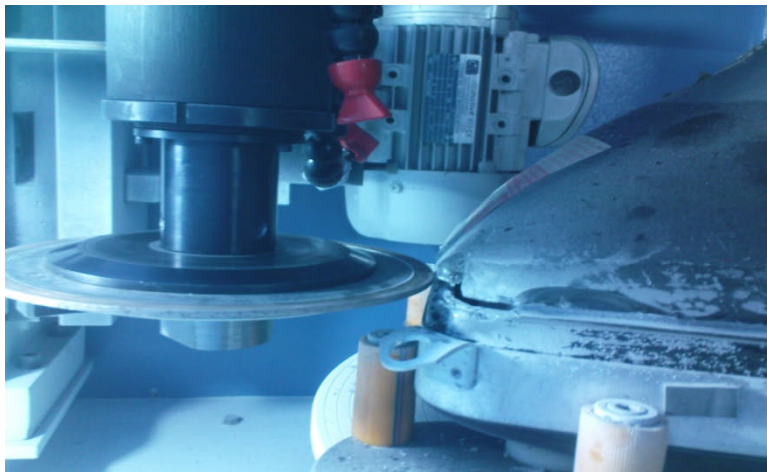
ACTIVITIES

- Investigation on WEEE
 - Preliminary study for developing an inventory
 - Development of WEEE inventory
 - Assessment of the problems of exposure to substances of environmental and health concerns in WEEE
 - Identification of environmentally sound technologies and processes for the management of WEEE
 - Report of Investigation on WEEE
- Development of Guidebook on ESM of WEEE
- Establishment of a steering committee



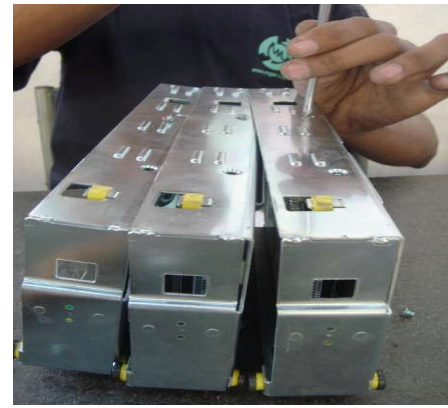
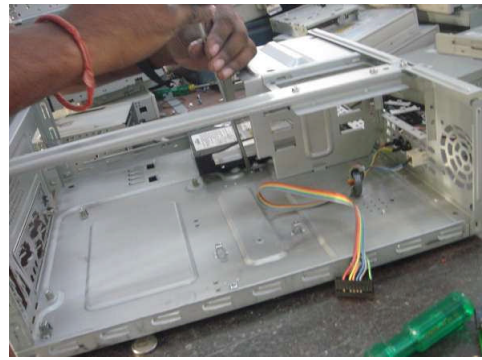
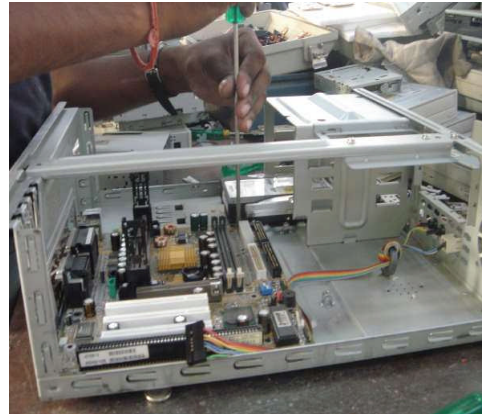


CRT CUTTING





DISMANTLING



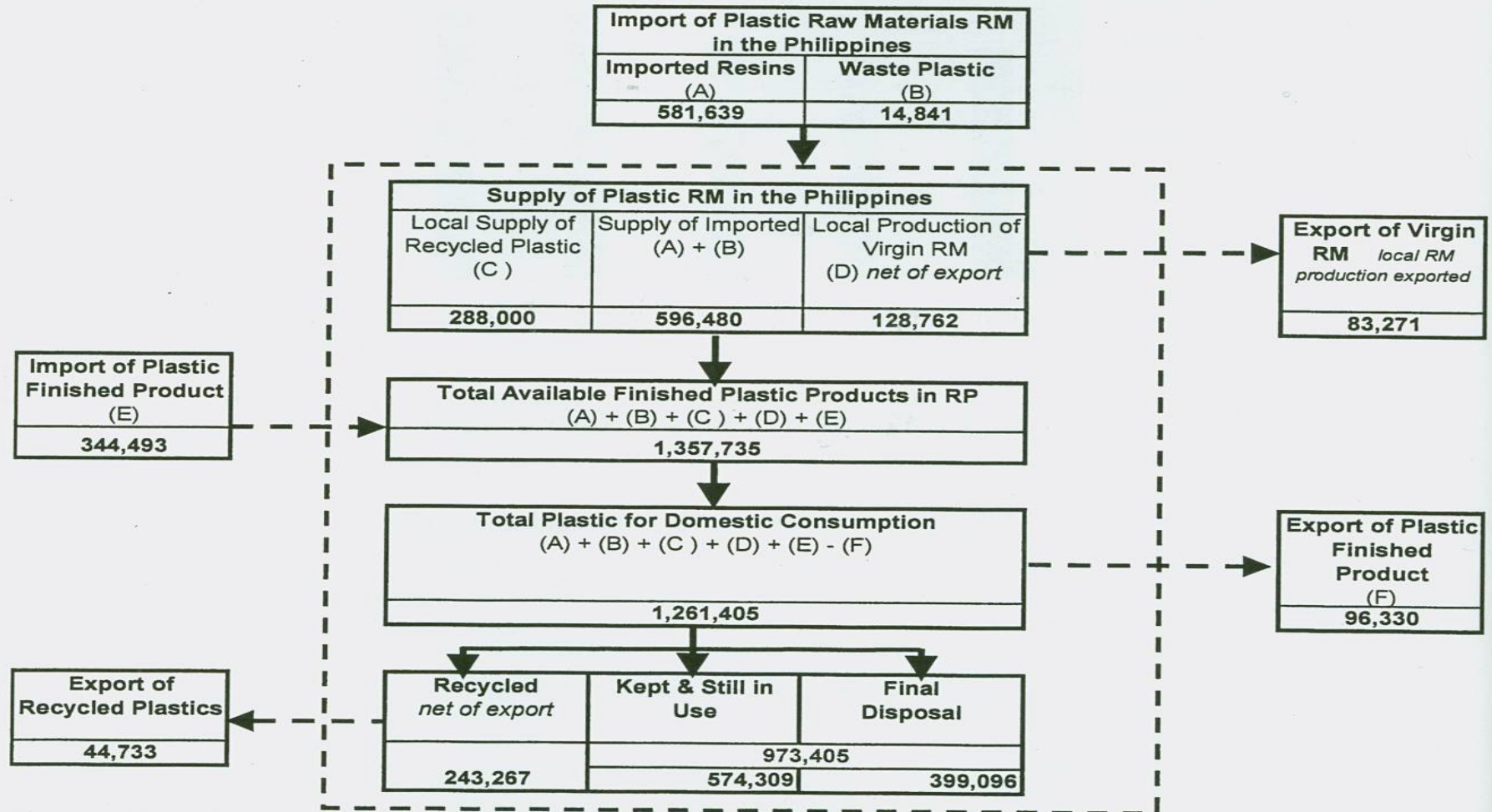


The Study on Recycling Industry Development in The Republic of the Philippines (DTI-BOI, 2008)





Domestic Production, Consumption and Material Flow of Plastics



Source: National Statistics Office
 Data on Recycling are PPIA estimates on MPRAI and Non-MPRAI operating capacities

Figure 1.2.14 Estimated Material Flow of Plastics (2004)



Table 6.6.1 Number of New PCs Imported to the Philippines (2004)

Import Origins	PC		
	Desktop	Laptop	Total
Hong Kong	18,017	10,207	28,224
Singapore	14,096	315	14,411
Japan	11,791	158	11,949
China	8,216	3,577	11,793
USA	6,857	385	7,242
Malaysia	4,478	10	4,488
Korea	998	1,973	2,971
Ireland	2,588	12	2,600
Taiwan	1,296	41	1,337
Indonesia	1,319	3	1,322
Others	1,509	592	2,101
Total	71,165	17,273	88,438

Source: 2004 Importation data recorded by Bureau of Importation Services (BIS)

Table 6.6.2 Number of Used PCs Imported to the Philippines (2004)

Import Origins	PC		
	Desktop	Laptop	Total
Korea	16,520	0	16,520
Japan	13,339	1,014	14,353
USA	3,674	1,999	5,673
Australia	2,681	1,706	4,387
Canada	1,810	0	1,810
Singapore	343	0	343
Taiwan	7	0	7
Total	38,374	4,719	43,093

Source: 2004 Importation data recorded by Bureau of Importation Services (BIS)



THANK YOU!!!

**DOMO ARIGATO
GOZAIMASHITA!!!**

