URENCO Environment, Vietnam

THE DEVELOPMENT OF E-WASTE INVENTORY IN VIETNAM

MOE Japan, MONRE Vietnam, EX Corporation.

July 2007

Part 3: Final Report

URENCO Urban Environmental Company Limited

FINAL REPORT

"SERVICE CONTRACT

ON

PROVISION OF CONSULTING SERVICES

FOR

THE DEVELOPMENT OF E-WASTE INVENTORY

IN

VIETNAM"

The Contract signed on 30th November 2006

Contractor:

URBAN ENVIRONMENT COMPANY LIMITED

URENCO

VIETNAM

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Project Management Board of URENCO

Project Director

Mr. **Chu Van Chung** - General Director of URENCO

Project Deputy Director

Mr. **Pham Van Duc** - Director of Consultancy Service

Technical Assistance

Mr. **Dinh Dang Hai** - Officer Consultancy Service

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July 2007

"SERVICE CONTRACT:
ON PROVISION OF CONSULTING SERVICES FOR
THE DEVELOPMENT OF E-WASTE INVENTORY IN VIETNAM"

FINAL REPORT

Pham Van Duc, Dinh Dang Hai, Nguyen Le Huyen
Dinh Hoang Viet, Nguyen Manh Cuong.

July 2007

1. ADMINISTRATIVE SUMMARY

Service contract:

ON PROVISION OF CONSULTING SERVICES FOR

THE DEVELOPMENT OF E-WASTE INVENTORY IN VIETNAM

The Contract signed on 30th November 2006

Witness institution:

Ministry of Natural Resource and Environment of Vietnam (MoNRE)

Person that signed the contract on behalf of the company:

Mr. Masato Ohno, Chief Executive Officer of EX Corporation - Japan

Person that signed the contract on behalf of the contractor:

Mr. Chu Van Chung, General Director of URENCO - Vietnam

Person authorized to co-ordinate the contract:

Mr. Dinh Xuan Hung, Senior Officer of ICD - MoNRE Vietnam

Persons responsible for carrying out the technical aspects of the work:

Mr. Pham Van Duc

Mr. Dinh Dang Hai

Mrs. Nguyen Le Huyen

Mr. Dinh Hoang Viet

Mr. Nguyen Manh Cuong

And other collaborators

Person responsible for administrative matters:

Mr. Dinh Dang Hai

Price:

Total cost: 47,000 USD

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2. TABLE OF CONTENTS

- **List of Acronyms**

Activity 1	Detail Inventory of E-waste in Vietnam
ACs	Air Conditioner
Bts	Batteries
CRTs	Cathode Ray Tubes
DOH	Department of Health
DOI	Department of Industry
DONRE	Department of Natural Resources and Environment
DOSTE	Department of Science, Technology and Environment
EEE	Electrical and Electronic Equipment
ESM	Environmental Sound Management
E-waste	Electronic waste
EX Corp	EX Corporation - Japan
GDP	Gross Domestic Product
GNP	Gross National Product
GOV	Government of Vietnam
HCM	Ho Chi Minh City
IZMB	Industrial Zone Management Board
Kg	Kilogram
MOE	Japanese Ministry of Environment
MONRE	Vietnam Ministry of Natural Resources and Environment
MOC	Vietnam Ministry of Construction
MOH	Vietnam Ministry of Health
MOI	Vietnam Ministry of Industry

MOT	Vietnamese Ministry of Trade
MPs	Mobile Phone Set
N/A	Not Available
NEA	National Environment Agency
PC	People Committee
PCB	Polychlorinated Biphenyls
PCs	Personal Computer
Rfs	Refrigerator
RoHS	Restriction of Hazardous Substances
SME	Small and Medium Enterprises
SOE	State Owned Enterprise
SPM	Solid Particulate Matter
SWM	Solid Waste Management
TCVN	Directorate for Standards and Quality
TUPW	Department of Transport and Urban Public Works
TVs	Television Set
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
URENCO	Urban Environmental Company Limited – Hanoi, Vietnam
URENCOs	Public Urban Environment Company
VEPA	Vietnam Environmental Protection Agency
VND	Vietnamese Dong
VUREA	Vietnam Urban Environment Association
WEEE	Waste Electrical and Electronic Equipment

WMs Washing Machine

- **Format of the Final Report**

The Final Report has been compiled in eight chapters. The first chapter describes the National Project of E-waste management in Vietnam and contents of the Activity 1 (the Work). The second chapter describes the methodology of the Inventory of E-waste in Vietnam. The third chapter describes the implementation, organization system and Work Team chart of URENCO. The fourth chapter describes the Approach methodology and survey; this is the part of result of Task 1 of the Work. The fifth chapter describes the framework of waste management in Vietnam and introduction about law and legislation; this is the result of Task 2 of the Work. The sixth chapter of this report describes the estimation data of EEE, used EEE and E-waste in Vietnam; this is the result of Task 3 of the Work. The seventh chapter describes about contents and results of the National Workshop on E-Waste Management and Inventory in Vietnam 2007. The eighth chapter is the last chapter of the Final Report and describes the Environmental impacts and the way forward proposed by Work Team of URENCO. Beside the main chapters there are three parts of annexes. The Annex Part A, Part B and Part C describe the situation of E-waste in Vietnam in detail.

3. CHAPTER 1: INTRODUCTION OF THE PROJECT AND WORK

- **Background:**

The ongoing IT revolution has improved people's lives in many ways. Electronic products have become part and partial of our everyday life. Because of economic growth and technological advances, it's often cheaper and convenient to buy a new electronic product than to upgrade an old one. Growing dependence on electronic products has given rise to a new environmental challenge, e-waste.

Currently, e-waste is one of the fastest growing segments of waste stream in Asia and the Pacific as in the other parts of the world. For example, approximately 4 million PCs are discarded every year in China. E-waste worth $1.5 billion was generated in India in 2003. In the United Sates, e-wastes already made up approximately 1% of the total municipal solid wastes in the country.

Common e-wastes include: PCs, TVs, telephones, cell phones, air conditioners, electronic toy, etc. According to the estimates PC used in the entire world was more than 500 million in 2002 and that is growing at 11.4% annually.

E-wastes often end up in landfills or incinerators. Toxic substances like mercury and lead that are commonly used in electronic products can contaminate the land, water and air.

Globally, it is recognized that there is a lack of reliable data on the generation, collection, import and exports, and management schemes in general. That is why a number of countries are in the process of initiating surveys to better define the problem, to identify toxic constituents in end-of-life electric and electronic equipment, to develop pilot projects on successful collections, and develop infrastructure to be able to locally refurbish and recycle such used and end-of-life equipment. Finally, it has been identified that it is important to target those types of equipment that have the greatest potential for impacting on human health and the environment, and at the same time have a greatest economic potential for refurbishment and recycling.

- **The Way Forward**

Objectives:

The goal is to control and or prevent the potential damage of e-wastes in Vietnam: The objectives of this project in Vietnam are as follows:

- To launch a multi-stakeholder partnership in order to prepare a strategy aimed at achieving the environmentally sound management of used and end-of-life electrical and electronic equipment and products in Vietnam in a period of four years;

- To enhance awareness raising and implement training needs on the issue of environmentally sound management of electrical and electronic wastes. It is to include sharing of experiences, information, inventory data, proven policies, practices amongst decision-makers from national Governments in the region and stakeholders;

- Through a partnership approach, to create the conditions for a sustainable system for the environmentally sound management of electrical and electronic wastes in Vietnam. with the view to replicating this experience to other countries in the region;

- **Introduction of the Project**

The Project of E-waste Management in Vietnam under Basel Convention ESM was proposed by the Ministry of Natural Resource and Environment of Vietnam (MONRE) in 2006. In this project, the organizations involved are the Ministry of Natural Resource and Environment of Vietnam (MoNRE), the Vietnam Urban Environment Association (VUREA), the Ministry of Industry of Vietnam (MOI) and the Ministry of Trade of Vietnam (MOT). There are 5 activities in this Project as follow:

Activity 1: Detailed Inventory

Activity 2: Seminars of Public Awareness

Activity 3: Pilot Schemes on Collection, Evaluation/Testing and Segregation of E-waste

Activity 4: Technologies and practices on Refurbishment and Recycling of used and end-of-life Electrical and Electronic Products and Equipment.

Activity 5: National Workshops

Under the Cooperation between Japanese and Vietnamese Governments, The Japanese Ministry of Environment (MOE) funded the Activity 1 (the Detail

Inventory) under the Basel Convention ESM of E-waste Management Project with US$ 47,000. The representative of MOE as a consultant, EX Corporation, made the contract with and disbursed the fund to Urban Environmental Company Limited (URENCO), the contractor that conducts Activity 1 in Vietnam.

- **Overview of the Contract:**

To implement the Activity 1 of the Project in Vietnam, URENCO was selected as a local consultant. URENCO and EX Corp have been signed the Contract in November, 2006. URENCO started implementing the Work under the supervision of EX Corp and the witness of MONRE.

In order to implement the Work, URENCO was responsible for providing all the necessary manpower, transportation, instruments, etc. for duplication of questionnaires, compilation of answers and reporting in accordance with the technical specifications.

- **Objective**

The development of E-waste inventory aims at gathering information, establishing a database required to address the needs, and finding solutions for the ESM of used and end-of-life electric and electronic equipment.

- **Target E-waste and work method**

The target E-waste to be covered by the inventory:

- TVs (1)
- PCs (2)
- Mobile phones (3)
- Refrigerators (4)
- Air conditioners (5)
- Washing machines (6)
- Waste batteries (7)*

* Identify statistic data from national level only (Waste Lead - Acid Battery for Automobile)

URENCO conducted the works according to the Guideline on Development of E-waste Inventory. The works include interview surveys with the following entities.

- 400 households
- 400 offices (business entities and institutions)
- 400 Recyclers (including importers/exporters, collectors, second-hand shops, repair shops, dismantlers, and processors of recyclable materials from used EEE)

In 7 major cities for each target E-waste: Langson, Hanoi, Haiphong, Nghean, Danang, Hochiminh, Binhduong.

No	Contents	City of interview survey							Total
		HN	HP	LS	NA	DN	BD	HCM	
1	Households *(Annex A)*	150	40	20	20	30	30	110	**400**
2	Offices *(Annex B)*	140	40	20	20	30	30	120	**400**
3	Importers and Exporters *(Annex C, C2)*	20	20	15	15	10	10	20	**110**
3	Collectors and Recyclers *(Annex D, D2)*	60	30	10	10	30	20	50	**210**
4	Manufactures *(Annex E)*	20	10	5	5	10	15	15	**80**
		390	**140**	**70**	**70**	**110**	**105**	**315**	**1,200**

Note:
HN: Hanoi
HP: Haiphong
LS: Langson
NA: Nghean
DN: Danang
BD: Binhduong
HCM: Hochiminh city

Scope of Work

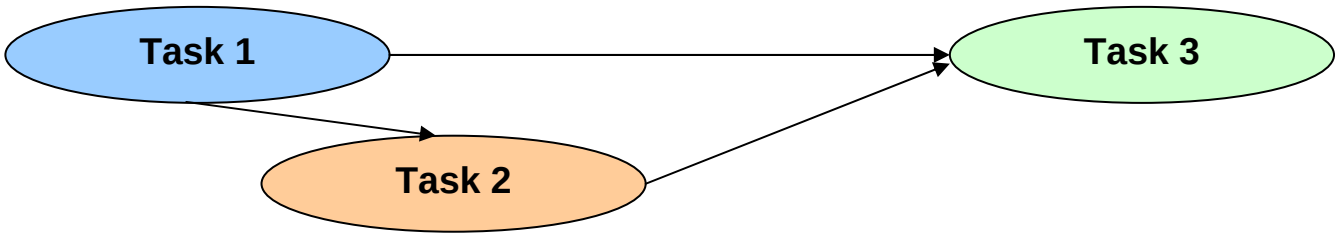
The development of E-waste inventory is composed of the following.

- Task 1: Identify how used EEE are collected, imported/exported, repaired, sold, dismantled, and recycled
- Task 2: Identify the status of implementation of measures for environmentally sound management of used and waste EEE
- Task 3: Estimate amount of used and waste EEE generated

The Work was implemented under the general guidance and direct supervision of the Ministry of Natural Resources and Environment, Vietnam. EX Corporation supervised the whole work and gave instructions on detail when necessary. The Ministry of the Environment, Japan contributed to the Work as a member of the Project Steering Committee.

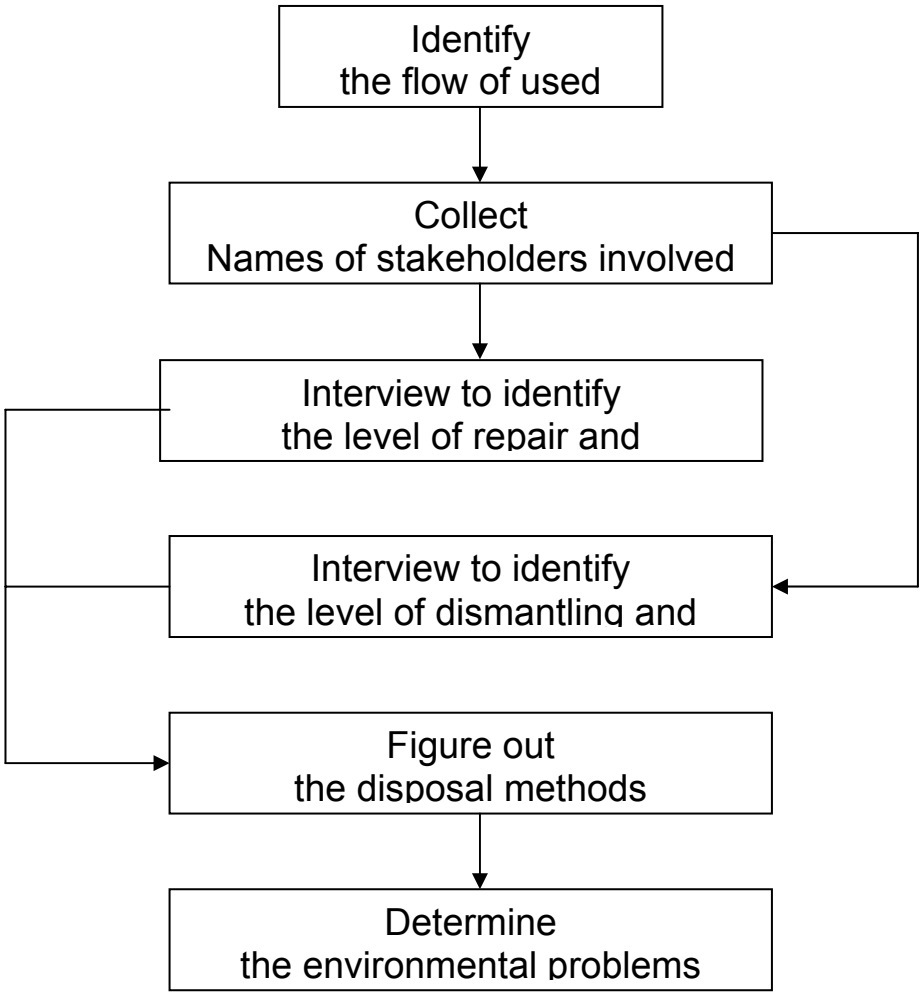
4. CHAPTER 2: METHODOLOGY OF THE WORK

To conduct the Activity 1 in Vietnam effectively the methodology to implement the Work should be uniform all over the country. The uniformity methodology is as follows:



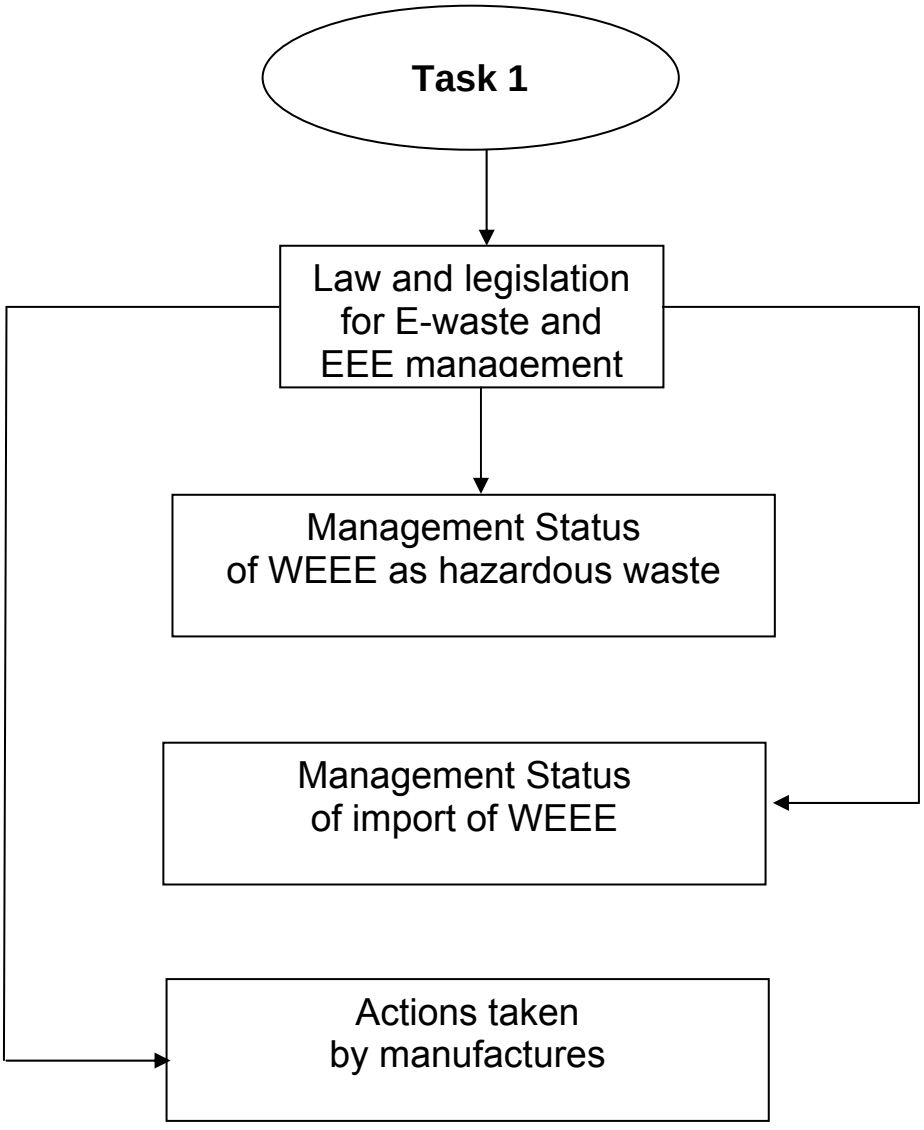
For the first task of Activity 1 "Identify how used EEE are collected, imported/exported, repaired, sold, dismantled, and recycled":

Via the interview survey with the questionnaires, the Working Team will be determine and figure out the disposal methods of WEEE and the environmental problems due to reuse, recycling and discharge of EEE.



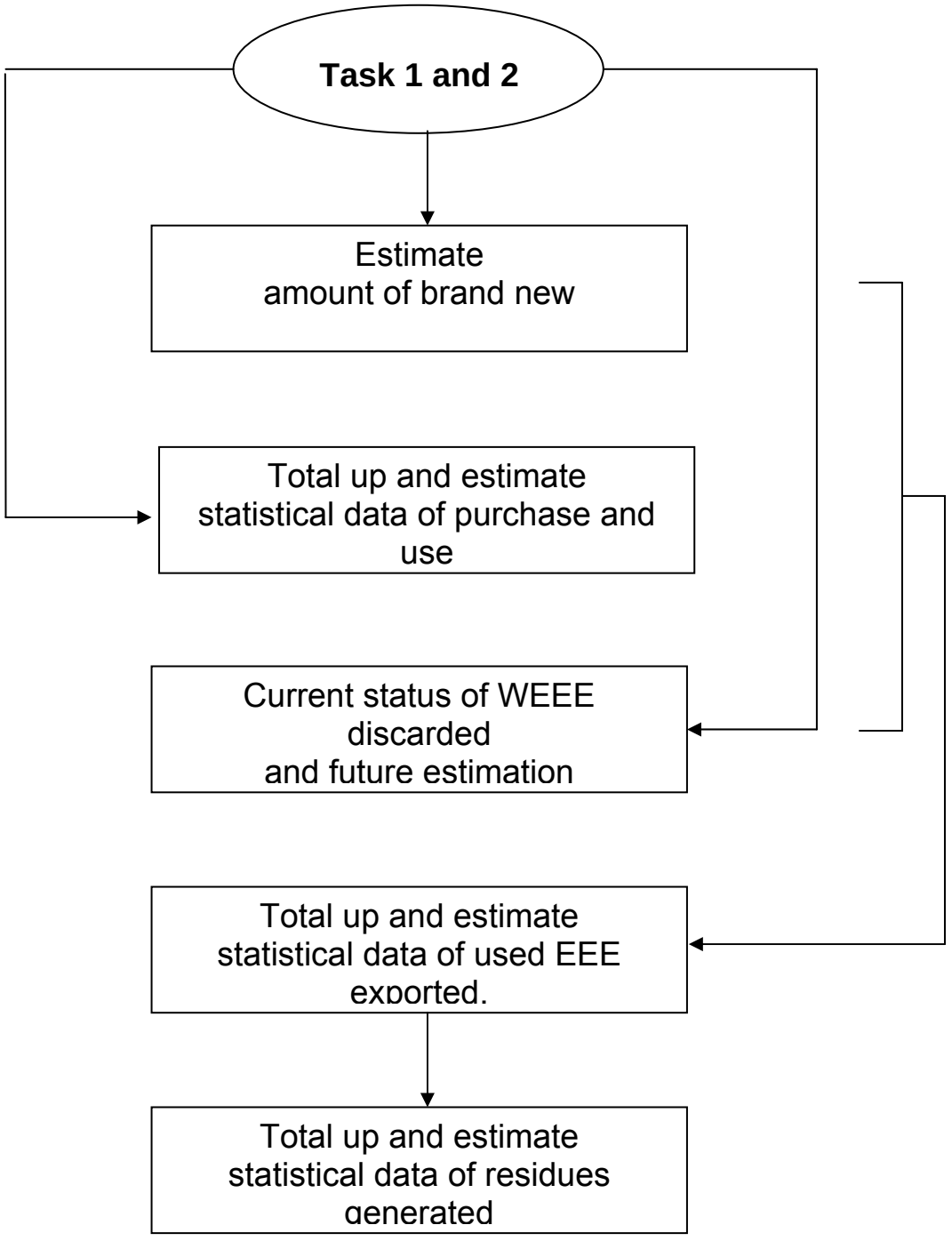
For the second task of Activity 1 “Identify the status of implementation of measures for environmentally sound management of used and waste EEE”:

In parallel with the implementation of the first task, the Working Team implemented the second task for collection the law and legislation documents about the WEEE and EEE management in Vietnam. The management status of WEEE import, as hazardous waste and the actions taken by manufactures was identified.



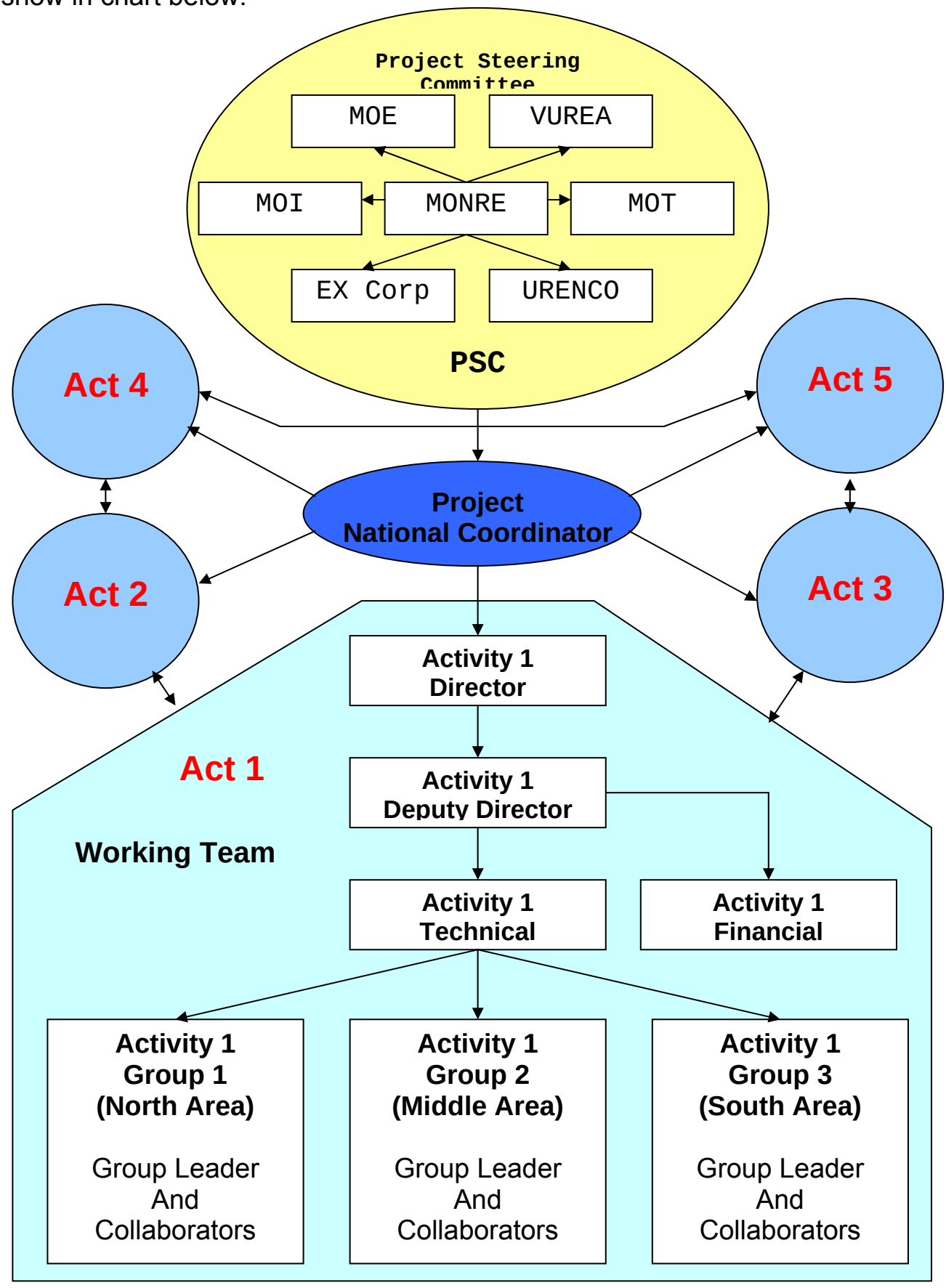
For the third task of Activity 1 “Estimate amount of used and waste EEE generated”:

After the first and second tasks are finished, the estimation work was implemented by the Working Team. Depend on the sample statistical data and other conditions (e.g. economic growth rate, domestic industries growth rate, population growth rate…) the estimation of brand new and used EEE was identified. The amount of used EEE export and the residues from repair, dismantling and processing will be estimated by the Working Team at the end of the Work.



5. CHAPTER 3: IMPLEMENTATION SYSTEM AND CHART

The implementation system (organizational structure) for National Project and Activity 1 of the Project Steering Committee and URENCO contractor will be show in chart below.



Implementation Management Chart of URENCO

The Working Team (E-waste inventory WT)

Act 1 Director
Mr. Chu Van Chung
URENCO CEO

Act 1 Permanent Leader

Act 1 Technical Assistant

Act 1 Financial Manager

Group 1 Leader
Ms. Nguyen Le Huyen

Group 2 Leader
Mr. Nguyen Manh Cuong

Group 3 Leader
Mr. Dinh Hoang Viet

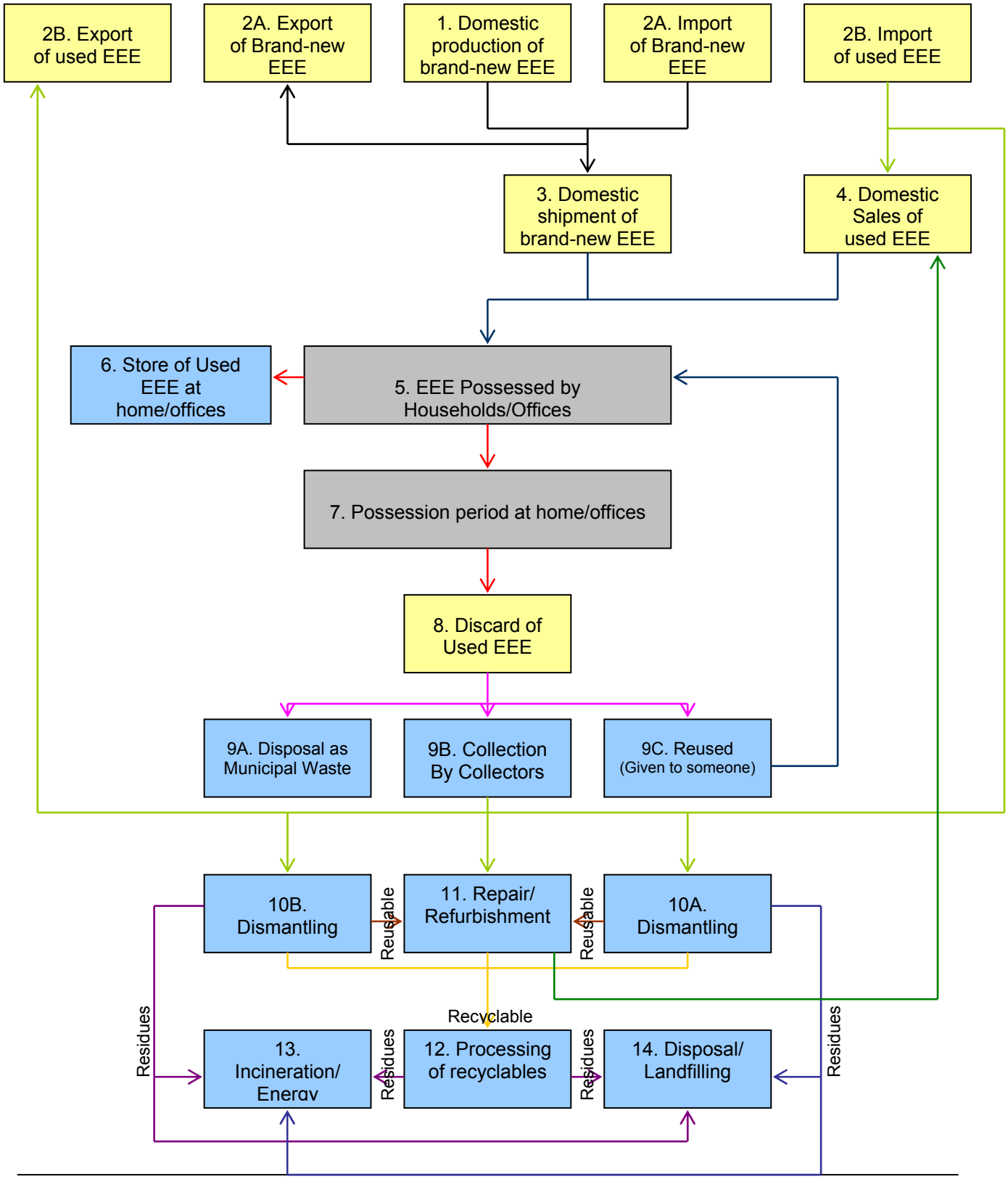
Collaborators

6. CHAPTER 4: APPROACH METHODOLOGY AND SURVEY

THE RESULTS OF TASK 1

I. FLOW CHART OF ELECTRICAL AND ELECTRONIC EQUIPMENT IN VIETNAM

1. Typical EEE:



2. Flow Chart of Television set:

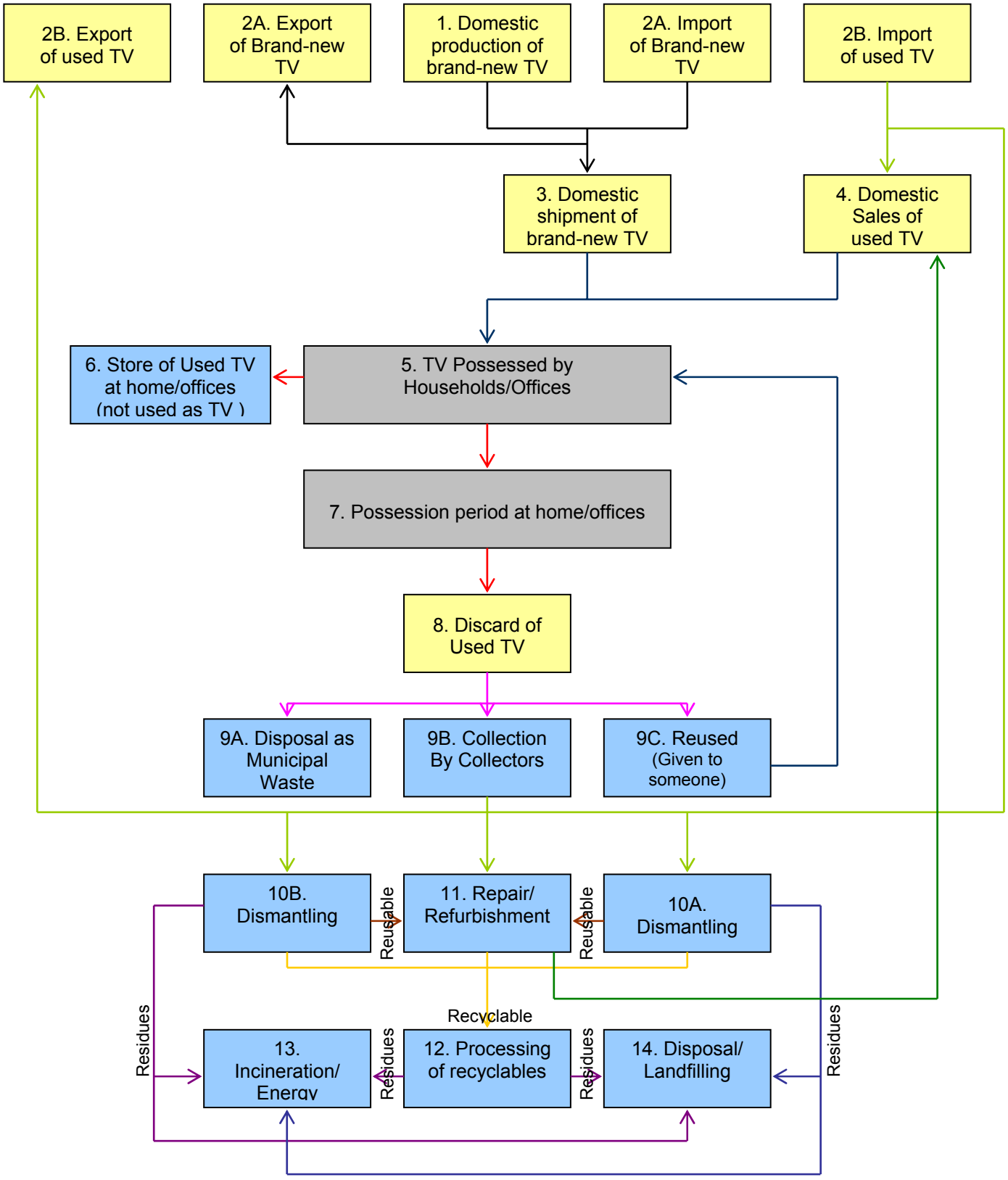
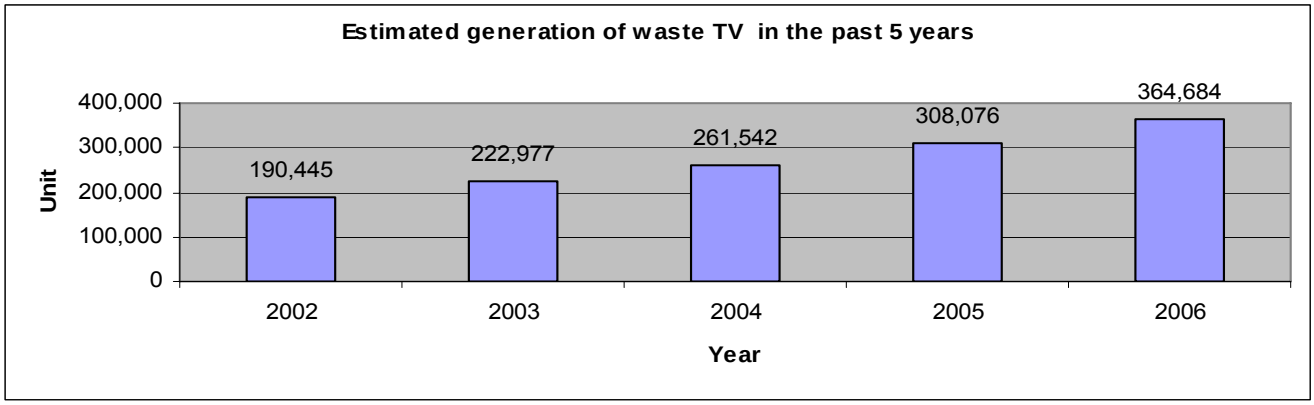


Table of TVs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	1,376,731	58,247	110,666	1,324,312	23,635	6,992	16,643	1,340,955
2003	1,756,020	270,590	104,238	1,922,372	1,720	9,534	0	1,914,558
2004	2,239,804	314,212	356,485	2,197,531	38,302	5,124	33,178	2,230,709
2005	2,515,300	796,094	390,597	2,920,797	35,464	9,152	26,312	2,947,109
2006	3,093,819	1,080,336	612,045	3,562,110	53,181	7,872	45,309	3,607,419

Chart of waste TVs Quantity in the past 5 years



Ratio for each activity of discarded TVs in 2005

No	Description	Ratio (%)
9B	Collected of Used TV	100
10A/B	Dismantling	<20
11	Repair/Refurbishment	>80
12	Processing of recyclables	>8.5
13	Incineration/Energy	<5.5
14	Disposal/Landfilling	

Explaination of Figures and data sources

Domestic shipment of brand-new EEE: This figure is calculated by formula as production + import - export. The production data is colected from National statistical data and the import and export datas are collected from National Customs Office

Domestic shipment of used EEE: This figure is calculated by formula as import - export. All import and export datas are collected from the National Customs Office.

Total Domestic shipment of EEE: This figure is calculated by plus domestic shipment of brand-new and used EEE.

The raw data on import/export of EEE were collected from the National Customs Office and divided into brand-new and used EEE by the Work Team.

If the import/export data have the description of "used," the Work Team classified them as used EEE. In addition, if the data do not have clear description of "brand-new" and if the unit price is below the following thresholds, the Work Team classificed them as "used."

- TVs: under 100 USD
- PCs: under 100 USD
- MPs: under 20 USD
- ACs: under 100 USD
- RFs: under 100 USD
- WMs: under 50 USD

The estimated figure of waste TVs are estimated by Weibull function with input data of interview. Please see detail estimation in Excel file: (1_1)Est_WEEE_Weibull_Dist_TVs_rev.

The figures from no. 9 to no. 14 are obtained from the additional interview survey in 2006 - 2007 with some big collectors, repair shops, second-hand shops, dismantlers and recyclers in Vietnam (see Annex D-Ratio for the questionnaire and answers[1]). For example: with 10 units of collected used TVs, 2 units were sent to dismantlers and 8 units were sent to repair shops/reassemblers and second-hand shops. From the dismantling and repair/refurbishment activities of 10 units (100%) of used TVs, approximately 86% of total (equivalent to 8,6 units included TVs and their usable parts) can be reuse as TV. And around 8.5% of total (equivalent to 0.85 units included recyclable materials as metal and plastic) can be recycled. The remains around 5.5% of total (equivalent to 0.55 units) are residues and can be disposed.

[1] The following is corresponding questions in Annex D-Ratio to the items # 10 to 14: item # 10A/B=Q4 of Section 1, item #11=Q2+Q3+Q5+Q6 of Section 1, item #12=Q4 of Section 3, and item 13&14=Q5 of Section 3.

3. Flow Chart of Personal Computers:

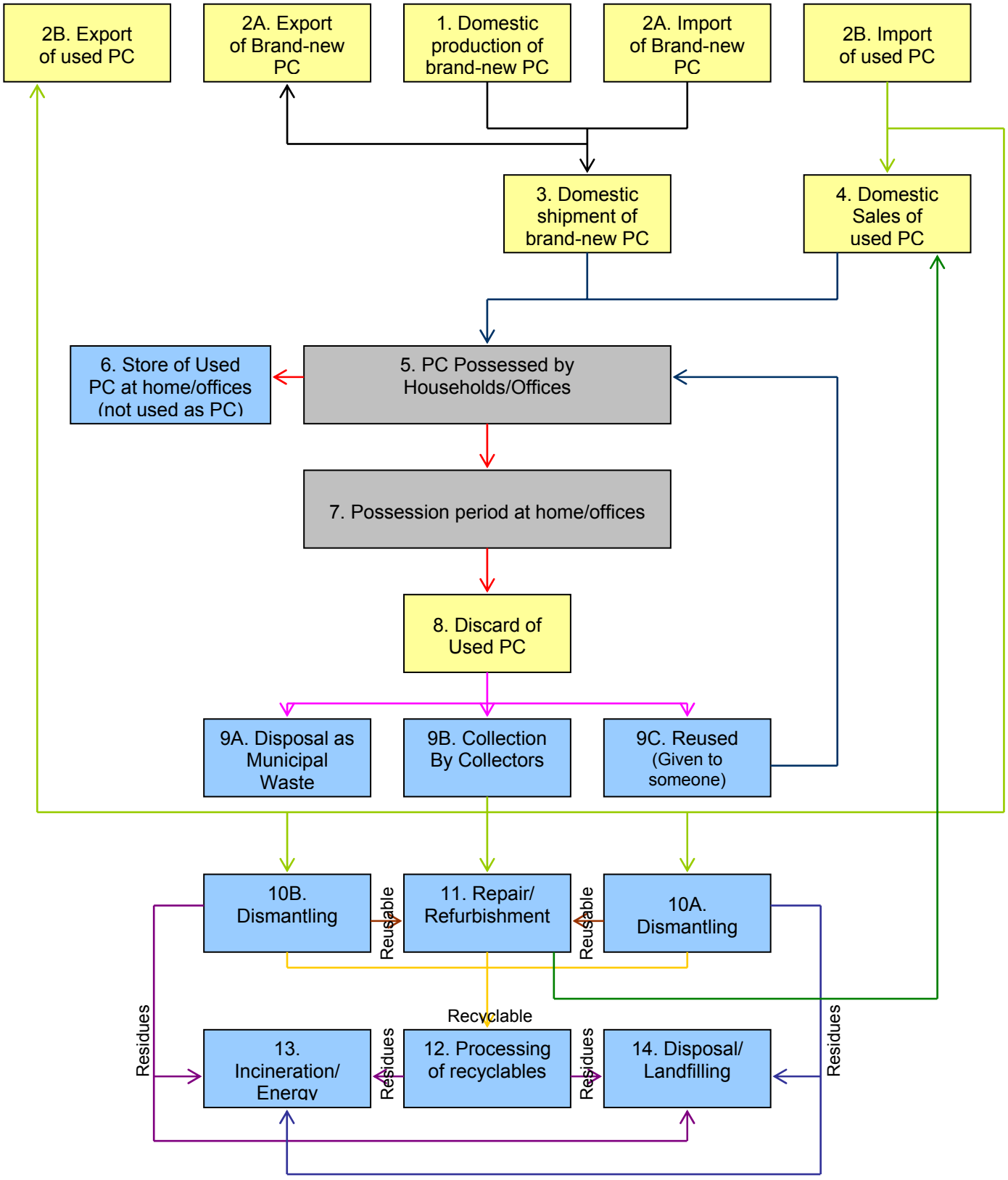
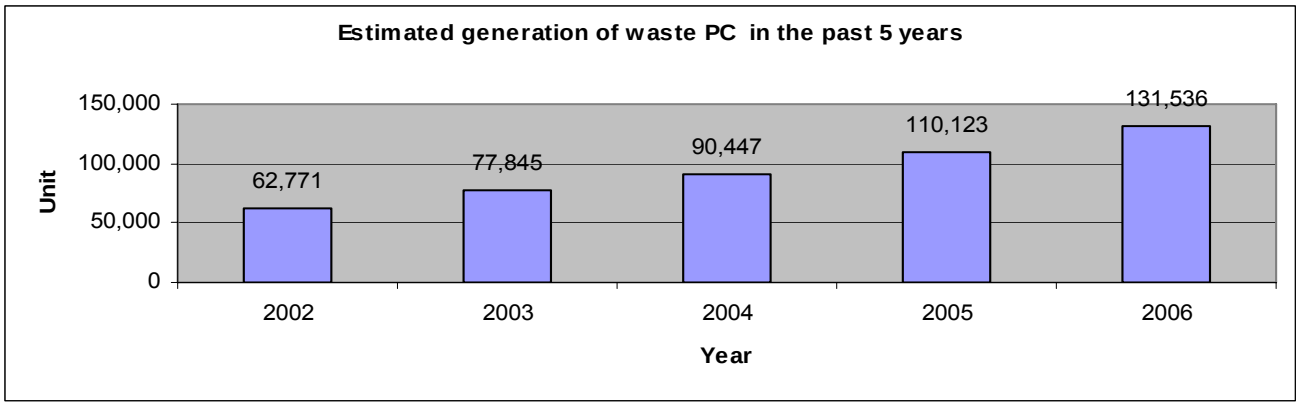


Table of PCs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	126,320	97,355	27,034	196,641	5,681	1,042	4,639	201,280
2003	141,857	178,555	21,684	298,728	7,767	1,169	6,598	305,326
2004	159,305	200,654	24,654	335,305	116,004	16,142	99,862	435,167
2005	178,900	256,321	107,649	327,572	16,516	0	16,516	344,088
2006	220,047	446,536	137,790	528,793	70,953	5,160	65,793	594,586

Chart of waste PCs Quantity in the past 5 years



Ratio for each activity of discarded PCs in 2005

No	Description	Ratio (%)
9B	Collected of Used PC	100
10A/B	Dismantling	<20
11	Repair/Refurbishment	>80
12	Processing of recyclables	>10
13	Incineration/Energy	<10
14	Disposal/Landfilling	

4. Flow Chart of Mobile Phones:

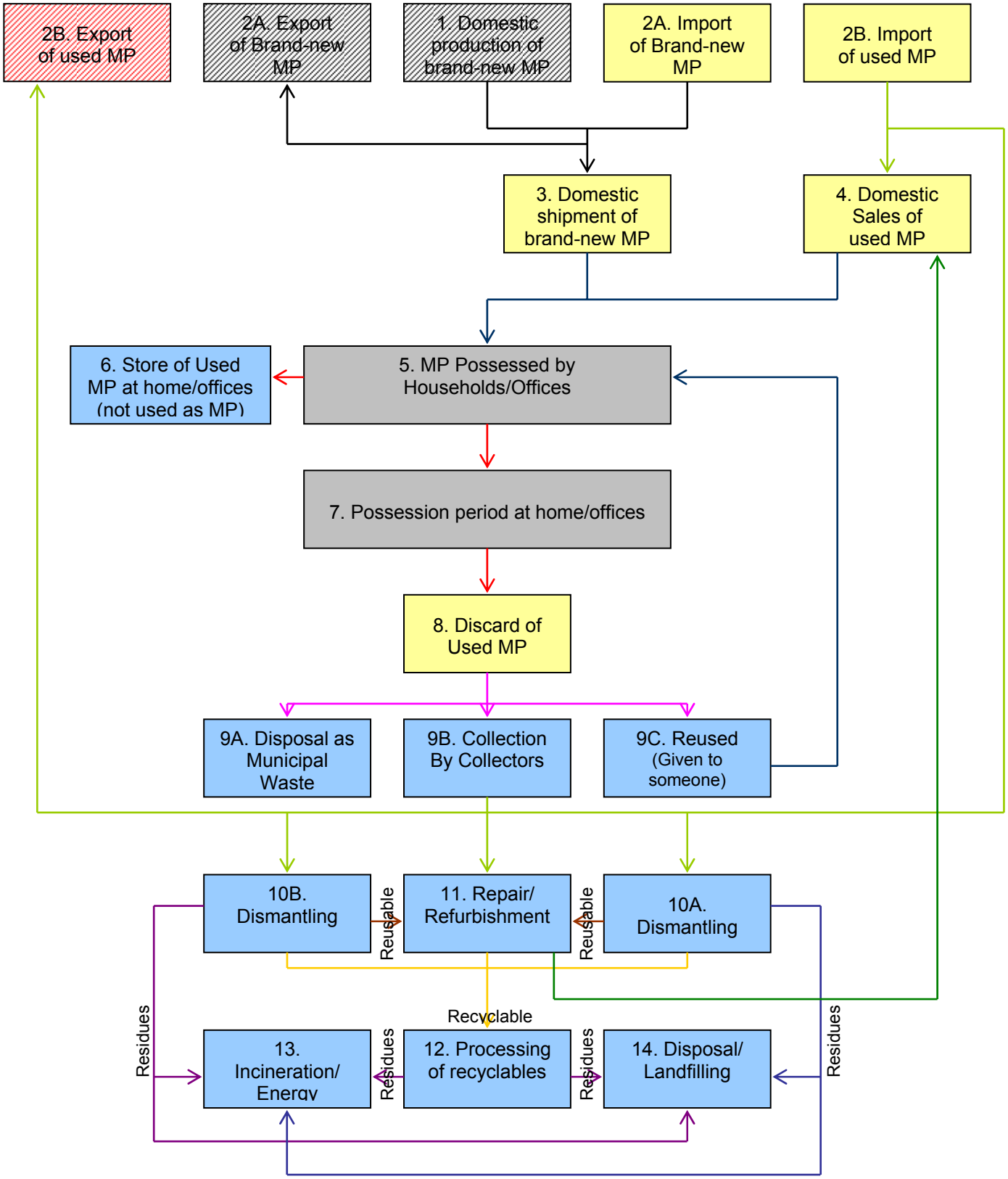
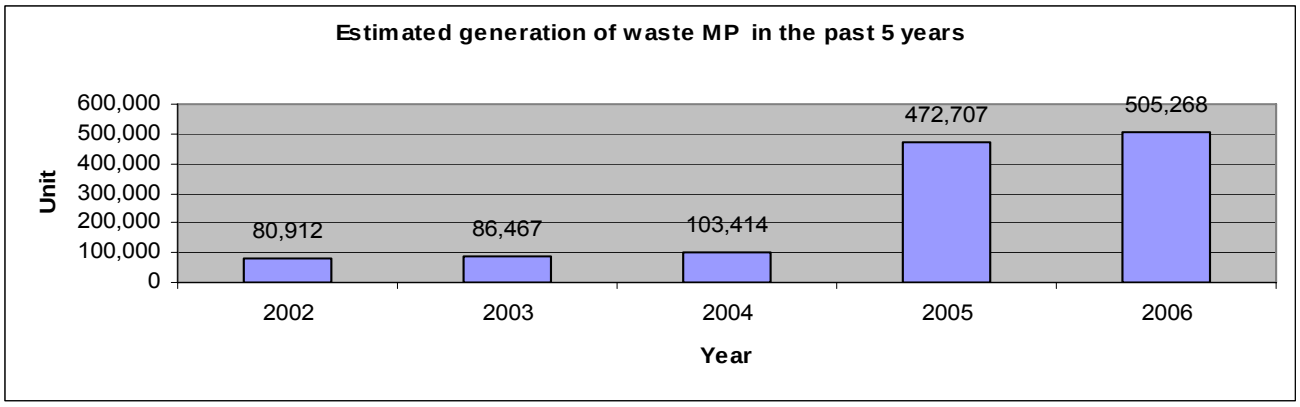


Table of MPs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	0	704,287	3,591	700,696	0	0	0	700,696
2003	0	1,396,260	23,716	1,372,544	53,822	0	53,822	1,426,366
2004	0	2,746,395	15,701	2,730,694	14,403	0	14,403	2,745,097
2005	0	2,806,041	11,558	2,794,483	13,560	0	13,560	2,808,043
2006	0	3,271,410	107,732	3,163,678	67,110	0	67,110	3,230,788

Chart of waste MPs Quantity in the past 5 years



Ratio for each activity of discarded MPs in 2005

No	Description	Ratio (%)
9B	Collected of Used MP	100
10A/B	Dismantling	>30
11	Repair/Refurbishment	<70
12	Processing of recyclables	<10
13	Incineration/Energy	>20
14	Disposal/Landfilling	

After collection of MPs from National Statistical and Customs Office and the data from interview survey, the work team used Weibull function to estimate the waste generation data but can not usable. The data of MPs is estimated by simple way as follow: quantity of discarded MP in the year (i) = quantity of domestic shipment of MP in the year (i - X), where X is the average use period of MP. In this estimation the work team used average use period of MP is 5 years.

5. Flow Chart of Refrigerators:

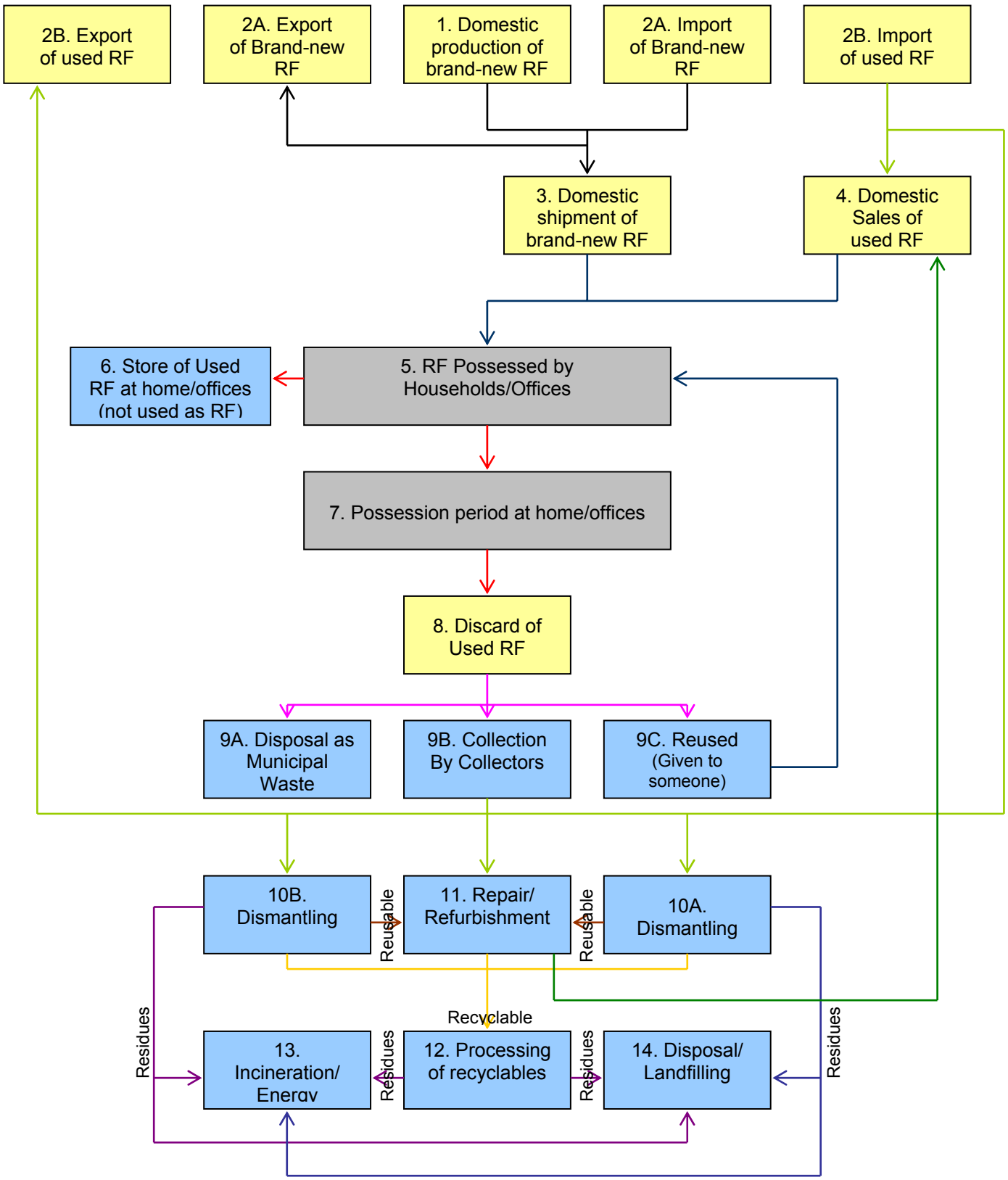
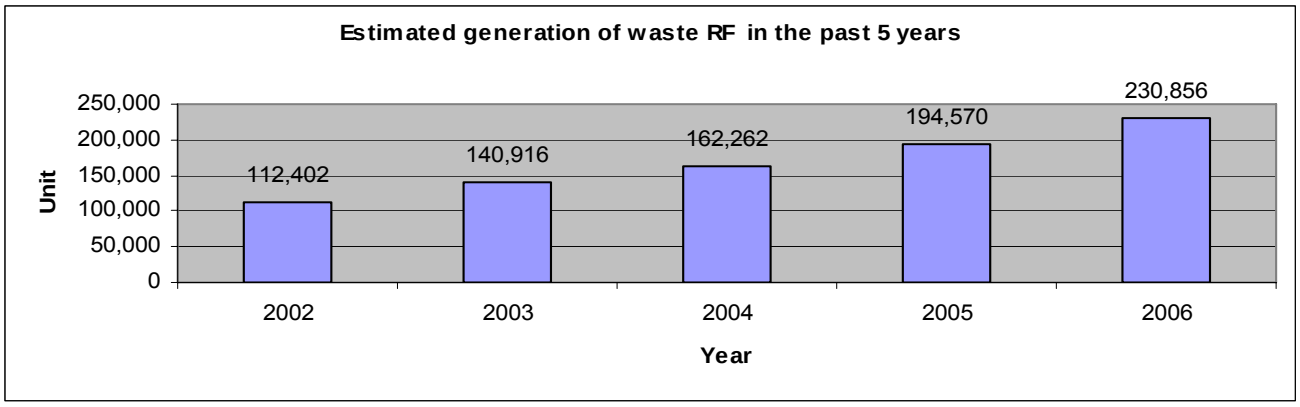


Table of RFs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	442,984	60,305	55,448	447,841	5,493	0	5,493	453,334
2003	497,471	132,199	171,653	458,017	7,700	0	7,700	465,717
2004	558,660	228,583	212,189	575,054	87,613	0	87,613	662,667
2005	627,375	246,868	201,480	672,763	42,713	95	42,618	715,381
2006	771,671	416,969	218,668	969,972	16,881	1,479	15,402	985,374

Chart of waste RFs Quantity in the past 5 years



Ratio for each activity of discarded RFs in 2005

No	Description	Ratio (%)
9B	Collected of Used RF	100
10A/B	Dismantling	<20
11	Repair/Refurbishment	>80
12	Processing of recyclables	>15
13	Incineration/Energy	<10
14	Disposal/Landfilling	

6. Flow Chart of Air Conditioners:

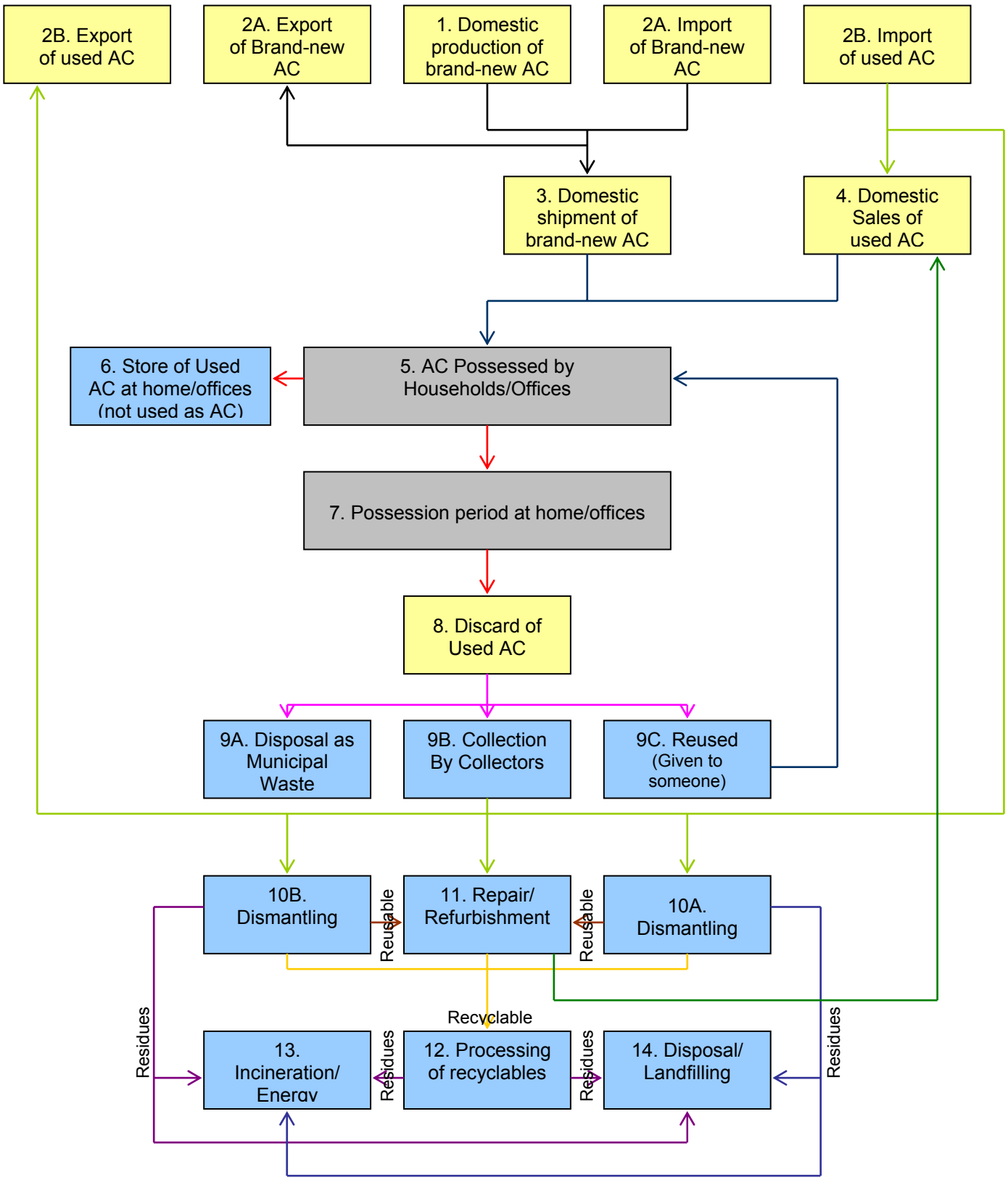
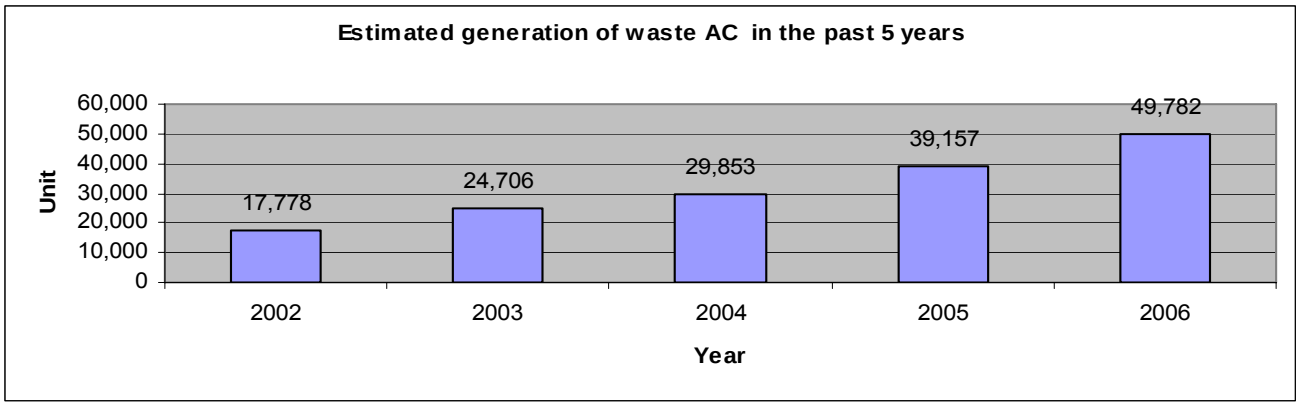


Table of ACs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	92,664	79,787	40,246	132,205	319	309	10	132,215
2003	104,062	24,687	20,576	108,173	1,345	0	1,345	109,518
2004	116,861	145,510	142,572	119,799	7,984	0	7,984	127,783
2005	131,235	181,901	210,531	102,605	226,631	3,756	222,875	325,480
2006	161,419	258,357	188,210	231,566	36,513	3,261	33,252	264,818

Chart of waste ACs Quantity in the past 5 years



Ratio for each activity of discarded ACs in 2005

No	Description	Ratio (%)
9B	Collected of Used AC	100
10A/B	Dismantling	<20
11	Repair/Refurbishment	>80
12	Processing of recyclables	>15
13	Incineration/Energy	<3
14	Disposal/Landfilling	

7. Flow Chart of Washing Machines:

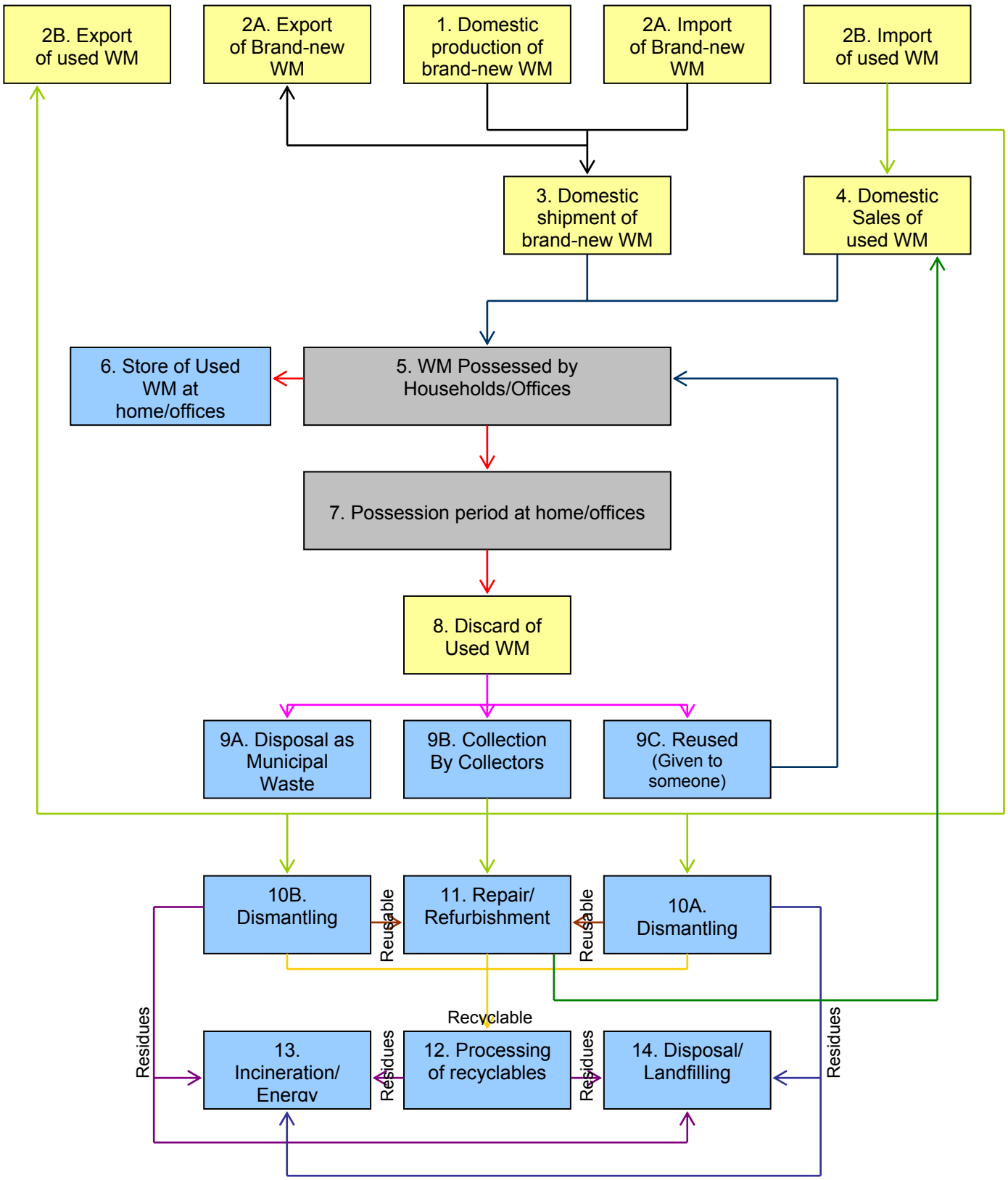
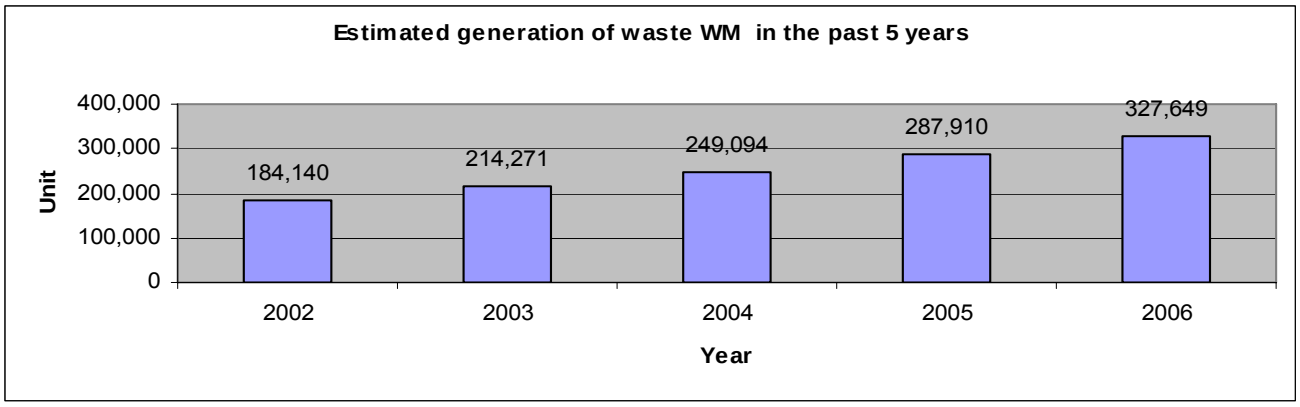


Table of WMs Quantity in the past 5 years

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production (1)	Import (2A)	Export (2A)	Domestic Shipment (3)	Import (2B)	Export (2B)	Doemstic Shipment (4)	
2002	372,756	107,589	5,130	475,215	36,009	2,335	33,674	508,889
2003	418,605	76,276	16,747	478,134	42,221	236	41,985	520,119
2004	470,093	183,553	81,058	572,588	10,960	768	10,192	588,042
2005	527,915	318,136	47,747	798,304	127,938	9,699	118,239	916,543
2006	649,335	258,681	25,371	882,645	54,021	5,353	48,668	931,313

Chart of waste WMs Quantity in the past 5 years



Ratio for each activity of discarded WM in 2005

No	Description	Ratio (%)
9B	Collected of Used WM	100
10A/B	Dismantling	<10
11	Repair/Refurbishment	>90
12	Processing of recyclables	<10
13	Incineration/Energy	<5
14	Disposal/Landfilling	

II. EXPLANATION OF STAKEHOLDERS INVOLVED IN EEE FLOW CHART

Target EEE:

- TVs (1)
- PCs (2)
- Mobile phones (3)
- Refrigerators (4)
- Air conditioners (5)
- Washing machine (6)
- *Waste Batteries** *(7)*

*not emplement the inventory for this type of E-waste

1. Domestic Production of Brand-new EEE

- Small Manufactures:
  These entities do not produce any parts. They import every part from other country and assemble to final product for sale. A large number of imported parts come from China.
  The products of small manufactures in Vietnam focus on PCs only.

- Medium Manufactures:
  Entities only produce a few of parts, the importance parts still import from other country and a large number among them from China too.
  The products of medium manufactures focus on every target EEE except mobile phones.

- Large Manufactures:
  With the large entities, the ratio of domestic production of parts was 40% in 2006. The remaining parts were imported from other all over the world.
  The products of large manufactures focus on every target EEE.

Table of Manufactures Association

NO	Name of association	Address	Quantity of member company	Turnover/year (Million USD)	Contact information	Type of EEE	Domestic Market Share in 2005 (%)	Designed life time of EEE
1	Vietnam Electronic Enterprises Association	11b Phan Huy Chu, Hoan Kiem, Hanoi	178		04 9332845	Television	60	10
						Personal Computer	40	5
						Mobile phone	30	5
						Refrigerator	40	10
						Washing Machines	45	10
						Air Conditioners	40	10
						Others	50	
2	Hanoi Medium and Small Enterprises Association	199 Le Duan, Hoan Kiem, Hanoi	14		04 9425640	Personal Computer	15	5
3	Vietnam Software Enterprises Association	185 Giang Vo, Hanoi	108		04 5121451	Personal Computer	75	5
4	Hanoi Electronic Company	No2 Chua Boc, Dong Da, Hanoi	26		04 8522102	Television	25	10
						Personal Computer	15	5
						Mobile phone	5	3
						Refrigerator	20	10
						Washing Machines	20	10
						Air Conditioners	20	10
						Others	25	
5	Viet Tan Binh (VTB) Electronic Company	422 Ho Van Hue, Phu Nhuan, Ho Chi Minh	5	50	08 8477047	Television	25	10
						Personal Computer	12	5
						Refrigerator	20	10
						Washing Machines	10	10
						Air Conditioners	6	10
						Others	15	10
6	Samsung Vina Electronic Company	938 1A Road, Linh Trung, Thu Duc, Ho Chi Minh	12	300	08 8965500	Television	20	10

NO	Name of association	Address	Quantity of member company	Turnover/year (Million USD)	Contact information	Type of EEE	Domestic Market Share in 2005 (%)	Designed life time of EEE
						Personal Computer	15	5
						Mobile phone	25	5
						Refrigerator	18	10
						Washing Machines	25	15
						Air Conditioners	15	10
						Others	20	
7	Vietnam LG Electronic Company	12th Floor, Melia Building, 44b Ly Thuong Kiet, Hanoi	2	400	04 9345110	Television	30	10
						Personal Computer	10	5
						Mobile phone	15	3
						Refrigerator	18	10
						Washing Machines	20	10
						Air Conditioners	32	10
						Others	30	
8	Vietnam Infomatic and Electronic JSC	15 Tran Hung Dao, Hoan Kiem, Hanoi	13	300	04 8255197	Television	15	15
						Personal Computer	17	5
						Refrigerator	12	15
						Air Conditioners	10	10
						Others	10	
9	Acer Vietnam Company	53-55 Cao Thang, Hochiminh		200	08 8343779	Personal Computer	30	5
						Others	16	

Market Share for Target Brand - New EEE in Vietnam 2005

TV	
Manufactures	Market Share (%)
Samsung	34
Sony	28
LG	19
Panasonic	10
Sharp	5
Toshiba	2
JVC	1
Others	1
Total	100

PC	
Manufactures	Market Share (%)
Self assembly	35
Acer	25
HP-compaq	18
Mekong	5
Toshiba	5
IBM	3
Dell	3
Sony	3
Others	3
Total	100

MP	
Manufactures	Market Share (%)
Nokia	50
Motorola	20
Sony Ericsson	5
Samsung	19
Siemens	3
Others	3
Total	100

RF	
Manufactures	Market Share (%)
Samsung	30
LG	20
National	15
Panasonic	15
Sanyo	10
Electrolux	3
General	3
Sharp	3
Others	1
Total	100

AC	
Manufactures	Market Share (%)
LG	25
Samsung	20
National	18
Panasonic	15
Funikin	10
Toshiba	5
Carrier	2
Others	5
Total	100

WM	
Manufactures	Market Share (%)
Samsung	25
LG	20
Panasonic	15
National	10
Electrolux	5
Sanyo	5
Sharp	5
Others	15
Total	100

Source: Vietnam Electric Industries Association and other producers

2. Import/Export of Brand-new and Used EEE

a. Import/Export of Brand-new EEE

- Small Importers/Exporters:
  These entities import/export brand-new EEE directly from/to other country and always are South-east Asia. A great number among them import brand-new EEE then sale in domestic market themselves.
  The imported/exported products such TVs, PCs, air conditioners and especial mobile phones were interested by small importers in Vietnam.

- Medium Importers/Exporters:
  The medium entities import/export brand-new EEE from/to other country all over the world. They import brand-new EEE with huge amount then distribute to dealers for retail.
  The medium importers/exporters paid attention to every target brand-new EEE.

- Large Importers/Exporters:
  The large organizations export/import brand-new EEE directly from foreigner firm. The foreigner companies of EEE production such as Japanese, Korean, Chinese firm are famous in Vietnam. In some

case, the large importers were the authorized dealer of foreigner firm in Vietnam and distribute the imported EEE products to other dealer for retail.

All of target brand-new EEE are interested by the large importers/exporters in Vietnam.

b. Import/Export of Used EEE

- Small Importers/Exporters:
  For Used EEE import/export, not much of small entities are involved.
  The used products such as TVs, air conditioners, washing machines and especially PCs were very interested by small importers before 2000. With the development of domestic production and reduction of import tax for brand-new EEE, used EEE are not interested by households in big cities and at middle- and high-income levels.

- Medium Importers/Exporters:
  The medium importers/exporters trade on used EEE from/to other country all over the world. They import used EEE with huge amount then distribute to dealers for retail.
  The medium importers/exporters paid attention to every target brand-new EEE.

- Large Importers/Exporters:
  The large organizations export/import used EEE from/to foreign firm. Used EEE was imported form Japan and other Asian country via seaway and from Thailand via land. The amount of used EEE for import reduced in several years recently because of the Vietnamese Government established some decision on hazardous waste management. The used EEE was exported to China with great amount and other developing country in South-east Asia.
  PCs and parts of them were interested by large exporters of used EEE.

3. Domestic shipment of Brand-new EEE

- Brand-new EEE dealers:
  The dealers of brand-new EEE in Vietnam often buy the products from medium and large importers then retail in the domestic market. Recently some domestic manufactures distribute their products to the domestic market. With brand-new EEE, there are many famous brands in Vietnam as Compag, HP, Motorola, Dell, Siemens, and Nokia... (US and EU brand), Sony, Panasonic, National, Toshiba... (Japanese brand), Deawoo, Samsung, LG... (Korean brand) and so forth.

4. Domestic sales of Used EEE

- Used EEE dealers:
  The entities that sell used EEE in domestic market buy used products from the importers and collectors. They buy used EEE then repair or refurbish for sale to domestic customers or the exporter of used EEE.
  All target used EEE were interested by the dealers for the domestic market but only PCs and its parts for export.

5. EEE Possessed by Households/Offices

- Households and offices:
  The households and offices purchase or obtain brand-new or used EEE from dealers and other households and offices. The targets EEE used and possessed by households and offices in the lifetime of products after that they discard it to municipal waste, sale to collectors or to other stakeholders for reuse.

6. Store of Used EEE at home/offices (not used as EEE)

- Households and offices:
  In some cases, used products were stored at home or office and not to be used as equipment. The period of time to store at home and offices is always difficult to know.

7. Possession period at home/offices

- Households and offices:
  The possession period of EEE at home and office are different from other to other. Every EEE have their own designed lifetime by the manufactures but the possession periods are different to know because it depends on the way to use the product. Only have the average number except the case of battery we can identify often two or three years for lifetime.

8. Discard of Used EEE

- Households and offices:
  The discard of used EEE was generated from households and offices. The reasons for discard are different, but hardware crashed, broken, obsoleted and unfashionable are regular reasons.

9. Disposal of EEE

a. As municipal waste

- Households and offices:
  With the current status of income levels in Vietnam, the way to disposal of used EEE as municipal waste is not usual. The generators often use the b and c way to discard used EEE. If used

EEE was discarded as municipal waste the small collectors will gather it at MSW landfill site. So that the environmental problems due to disposal of used EEE as municipal waste in Vietnam till now are inappreciable.

b. To collectors

- Households and offices:
  This way to discard of used EEE is popular in Vietnam. Everybody will sell their own used EEE to the small collectors when they want to dispose the products. The small collectors will collect used EEE from many generators then send to the medium and big collectors for repair, refurbishment and sales. To collect of used EEE from households always are small collectors (individual or family), from offices always are medium and large collectors (cooperative or company). Difference between collectors for households and offices are legal status and budget. Almost all of small collectors do not have any register for their actions. About the collectors for offices, they are often medium and big collectors. Contract of collection will be established after offices called and found best collectors for used EEE which they discarded. The collectors will keep in touch with the offices for used EEE collection.

c. Direct reuse

- Households and offices:
  In big cities of Vietnam as Hanoi, Danang and Hochiminh, the generators with small amount of EEE and WEEE as households always discard to other user for direct reuse. This way often occurs in the middle and high income level households. The users of direct reuse always are relatives or friends who live in suburban or are at low income level. Used EEE will continue the lifetime in other households in the suburban and other small town.

10. Dismantling

- Dismantlers:
  These stakeholders received WEEE from collectors and importers for dismantling. The dismantling is processes in order to separate recyclable materials and parts. They will sell recyclable materials to the recyclers and reusable parts to repair and refurbishment shop. There are some residues from this activity and it is disposed as municipal waste or not properly treated. The disposal of such residues is one reason of environmental problem in recycling villages in Vietnam.

11. Repair/Refurbishment

- Repairers and refurbishers:
  These stakeholders buy used EEE and reusable parts from users

(generators), importers, collectors and dismantlers for repair and refurbishment. Their products will be back to the market, and the lifetime of used EEE can be increased via this activity. The repair and refurbishment activities discard an amount of residues to landfill as municipal waste.

With used EEE which customers bring to shops for repair only, all of EEE repaired by the repairers will be warranted for operated ability of used EEE. These warranties are in order to guarantee for effect of repair by the repairers. Depend on status and type of used EEE the repairer will discuss with his customers for the period of warranty. The period of warranty for repaired EEE is usually from 1 week to 1 month.

"On site repair service at home or office", this is a name of repair service for used EEE in Vietnam. In many cases, when the user has problems with his equipment, he can contact the repairers by telephone then they will come to home/office for repair. All technical activities will be implemented at home/office of customers. For this service, only small breaks of used EEE are repaired. With difficult or hard breaks, the repairers will discuss with the customer to bring to his workshop.

12. Processing of recyclables

- Recyclers:

  The E-waste of recyclable materials from many sources as dismantling, repair and refurbishment go to the recyclers for processing. At these entities the recyclable materials were recycled into materials for small industries. The big environmental problems occur at these places. With the rudimentary and underdeveloped technologies the recyclers brought about many problems for surrounding environment. Soil, water and air environmental pollutions in and around recycling entities are the big problems in Vietnam in general and in recycling villages in particular.

13. Incineration/Energy recovery

- Final Treatment Entities:

  The e-waste from above stakeholders ends its life at the final treatment facilities. At some private entities incineration facilities are simple and can not comply with national environmental standards. These entities live outside the law, and it is difficult to control them. The environmental pollution in these private organizations is considered by decision's makers. Now in Vietnam there are only two authorized central facilities for hazardous waste treatment, one in Hanoi and one in Hochiminh.

14. Disposal/Landfilling

- Final Treatment Entities:
  The target E-waste discarded as municipal waste goes to MSW landfill site. A little among them from big manufactures and offices go to the hazardous waste landfill via the contract with authorized organizations. The authorized organization in Hanoi is Industrial Waste Treatment Enterprise - the member of URENCO, and the other in Hochiminh city belongs to Hochiminh City People's Committee.

III. LIST OF COLLECTORS, IMPORTERS/EXPORTERS, REPAIRERS, REASSEMBLERS, DISMANTLERS AND PROCESSORS OF USED EEE IN VIETNAM.

LIST OF COLLECTORS, REPAIRERS, REASSEMBLERS, DISMANTLERS, PROCESSORS OF USED EEE

For TV:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED TV HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Ha Noi									
7	Trung tâm sửa chữa điện tử	174 Đường Bưởi	X	X	X		X	04 7668687	10	
12	Cöa hµng §øc Lîi	135/158 Tæ 15,Lµng Ngäc Hµ	X	X			X	04 7236059	7	
17	Cty CP điện tử Giảng Võ	121 Phủ Doãn		X			X	04 9288089	20	
20	TT bảo hành sửa chữa điện tử Sharp	121 Phủ Doãn		X			X	04 8286931	20	
21	Cty CP 28	115 Phủ Doãn		X			X	04 2700254	40	
22	Cty TNHH sản xuất và dịch vụ thương mại Thắng Lợi	52 B Thợ Nhuộm		X			X	04 9428189	25	
23	Xí nghiệp dịch vụ điện tử	A12 Khương Thượng		X		X	X	04 8522106	230	
36	Cửa hàng sửa chữa Mạnh Cường	P103-E4, Bách Khoa	X	X			X	04 9155864	35	
44	Bệnh viện máy tính	80 Trương Định	X	X			X	04 8631047	120	
	Lang Son									
6	Cửa hàng điện tử Anh Sơn	Khu An Ninh, Thị trấn Hữu Lũng	X	X			X	025 827715	15	
8	Cửa hàng điện tử điện lạnh Hoàng Đạt	Số 2 Ngõ 1, Phai Vệ	X	X			X	025 878885	15	
9	Cửa hàng điện tử Tuyết Mai	Ki-ốt 283 Chợ Đông Kinh	X	X			X	025 876024	10	
15	Cửa hàng điện tử Vân Dung	78 Trần Hưng Đạo	X	X			X	025 813628	10	
	Hai Phong									
5	TT sửa chữa Cường Hưng	38 Nguyễn Đức Cảnh		X			X	031 3510295	10	
13	Cty TNHH Điện thoại máy tính Trí Việt	132 Đà Nẵng, Lạc Kiên		X			X	031 3651751	30	
14	Cty TNHH sản xuất xe máy và cơ điện lạnh	Khu CN 355 Tiểu Trà, xã Hưng Đạo		X			X	031 3380268	10	
17	Xưởng điện tử Hằng Hải	2 Nguyễn Thượng Hiền, Minh Khai	X	X		X	X	031 3842147	25	
28	Cửa hàng điện tử số 6	Quầy 198 Chợ Sắt		X			X	031 3838277	30	
	Nghe An									
2	Cty TNHH Việt Hoàng	87A Minh Khai		X			X	038 3591288	20	
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh		X			X	038 3517216	20	
4	Cửa hàng điện tử Thị Sen	Trung Hoà, Hà Huy Tập		X			X	038 3832810	70	
	Da Nang									
12	Cửa hàng điện tử tư nhân	311 Hùng Vương	X	X			X	0511 837841	10	
13	Cửa hàng điện máy Tú Anh	323 Hùng Vương	X		X		X	0511 691573		15
18	Cửa hàng sửa chữa điện tử Bình Long	59 Hàm Nghi	X	X			X	0511 691554	15	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED TV HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Binh Duong									
1	Tiệm điện tử Việt Cường	1 Văn Công Khai, P Phú Cường		X			X	0650 859239	15	
5	Cơ sở sửa chữa điện tử Phan Đình Thích	Ấp Long Điền, Long Hoà		X			X	0650 562009	40	
7	Cửa hàng sửa chữa điện tử	Ấp 1 Tân Định	X	X			X	0650 560308	20	
11	Cơ sở điện lạnh Bình Dương	216 Đường Cách Mạng T8, P Phú Cường			X		X	0650 838678		80
13	Cửa hàng điện lạnh Minh Đức	132 Nguyễn Trãi- Lái Thiêu	X	X			X	0650 570077	50	
23	Cơ sở sửa chữa điện tử Ngọc Sinh	181 TT Mỹ Phước	X	X			X	0650 565180	30	
35	Tiệm sửa chữa điện tử Nguyễn Minh Đức	Ấp 3, Long Hoà		X			X	0650 570077	19	
36	Tiệm sửa chữa điện tử Duy	Ấp chợ Thanh Tuyền	X	X			X	0650 562305	25	
37	Cửa hàng sửa chữa điện tử Chung Chính	Ấp Minh Thạnh, Minh Hoà	X	X			X	0650 545169	20	
39	Cơ sở sửa chữa điện tử Bốn Biển	A35/2 Đường Lý Thường Kiệt, P Chánh Nghĩa	X	X			X	0650 820278	15	
40	Cơ sở sửa chữa điện tử Toàn	7 Đường Nguyễn Đình Chiểu, P Phú Cường	X	X			X	0650 826976	20	
	HO CHI MINH									
9	Dịch vụ điện tử Ánh Dương	228 Bắc Hải P15	X	X			X	08 9700962	15	
16	Xí nghiệp điện tử công nghệ VT	268 Trần Hưng Đạo		X			X	08 9202801	38	
17	Xí nghiệp tư doanh điện tử TQT	749 Lê Hồng Phong P12			X		X	08 8620731		40
19	Cty TNHH thương mại sản xuất lắp ráp thiết bi Sao Sáng	25 Hải Triều, P Bến Nghé			X		X	08 8223775		35
20	Nhà máy điện tử Bình Hoà	204 Nơ Trang Long, P12		X			X	08 5161859	120	
32	TT mua bán sửa chữa thiết bị điện tử tin học TNT	418 A Võ Văn Tần, P 5	X	X		X	X	08 9328091	20	

NOTE
COL: Collection
REP: Repair
REF: Refurbishment
REC: Recycle
SAL: Sales

For PC:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED PC HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Hanoi									
5	TT bảo hành máy in , máy tính	224 Bạch Mai		X			X	04 6274338	20	
33	Cửa hàng sửa chữa đồ điện tử	Số 7 ngõ 32 Đường Bưởi	X	X			X	04 9030251	85	
36	Cửa hàng sửa chữa Mạnh Cường	P103-E4, Bách Khoa	X	X			X	04 9155864	75	
41	Cty Máy tính TNC	64 Lê Thanh Nghị		X			X	04 6230005	50	
45	Huy Diễm Mobile	60 Hàng Cót	X	X			X	04 9273979	20	
	Lang Son									
16	Cty TNHH điện tử TH SaoHôm	50 Phai Vệ		X			X	025 871895	20	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED PC HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Hai Phong									
13	Cty TNHH Điện thoại máy tính Trí Việt	132 Đà Nẵng, Lạc Kiên		X			X	031 3651751	40	
14	Cty TNHH sản xuất xe máy và cơ điện lạnh	Khu CN 355 Tiểu Trà, xã Hưng Đạo		X			X	031 3380268	15	
17	Xưởng điện tử Hằng Hải	2 Nguyễn Thượng Hiền, Minh Khai	X	X		X	X	031 3842147	80	
29	Cửa hàng dịch vụ điện tử và tin học	Khu Thể Thao Đằng Lâm	X	X	X		X	031 3829240	50	60
	Nghe An									
2	Cty TNHH Việt Hoàng	87A Minh Khai		X			X	038 3591288	30	
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh	X	X			X	038 3517216	10	
	Da Nang									
19	Dịch vụ sửa chữa thiết bị viễn thông tin học Trọng Hùng	29 Hàm Nghi	X		X		X	0511 591887		15
25	Cty điện tử tin học Phi Long	102 Hàm Nghi, P. Thục Giám		X			X	0511 816000	12	
	Binh Duong									
5	Cơ sở sửa chữa điện tử Phan Đình Thích	Ấp Long Điền, Long Hoà	X	X			X	0650 562009	25	
7	Cửa hàng sửa chữa điện tử	Ấp 1 Tân Định	X	X			X	0650 560308	15	
39	Cơ sở sửa chữa điện tử Bốn Biển	A35/2 Đường Lý Thường Kiệt, P Chánh Nghĩa	X	X			X	0650 820278	10	
	HO CHI MINH									
15	Dịch vụ tin học 15	5C Nguyễn Trung Trực, P5	X	X			X	907993925	35	
20	Nhà máy điện tử Bình Hoà	204 Nơ Trang Long, P12		X			X	08 5161859	100	
29	TT sửa chữa thiết bị tin học Tân Phương	01 Tôn Thất Tùng, P Phạm Ngũ Lão		X			X	08 9253216	55	
30	Cửa hàng vi tính Đông Huy	34 Tôn Thất Tùng, P Bến Thành	X	X			X	08 9253504	25	
31	Doanh nghiệp tư nhân tin học CP	76 Tôn Thất Tùng, P Bến Thành		X			X	08 9252335	45	
32	TT mua bán sửa chữa thiết bị điện tử tin học TNT	418 A Võ Văn Tần, P 5	X	X		X	X	08 9328091	30	
35	Doanh nghiệp tư nhân thương mại dịch vụ tin học Minh Quân	46 Tôn Thất Tùng		X			X	08 8332919	45	

For MP:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED MP HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Ha Noi									
1	Cửa hàng bảo hành sửa chữa chính hãng	247 Kim Mã		X			X	04 8460129	100	
8	Siêu thị điện thoại cũ Minh Phương Mobiel	157 Thái Hà	X	X			X	04 5143349	20	
11	Cửa hàng mua bán và sửa chữa	45 Đỗ Ngọc Du	X	X			X	04 2124522	15	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED MP HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	điện thoại di động									
16	Cty xuất nhập khẩu Tân Mai	36 Bà Triệu		X			X	04 8254191	80	
18	TT mua bán sửa chữa điện thoại di động	6 Tông Đản	X	X	X		X	04 9351048	20	
25	TT điện thoại di động	8 Thái Hà	X	X			X	04 5875209	100	
26	Cty TNHH sản xuất và dịch vụ thương mại Thắng Lợi	52 B Thợ Nhuộm		X			X	04 9428189	15	
27	Cty TNHH điện tử viễn thông Siêu Thoại	88 Trần Hưng Đạo		X			X	04 9425688	80	
28	Cty CP Tiên Hoàng	86 Quán Sứ		X			X	04 9426286	100	
43	Hải Mobile	413 Kim Mã	X	X	X		X	04 7712463	50	
	Lang Son									
1	Ki ốt 5 , Chợ Trung Tâm	Phố Đức Hinh	X	X			X		50	
2	Cty TNHH Hữu Nghị	2 Hoàng Tân, Hoàng Đồng		X			X	025 890044	100	
10	Đại lý điện thoại	TT Đồng Đăng	X	X			X	025 851618	40	
11	TT bảo hành Nokia	Q2, Khu Tân Mỹ		X			X	025 826828	60	
14	Cty cổ phần điện báo điện thoại	49 Lê Lợi		X			X	025 715968	30	
	Hai Phong									
6	Nokia 17	17 Cát Dài		X			X	031 3634607	10	
7	TT bảo hành và sửa chữa điện thoại di động Trần Tiến	77 Lương Khánh Thiện		X			X	031 3847266	20	
13	Cty TNHH Điện thoại máy tính Trí Việt	132 Đà Nẵng, Lạc Kiên		X			X	031 3651751	100	
14	Cty TNHH sản xuất xe máy và cơ điện lạnh	Khu CN 355 Tiểu Trà, xã Hưng Đạo		X			X	031 3380268	20	
17	Xưởng điện tử Hằng Hải	2 Nguyễn Thượng Hiền, Minh Khai	X	X	X		X	031 3842147	150	
	Nghe An									
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh	X	X			X	038 3517216	30	
6	TT giao dịch điện thoại di động VMS Mobifone	105 Lê Hồng Phong	X	X			X	038 3564999	150	
	Danang									
22	Dịch vụ sửa chữa thiết bị viễn thông tin học Trọng Hùng	29 Hàm Nghi	X	X			X	0511 591887	40	
23	Cửa hàng điện thoại di động	137 Lê Duẩn	X	X			X	0511 856692	100	
25	Cty điện tử tin học Phi Long	102 Hàm Nghi, P. Thục Giám		X			X	0511 816000	15	
	Hochiminh									
5	Cơ sở sửa chữa điện tử Phan Đình Thích	Ấp Long Điền, Long Hoà	X	X	X		X	0650 562009	52	
35	Tiệm sửa chữa điện tử Nguyễn Minh Đức	Ấp 3, Long Hoà	X	X	X		X	0650 570077	25	

For AC:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED AC HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Ha Noi									
2	Trung tâm cơ điện lạnh thủ đô	18 Lý Văn Phúc	X	X			X	04 8231702	5	
3	Trung tâm sửa chữa máy giặt	43 Lý Nam Đế	X	X			X	04 8232830	30	
5	Cửa hàng điện lạnh Việt Hùng	19/290 Kim Mã	X	X			X	04 8230894	2	
6	Cửa hàng sửa chữa điện lạnh	261 Đội Cấn	X	X			X		10	
15	TT bảo hành Philips,Akira,Panasonic,Shape	120 Đông Các		X			X	04 5118645	50	
16	Cửa hàng sửa chữa đồ điện lạnh	85 Đại Cồ Việt	X	X			X		5	
18	TT bảo hành Hitachi và Mitsubishi	233 Nguyễn Khoái		X			X		10	
20	TT bảo hành HItachi và Mitsubishi	233 Nguyễn Khoái		X			X		10	
28	Cty CP điện tử Giảng Võ	121 Phủ Doãn		X			X	04 9288089	15	
30	Cửa hàng Hải Yến	94 Trần Hưng Đạo	X	X			X		10	
31	TT bảo hành sửa chữa điện tử Shape	121 Phủ Doãn		X			X	04 8286931	25	
39	Điện lạnh công đoàn Hai Bà Trưng	167 Thuỵ Khuê	X	X			X	04 7280733	5	
44	Điện tử điện lạnh Bách Khoa	32 Cầu Giấy	X	X			X	04 9154856	60	
45	Cty TNHH Nguyễn Tiến Phú	6 Ngõ 165C Xuân Thuỷ, Tổ 54 Dịch Vọng Hậu	X	X		X	X		10	
	Hai Phong									
2	Cty CP điện tử Dương Hưng Hà	76 Lạch Tray		X			X	031 3827263	10	
8	Cửa hàng điện tử số 6	Quầy 198 Chợ Sắt		X			X	031 3838277	15	
10	TT sửa chữa điện lạnh Hiếu Thảo	53 Mê Linh	X	X			X	031 3631823	2	
13	Cửa hàng điện lạnh	5B Lương Khánh Thiện	X	X			X	031 3920180	8	
16	Cửa hàng Sanyo Phương Nam	109 Lương Khánh Thiện		X			X	031 3853037	7	
25	Cty TNHH cơ điện lạnh Quang Thắng	Mỹ Chanh, xã Nam Sơn	X	X			X	031 3770461	10	
	Lang Son									
2	Cửa hàng điện tử điện lạnh Hoàng Đạt	Số 2 Ngõ 1, Phai Vệ	X	X			X		5	
3	Cửa hàng điện tử Tuyết Mai	Kiot 283 Chợ Đông Kinh		X			X	025 876024	10	
4	TT điện tử điện lạnh Mai Lâm	96 Phai Vệ	X	X			X	025 876508	5	
6	Cửa hàng điện tử Anh Sơn	Khu An Ninh, TT Hữu Lũng		X			X	025 827715	5	
8	Cửa hàng điện tử Hà Cảnh	Khu 1, TT Đình Lập		X			X	025 846685	12	
10	Cửa hàng điện tử Vân Dung	78 Trần Hưng Đạo		X			X	025 813628	5	
13	TT sửa chữa điện lạnh	Khu Nhiệt điện Tam Thanh-Tam Thanh	X	X			X	025 872606	15	
14	Cửa hàng điện tử điện lạnh Tân Thanh	Tân Thanh	X	X			X	025 888466	15	
	Nghe An									
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh	X	X			X	038 3517216	5	
	Da Nang									
9	Cửa hàng điện máy Tú Anh	323 Hùng Vương	X		X		X	0511 691573		20

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED AC HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Ho Chi Minh									
1	Cửa hàng Kiến Thức	C12/4 TI10, P Bình Trị Đông		X			X			
2	Cửa hàng điện tử Thương Tín	581 Bùi Đức Quý					X			
3	Cửa hàng điện tử Hùng Vương	104 Lê Quang Định, P 14					X			
4	Cty TNHH Thương mại dịch vụ thiết bị điện tử Tân Anh Minh	7F Nơ Trang Long	X	X			X			
5	Dịch vụ tin học 15	5C Nguyễn Trung Trực, P5								
6	Nhà máy điện tử Bình Hoà	204 Nơ Trang Long, P12					X			
7	TT dịch vụ tin học Trương Nguyễn	60 Tôn Thất Tùng								
8	Cty TNHH thương mại dịch vụ Sông Ba Hạ	20 Bùi Thị Xuân		X			X			
9	Cty TNHH thương mại dịch vụ tin học Duy Anh	22 Bùi Thị Xuân					X			
10	TT thương mại dịch vụ tin học viễn thông Thành Phát	32 Bùi Thị Xuân					X			
11	TT sửa chữa thiết bị tin học Tân Phương	01 Tôn Thất Tùng, P Phạm Ngũ Lão					X			
12	Cửa hàng vi tính Đông Huy	34 Tôn Thất Tùng, P Bến Thành					X			
13	Doanh nghiệp tư nhân tin học CP	76 Tôn Thất Tùng, P Bến Thành					X			
14	Cty TNHH dịch vụ thương mại tin học Kỷ Nguyên	153 Lê Thị Riêng					X			
15	TT dịch vụ tin học điện máy Hoàng Tôn	16 Lưu Văn Lang, P Bến Thành					X			
16	Doanh nghiệp tư nhân thương mại dịch vụ tin học Minh Quân	46 Tôn Thất Tùng					X			
17	Cty TNHH thương mại và dịch vụ tin học viễn thông UBC	41 Nguyễn Thị Minh Khai, P Đa Kao					X			
18	Xưởng công nghệ điện tử VT	268 Trần Hưng Đạo					X			
19	Cty TNHH thương mại sản xuất lắp ráp thiết bị điện tử Sao Sáng	25 Hải Triều, P Bến Nghé	X	X			X			
20	Cty TNHH điện tử điện lạnh Đa Linh	64 Tôn Thất Thuyết, P Bến Nghé					X			
21	Cửa hàng thương mại dịch vụ Vĩnh Khang	36 Tôn Thất Tùng					X			
22	Doanh nghiệp tư nhân thương mại dịch vụ Nguyễn Thắng	195Bis Đường Nam Kỳ Khởi Nghĩa					X			
23	TT mua bán sửa chữa thiết bị điện tử tin học TNT	418 A Võ Văn Tần, P 5					X			
24	Cửa hàng kinh doanh điện tử	48 Đường Cách Mạng T8, P 6					X			
25	Cửa hàng kinh doanh thiết bị công nghệ và tin học viễn thông	397 Võ Văn Tần, P 5					X			
26	Cty TNHH điện tử Tiến Đạt	106 bis, Cư xá Đô Thành Đường 3, P 4					X			
27	Cửa hàng điện tử gia dụng Philip	225 Lê Văn Sỹ, P 13	X	X			X			
28	Cty TNHH điện tử Việt Tâm	46/28 A Lê Siêu, P 16					X			
29	Cơ sở điện và điện tử Thanh Ngân	569 Đường 3 tháng 2, P 8					X			
30	Dịch vụ điện tử Ánh Dương	228 Bắc Hải P15					X			
31	Xí Nghiệp tư doanh điện tử TQT	749 Lê Hồng Phong, P 12					X			
32	Cơ sở điện và điện tử Tài Kỳ	F15 Đường 26/3 P 15					X			

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED AC HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
33	Cửa hàng tin học Tân Tiến	250 Hồ Văn Huê					X			
34	Cửa hàng dịch vụ điện tử tin học Kim Ngân	2/10 Khu Phố 4, Trần Mão, P Bình An					X			
35	Doanh nghiệp tư nhân thương mại dịch vụ Quảng Dương	211 A Nam Kỳ Khởi Nghĩa, P 7	X	X			X			
36	Cty Công nghệ điện tử Cơ khí và Môi Trường	Lô 1 Trường Cảnh Sát nhân dân, P Long Thành Mỹ	X	X			X			
37	TT dịch vụ điện tử Thoại Hiệp	T4, Bàu Cát, P 13					X			
38	Cửa hàng Á Mỹ	352 B Trường Chinh, P 13					X			
	Binh Duong									
16	Cửa hàng điện lạnh Minh Đức	132 Nguyễn Trãi- Lái Thiêu	X	X			X	0650 570077	38	
40	Cơ sở điện lạnh Hồng Nhân	Khu 1, TT Uyên Hưng	X	X			X	0650 656271		

For RF:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Hanoi									
2	Trung tâm cơ điện lạnh thủ đô	18 Lý Văn Phúc	X	X			X	04 8231702	5	
3	Trung tâm sửa chữa máy giặt	43 Lý Nam Đế		X			X	04 8232830	30	
5	Cửa hàng điện lạnh Việt Hùng	19/290 Kim Mã	X	X			X	04 8230894	5	
6	Cửa hàng sửa chữa điện lạnh	261 Đội Cấn	X	X			X		8	
11	Xí nghiệp dịch vụ điện tử	A12 Khương Thượng		X			X	04 8522106	150	
15	TT bảo hành Philips,Akira,Panasonic,Shape	120 Đông Các		X			X	04 5118645	30	
16	Cửa hàng sửa chữa đồ điện lạnh	85 Đại Cồ Việt	X	X			X		5	
18	TT bảo hành Hitachi và Mitsubishi	233 Nguyễn Khoái		X			X		30	
20	TT bảo hành HItachi và Mitsubishi	233 Nguyễn Khoái		X			X		30	
28	Cty CP điện tử Giảng Võ	121 Phủ Doãn		X			X	04 9288089	15	
31	TT bảo hành sửa chữa điện tử Shape	121 Phủ Doãn		X			X	04 8286931	15	
39	Điện lạnh công đoàn Hai Bà Trưng	167 Thuỵ Khuê		X			X	04 7280733	10	
41	Cửa hàng sửa chữa đồ điện lạnh	138 Lê Trọng Tấn	X	X			X		7	
44	Điện tử điện lạnh Bách Khoa	32 Cầu Giấy	X	X			X	04 9154856	40	
45	Cty TNHH Nguyễn Tiến Phú	6 Ngõ 165C Xuân Thuỷ, Tổ 54 Dịch Vọng Hậu		X			X		20	
	Hai Phong									
2	Cty CP điện tử Dương Hưng Hà	76 Lạch Tray	X	X			X	031 3827263	20	
8	Cửa hàng điện tử số 6	Quầy 198 Chợ Sắt	X	X			X	031 3838277	10	
10	TT sửa chữa điện lạnh Hiếu Thảo	53 Mê Linh	X	X			X	031 3631823	7	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
13	Cửa hàng điện lạnh	5B Lương Khánh Thiện	X	X			X	031 3920180	6	
16	Cửa hàng Sanyo Phương Nam	109 Lương Khánh Thiện		X			X	031 3853037	10	
25	Cty TNHH cơ điện lạnh Quang Thắng	Mỹ Chanh, xã Nam Sơn	X	X			X	031 3770461	20	
	Lang Son									
2	Cửa hàng điện tử điện lạnh Hoàng Đạt	Số 2 Ngõ 1, Phai Vệ		X			X		10	
3	Cửa hàng điện tử Tuyết Mai	Kiot 283 Chợ Đông Kinh		X			X	025 876024	10	
4	TT điện tử điện lạnh Mai Lâm	96 Phai Vệ		X			X	025 876508	5	
6	Cửa hàng điện tử Anh Sơn	Khu An Ninh, TT Hữu Lũng		X			X	025 827715	5	
8	Cửa hàng điện tử Hà Cảnh	Khu 1, TT Đình Lập		X			X	025 846685	10	
10	Cửa hàng điện tử Vân Dung	78 Trần Hưng Đạo		X			X	025 813628	10	
13	TT sửa chữa điện lạnh	Khu Nhiệt điện Tam Thanh-Tam Thanh	X	X			X	025 872606	10	
14	Cửa hàng điện tử điện lạnh Tân Thanh	Tân Thanh	X	X			X	025 888466	15	
	Nghe An									
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh		X			X	038 3517216	2	
	Da Nang									
8	Cửa hàng điện tử tư nhân	311 Hùng Vương		X			X	0511 837841	15	
9	Cửa hàng điện máy Tú Anh	323 Hùng Vương			X		X	0511 691573		15
24	Cửa hàng sửa chữa điện tử Bình Long	59 Hàm Nghi	X	X			X	0511 691554	15	
33	Cty TNHH thương mại và dịch vụ Lưu Kim Sơn	27 Ngũ Hành Sơn		X			X	0511 847747	13	
34	Tiệm điện tử tư nhân Tấn Đạt	Ngã 3 Hoà Sơn, xã Hoà Sơn		X			X	0511 793382	8	
	Ho Chi Minh									
1	Cửa hàng Kiến Thức	C12/4 TI10, P Bình Trị Đông					X			
2	Cửa hàng điện tử Thương Tín	581 Bùi Đức Quý		X			X			
3	Cửa hàng điện tử Hùng Vương	104 Lê Quang Định, P 14					X			
4	Cty TNHH Thương mại dịch vụ thiết bị điện tử Tân Anh Minh	7F Nơ Trang Long					X			
5	Dịch vụ tin học 15	5C Nguyễn Trung Trực, P5	X	X			X			
6	Nhà máy điện tử Bình Hoà	204 Nơ Trang Long, P12					X			
7	TT dịch vụ tin học Trương Nguyễn	60 Tôn Thất Tùng					X			
8	Cty TNHH thương mại dịch vụ Sông Ba Hạ	20 Bùi Thị Xuân					X			
9	Cty TNHH thương mại dịch vụ tin học Duy Anh	22 Bùi Thị Xuân		X			X			
10	TT thương mại dịch vụ tin học viễn thông Thành Phát	32 Bùi Thị Xuân					X			
11	TT sửa chữa thiết bị tin học Tân Phương	01 Tôn Thất Tùng, P Phạm Ngũ Lão					X			
12	Cửa hàng vi tính Đông Huy	34 Tôn Thất Tùng, P Bến Thành					X			
13	Doanh nghiệp tư nhân tin học CP	76 Tôn Thất Tùng, P Bến					X			

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
		Thành								
14	Cty TNHH dịch vụ thương mại tin học Kỷ Nguyên	153 Lê Thị Riêng					X			
15	TT dịch vụ tin học điện máy Hoàng Tôn	16 Lưu Văn Lang, P Bến Thành					X			
16	Doanh nghiệp tư nhân thương mại dịch vụ tin học Minh Quân	46 Tôn Thất Tùng					X			
17	Cty TNHH thương mại và dịch vụ tin học viễn thông UBC	41 Nguyễn Thị Minh Khai, P Đa Kao					X			
18	Xưởng công nghệ điện tử VT	268 Trần Hưng Đạo					X			
19	Cty TNHH thương mại sản xuất lắp ráp thiết bị điện tử Sao Sáng	25 Hải Triều, P Bến Nghé					X			
20	Cty TNHH điện tử điện lạnh Đa Linh	64 Tôn Thất Thuyết, P Bến Nghé	X	X			X			
21	Cửa hàng thương mại dịch vụ Vĩnh Khang	36 Tôn Thất Tùng					X			
22	Doanh nghiệp tư nhân thương mại dịch vụ Nguyễn Thắng	195Bis Đường Nam Kỳ Khởi Nghĩa					X			
23	TT mua bán sửa chữa thiết bị điện tử tin học TNT	418 A Võ Văn Tần, P 5					X			
24	Cửa hàng kinh doanh điện tử	48 Đường Cách Mạng T8, P 6					X			
25	Cửa hàng kinh doanh thiết bị công nghệ và tin học viễn thông	397 Võ Văn Tần, P 5					X			
26	Cty TNHH điện tử Tiến Đạt	106 bis, Cư xá Đô Thành Đường 3, P 4					X			
27	Cửa hàng điện tử gia dụng Philip	225 Lê Văn Sỹ, P 13					X			
28	Cty TNHH điện tử Việt Tâm	46/28 A Lê Siêu, P 16	X	X			X			
29	Cơ sở điện và điện tử Thanh Ngân	569 Đường 3 tháng 2, P 8					X			
30	Dịch vụ điện tử Ánh Dương	228 Bắc Hải P15					X			
31	Xí Nghiệp tư doanh điện tử TQT	749 Lê Hồng Phong, P 12					X			
32	Cơ sở điện và điện tử Tài Kỳ	F15 Đường 26/3 P 15					X			
33	Cửa hàng tin học Tân Tiến	250 Hồ Văn Huê					X			
34	Cửa hàng dịch vụ điện tử tin học Kim Ngân	2/10 Khu Phố 4, Trần Mão, P Bình An					X			
35	Doanh nghiệp tư nhân thương mại dịch vụ Quảng Dương	211 A Nam Kỳ Khởi Nghĩa, P 7					X			
36	Cty Công nghệ điện tử Cơ khí và Môi Trường	Lô 1 Trường Cảnh Sát nhân dân, P Long Thành Mỹ	X	X			X			
37	TT dịch vụ điện tử Thoại Hiệp	T4, Bàu Cát, P 13	X	X			X			
38	Cửa hàng Á Mỹ	352 B Trường Chinh, P 13					X			
	Binh Duong									
8	Cửa hàng sửa chữa điện tử Chung Chính	Ấp Minh Thạnh, Minh Hoà		X			X	0650 545169	12	
16	Cửa hàng điện lạnh Minh Đức	132 Nguyễn Trãi- Lái Thiêu		X			X	0650 570077	51	
19	Tiệm điện tử Việt Cường	1 Văn Công Khai, P Phú Cường		X			X	0650 859239	10	
20	Cơ sở điện lạnh Bình Dương	216 Đường Cách Mạng T8, P Phú Cường			X		X	0650 838678		90
38	Cơ sở sửa chữa điện tử Toàn	7 Đường Nguyễn Đình Chiểu, P Phú Cường		X			X	0650 826976	10	

For WM:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Ha Noi									
2	Trung tâm cơ điện lạnh thủ đô	18 Lý Văn Phúc	X	X			X	04 8231702	10	
3	Trung tâm sửa chữa máy giặt	43 Lý Nam Đế	X	X			X	04 8232830	40	
6	Cửa hàng sửa chữa điện lạnh	261 Đội Cấn	X	X			X		6	
15	TT bảo hành Philips,Akira,Panasonic,Shape	120 Đông Các		X			X	04 5118645	35	
16	Cửa hàng sửa chữa đồ điện lạnh	85 Đại Cồ Việt	X	X			X		3	
18	TT bảo hành Hitachi và Mitsubishi	233 Nguyễn Khoái		X			X		20	
20	TT bảo hành HItachi và Mitsubishi	233 Nguyễn Khoái		X			X		30	
28	Cty CP điện tử Giảng Võ	121 Phủ Doãn	X	X			X	04 9288089	10	
31	Trạm bảo hành sửa chữa điện tử Shape	121 Phủ Doãn		X			X	04 8286931	15	
39	Điện lạnh công đoàn Hai Bà Trưng	167 Thuỵ Khuê		X			X	04 7280733	8	
41	Cửa hàng sửa chữa đồ điện lạnh	138 Lê Trọng Tấn		X	X		X		35	
44	Điện tử điện lạnh Bách Khoa	32 Cầu Giấy	X	X	X	X	X	04 9154856	50	
45	Cty TNHH Nguyễn Tiến Phú	6 Ngõ 165C Xuân Thuỷ, Tổ 54 Dịch Vọng Hậu		X			X		10	
	Hai Phong									
2	Cty CP điện tử Dương Hưng Hà	76 Lạch Tray	X	X			X	031 3827263	30	
10	TT sửa chữa điện lạnh Hiếu Thảo	53 Mê Linh	X	X			X	031 3631823	7	
16	Cửa hàng Sanyo Phương Nam	109 Lương Khánh Thiện		X			X	031 3853037	15	
25	Cty TNHH cơ điện lạnh Quang Thắng	Mỹ Chanh, xã Nam Sơn	X	X			X	031 3770461	15	
	Lang Son									
4	TT điện tử điện lạnh Mai Lâm	96 Phai Vệ	X	X			X	025 876508	10	
13	TT sửa chữa điện lạnh	Khu Nhiệt điện Tam Thanh-Tam Thanh	X	X			X	025 872606	5	
14	Cửa hàng điện tử điện lạnh Tân Thanh	Tân Thanh	X	X			X	025 888466	5	
	Nghe An									
3	Kiôt điện tử Ngã 4 Chợ Vinh, Phạm Hồng Thắng	Ngã 4 Chợ Vinh	X	X			X	038 3517216	2	
	Da Nang									
9	Cửa hàng điện máy Tú Anh	323 Hùng Vương			X			0511 691573		15
	Ho Chi Minh									
1	Cửa hàng Kiến Thức	C12/4 TI10, P Bình Trị Đông		X			X			
2	Cửa hàng điện tử Thương Tín	581 Bùi Đức Quý					X			
3	Cửa hàng điện tử Hùng Vương	104 Lê Quang Định, P 14					X			
4	Cty TNHH Thương mại dịch vụ thiết bị điện tử Tân Anh Minh	7F Nơ Trang Long	X	X			X			
5	Dịch vụ tin học 15	5C Nguyễn Trung Trực, P5						907993925		
6	Nhà máy điện tử Bình Hoà	204 Nơ Trang Long, P12					X	08 5161859		
7	TT dịch vụ tin học Trương	60 Tôn Thất Tùng					X			

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Nguyễn									
8	Cty TNHH thương mại dịch vụ Sông Ba Hạ	20 Bùi Thị Xuân		X			X			
9	Cty TNHH thương mại dịch vụ tin học Duy Anh	22 Bùi Thị Xuân					X			
10	TT thương mại dịch vụ tin học viễn thông Thành Phát	32 Bùi Thị Xuân					X			
11	TT sửa chữa thiết bị tin học Tân Phương	01 Tôn Thất Tùng, P Phạm Ngũ Lão					X	08 9253216		
12	Cửa hàng vi tính Đông Huy	34 Tôn Thất Tùng, P Bến Thành					X	08 9253504		
13	Doanh nghiệp tư nhân tin học CP	76 Tôn Thất Tùng, P Bến Thành					X	08 9252335		
14	Cty TNHH dịch vụ thương mại tin học Kỷ Nguyên	153 Lê Thị Riêng					X			
15	TT dịch vụ tin học điện máy Hoàng Tôn	16 Lưu Văn Lang, P Bến Thành					X			
16	Doanh nghiệp tư nhân thương mại dịch vụ tin học Minh Quân	46 Tôn Thất Tùng					X	08 8332919		
17	Cty TNHH thương mại và dịch vụ tin học viễn thông UBC	41 Nguyễn Thị Minh Khai, P Đa Kao					X			
18	Xưởng công nghệ điện tử VT	268 Trần Hưng Đạo					X			
19	Cty TNHH thương mại sản xuất lắp ráp thiết bị điện tử Sao Sáng	25 Hải Triều, P Bến Nghé	X	X			X	08 8223775		
20	Cty TNHH điện tử điện lạnh Đa Linh	64 Tôn Thất Thuyết, P Bến Nghé					X			
21	Cửa hàng thương mại dịch vụ Vĩnh Khang	36 Tôn Thất Tùng					X			
22	Doanh nghiệp tư nhân thương mại dịch vụ Nguyễn Thắng	195Bis Đường Nam Kỳ Khởi Nghĩa					X			
23	TT mua bán sửa chữa thiết bị điện tử tin học TNT	418 A Võ Văn Tần, P 5					X	08 9328091		
24	Cửa hàng kinh doanh điện tử	48 Đường Cách Mạng T8, P 6					X			
25	Cửa hàng kinh doanh thiết bị công nghệ và tin học viễn thông	397 Võ Văn Tần, P 5					X			
26	Cty TNHH điện tử Tiến Đạt	106 bis, Cư xá Đô Thành Đường 3, P 4					X			
27	Cửa hàng điện tử gia dụng Philip	225 Lê Văn Sỹ, P 13	X	X			X			
28	Cty TNHH điện tử Việt Tâm	46/28 A Lê Siêu, P 16					X			
29	Cơ sở điện và điện tử Thanh Ngân	569 Đường 3 tháng 2, P 8					X			
30	Dịch vụ điện tử Ánh Dương	228 Bắc Hải P15					X			
31	Xí Nghiệp tư doanh điện tử TQT	749 Lê Hồng Phong, P 12					X	08 8620731		
32	Cơ sở điện và điện tử Tài Kỳ	F15 Đường 26/3 P 15					X			
33	Cửa hàng tin học Tân Tiến	250 Hồ Văn Huê					X			
34	Cửa hàng dịch vụ điện tử tin học Kim Ngân	2/10 Khu Phố 4, Trần Mão, P Bình An					X			
35	Doanh nghiệp tư nhân thương mại dịch vụ Quảng Dương	211 A Nam Kỳ Khởi Nghĩa, P 7	X	X			X			
36	Cty Công nghệ điện tử Cơ khí và Môi Trường	Lô 1 Trường Cảnh Sát nhân dân, P Long Thành Mỹ	X	X			X			
37	TT dịch vụ điện tử Thoại Hiệp	T4, Bàu Cát, P 13					X			
38	Cửa hàng Á Mỹ	352 B Trường Chinh, P 13					X			

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY					CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
			COL	REP	REF	REC	SAL		REP	REF
	Binh Duong									
4	Cơ sở sửa chữa điện tử Ngọc Sinh	181 TT Mỹ Phước					X	0650 65180		
7	Tiệm sửa chữa điện tử Duy	Ấp chợ Thanh Tuyền					X	0650 62305		
8	Cửa hàng sửa chữa điện tử Chung Chính	Ấp Minh Thạnh, Minh Hoà					X	0650 45169		
18	Cơ sở điện lạnh Thu Vân	745 KP chợ, TT Lái Thiêu					X	0650 56396		
29	Cửa hàng điện tử vi tính văn phòng phẩm TLC	29/10 Đường 30 tháng 4, P Phú Hoà					X	0650 37587		
34	Cửa hàng phục tùng điện lạnh Thành Nam	2/24 Đại Lộ Bình Dương, P Phú Thọ					X	0650 28981		
37	Cơ sở sửa chữa điện tử Bốn Biển	A35/2 Đường Lý Thường Kiệt, P Chánh Nghĩa					X	0650 20278		
38	Cơ sở sửa chữa điện tử Toàn	7 Đường Nguyễn Đình Chiểu, P Phú Cường					X	0650 26976		
40	Cơ sở điện lạnh Hồng Nhân	Khu 1, TT Uyên Hưng					X	0650 56271		

LIST OF IMPORTERS AND EXPORTERS OF USED EEE

For TVs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED TV HANDLED PER MONTH	
					IMP	EXP
	Ha Noi					
1	Cty TNHH công nghệ điện-Điện tử	48 Ngõ Hoàng An Trung Phụng	IMP		50	
2	Cửa hàng điện lạnh đồ gia dụng	159 Thái Hà	IMP		20	
3	Cty kỹ nghệ Hà Nội Vàng	4 Hoàng Diệu - Ba Đình	IMP		50	
4	Cty TNHH THương Mại Việt Long	187 Giảng Võ- Ba Đình	IMP		20	
5	Cty CP dịch vụ điện tử Hanel	A12 Khương Thượng	IMP		150	
6	TT điện Máy Việt Long	187 Giảng Võ	IMP		200	
7	Cty TNHH Trường Thành	187 Giảng Võ	IMP		150	
8	Cty Công nghệ và thương mại Quang Tùng	41/130 Đốc Ngữ	IMP		90	
9	Cty Côn nghệ và truyền thông CK	Tầng 2 siêu thị Big C	IMP		100	
10	Cty Misustar	Tầng 2 siêu thị Big C	IMP		0	
11	Chi nhánh cty JVC Việt Nam tại Hà Nội	30 Nguyễn Du	IMP		100	
12	TT Điện tử- Điện lạnh Hưng Anh	40 Hàm Long	IMP		100	
13	Cty TNHH LG Electronics Việt Nam	Tầng 12-44 B Lý THường Kiệt	IMP		40	
14	Cty điện tử Hoàn Kiếm	383 Hia Bà Trưng	IMP		50	
15	Cty THương mại Hoàng Hải	22 Hàng Bài	IMP		80	
16	Cửa hàng điện tử điện lạnh cao cấp	39 Hai Bà Trưng	IMP		80	
17	TT điện tử điện lạnh thành phố	25 Quang Trung	IMP		60	
18	Cty TNHH Điên tử và chuyển giao công nghệ Tấn Á	1 B Yên Lạc	IMP		30	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED TV HANDLED PER MONTH	
					IMP	EXP
19	Cty TNHH sản xuất và thương mại điện tử Bính Sơn	F1101-17T9 Trung Hoà Nhân Chính	IMP		120	
	Lang Son					
1	Cty TNHH điện tử Ánh Trí	100 Ngô Quyền	IMP	717111	60	
2	Cty XNK Hà Nội - CN Lang Sơn	66 A Lê Đại Hành	IMP	874888	100	
3	Cty VIHACO	Khu Giây Thép huyện Cao Lộc	IMP	851248	120	
4	Cửa hàng máy tínhHMT	Thống Nhất 1 Đồng Mỏ	IMP	821212	0	
6	Cty XNK - ĐT Bình Thuận- Chi nhánh	216 Trần Đăng Ninh	IMP	874189	400	
7	TT Thương mại tổng hợp	135 Trần Đăng Ninh	IMP	876672	100	
8	TT điện thoại thành phố Lạng Sơn	49 Lê Lợi- Vĩnh Trại	IMP	715903	300	
	Hai Phong					
1	Cty Điện tử Hải Phòng	73 Điện Biên Phủ		746486	120	
2	TT UNESCO phát triển công nghệ thông tin	4 Bạch Đằng	IMP	876212	45	
3	Chi nhánh Cty điện tử Eleco	33 Minh Khai	IMP	823719	200	
4	Cty CP điện tử liên doanh	2B Nguyễn Tri Phương- Minh Khai	IMP	821089	150	
5	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	856508	100	
6	Cty TNHH điện tử và viễn thông Hải Phòng	180Lê Lợi -Gia Viên	IMP	656228	120	
7	TT nghiên cứu thiết bị tàu thuỷ và điện dân dụng	484 Lạch Tray	IMP	625710	150	
8	Cty Sony Việt Nam (chi nhánh Hải Phòng)	32 Lương Khánh Thiện	IMP	920424	500	
	Nghe An					
1	Cty XNK Nghệ An - UNIMEX	Hưng Lộc	IMP		100	
2	Cty TNHH thương mại Việt Linh	6 Đường Quang Trung	IMP		100	
3	Cửa hàng điện tử - Cty Hồng Phúc	K8 Lê Lợi	IMP		100	
4	Cty TNHH thương mại và dịch vụ XNK Nam Sao	25B Nguyễn Thị Minh Khai	IMP		30	
5	Cty XNK Trường Thịnh	19 Mai Hắc Đế, Lê Lợi	IMP		50	
	Da Nang					
1	Cty Cơ nhiệt điện lạnh Bách Khoa miền Trung	Lô C14 -472 Bắc Nam p Thục Gián	IMP AND EXP	655319	150	100
2	Cty CP Điện tử và tin Học Đà Nẵng	6 Pastuer- Hìa Châu 1	IMP AND EXP	872965	200	
3	Cty TNHH Thương mại và Dịch vụ điện lạnh Thành thị	75 Đống Đa	IMP		180	
4	Cty TNHH Điện tử DX	351 Nguyễn Tri Phương	IMP AND EXP	633175	200	120
5	Cty Điện tử tin Học Pvà H	102 Phan Thanh	IMP AND EXP		250	160
6	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	100	
7	Cty cơ điện tử Samsung tại Đà Nẵng	60 Hàm Nghi	IMP AND EXP	652359	70	70
9	Cty TNHH Điện tử tin Học Bảo Thắng	158 Lý Tự Trọng	IMP AND EXP	531294	121	100
10	Cty Cơ điện lạnh Bách Khoa - Công nghệ Đà Nẵng	77 Trường Nữ Vương	IMP AND EXP	872679	400	200

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED TV HANDLED PER MONTH	
					IMP	EXP
11	Cty TNHH Điện tử viễn thông Trí Lực	503 Tôn Đức Thắng Hoà khánh	IMP AND EXP	733104	100	80
12	Cty TNHH Điện tử Việt Hoa	Lô A1 khu công nhgiệp Khánh Hoà	IMP AND EXP	736188	500	200
13	Cty TNHH Đà Việt	Lô C34 -123 Dũng Sĩ Thanh Khê	IMP AND EXP	760158	100	80
	Ho Chi Minh					
1	Cty điện tử công nghiệp	24 Nguyễn Thị Minh Khai P Đakao	IMP		100	
2	Cty Điện và Điện tử TCL	10A Trần Hưng Đạo P Phạm Ngũ Lão	IMP		50	
3	Cty TNHH điện tử Deawoo Hanel	192 Võ Thị Sáu p6	IMP		200	
4	Cty SX kinh doanh XNK Điện - Điện tử quận 10	62/231 Lý Chính Thắng- P8	IMP		50	
5	Cty Điện tử công trình	264 Võ Văn Tần P5	IMP		40	
6	Cty CP Điện tử công trình VNC	39 Phạm Ngọc Thạch P6	IMP		30	
7	Cty Điện tử hàng hải Việt Nam	Khu Phố 2 Phạm Hữu Lầu	IMP		70	
8	Cty CP Điện tử Biên Hoà	207/13 Đường 3/2 P11	IMP		250	
9	Cty TNHH Thương Mại XNK Cát Tường	73/2 Phạm Văn Trị P12	IMP		100	
10	Cty Điện tử Bình Hoà	561/53 Lê Quang Định P1	IMP		50	
11	Cty Cp điện tử Sao Kim	17/3 Đường Hồ Văn Huê P9	IMP		80	
12	Cty CP điện tử Thủ Đức- VTD	16/12 Hoàng việt P4	IMP		100	
13	Cty TNHH Điện tử Nam Việt	B7/144A Nguyễn Cửu Phú p Tân Tạo	IMP		70	
	Binh Duong					
1	Cty TNHH điện tử điện lạnh Darling	112/9 Đường Trần Hưng Đạo, Đông Hoá	IMP AND EXP		400	250
2	Cty Điện tử ASTI	Đông An Tân, Đông Hiệp	IMP		100	
3	ty TNHH thương mại DV điện tử tin học Đại Thuận	4/14b ấp Tân Long, Tân Đông Hiệp	IMP		300	
4	Cty TNHH Điện Tử TT	đường số 4 khu CN tân Đông Hiệp B	IMP		100	
5	Cty TNHH Điện tử Minh Tâm	Kho ĐẠi Dương, Đường 10 khu CN Sóng Thần 2	IMP AND EXP		300	200
6	Cty TNHH cơ khí điện- điện tử Văn Ứng	16/2 KT3 ấp Đông Hoà	IMP AND EXP		500	300
7	Cty TNHH Điện tử - Tin Học Toàn Việt	Ấp 4 An Phú	IMP		100	
8	Cty TNHH Điện tử Sin Young	C8 Đường 8, KCN VSIP, Bình Hoà	IMP AND EXP		200	100
9	Cty TNHH Điện tử Sun Ching Việt Nam	1A Tổ 1, ấp 1 Hội Nghĩa	IMP AND EXP		400	250
10	Cty TNHH Điện tử- Điện Lạnh Việt Nhật	Ấp An Thành, An Tây	IMP AND EXP		400	200
11	Chi nhánh cty CP thương mại XNK Thủ Đức	1A Tổ 1, ấp 1 Hội Nghĩa	EXP			50

NOTE:
IMP: Import EXP: Export

For PCs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED PC HANDLED PER MONTH	
					IMP	EXP
	Ha Noi					
1	Cty CP Ứng dụng công nghệ HTC	354 Lê Duẩn	IMP		300	
2	Cty XNK Cali	14 Phố Chùa Láng	IMP		40	
3	Cty CP Công nghệ thương mại quốc tế FAM	66 Hoàng Cầu	IMP		300	
4	Cty DSL Computer	56C Hoàng Cầu	IMP		200	
5	Cty kỹ nghệ Hà Nội Vàng	4 Hoàng Diệu - Ba Đình	IMP		80	
6	Cty CP Công nghệ và truyền thông CK	Tầng 1 siêu thị Big C	IMP		0	
7	Cty Misustar	Tầng 2 siêu thị Big C	IMP		0	
8	Cty CP công nghệ 3D	57 Xuân Thuỷ	IMP		30	
9	Cty CP Thương mại tin Học Hưng Long	482 Trần Khát Trân	IMP		250	
10	Cty TNHH công nghệ Hoàng Thành	12 A Lý Nam Đế	IMP		5000	
11	Cty TNHH Hà Anh	48b Hai Bà Trưng	IMP		60	
12	Cty TNHH Điện tử và chuyển giao công nghệTân Á	1B Yên Lạc	IMP		50	
	Lang Son					
1	Cty TNHH điện tử Ánh Trí	100 NGô Quyền	IMP	717111	50	
2	Cty XNK Lạng Sơn	Số 2 Đường Phai Vệ	IMP	879616	300	
3	Cửa hàng máy tínhHMT	Thống Nhất 1 Đồng Mỏ	IMP	821212	50	
4	TT cung cấp máy tính DV Điện Tử	51 Lê Lai	IMP	874718	50	
	Hai Phong					
1	Cửa hàng điện tử Mai Lâm	79 Quang Trung	IMP	839474	25	
2	TT UNESCO phát triển công nghệ thông tin	4 Bạch Đằng	IMP	876212	250	
3	Cty Điện tử Hải Phòng	73 Điện Biên Phủ	IMP	746486	100	
5	Cty TNHH thiết bị kỹ thuật Phần mềm Việt nam	27 B2 Điện Biên phủ - Minh Khai	IMP	746778	350	
6	Cty CP máy tính và thiết bị điện tử công nghiệp	45 Cát Cụt P An Biên	IMP	510558	75	
7	Chi nhánh Cty Cp điện tử tin học viễn thông	214 Trần Nguyên Hãn	IMP	718614	300	
8	Cty TNHH phát triển công nghệ thông tin Việt Nam	1/271 Trần Nguyên Hãn	IMP	785108	150	
9	Cty TNHH Công nghệ thông tin Duy Phương	102 hai Bà Trưng- An Biên	IMP		50	
10	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	856508	200	
11	Cty Máy tính Hoàng Cường	75 Lương Khánh Thiện	IMP	610710	33	
12	Cty TNHH Điện tử và viễn thông hải Phòng	180 Lê Lợi Gia Viên	IMP	656228	200	
13	Cty TNHH Điện tử viễn thông Đức Hải	8 trần Khánh Dư, Máy Tơ	IMP	848450	100	
14	Cty TNHH Điện tử tin học	3/2 Cát Bì- An hải	IMP	726234	300	
15	Cty TNHH Thiết bị thông tin COMTEC	274 Lô B2 Lạch Tray	IMP	870642	250	
16	Cty TNHH Viễn Thông tin học CNS	17 Phạm Ngũ Lão	IMP	921099	200	
17	Cty CP Điện tử tin Học Viễn thông	Tổ 19 Khu 4 TT Cát bà	IMP	887716	50	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED PC HANDLED PER MONTH	
					IMP	EXP
	Nghe An					
1	Cty điện tử tin học Viễn thông Nghệ An	33 nguyễn Thị Minh Khai	IMP		330	
2	Cty Viễn thông bưu điện tỉnh Nghệ An	2 nguyễn Thị Minh Khai	IMP		200	
3	Cty XNK Tân Á	32/6 Lê Hồng Phong	IMP		70	
4	Cty Vận tải thương mại và XNK Thiện Tài	1 Võ Nguyên Hiến, Hưng Bình	IMP		50	
5	Cty CP XNK Văn Minh	174 Phan Chu Trinh	IMP		45	
	Da Nang					
1	Cty Cơ nhiệt điện lạnh Bách Khoa miền Trung	Lô C14 -472 Bắc Nam p Thục Gián	IMP AND EXP	655319	50	25
2	Cty CP Điện tử và tin Học Đà Nẵng	6 Pastuer- Hỉa Châu 1	IMP	872965	350	
3	Cty TNHH Điện tử DX	351 Nguyễn Tri Phương	IMP AND EXP	633175	165	100
4	Cty Điện tử tin Học Pvà H	102 Phan Thanh	IMP AND EXP		400	250
5	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	70	
6	Cty Điện tử tin học Đà Nẵng	44 Lê Duẩn	IMP AND EXP	652359	135	135
7	Cty cơ điện tử Samsung tại Đà Nẵng	60 Hàm Nghi	IMP	652359	30	
8	Cty điện tử công nghệ thông tin Việt Đà	Lô 4B Phan Đăng Lưu-Hoà Cường	IMP	644091	600	
9	Cty TNHH Điện tử tin Học Bảo Thắng	158 Lý Tự Trọng	IMP AND EXP	531294	80	68
10	Cty TNHH Điện tử viễn thông Trí Lực	503 Tôn Đức Thắng Hoà khánh	IMP AND EXP	733104	351	200
11	Cty TNHH Điện tử Việt Hoa	Lô A1 khu công nhgiệp Khánh Hoà	IMP AND EXP	736188	300	100
12	Cty TNHH Điện tử viễn thông Phú Gia	486 Điện Biên Phủ	IMP AND EXP	759663	500	200
13	Cty TNHH Đà Việt	Lô C34 -123 Dũng Sĩ Thanh Khê	IMP AND EXP	760158	60	40
	Binh Duong					
1	Cty TNHH điện tử điện lạnh Darling	112/9 Đường Trần Hưng Đạo, Đông Hoá	IMP AND EXP		200	120
2	Cty Điện tử ASTI	Đông An Tân, Đông Hiệp	IMP		180	
3	ty TNHH thương mại DV điện tử tin học Đại Thuận	4/14b ấp Tân Long, Tân Đông Hiệp	IMP		400	
4	Cty TNHH Điện Tử TT	đường số 4 khu CN tân Đông Hiệp B	IMP		200	
5	Cty TNHH Điện tử Minh Tâm	Kho ĐẠi Dương, Đường 10 khu CN Sóng Thần 2	IMP AND EXP		250	180
6	Cty TNHH cơ khí điện- điện tử Văn Ứng	16/2 KT3 ấp Đông Hoà	IMP AND EXP		300	250
7	Cty TNHH Điện tử - Tin Học Toàn Việt	Ấp 4 An Phú	IMP		300	
8	Cty TNHH Điện tử Sin Young	C8 Đường 8, KCN VSIP, Bình Hoà	IMP AND EXP		350	210
9	Cty TNHH thương mại dịch vụ sx cơ điện lạnh Chánh Triển	45/7 Quốc lộ 13 ấp Trung Vĩnh Phú	IMP		600	
10	Cty TNHH Điện tử Sun Ching	1A Tổ 1, ấp 1 Hội	IMP AND		500	300

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED PC HANDLED PER MONTH	
					IMP	EXP
	Việt Nam	Nghĩa	EXP			
11	Cty TNHH Điện tử- Điện Lạnh Việt Nhật	Ấp An Thành, An Tây	IMP AND EXP		350	180
12	Cty Điện tử viễn thôn quân Đội	Áap 7 Tân An	IMP		1300	
	HO CHI MINH					
1	Cty Điện tử viễn thông quân đội	90 hai Bà trưng P Bến Nghé	IMP		150	
2	Cty điện tử công nghiệp	24 nguyễn thị Minh Khai P Đa Kao	IMP		70	
3	Cty CP viễn thông tin học điện tử	12/5CNguyễn thị Minh Khai P Đa Kao	IMP		70	
4	Cty TNHH Điện tử tin học Ánh vàng -GL	75 trương ĐỊnh	IMP		20	
5	Cty Điện tử tin học Sài Gòn	123 trương ĐỊnh	IMP		100	
6	Cty Điện tử tin Học	155 Võ Thị Sáu	IMP		60	
7	Cty Điện tử công trình	264 Võ Văn Tần P5	IMP		50	
8	Cty sx dịch vụ XNK khoa học kỹ thuật	141 Lầu 1 Hai Bà Trưng P6	IMP		60	
9	Cty TNHH thương mại tin học Thuận Phát	136 Bàu Cờ P3	IMP		65	
10	Cty TNHH thương mại Halan	411/43 Nguyễn ĐÌnh Chiểu P5	IMP		75	
11	Cty TNHH công nghệ tin học Trường Tiên	14 trương Quyền P6	IMP		100	
12	Chi nhánh tổng công ty điện tử Việt Nam	12A Trần Phú	IMP		100	
13	Cty TNHH Thương mại và Dịch vụ điện tử thế giaới công nghệ	285 Lâm Văn Bền P Bình Thuận	IMP		35	
14	Cty Điện tử Sài Gòn	106/7764 Nguyễn kiệm P3	IMP		100	
15	Cty TNHH Phát triển tin học	176/37A Trần Huy Liệu P15	IMP		60	
16	Cty TNHH thương mại DV tin học Anpha	306/1 Thạch lam P18	IMP		85	
17	Cty đầu tư & phát triển tin học Nguyễn Hoàng Thủ Đức	240 Võ Văn Ngân-Bình Thọ	IMP		65	
18	Cty TNHH Tin Học Á Đông(ADC)	163/17 Thành Thái	IMP		40	

For MPs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED MP HANDLED PER MONTH	
					IMP	EXP
	Ha Noi					
1	Cty TNHH Vân Chung	151 Đặng Tiến Đông	IMP		7000	
2	Siêu thị di động Toàn Phát mobile	151 Khâm Thiên	IMP		420	
3	Cty CP Công nghệ và truyền thông CK	Tầng 1 siêu thị Big C	IMP		30-40	
4	Cty Mitsustar	Tầng 2 siêu thị Big C	IMP		0	
5	TT phân phối Đt di động Thiên Long	49 Phố Huế	IMP		200	
6	Cty TNHH Thương Mại và DV Kỹ thuật Nhật Cường	41A Lý Quốc Sư	IMP		500	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED MP HANDLED PER MONTH	
					IMP	EXP
7	Cửa hàng ĐT Việt Ngọc	23 bà Triệu	IMP		130	
8	Cty Cp phát triển thương mại Hà Nội	18 hàng bài	IMP		220	
9	Cty XNK Tân Mai	36 bà Triệu	IMP		300	
10	Cửa hàng Thành Công Mobile	86 trần Hưng Đạo	IMP		200	
11	Cửa hàng diện tử điện lạnh cao cấp	39 Hai Bà Trưng	IMP		80	
	Lạng Sơn					
1	Cty TNHH điện tử Ánh Trí	100 Ngô Quyền, Đông Kinh	IMP	717111	70	
2	Cty TNHH Thương mại hùng Vương	Số 12 Trần Hưng Đạo	IMP	813806	100	
3	TT cung cấp máy tính dịch vụ điện tử	51 Lê Lai- Hoàng Văn Thụ	IMP	874718	100	
4	TT cung cấp ĐT di động	65 trần Đăng Ninh- Tam Thanh	IMP	710444	300	
5	Trung tâm dịch vụ khách hàng Vinafone	49 Lê Lợi - Vĩnh Trại	IMP		80	
	Hai Phong					
1	TT UNESCO phát triển công nghệ thông tin	4 Bạch Đằng	IMP	876212	200	
2	Chi nhánh Cty Cp điện tử tin học viễn thông	214 Trần Nguyên Hãn	IMP	718614	500	
3	Cty TNHH phát triển công nghệ thông tin Việt Nam	1/271 Trần Nguyên Hãn	IMP	785108	250	
4	Cty TNHH Công nghệ thông tin Duy Phương	102 hai Bà Trưng- An Biên	IMP	511791	100	
5	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	856508	300	
6	Cửa hàng Nam Trang	34 Lạch Tray	IMP	853429	20	
7	Cty TNHH Điện tử và viễn thông Hải Phòng	180 Lê Lợi Gia Viên	IMP		300	
8	Cty TNHH Điện tử viễn thông Đức Hải	8 trần Khánh Dư, Máy Tơ	IMP	848450	120	
9	Cty TNHH Thiết bị thông tin COMTEC	274 Lô B2 Lạch Tray	IMP	870642	150	
10	Cty TNHH Viễn Thông tin học CNS	17 Phạm Ngũ Lão	IMP	921099	300	
11	Cty điện tử Hàng Hải	Km7 Đường Hải Thành	IMP	581045	50	
12	Cty Điện thoại Hải Phòng	97 Bạch Đằng, Hạ Lý	IMP	668800	300	
	Nghe An					
1	Cty điện tử tin học Viễn thông Nghệ An	33 nguyễn Thị Minh Khai	IMP		200	
2	TT giao dịch Điện thoại di động VMS Mobifone	105 lê Hồng Phong	IMP		450	
3	Cty viễn thông bưu điện tỉnh nghệ An	Số 2 Nguyễn thị Minh Khai	IMP		500	
4	Cty XNK Tân Á	32/6 Lê Hồng Phong	IMP		50	
5	Cty XNK Nghệ An	15 Quang Trung	IMP		80	
	Da Nang					
1	Cty CP Điện tử và tin Học Đà Nẵng	6 Pastuer- Hia Châu 1	IMP	872965	100	
2	Cty TNHH Điện tử DX	351 Nguyễn Tri Phương	IMP	633175	300	200
3	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	200	
4	Cty điện tử công nghệ thông	Lô 4B Phan Đăng Lưu-	IMP	644091	450	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED MP HANDLED PER MONTH	
					IMP	EXP
	tin Việt Đà	Hoà Cường				
5	Cty TNHH Điện tử tin Học Bảo Thắng	158 Lý Tự Trọng	IMP	531294	150	120
6	Cty TNHH Điện tử viễn thông Trí Lực	503 Tôn Đức Thắng Hoà khánh	IMP	733104	500	350
7	Cty TNHH Điện tử viễn thông Phú Gia	486 Điện Biên Phủ	IMP	759663	385	191
8	Cty TNHH Đà Việt	Lô C34 -123 Dũng Sĩ Thanh Khê	IMP	760158	200	120
	Ho Chi Minh					
1	Cty Liên doanh điện tử tổng hợp	212/a71 Nguyễn Trãi P Nguyễn Cư Trinh	IMP		180	
2	Cty CP viễn thông tin học điện tử	12/5CNguyễn thị Minh Khai P Đa Kao	IMP		200	
3	Cty DV đầu tư XNK tôngr hợp Đồng Tháp Mười	54B Nguyễn Đình Chiểu P ĐaKao	IMP		100	
4	Cty CP đầu tư thương mại Nam An	72/5 Pasteur	IMP		50	
5	Chi nhánh tổng cty điện tử tin học Việt Nam	12A Trần Phú	IMP		120	
6	Cty TNHH điện tử viễn thông Vũ Huy Hoàng	32 Hùng Vương P1	IMP		200	
7	Cty sx kinh doanh XNK Bình Minh	P1 Nguyễn Hữu Cảnh P22	IMP		80	
8	Cty điện tử Thủ Đức	15 C nGuyễn Văn Trỗi	IMP		150	
9	Cty CP điện tử Thủ Đức VTD	16/12 Hoàng Việt P4	IMP		200	
	Binh Duong					
1	Cty Điện tử ASTI	Đông An Tân, Đông Hiệp	IMP		150	
2	ty TNHH thương mại DV điện tử tin học Đại Thuận	đường số 4 khu CN tân Đông Hiệp B	IMP		500	
3	Cty TNHH Điện Tử TT	Kho ĐẠi Dương, Đường 10 khu CN Sóng Thần 2	IMP		150	
4	Cty TNHH Điện tử Minh Tâm	Ấp 4 An Phú	IMP		400	250
5	Cty TNHH Điện tử - Tin Học Toàn Việt		IMP		200	
6	Cty TNHH Điện tử Sin Young	C8 Đường 8, KCN VSIP, Bình Hoà	IMP		400	300
7	Cty TNHH thương mại dịch vụ sx cơ điện lạnh Chánh Triển	45/7 Quốc lộ 13 ấp Trung Vĩnh Phú	IMP		400	
8	Cty TNHH Điện tử Sun Ching Việt Nam	1A Tổ 1, ấp 1 Hội Nghĩa	IMP		100	
9	Cty Điện tử viễn thôn quân Đội	Áap 7 Tân An	IMP		100	

For ACs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED AC HANDLED PER MONTH	
					IMP	EXP
	Hanoi					
1	Cty TNHH công nghệ điện-Điện tử	48 ngõ Hoàng An - Trung Phụng	IMP		25	
2	Cửa hàng điện lạnh đồ gia dụng	159 Thái Hà	IMP		25	
3	Cty TNHH THương Mại Việt Long	187 Giảng Võ- Ba Đình	IMP		15	
4	Cty CP dịch vụ điện tử Hanel	A12 Khương Thượng	IMP		120	
5	TT điện Máy Việt Long	187 Giảng Võ	IMP		120	
6	Cty TNHH Trường Thành	187 Giảng Võ	IMP		100	
7	Cty CP Công nghệ và truyền thông CK	Tầng 1 siêu thị Big C	IMP		12	
8	Cty Misustar	Tầng 2 siêu thị Big C	IMP		5	
9	Chi nhánh cty JVC Việt Nam tại Hà Nội	30 Nguyễn Du	IMP		120	
10	TT Điện tử- Điện lạnh Hưng Anh	40 Hàm Long	IMP		50	
11	Cty cổ phần NIKKO VN	440 Trần Khát Chân	IMP		120	
12	Cty TNHH LG Electronics Việt Nam	Tầng 12-44 B Lý THường Kiệt	IMP		50	
13	Cty điện tử Hoàn Kiếm	383 Hia Bà Trưng	IMP		20	
14	Cty THương mại Hoàng Hải	22 Hàng Bài	IMP		50	
15	Cty THương Mại Bích Liên	43C Hai Bà Trưng	IMP		50	
16	Cửa hàng điện tử điện lạnh cao cấp	39 Hai Bà Trưng	IMP		60	
17	TT điện tử điện lạnh thành phố	25 Quang Trung	IMP		50	
18	Cty TNHH thương mại và dịch vụ Phong Thuỷ	2F Quang Trung	IMP		100	
19	Cty TNHH sản xuất và thương mại điện tử Bính Sơn	F1101-17T9 Trung Hoà Nhân Chính	IMP		100	
	Haiphong					
1	Cửa hàng điện tử Mai Lâm	79 Quang Trung	IMP	031 3839474	15	
2	Cty Điện tử Hải Phòng	73 Điện Biên Phủ	IMP	031 3746486	80	
3	Chi nhánh Cty điện tử Eleco	33 Minh Khai	IMP	031 3823791	100	
4	Cty CP dđiện tử liên doanh	2B Nguyễn Tri Phương- Minh Khai	IMP	031 3821089	60	
5	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	031 3856508	50	
6	Cty TNHH phúc Hưng	10 Lương Khánh Thiện	IMP	031 3855633	40	
7	TT Máy lạnh Trọng Tiến	143 Lương Khánh Thiện	IMP	031 3592621	25	
8	Cửa hàng Anh Huy	9 Lương Khánh Thiện	IMP	031 3921692	10	
9	TT Điện Máy	119 Lương Khánh Thiện	IMP	031 3845716	30	
10	Cty dịch vụ và XNK Hạ Long	37 Lê lai	IMP	031 3837388	150	
11	TT nghiên cứu thiết bị tàu thuỷ và điện dân dụng	484 Lạch Tray	IMP	031 3625710	70	
	Nghean					
1	Cty XNK Nghệ An - UNIMEX	Hưng Lộc	IMP		150	
2	Cty TNHH thương mại Việt Linh	6 Đường Quang Trung	IMP		20	
3	Cửa hàng điện tử - Cty Hồng Phúc	K8 Lê Lợi	IMP		30	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED AC HANDLED PER MONTH	
					IMP	EXP
4	Cty CP vận tải XNK tổng hợp Nghệ An	K6 Cửa Nam	IMP		40	
5	Cty TNHH thương mại và dịch vụ XNK Nam Sao	25B Nguyễn Thị Minh Khai	IMP		25	
6	Cty TNHH XNK và hợp tác đầu tư DH	Ngọc Tân Diễn Ngọc	IMP		40	
	Langson					
1	Cty TNHH điện tử Ánh Trí	100 NGô Quyền	IMP	717111	30	
2	Cty XNK Hà Nội - CN LẠng Sơn	66 A Lê Đại Hành	IMP	874888	60	
3	Cửa hàng máy tínhHMT	Thống Nhất 1 Đồng Mỏ	IMP	821212	20	
4	TT Thương mại tổng hợp	135 Trần Đăng Ninh	IMP	876672	30	
	Danang					
1	Cty Cơ nhiệt điện lạnh Bách Khoa miền trung	Lô C14 -472 Bắc Nam p Thục Gián	IMP AND EXP	655319	500	300
2	Cty TNHH Thương mại và Dịch vụ điện lạnh Thành thị	75 Đống Đa	IMP		287	
3	Cty TNHH Điện tử DX	351 Nguyễn Tri Phương	IMP	633175	230	
4	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	100	
5	Cty cơ điện tử Samsung tại Đà Nẵng	60 Hàm Nghi	IMP	652359	40	
6	Cty cơ điện lạnh Bách Khoa-Công nghệ Đà Nẵng	77 Trường Nữ Vương	IMP AND EXP	872679	158	100
	Hochiminh					
1	Cty Cp Đầu tư XNK Ánh Kim	17 lưu Văn Lang p Bến Thành	IMP		70	
2	Cty sx kinh doanh xuất nhập Thái Bình	D26 Nguyễn Trãi P Nguyễ Cư Trinh	IMP		30	
3	Cty TNHH Điện tử Deawoo Hanel	192 Võ THị Sáu	IMP		100	
4	Cty sx KD XNK Điện - Điện tử quận 10	62/231 Lý Chính Thắng - P8	IMP		20	
5	Cty XNK Thương Mại Thái An	312/2 Xô Viết Nghệ Tĩnh P12	IMP		50	
	Binhduong					
1	Cty TNHH điện tử điện lạnh Darling	112/9 Đường Trần Hưng Đạo, Đông Hoá	IMP AND EXP		250	100
2	Cty Điện tử ASTI	DDông An Tân, Đông Hiệp	IMP		45	
3	Cty TNHH Điện tử Minh Tâm	Kho ĐẠi DƯơng, Đường 10 khu CN Sóng Thần 2	IMP AND EXP		100	50
4	Cty TNHH cơ khí điện- điện tử Văn Ứng	16/2 KT3 ấp Đông Hoà	IMP AND EXP		200	120
5	Cty TNHH thương mại dịch vụ sx cơ điện lạnh Chánh Triển	45/7 Quốc lộ 13 ấp Trung Vĩnh Phú	IMP		450	
6	Cty TNHH Điện tử- Điện Lạnh Việt Nhật	Ấp An Thành, An Tây	IMP AND EXP		300	150
7	Chi nhánh cty CP thương mại XNK Thủ Đức	1A Tổ 1, Ấp 1 Hội Nghĩa	IMP		30	

For RFs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
					IMP	EXP
	Hanoi					
1	Cty TNHH công nghệ điện-Điện tử	48 ngõ Hoàng An - Trung Phụng	IMP		20	
2	Cửa hàng điện lạnh đồ gia dụng	159 Thái Hà	IMP		20	
3	Cty TNHH THương Mại Việt Long	187 Giảng Võ- Ba Đình	IMP		15	
4	Cty CP dịch vụ điện tử Hanel	A12 Khương Thượng	IMP		100	
5	TT điện Máy Việt Long	187 Giảng Võ	IMP		100	
6	Cty TNHH Trường Thành	187 Giảng Võ	IMP		80	
7	Cty CP Công nghệ và truyền thông CK	Tầng 1 siêu thị Big C	IMP		30	
8	Cty Misustar	Tầng 2 siêu thị Big C	IMP		15	
9	Chi nhánh cty JVC Việt Nam tại Hà Nội	30 Nguyễn Du	IMP		100	
10	TT Điện tử- Điện lạnh Hưng Anh	40 Hàm Long	IMP		80	
11	Cty cổ phần NIKKO VN	440 Trần Khát Chân	IMP		150	
12	Cty HVCOM	149 Lê thanh Nghị	IMP		67	
13	Cty TNHH LG Electronics Việt Nam	Tầng 12-44 B Lý THường Kiệt	IMP		40	
14	Cty điện tử Hoàn Kiếm	383 Hia Bà Trưng	IMP		40	
15	Cty THương mại Hoàng Hải	22 Hàng Bài	IMP		40	
16	Cty CP kỹ thuật công nghiệp Hà Nội	43 Hai Bà Trưng	IMP		30	
17	Cửa hàng điện tử điện lạnh cao cấp	39 Hai Bà Trưng	IMP		60	
18	TT điện tử điện lạnh thành phố	25 Quang Trung	IMP		35	
19	Cty TNHH thương mại và dịch vụ Phong Thuỷ	2F Quang Trung	IMP		70	
20	Cty TNHH sản xuất và thương mại điện tử Bính Sơn	F1101-17T9 Trung Hoà Nhân Chính	IMP		80	
	Haiphong					
1	Cửa hàng điện tử Mai Lâm	79 Quang Trung	IMP	839474	10	
2	Cty Điện tử Hải Phòng	73 Điện Biên Phủ	IMP	031 3746486	150	
3	Chi nhánh Cty điện tử Eleco	33 Minh Khai	IMP	031 3823791	80	
4	Cty CP điện tử liên doanh	2B Nguyễn Tri Phương- Minh Khai	IMP	031 3821089	50	
5	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	031 3856508	30	
6	Cty TNHH phúc Hưng	10 Lương Khánh Thiện	IMP	031 3855633	30	
7	TT Máy lạnh Trọng Tiến	143 Lương Khánh Thiện	IMP	031 3592621	20	
8	Cửa hàng Anh Huy	9 Lương Khánh Thiện	IMP	031 3921692	20	
9	TT Điện Máy	119 Lương Khánh Thiện	IMP	031 3845716	50	
10	Cty dịch vụ và XNK Hạ Long	37 Lê lai	IMP	031 3837388	100	
11	TT nghiên cứu thiết bị tàu thuỷ và điện dân dụng	484 Lạch Tray	IMP	031 3625710	50	
	Nghean					
1	Cty XNK Nghệ An - UNIMEX	Hưng Lộc	IMP		200	
2	Cty TNHH thương mại Việt Linh	6 Đường Quang Trung	IMP		30	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
					IMP	EXP
3	Cửa hàng điện tử - Cty Hồng Phúc	K8 Lê Lợi	IMP		40	
4	Cty TNHH XNK Hùng Vương	KCN Băc Vinh, H Hưng Đông	IMP		20	
5	Cty CP vận tải XNK tổng hợp Nghệ An	K6 Cửa Nam	IMP		30	
6	Cty XNK Trường Thịnh	19 Mai Hắc Đé	IMP		20	
7	Cty TNHH thương mại và dịch vụ XNK Nam Sao	25B Nguyễn Thị Minh Khai	IMP		20	
8	Cty TNHH XNK và hợp tác đầu tư DH	Ngọc Tân Diễn Ngọc	IMP		30	
	Langson					
1	Cty TNHH điện tử Ánh Trí	100 NGô Quyền	IMP	717111	20	
2	Cty XNK Hà Nội - CN Lang Sơn	66 A Lê Đại Hành	IMP	874888	50	
3	Cửa hàng máy tínhHMT	Thống Nhất 1 Đồng Mỏ	IMP	821212	15	
4	TT Thương mại tổng hợp	135 Trần Đăng Ninh	IMP	876672	30	
	Danang					
1	Cty Cơ nhiệt điện lạnh Bách Khoa miền trung	Lô C14 -472 Bắc Nam p Thục Gián	IMP AND EXP	655319	150	150
2	Cty TNHH Thương mại và Dịch vụ điện lạnh Thành thị	75 Đống Đa	IMP		300	
3	Cty TNHH Điện tử DX	351 Nguyễn Tri Phương	IMP	633175	100	
4	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	150	
5	Cty cơ điện tử Samsung tại Đà Nẵng	60 Hàm Nghi	IMP	652359	15	
6	Cty cơ điện lạnh Bách Khoa-Công nghệ Đà Nẵng	77 Trường Nữ Vương	IMP AND EXP	872679	350	181
7	Cty TNHH Điện tử Việt Hoa	Lô A1 khu công nhgiệp Khánh Hoà	IMP AND EXP	736188	100	50
	Hochiminh					
1	Cty sx Kinh doanh xuất nhập Thái Bình	D26 nguyễn Trãi p Nguyễn Cư Trinh	IMP		20	
2	Cty Điện và Điện tử TCL	10A Trần Hưng Đạo P Phạm Ngũ Lão	IMP		80	
3	Cty TNHH điện tử Deawoo Hanel	192 Võ Thị Sáu p6	IMP		70	
4	Cty SX kinh doanh XNK Điện - Điện tử quận 10	62/231 Lý Chính Thắng- P8	IMP		30	
5	Cty Điện tử thương mại Đại Việt	83/12A Dương Văn Lâu	IMP		60	
6	Cty TNHH thương mại XNK Cát Tường	73/2 Phạm Vă Trị P12	IMP		50	
7	Cty XNK Thương mại Thái An	312/2 Xô Viết Nghệ Tĩnh P12	IMP		100	
8	Cty Cp điện tử Sao Kim	17/3 Đường Hồ Văn Huê P9	IMP		50	
9	Cty CP điện tử Thủ Đức-VTD	16/12 Hoàng việt P4	IMP		80	
	Binhduong					
1	Cty TNHH điện tử điện lạnh Darling	112/9 Đường Trần Hưng Đạo, Đông Hoá	IMP		300	
2	Cty Điện tử ASTI	DDông An Tân, Đông Hiệp	IMP		80	
3	ty TNHH thương mại DV điện tử tin học Đại Thuận	4/14b ấp Tân Long, Tân Đông Hiệp	IMP		200	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED RF HANDLED PER MONTH	
					IMP	EXP
4	Cty TNHH Điện tử Minh Tâm	Kho ĐẠi DƯơng, Đường 10 khu CN Sóng Thần 2	IMP AND EXP		120	55
5	Cty TNHH cơ khí điện- điện tử Văn Ứng	16/2 KT3 ấp Đông Hoà	IMP AND EXP		100	80
6	Cty TNHH thương mại dịch vụ sx cơ điện lạnh Chánh Triển	45/7 Quốc lộ 13 ấp Trung Vĩnh Phú	IMP		300	
7	Cty TNHH Điện tử- Điện Lạnh Việt Nhật	Ấp An Thành, An Tây	IMP AND EXP		200	100
8	Cty điện tử viễn thông Quân đội	1A Tổ 1, ấp 1 Hội Nghĩa	IMP		700	
9	Chi nhánh cty CP thương mại XNK Thủ Đức	1A Tổ 1, ấp 1 Hội Nghĩa	IMP		40	

For WMs:

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
					IMP	EXP
	Hanoi					
1	Cty TNHH công nghệ điện-Điện tử	48 ngõ Hoàng An - Trung Phụng	IMP		20	
2	Cửa hàng điện lạnh đồ gia dụng	159 Thái Hà	IMP		20	
3	Cty TNHH THương Mại Việt Long	187 Giảng Võ- Ba Đình	IMP		20	
4	Cty CP dịch vụ điện tử Hanel	A12 Khương Thượng	IMP		80	
5	TT điện Máy Việt Long	187 Giảng Võ	IMP		100	
6	Cty TNHH Trường Thành	187 Giảng Võ	IMP		100	
7	Cty CP Công nghệ và truyền thông CK	Tầng 1 siêu thị Big C	IMP		40	
8	Cty Misustar	Tầng 2 siêu thị Big C	IMP		40	
9	Chi nhánh cty JVC Việt Nam tại Hà Nội	30 Nguyễn Du	IMP		80	
10	TT Điện tử- Điện lạnh Hưng Anh	40 Hàm Long	IMP		60	
11	Cty TNHH LG Electronics Việt Nam	Tầng 12-44 B Lý THường Kiệt	IMP		30	
12	Cty điện tử Hoàn Kiếm	383 Hia Bà Trưng	IMP		30	
13	Cty THương mại Hoàng Hải	22 Hàng Bài	IMP		40	
14	Cty CP kỹ thuật công nghiệp Hà Nội	43 Hai Bà Trưng	IMP		35	
15	TT điện tử điện lạnh thành phố	25 Quang Trung	IMP		40	
16	Cty TNHH thương mại và dịch vụ Phong Thuỷ	2F Quang Trung	IMP		50	
17	Cty TNHH sản xuất và thương mại điện tử Bính Sơn	F1101-17T9 Trung Hoà Nhân Chính	IMP		60	
	Haiphong					
1	Cty Điện tử Hải Phòng	73 Điện Biên Phủ	IMP	031 3746486	70	
2	Chi nhánh Cty điện tử Eleco	33 Minh Khai	IMP	031 3823791	50	

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
					IMP	EXP
3	Cty CP điện tử liên doanh	2B Nguyễn Tri Phương- Minh Khai	IMP	031 3821089	30	
4	Cty TNHH thương mại và cơ điện lạnh Quang Dũng	424 Trần Nguyên Hãn	IMP	031 3856508	30	
5	Cửa hàng Nam Trang	34 Lạch Tray	IMP	031 3853429	20	
6	Cty TNHH phúc Hưng	10 Lương Khánh Thiện	IMP	031 3855633	35	
7	TT Máy lạnh Trọng Tiến	143 Lương Khánh Thiện	IMP	031 3592621	15	
8	Cửa hàng Anh Huy	9 Lương Khánh Thiện	IMP	031 3921692	20	
9	TT Điện Máy	119 Lương Khánh Thiện	IMP	031 3845716	50	
10	Cty dịch vụ và XNK Hạ Long	37 Lê lai	IMP	031 3837388	120	
11	TT nghiên cứu thiết bị tàu thuỷ và điện dân dụng	484 Lạch Tray	IMP	031 3625710	60	
	Nghean					
1	Cty XNK Nghệ An - UNIMEX	Hưng Lộc	IMP		80	
2	Cty TNHH thương mại Việt Linh	6 Đường Quang Trung	IMP		20	
3	Cửa hàng điện tử - Cty Hồng Phúc	K8 Lê Lợi	IMP		20	
4	Cty TNHH thương mại và dịch vụ XNK Nam Sao	25B Nguyễn Thị Minh Khai	IMP		30	
	Langson					
1	Cty TNHH điện tử Ánh Trí	100 NGô Quyền	IMP	717111	30	
2	Cty XNK Hà Nội - CN LẠng Sơn	66 A Lê Đại Hành	IMP	874888	30	
3	Cửa hàng máy tínhHMT	Thống Nhất 1 Đồng Mỏ	IMP	821212	20	
	Danang					
1	Cty Cơ nhiệt điện lạnh Bách Khoa miền trung	Lô C14 -472 Bắc Nam p Thục Gián	IMP AND EXP	655319	300	180
2	Cty TNHH Thương mại và Dịch vụ điện lạnh Thành thị	75 Đống Đa	IMP		150	
3	Cty Điện tử Phi Long	102 hàm Nghi	IMP	653999	80	
4	Cty cơ điện tử Samsung tại Đà Nẵng	60 Hàm Nghi	IMP	652359	10	
5	Cty cơ điện lạnh Bách Khoa- Công nghệ Đà Nẵng	77 Trường Nữ Vương	IMP AND EXP	872679	100	72
7	Cty TNHH Điện tử Việt Hoa	Lô A1 khu công nhgiệp Khánh Hoà	IMP AND EXP	736188	200	150
	Hochiminh					
1	Cty Cp Đầu tư XNK Ánh Kim	17 lưu Văn Lang p Bến Thành	IMP		50	
2	Cty sx kinh doanh xuất nhập Thái Bình	D26 Nguyễn Trãi P Nguyễ Cư Trinh	IMP		40	
3	Cty TNHH Điện tử Deawoo Hanel	192 Võ THị Sáu	IMP		200	
4	Cty sx KD XNK Điện - Điện tử quận 10	62/231 Lý Chính Thắng - P8	IMP		15	
5	Cty Điện tử Thương Mại Đại Việt	83/12A Âu Dương Lâu	IMP		50	
	Binhduong					

NO	NAME OF ORGANIZATION	ADDRESS	TYPE OF COMPANY	CONTACT INFO	AMOUNT OF USED WM HANDLED PER MONTH	
					IMP	EXP
1	Cty TNHH điện tử điện lạnh Darling	112/9 Đường Trần Hưng Đạo, Đông Hoá	IMP		100	
2	Cty Điện tử ASTI	DDông An Tân, Đông Hiệp	IMP		200	
3	Cty TNHH Điện tử Minh Tâm	Kho ĐẠi DƯơng, Đường 10 khu CN Sóng Thần 2	IMP		100	
4	Cty TNHH cơ khí điện- điện tử Văn Ứng	16/2 KT3 ấp Đông Hoà	IMP		100	
5	Cty TNHH thương mại dịch vụ sx cơ điện lạnh Chánh Triển	45/7 Quốc lộ 13 ấp Trung Vĩnh Phú	IMP AND EXP		200	100
6	Chi nhánh cty CP thương mại XNK Thủ Đức	1A Tổ 1, Ấp 1 Hội Nghĩa	IMP		35	

In order to implement the interview survey on E-waste inventory in Vietnam, the Work Team of URENCO has established a list of stakeholders. The list prepared for each city with households, offices and businesses. The quantity of interviewees is as follow.

- 400 Households
- 400 Offices
- 400 Businesses (importers, exporters, collectors, recyclers, manufactures)

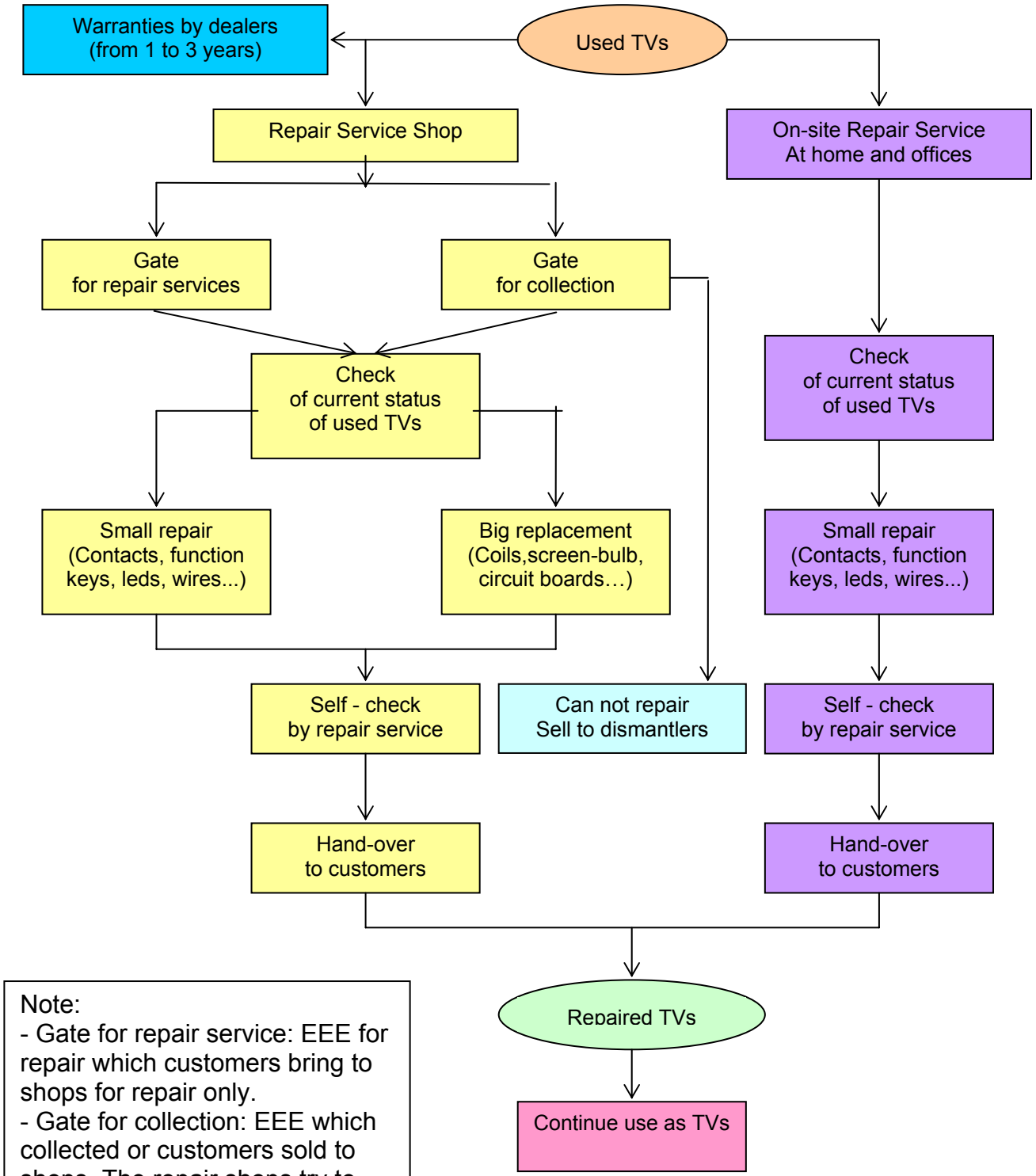
The detail list of interviewees in 7 (seven) cities is shown in table format in Annex Part B - Volume A (1 to 5) of this Final Report.

IV. LEVEL OF REPAIR AND REFURBISHMENT FOR REUSE

1. Process chart of repair, reassembling and refurbishment of used EEE

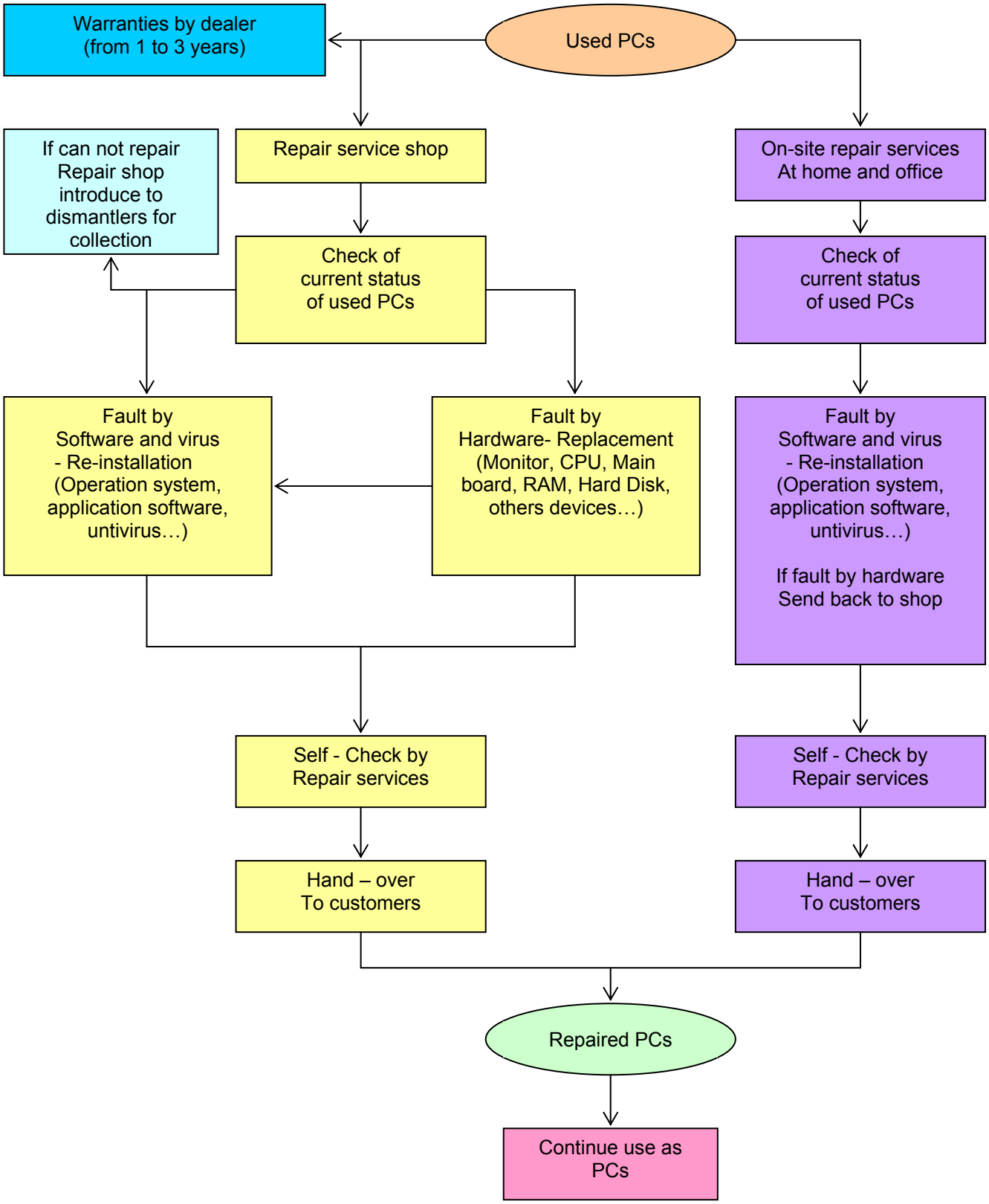
a. Process chart of repair

For Television set (TVs)

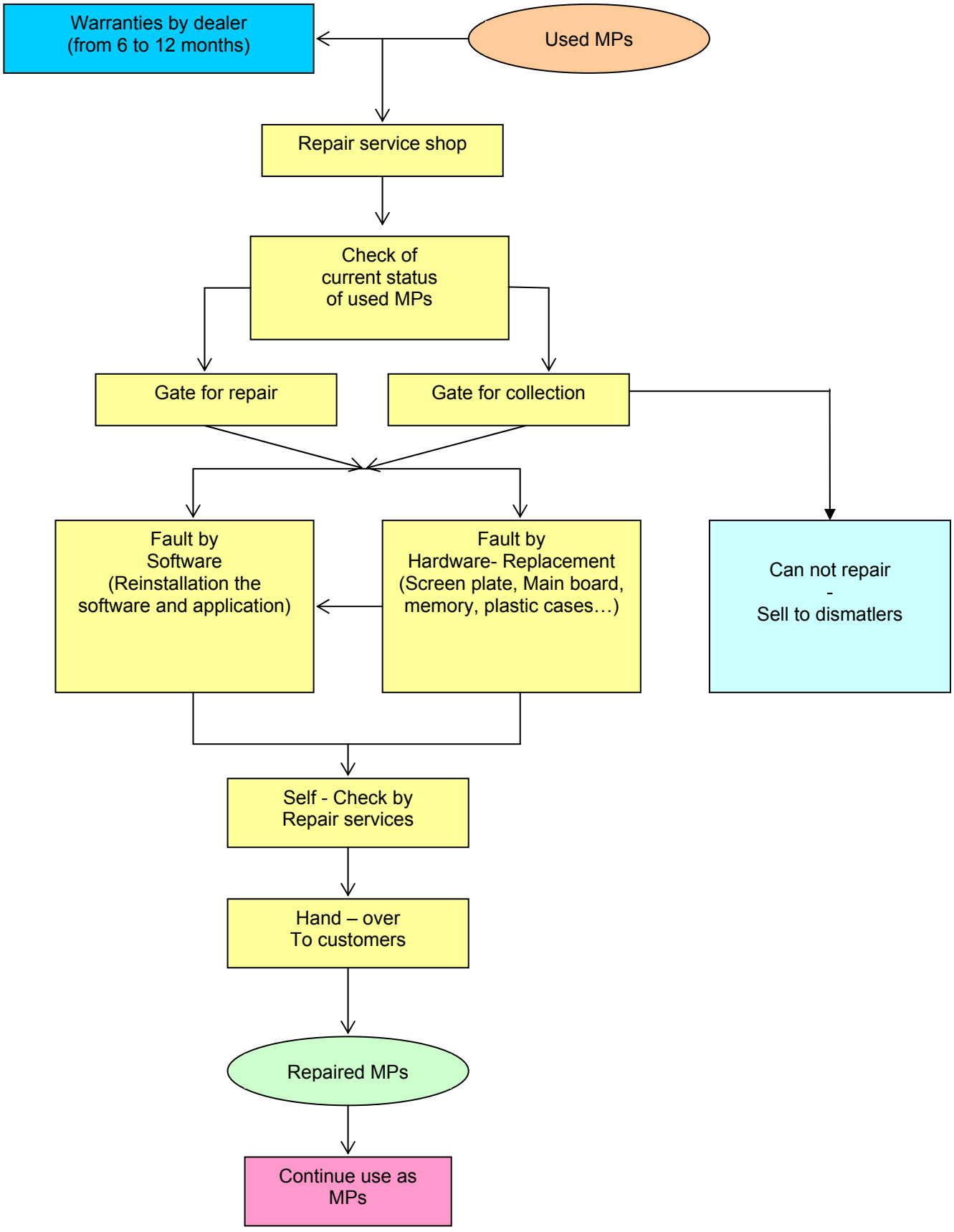


Note:
- Gate for repair service: EEE for repair which customers bring to shops for repair only.
- Gate for collection: EEE which collected or customers sold to shops. The repair shops try to repair them then sell as used EEE.

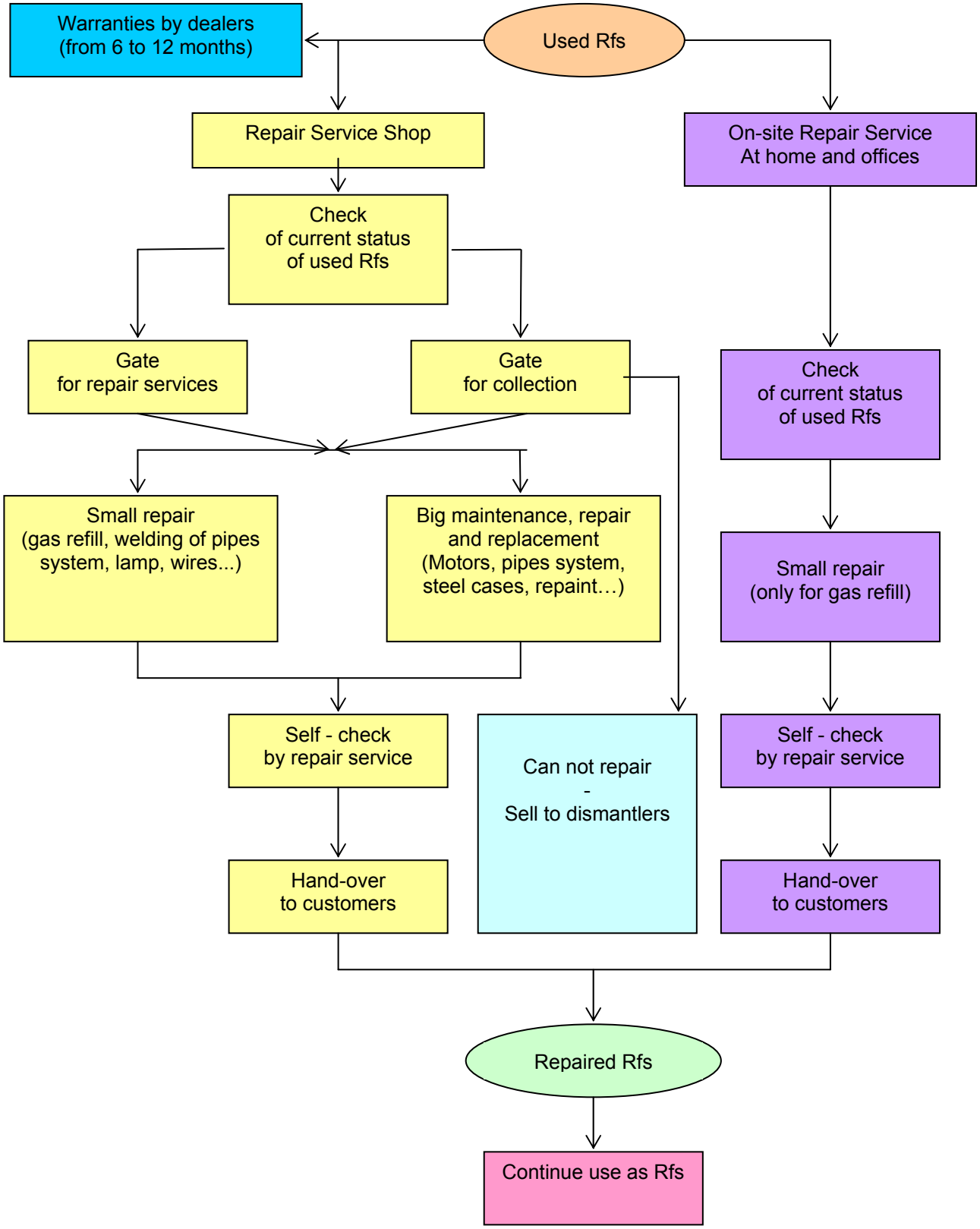
For Personal Computer (PCs)



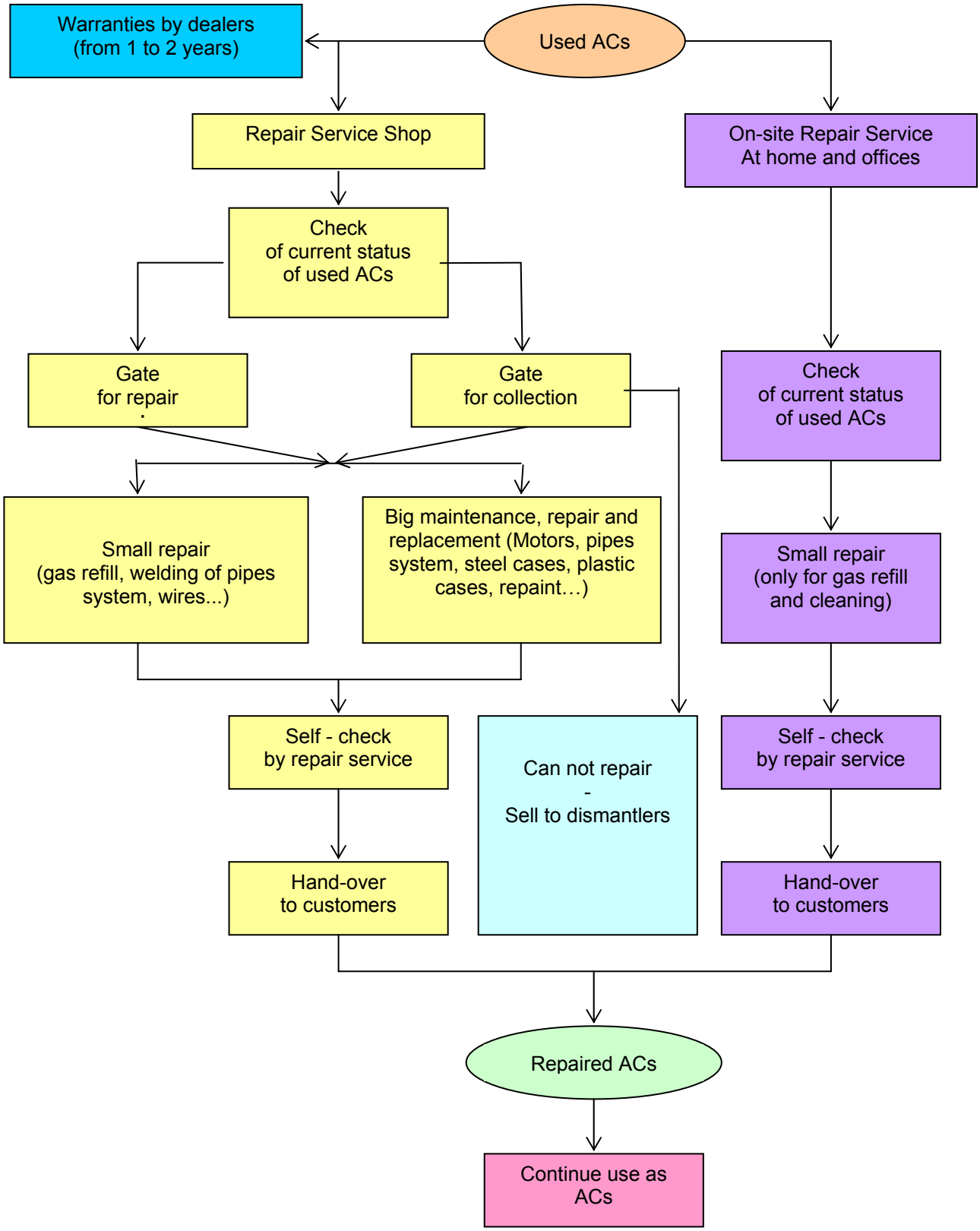
For Mobile phones (MPs)



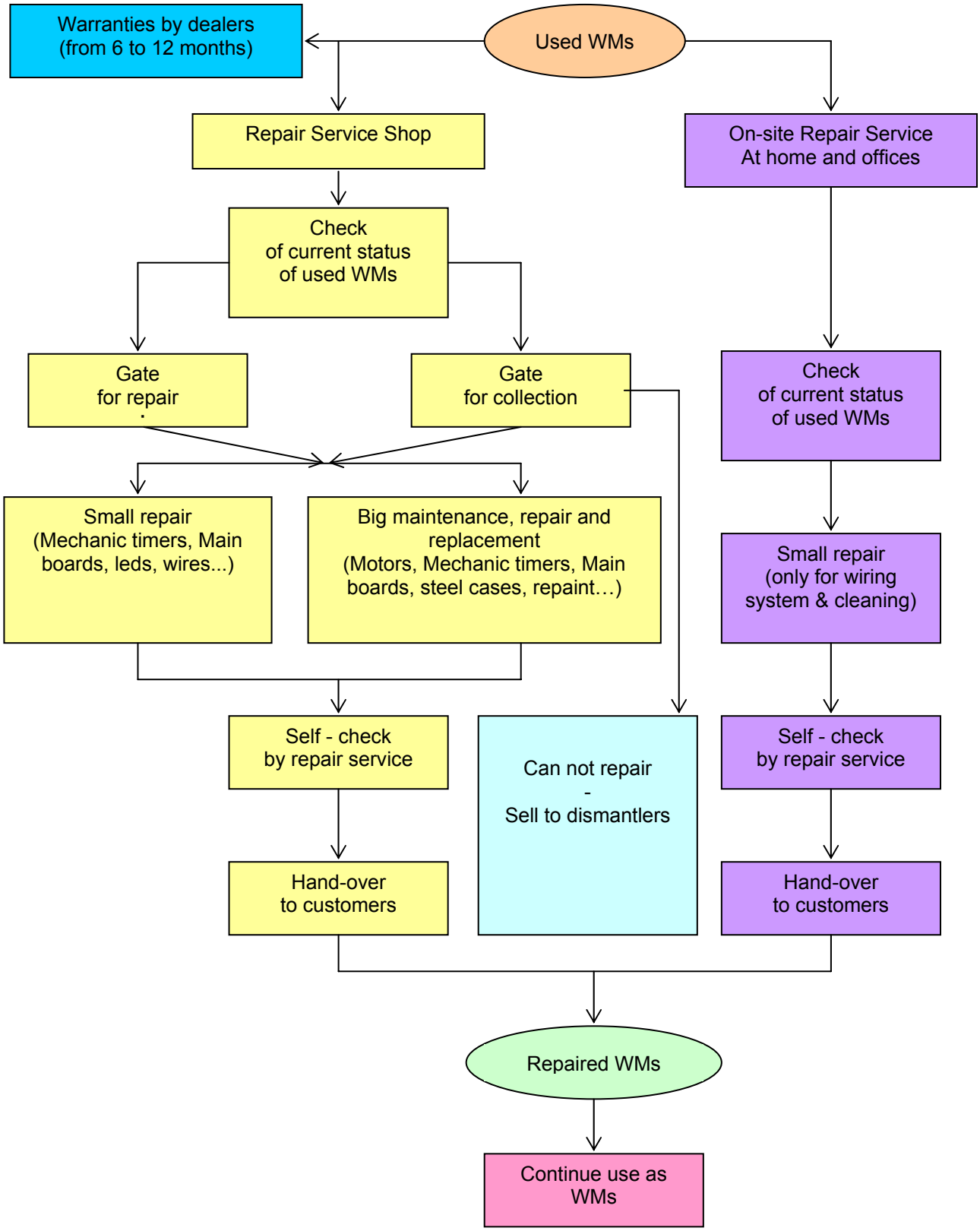
For Refrigerators (Rfs)



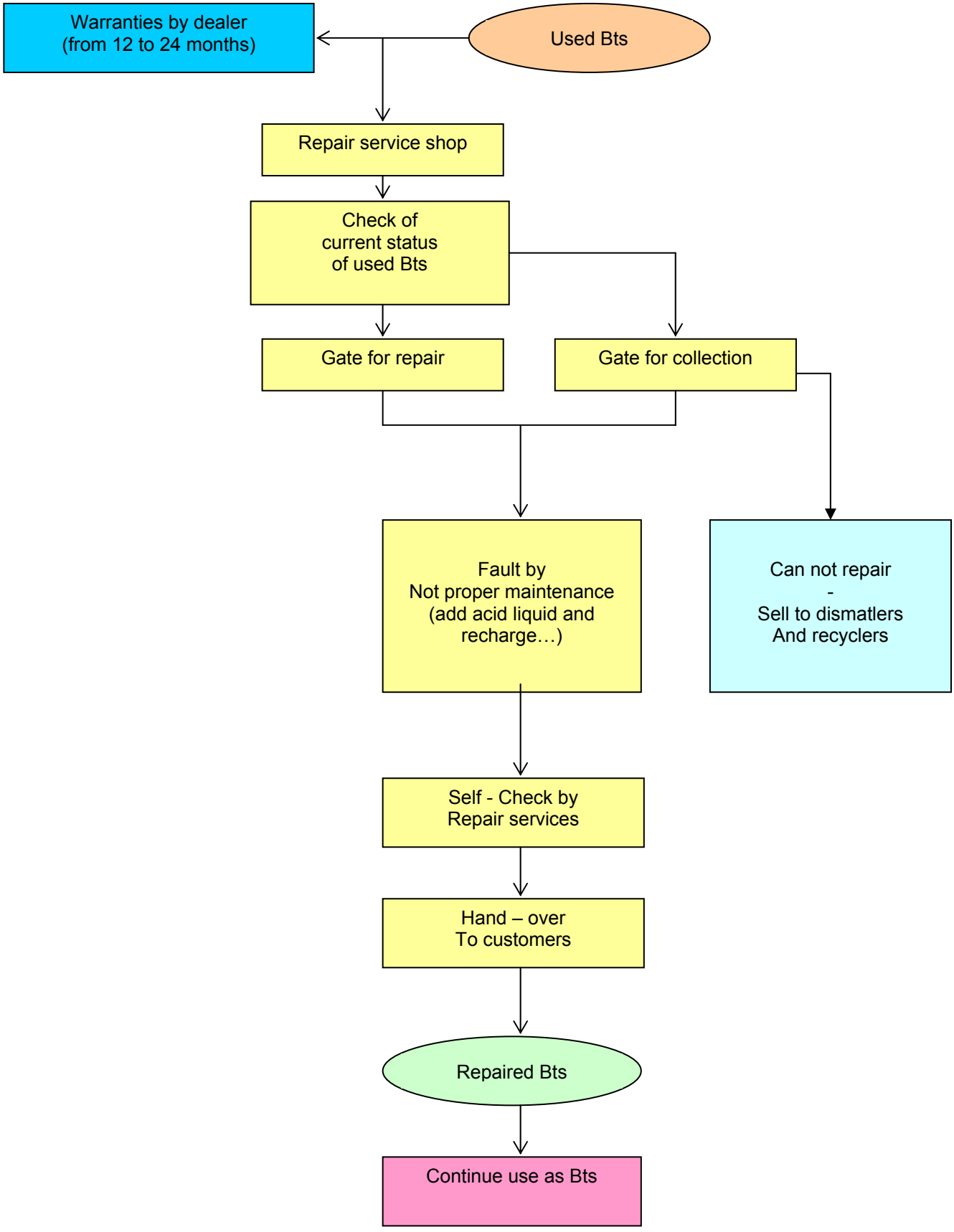
For Air conditioners (ACs)



For Washing Machines (WMs)

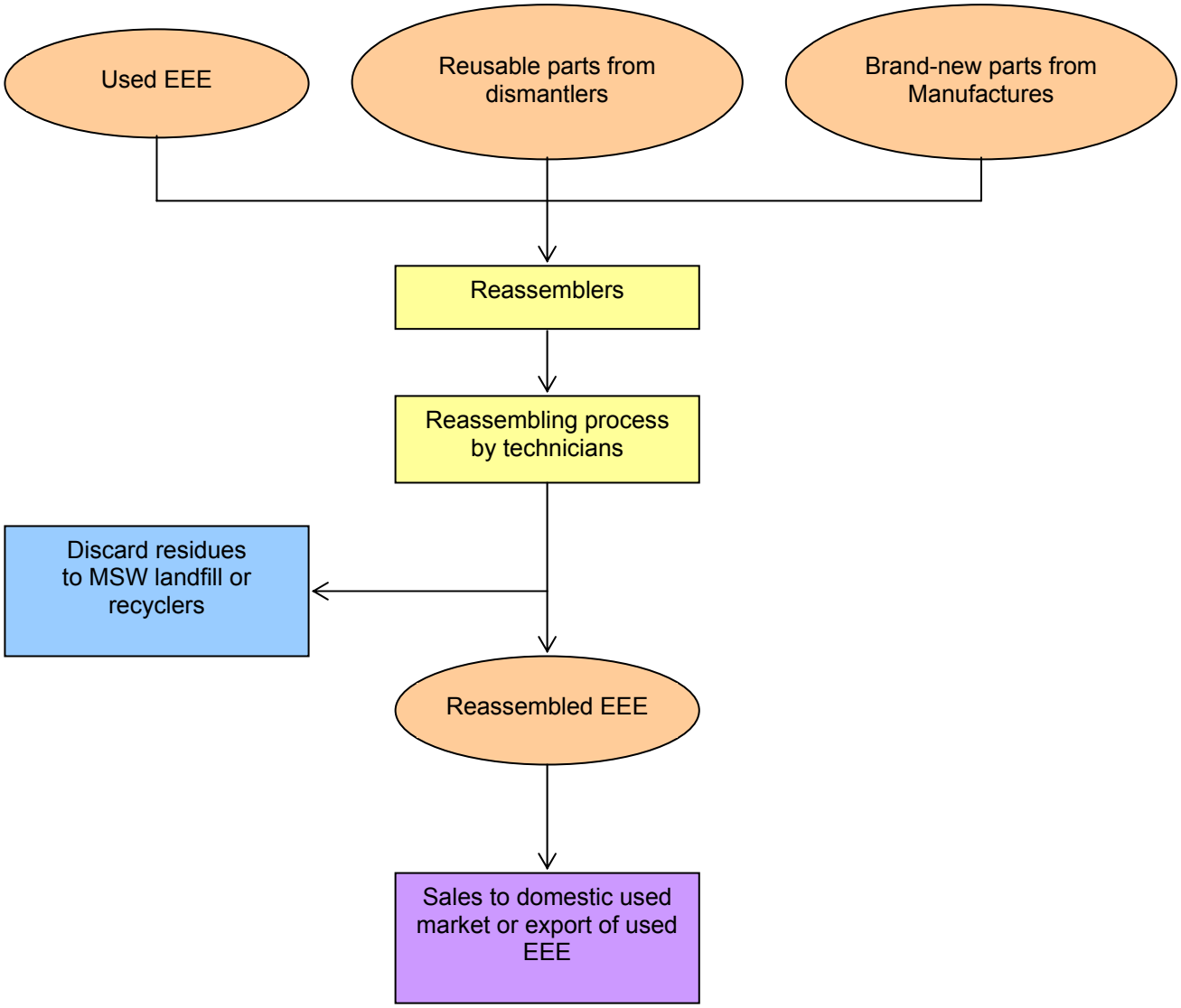


For Lead-Acid Batteries (Bts)

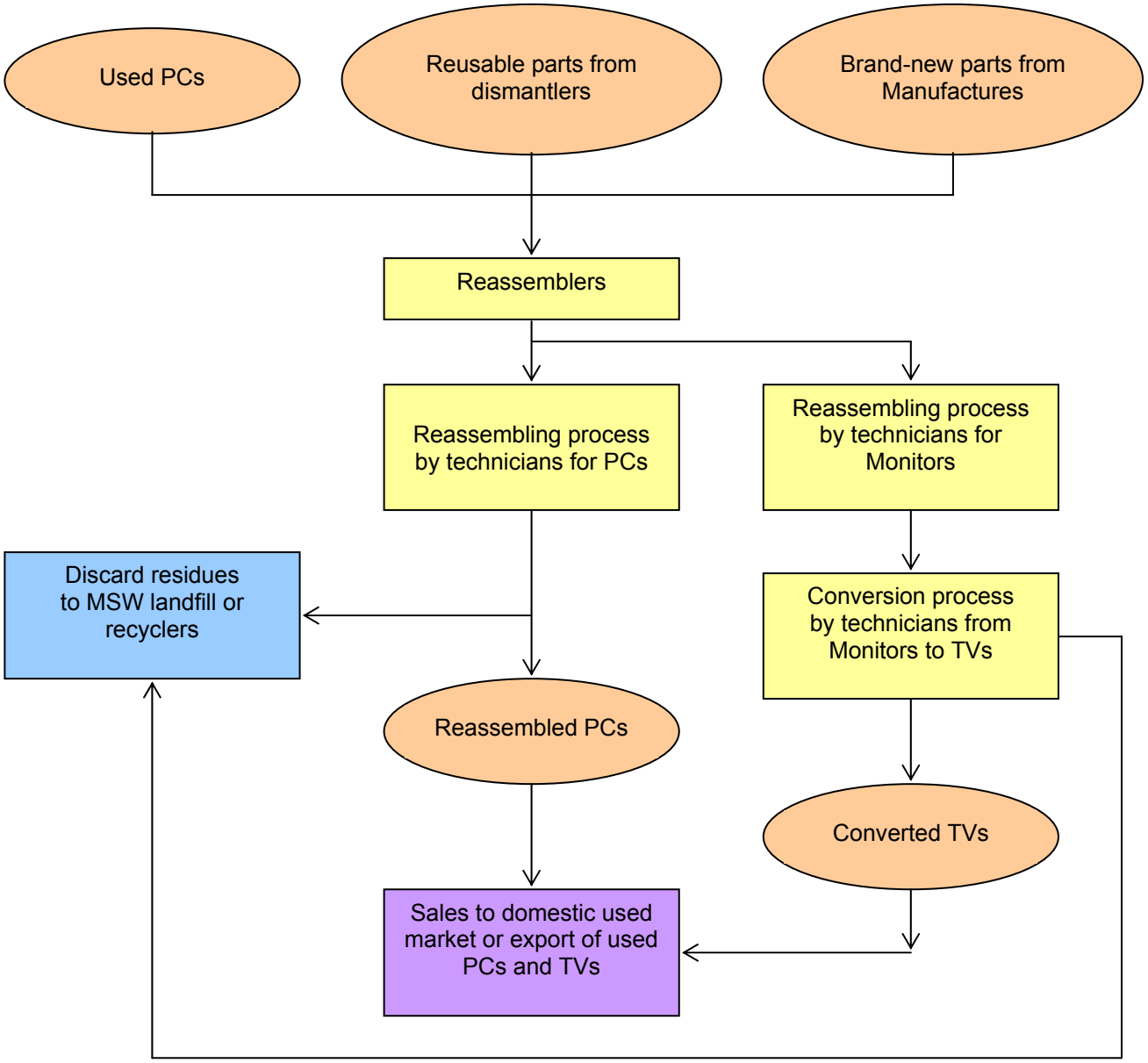


b. Process chart of reassembling

For Television sets, Air Conditioners, Refrigerators, Mobile Phones, and Washing Machines



For Personal Computers (PCs)

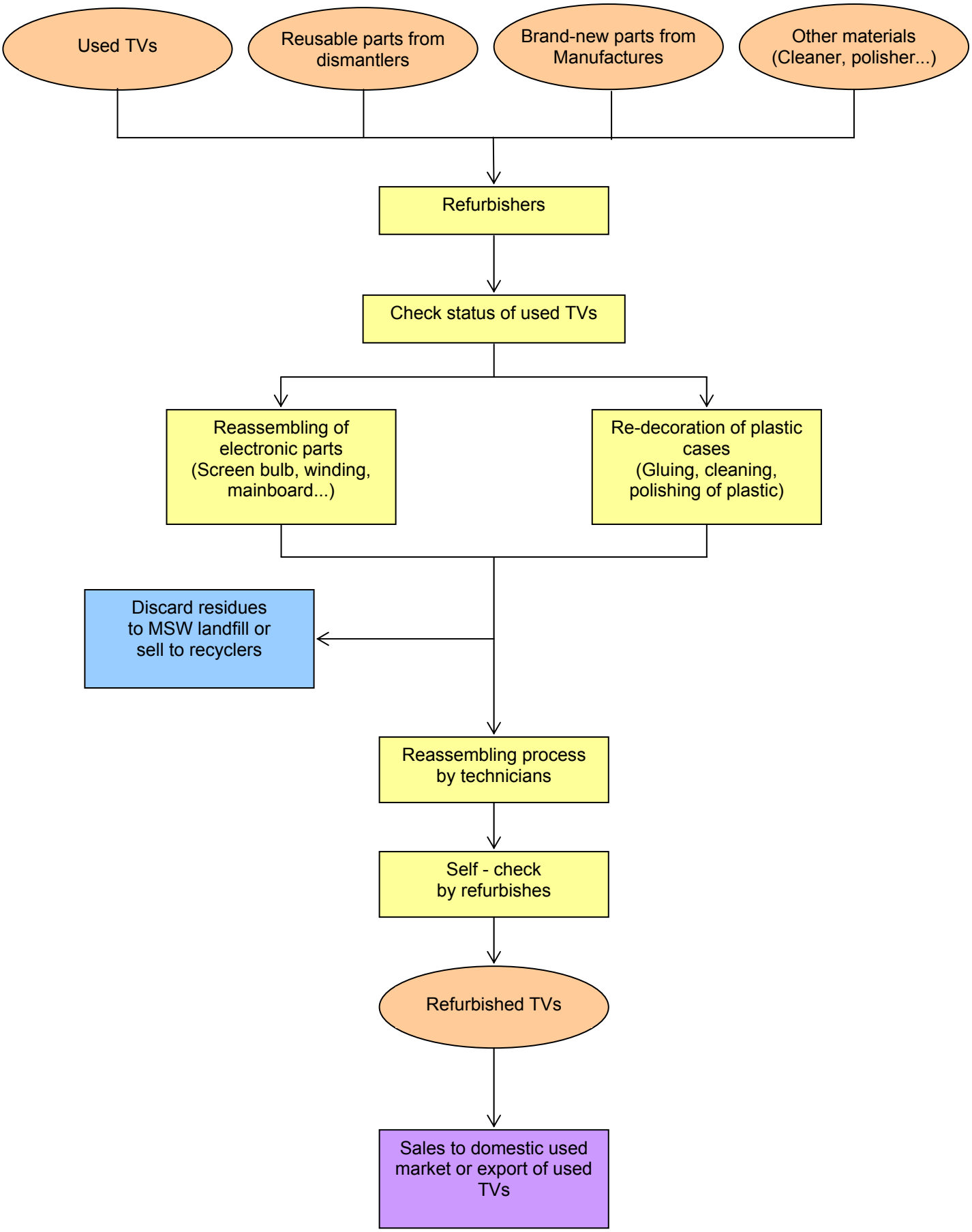


For Lead-Acid Batteries (Bts)

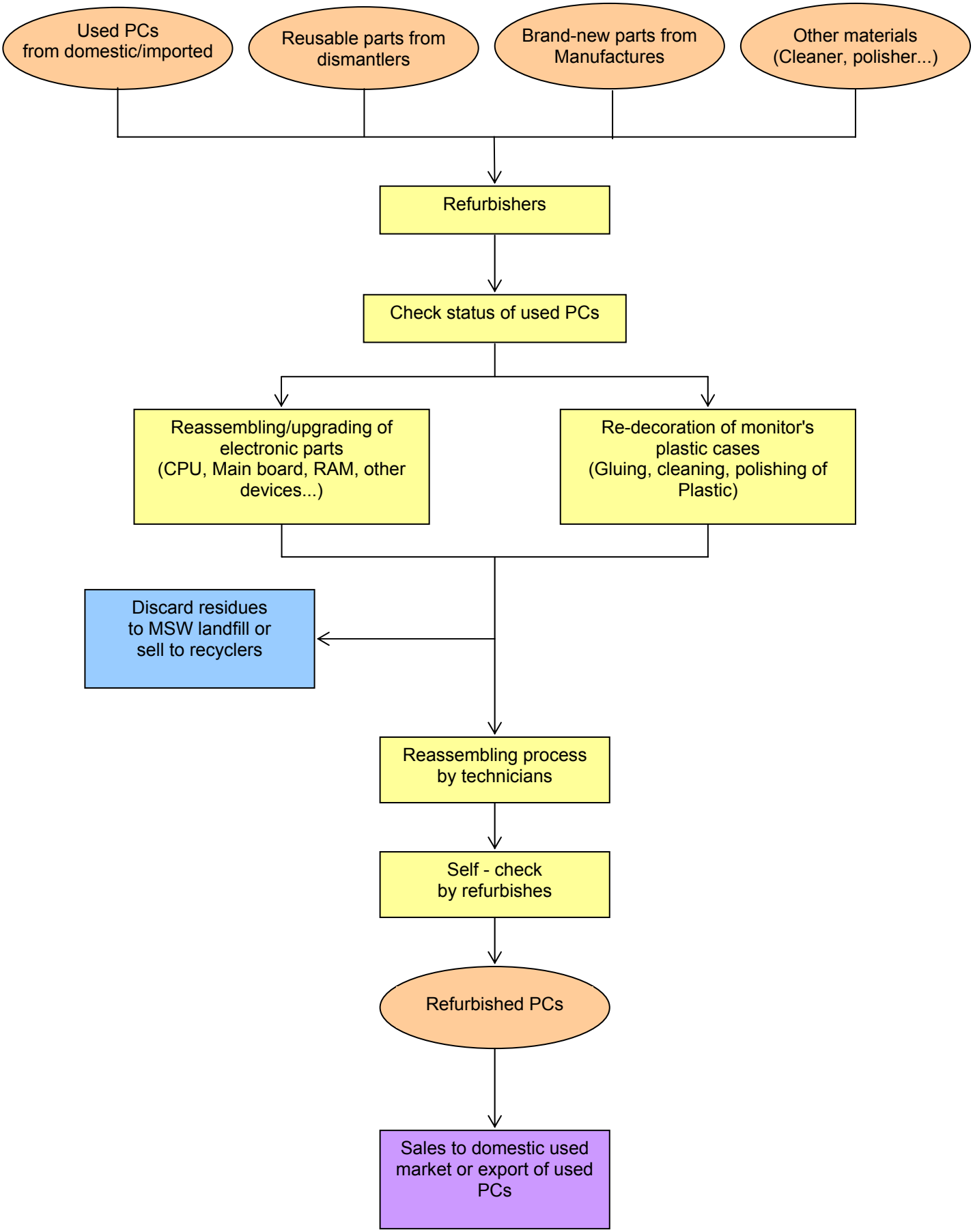
There is not any process for reassembling of lead acid batteries. To increase the lifetime of a battery we should maintenance it carefully and follow the instruction of manufactures. The range of lifetime of used batteries is from two to three years. After this period of time the products can not be used or repaired any more. Some users store them in backyard or somewhere at home (in the case of motorcycles batteries). The others sell them to collectors for recycle. The recyclable materials of waste batteries are lead and plastic. The recycling process of lead acid batteries at small entities often brings about serious consequences to the environment.

c. Process chart of refurbishment

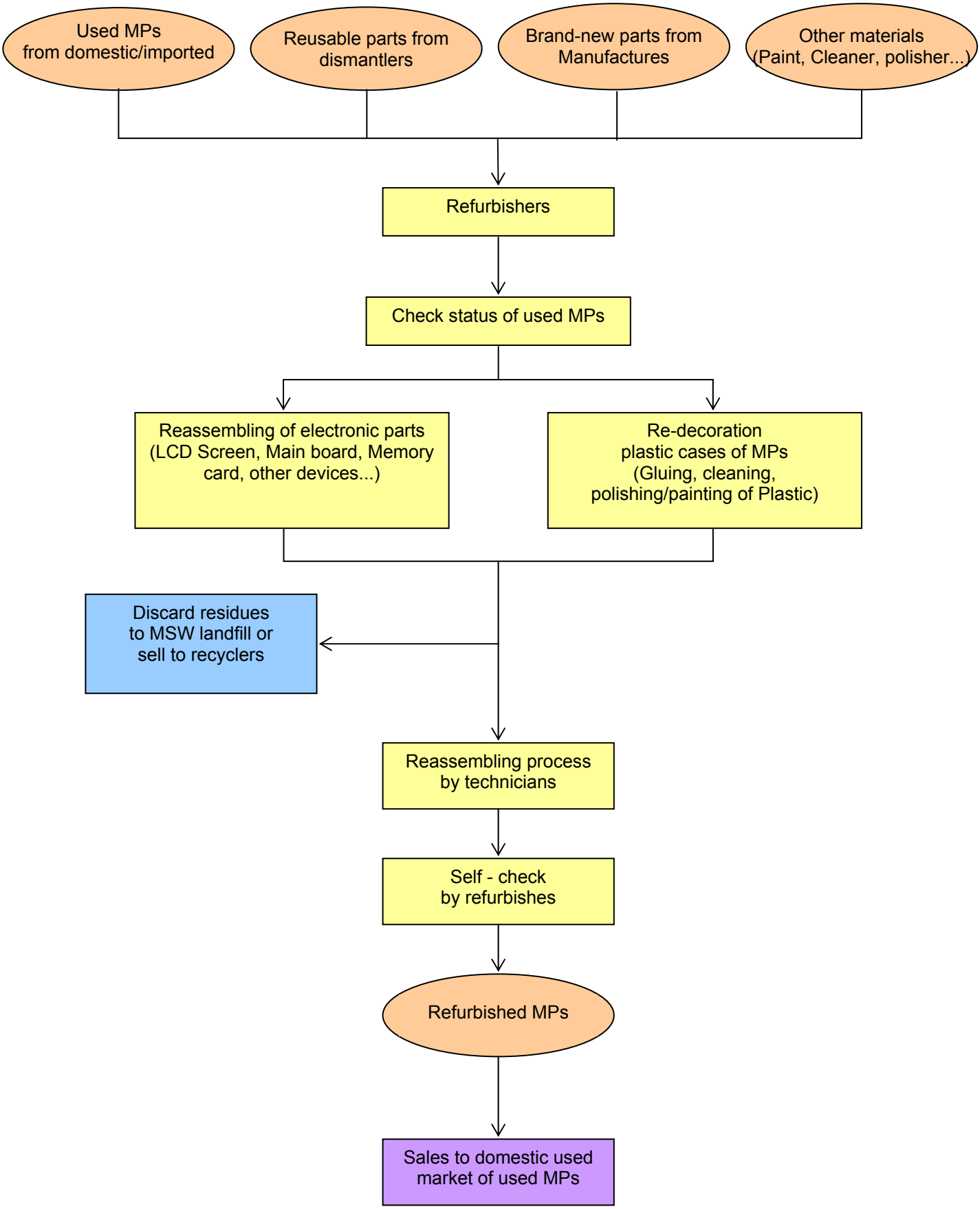
For Television (TVs)



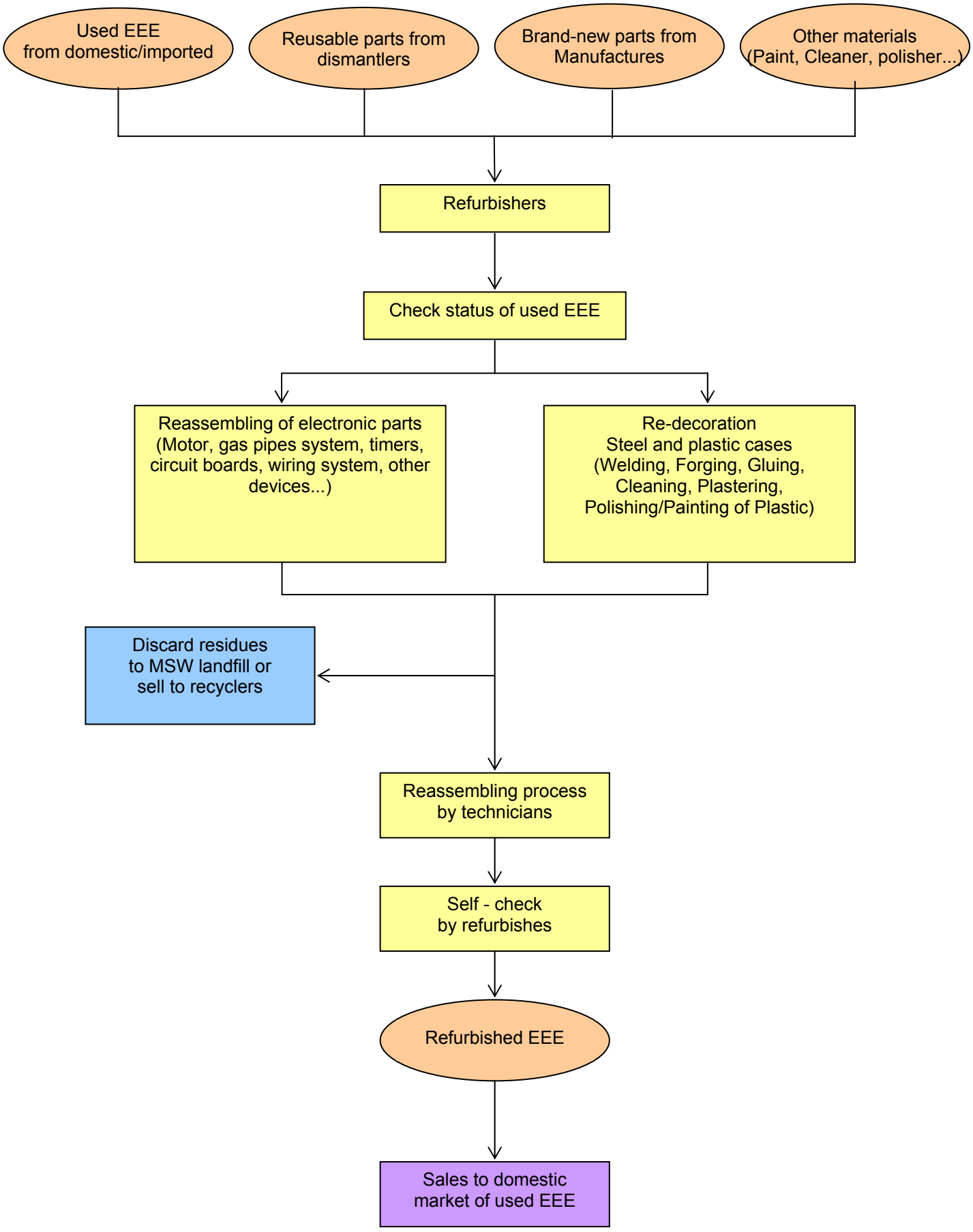
For Personal Computers (PCs)



For Mobile phones (MPs)



For Refrigerators (Rfs), Air conditioners (ACs), Washing machines (WMs)

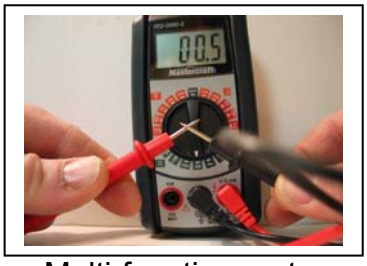


For Lead-Acid Batteries (Bts)

In the case of lead-acid batteries, there are not any reassembling, refurbishment and direct reuse activities. The battery has its designed lifetime about two or three years, and this period of time is relatively fixed. The users/generators always sell used batteries directly to collectors for recycling the materials. Sometimes the users keep lead-acid batteries in backyard/garage with small quantity for long time, and this practice is more common to motorcycle batteries than car batteries.

2. Required tools/equipments for repair, reassembling and refurbishment of used EEE.

a. Tools/equipments for electronic system repair



Multi-function meter

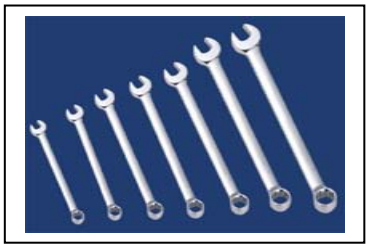
Electric soldering-iron

Pliers

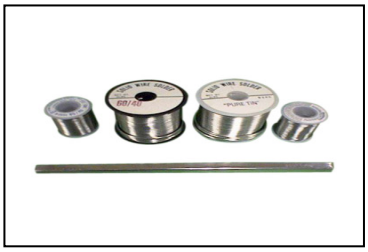
Scissors

Cutter

Screwdriver



Wrench/Spanner



Tin

Pine resin

Glue

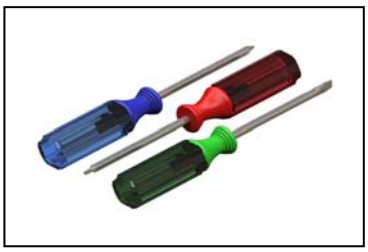
And other hand tools/equipments for electronic work

b. Tools/equipments for mechanic work

Hammer

Anvil

Pliers



Screwdriver

Wrench/Spanner

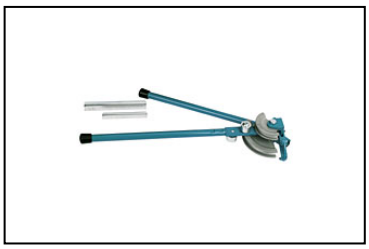
Welding Machine

Hand Drill

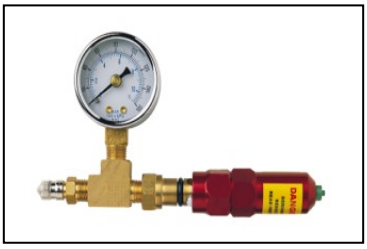
Drill Press

Cutting machine

Electric Grinder



Pipes Bender



Gas Pressure Meter

And other tools/equipments for mechanic work

c. Tools/equipments for refurbishment/decoration

Plastering Board

Sandpaper

Paint Spray Gun

Air Compressor

Polish Machine

Knife

Scissors

Soldering Iron

Plastic Polisher

Metal polish

Paint/plastic polish

Glue

And other tools/equipments and materials for decoration work

3. Generation and management of residues from repair/reassembling

a. Summary of repair and refurbishment activities:

In repair shops and second-hand shops, the quantity of used EEE collected is equivalent to those sold out. The reuse of used EEE in Vietnam at present is in good condition, but recycling is uncontrolled. The residues from repair and refurbishment activities are small in quantity and can be sold to recyclers. The repairers collect used EEE and then try to repair them as much as possible. Refurbishment activities occupied from 5% to 15% in total of collected quantity. Mobile phones are rarely refurbished because they are fashion product. This explains why the growth rate of mobile phone sales is always high. Present recycling activities in Vietnam are implemented by private and small entities. This is the main reason of environmental pollution. At small and private entities, environmentally sound recovery of materials and clean and safe production are defied. These activities will be controlled in near future by the government when the legal framework and management capacity are improved.

Ratio of repair, refurbish and sold as used EEE of collected used EEE

Unit: set

No	Used EEE	Collected		Repaired		Refurbished		Sold as used EEE	
		Quantity	%	Quantity	%	Quantity	%	Quantity	%
1	TVs	2401	100	1254		170	7.08	1927	80.26
2	PCs	2500	100	957		75	3.00	2031	81.24
3	MPs	3060	100	1572		0	0.00	2624	85.75
4	RFs	1343	100	568		105	7.82	1214	90.39
5	Acs	1058	100	294		80	7.56	927	87.62
6	WMs	784	100	251		15	1.91	717	91.45

Source: interview survey in 2006 - 2007 by URENCO

The quantity of repaired equipment including those collected by recyclers and those which users bring to the shop for repair only. The quantity of used EEE sold out by repair shops range from 80 to 90% of collected equipment and approximately fewer than 7% of them for refurbishment. (see detail in Excel file: "Mau D.xls" - in folder: "original survey data" and "11_Est_EEE_ratio_recycling.xls" - in "on Excel" folder).

b. Ratio of reusable parts, recyclable materials and residues from repair/reassembling:

With data from interview survey with the repair/reassembling/refurbishment shops by Annex D, the average ratio of reuslable parts, recyclable materials and residues are calculated as follows.

- **Television set (TVs)**

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used TVs	Kg	35	
2	Average volume of 100 units of used TVs	Kg	3,500	100.0
3	Average quantity of reusable part generated from 100 units of used TVs	Kg	3,000	86.0
4	Average quantity of recyclable material generated from 100 units of used TVs	Kg	300	8.5
5	Average quantity of residue generated from 100 units of used TVs	Kg	200	5.5

Through data above, the ratio of reusable part of used TVs in repaired TVs is approximately more than 80% of its volume. They are including of plastic cases and lead glass bulb. The recyclable materials are copper, steel, plastic, glass and take about 8.5%. The remaining are quantities of residues approximately 5.5%. Ratio of recyclable materials and residues will be compensated by reusable parts from dismantling activities or brand-new parts from manufactures.

And we have the data for repair/reassembling/refurbishment activities of used TVs as follow:

Average volume per 1 used TVs = 35.0 kg
Average volume of reusable parts per 1 used TVs = 30.0 kg
Average volume of recyclable materials per 1 used TVs = 3.0 Kg
Average volume of residues per 1 used TVs = 2.0 Kg

- **Personal Computer (PCs)**

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used PCs (Monitor + CPU case)	Kg	62	
2	Average volume of 100 units of used PCs	Kg	6,200	100.0
3	Average quantity of reusable part generated from 100 units of used PCs	Kg	5,200	84.0
4	Average quantity of recyclable material generated from 100 units of used PCs	Kg	500	8.0
5	Average quantity of residue generated from 100 units of used PCs	Kg	500	8.0

Through data from survey above, the ratio of reusable part of used PCs in repaired PCs is approximately more than 80% of its volume. They are including of monitors, plastic and steel cases and many parts inside the CPU case. The recyclable materials are copper, steel, plastic, glass and take about 8.0%. The remaining is quantities of residues approximately 8.0%. In order to reassemble PCs, the repair shops put some reusable parts from dismantles or brand-new parts from manufactures into the PCs.

The data for level of repair/reassembling/refurbishment activities of used PCs is shown as follow:

Average volume per 1 used PCs (Monitor + CPU case) = 62.0 kg
Average volume of reusable parts per 1 used PCs = 52.0 kg
Average volume of recyclable materials per 1 used PCs = 5.0 Kg
Average volume of residues per 1 used PCs = 5.0 Kg

- **Mobile Phone (MPs)**

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used MPs	Kg	0.185	
2	Average volume of 100 units of used MPs	Kg	18.50	100.0
3	Average quantity of reusable part generated from 100 units of used MPs	Kg	12.03	65.0
4	Average quantity of recyclable material generated from 100 units of used MPs	Kg	0.93	5.0
5	Average quantity of residue generated from 100 units of used MPs	Kg	5.55	30.0

Data from the interview survey with MPs repair shops and data from analysis result of target E-waste sample (List_Sample_Anl_E.pdf) give us an overview about the repair/reassembling/refurbishment of MPs. The ratio of residues from repair activities is high percentage, about 30% of total. Sub total of reusable parts and recyclable materials is approximately 70%.

The level of repair/reassembling/refurbishment is shown in following box.

Average volume per 1 used MPs (2006-2007 survey) = 0.185 kg
Average volume of reusable parts per 1 used MPs = 0.120 kg
Average volume of recyclable materials per 1 used MPs = 0.009 Kg
Average volume of residues per 1 used MPs = 0.056 Kg

- **Refrigerators (Rfs)**

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used Rfs	Kg	60	
2	Average volume of 100 units of used Rfs	Kg	6,000	100.0
3	Average quantity of reusable part generated from 100 units of used Rfs	Kg	4,800	80.0
4	Average quantity of recyclable material generated from 100 units of used Rfs	Kg	600	10.0
5	Average quantity of residue generated from 100 units of used Rfs	Kg	600	10.0

90% of total quantity of used Rfs can be reused and recycled at repair/reassembling/refurbishment shops. Only 10.0% (600 Kg per 100 units) is the ratio of residues which are discarded as MSW. The residue of repair activity of Rfs is only small broken parts of plastic, glass, paper and rubber.

And we have the data for repair/reassembling/refurbishment activities of used RFs as follow:

Average volume per 1 used Rfs = 60.0 kg
Average volume of reusable parts per 1 used Rfs = 48.0 kg
Average volume of recyclable materials per 1 used Rfs = 6.0 Kg
Average volume of residues per 1 used Rfs = 6.0 Kg

➢ Air Conditioner (ACs)

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used ACs	Kg	50	
2	Average volume of 100 units of used ACs	Kg	5,000	100.0
3	Average quantity of reusable part generated from 100 units of used ACs	Kg	4,000	80.0
4	Average quantity of recyclable material generated from 100 units of used ACs	Kg	850	17.0
5	Average quantity of residue generated from 100 units of used ACs	Kg	150	3.0

With used ACs, ratio of residues is only 3.0% of total quantity. For 100 units of used ACs input have 150 kg of residues, they are small broken parts, plastic and other fragmented pieces. The quantity of reusable parts and recyclable materials reaches over 90% including iron/iron alloys and plastic parts.

Data of level on repair/reassembling/refurbishment activities is shown in following box:

Average volume per 1 used ACs = 50.0 kg
Average volume of reusable parts per 1 used ACs = 40.0 kg
Average volume of recyclable materials per 1 used ACs = 8.5 Kg
Average volume of residues per 1 used ACs = 1.5 Kg

- **Washing Machine (WMs)**

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of used WMs	Kg	35	
2	Average volume of 100 units of used WMs	Kg	3,500	100.0
3	Average quantity of reusable part generated from 100 units of used WMs	Kg	2,975	85.0
4	Average quantity of recyclable material generated from 100 units of used WMs	Kg	350	10.0
5	Average quantity of residue generated from 100 units of used WMs	Kg	175	5.0

Over 90% of used WMs are reusable parts and recyclable materials. The residues ratio in repair/reassembling/refurbishment activities of WMs is approximately 5%, and about 175 kg of residue per 100 units of used WMs at repair shops.

The data for level of repair/reassembling/refurbishment activities of used WMs is shown as follow:

Average volume per 1 used WMs = 35.0 kg
Average volume of reusable parts per 1 used WMs = 29.75 kg
Average volume of recyclable materials per 1 used WMs = 3.5 Kg
Average volume of residues per 1 used WMs = 1.75 Kg

➢ Waste Automobile Lead Acid Batteries (Bts)

No	Information	Unit	Data	% of volume
1	Average volume of 1 unit of waste Bts	Kg	17	
2	Average volume of 100 units of waste Bts	Kg	1,700	100.0
3	Average quantity of reusable part generated from 100 units of waste Bts	Kg	100	6.0
4	Average quantity of recyclable material generated from 100 units of waste Bts	Kg	1,150	68.0
5	Average quantity of residue generated from 100 units of waste Bts	Kg	450	26.0

The ratio of reusable parts from batteries is zero. Recyclable materials from waste batteries are plastics and lead metals and lead sulphate/oxide. Recyclers use melting technology to recycle lead metal from waste batteries. Recycled materials from lead acid battery become raw material for manufactures of battery product and others. Residue from recycling process in small private entities of waste batteries is acid liquid and discarded as sewage into the public drainage system.

Ratio of reusable parts, recyclable materials and residues of waste acid batteries is shown as follow.

Average volume per 1 used Bts = 17.0 kg
Average volume of reusable parts per 1 used Bts = 0.1 kg
Average volume of recyclable materials per 1 used Bts = 11.5 Kg
Average volume of residues per 1 used Bts = 4.5 Kg

c. Generation and management of residues from repair/reassembling:

The average volume residues from repair activities of target E-waste were shown as follow:

- TVs: 2.0 kg/unit
- PCs: 5.0 kg/unit
- MPs: 0.056 kg/unit
- ACs: 1.5 kg/unit
- RFs: 6.0 kg/unit
- WMs: 1.75 kg/unit
- Bts: 4.5 kg/unit

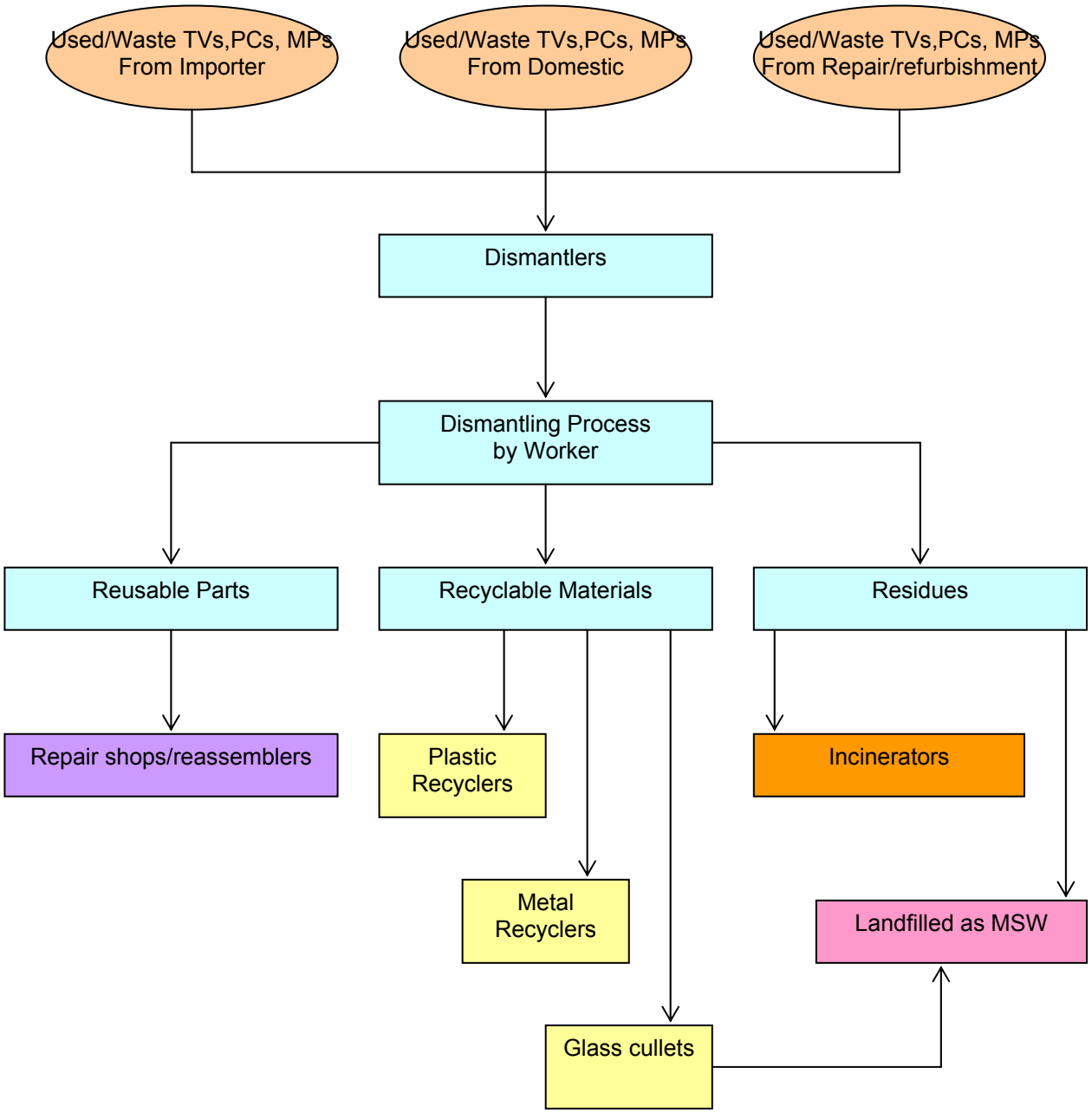
The residues included plastic, glass, lead glass, crushed PCB (printed circuit board), CFC gas, all kind of waste battery as rechargable, dry cell batteries. At this time, the residues always are non recyclable and hazardous waste and discarded into the environment or landfill as MSW. Now in Vietnam there are some entities have permit to treat these kinds of residues as URENCO Hanoi, URENCO Hochiminh and URENCO Danang. However the national and local management system of E-waste is only at the time of begining so that it can not have enough ability to manage all generators. Only some big generators implemented to contract of treatment with authorized entities and always be producers and importers.

V. LEVEL OF DISMANTLING AND RECYCLING

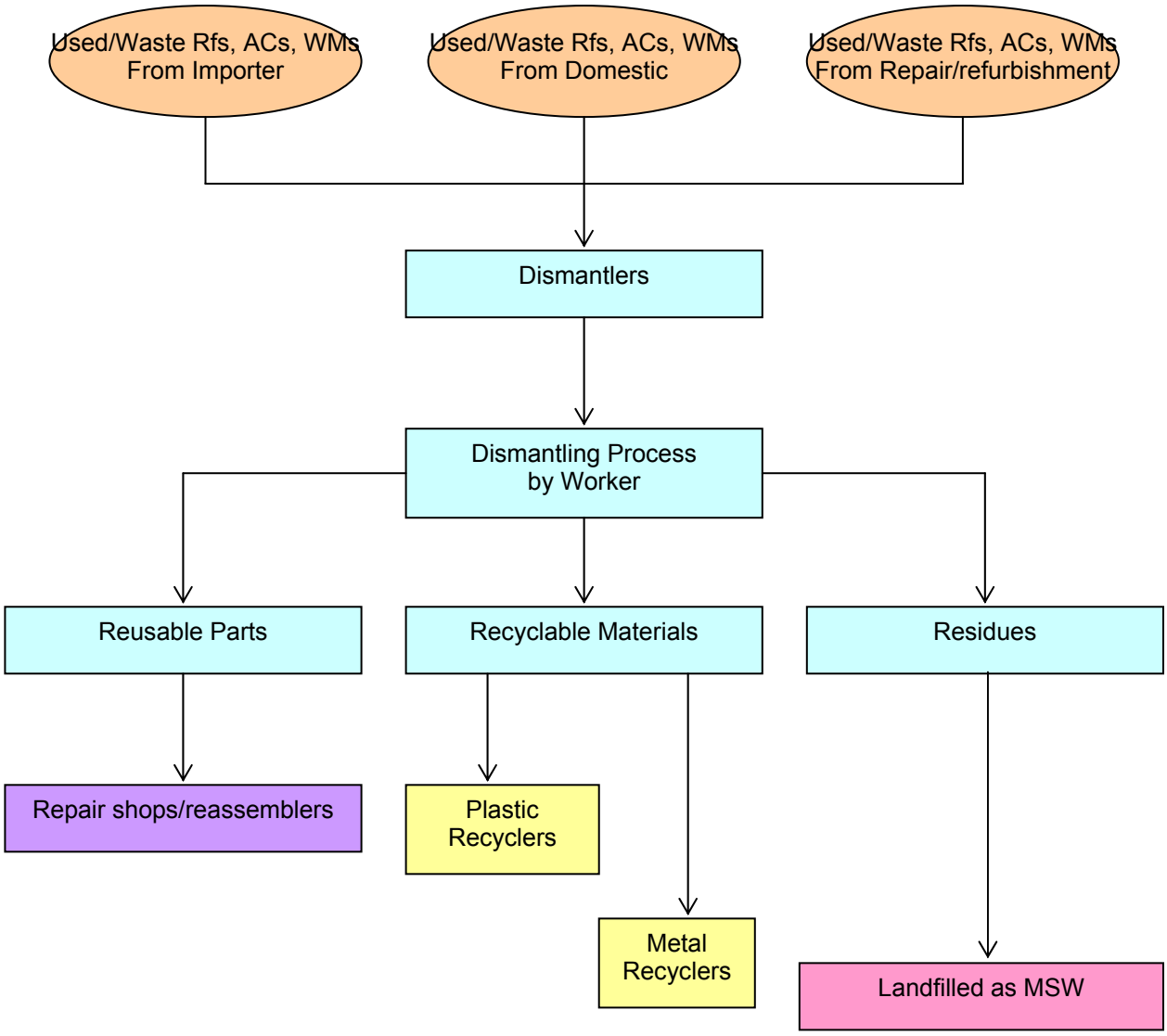
1. Process chart of dismantling and recycling of E-waste

a. Process chart of dismantling

For Television set (TVs), Personal Computers (PCs), Mobile Phone (MPs)

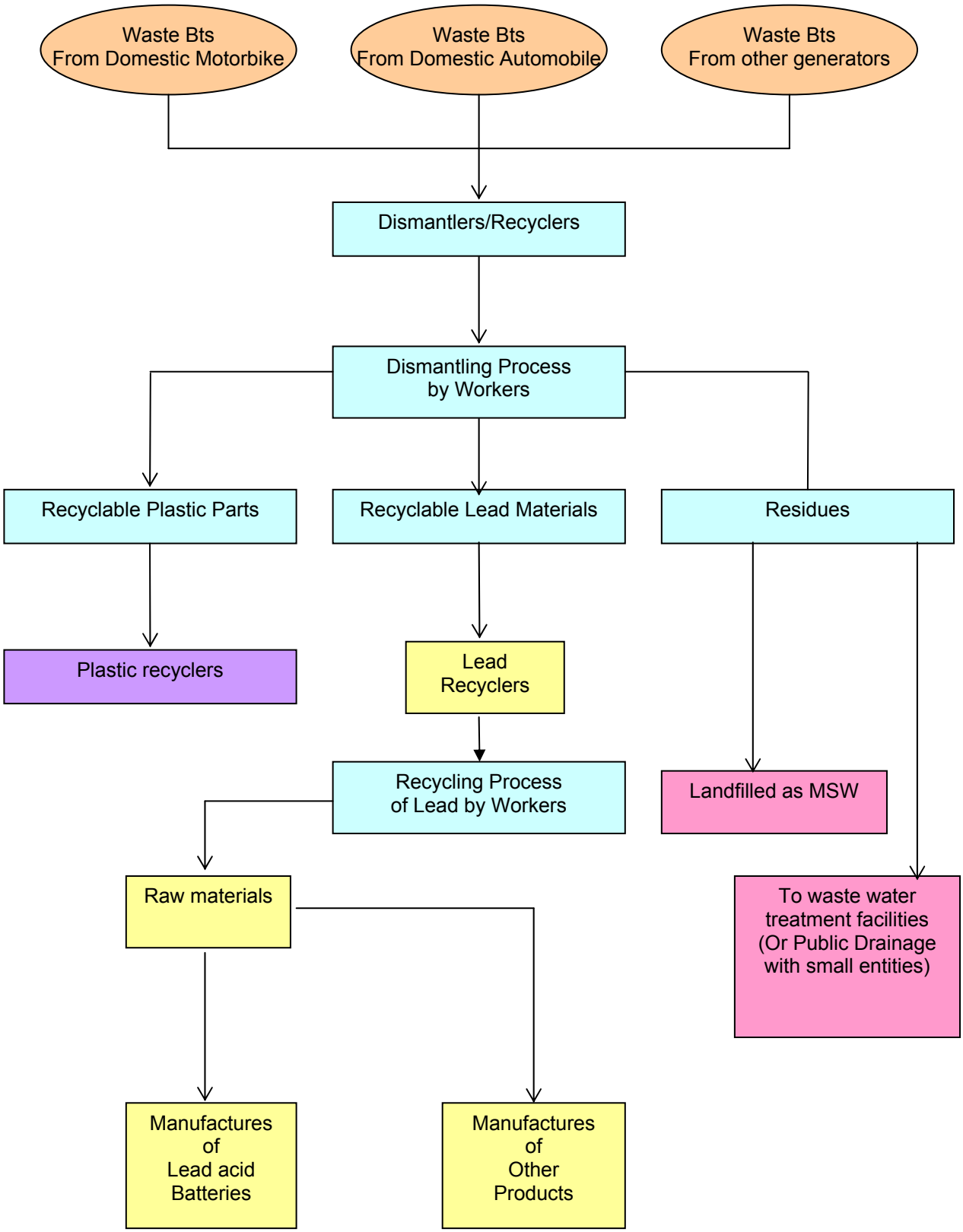


For Refrigerators(Rfs), Air Conditioners(ACs), Washing Machines(WMs)



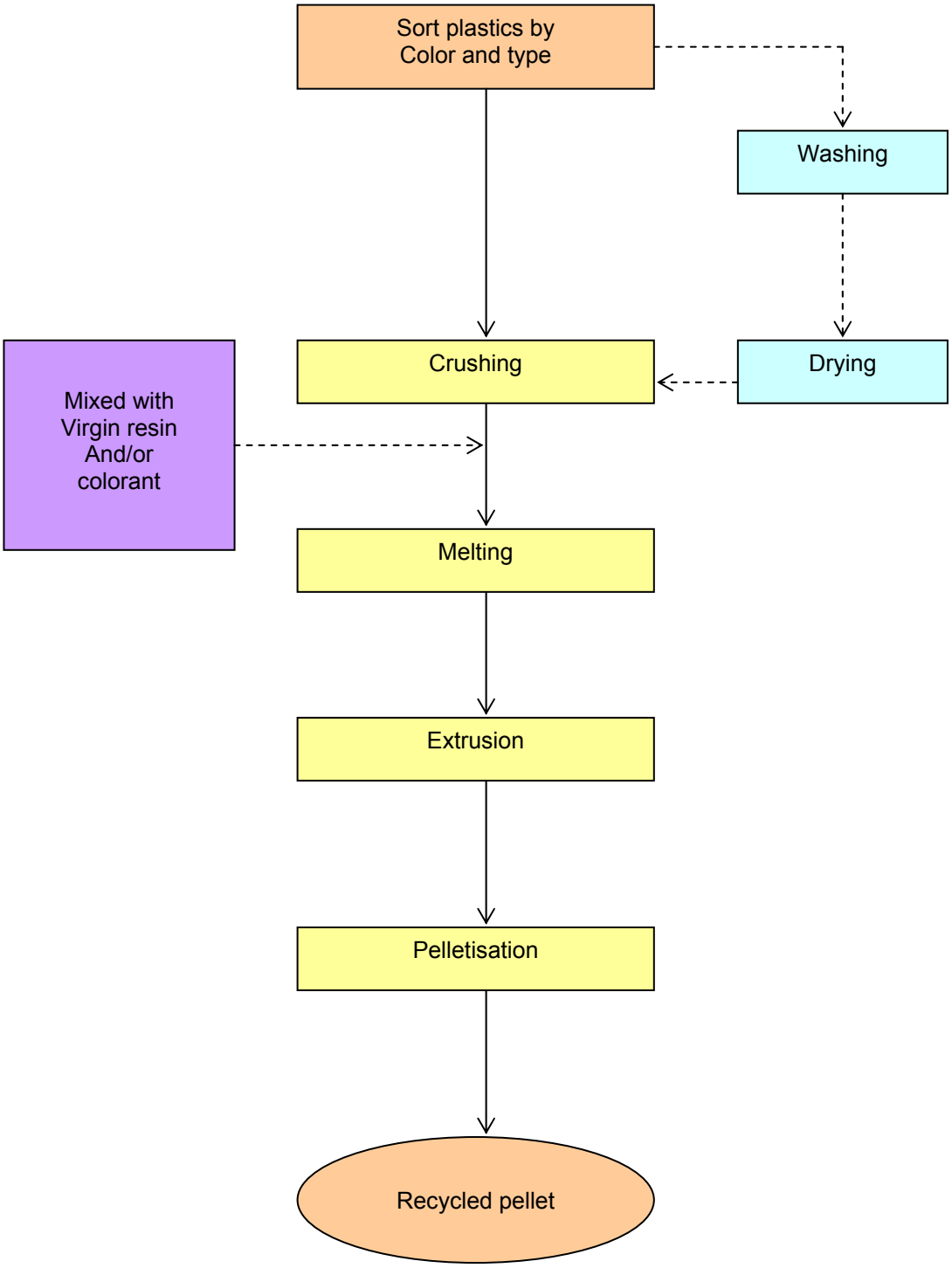
For Waste Lead-Acid Batteries (Bts)

The following chart describes the dismantling and recycling activities of waste lead-acid batteries. Reuse/repair/refurbish activities of used lead-acid batteries do not occur. After use of battery the user sale it directly to the collector for recycling. The dismantling/recycling process of waste batteries is shown as follows.



b. Process chart of recycling for main recyclable materials in E-waste

For Plastic



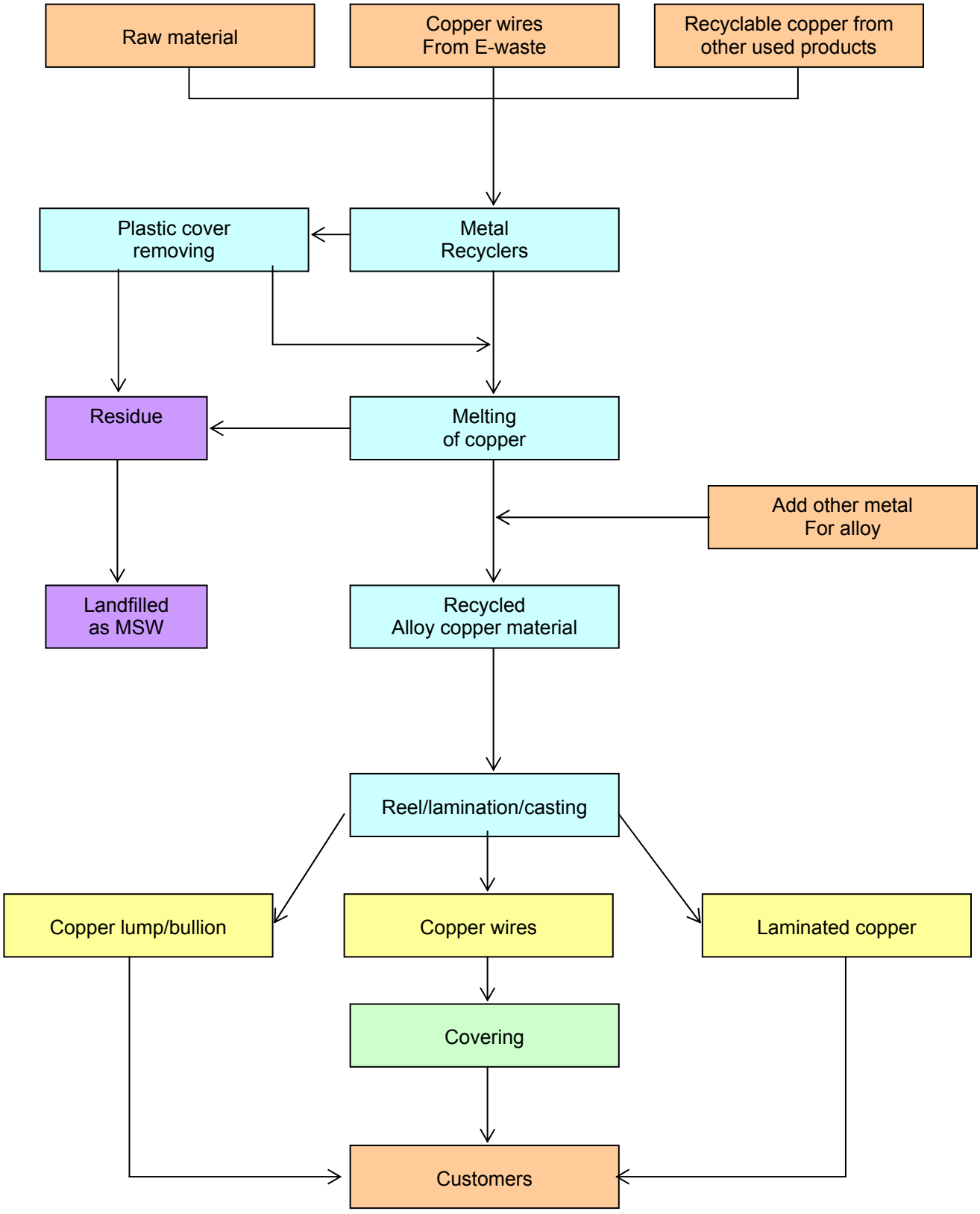
Common process flow

Optional process flow

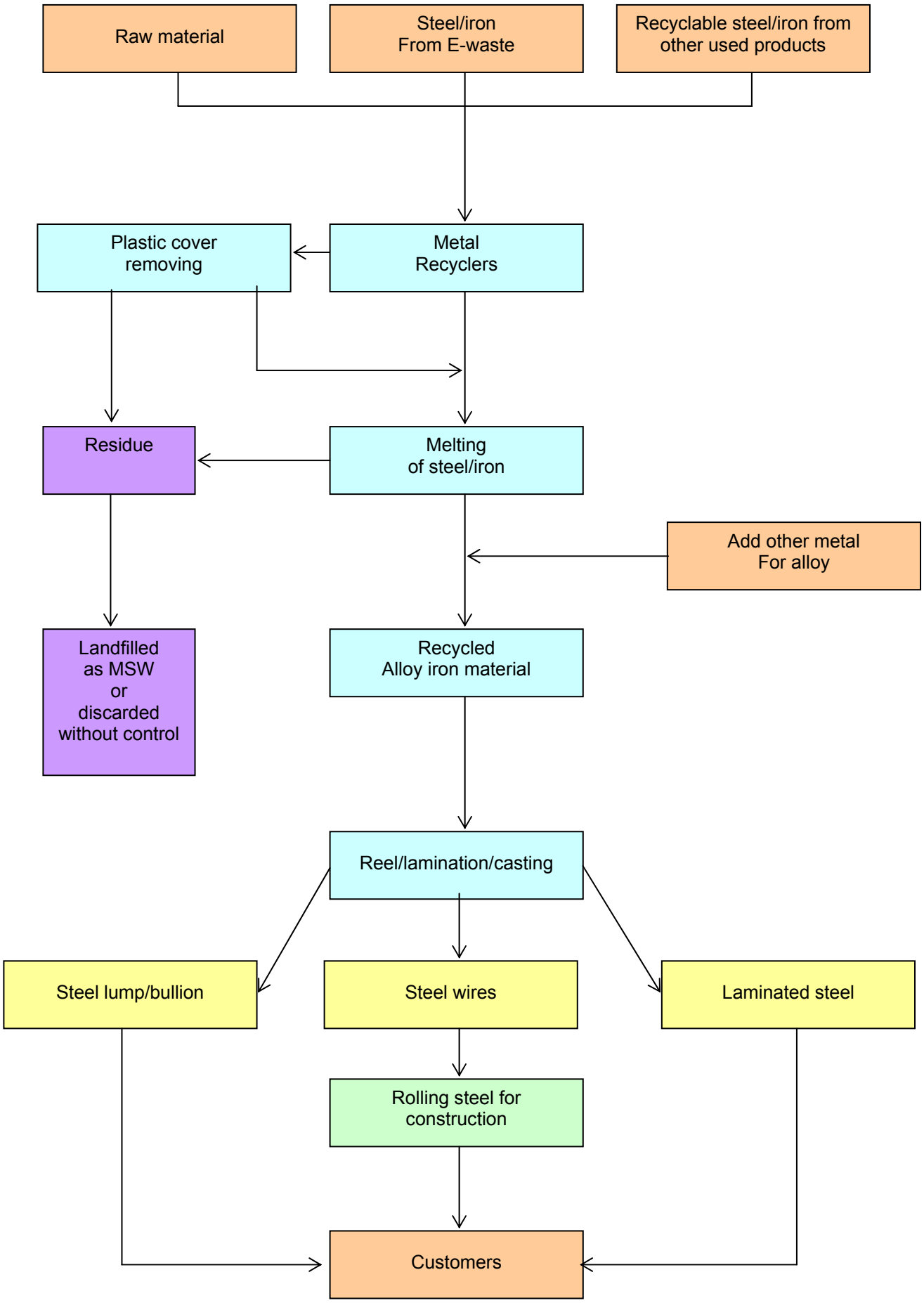
For Glass

Cullet glass from dismantles of E-waste is considered as residues and discarded to landfill as municipal solid waste. This glass can not be recycled and can not be managed at this time.

For copper wire



For steel/iron

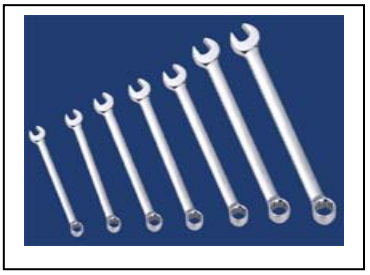


2. Required tools/equipments for dismantling and recycling of E-waste

a. Tools/equipments for dismantling

Hammers

Anvil

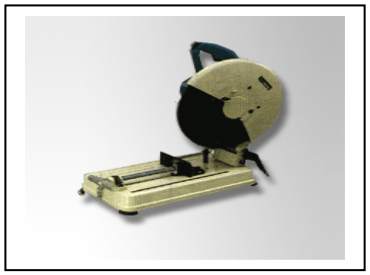


Wrench/spanner

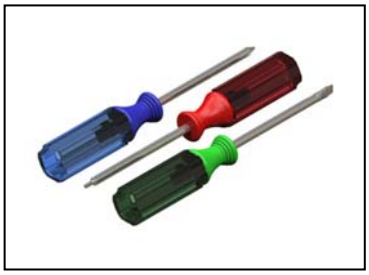
Oxyacetylene welder

Electric arc welder

Cutting machine



Hacksaw



Screwdriver

Pliers

b. Equipments for recycling of plastic

Color sorting system

Crushing machine

Washing system

Drying yard

Pelletisation products

c. Equipments for recycling of copper/steel/iron metal

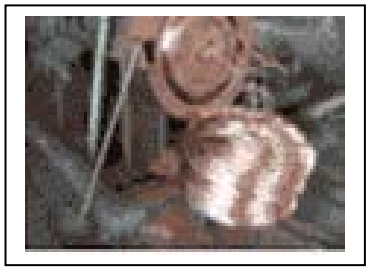
Melting furnace

Cover removing

Cutting machine

Manual separation

Lamination



Reel equipments

3. Estimation the level of dismantling and recycling of E-waste

Through the interview survey with dismantlers and recyclers, The Work Team of URENCO tried to collect information on dismantling and recycling activities of E-waste in Vietnam. Because of their recognizing environmental pollution and illegality of their activities, most of the interviewees evaded to answer the questions.

4. Discard of Residues from repair, refurbishing, reassembling and dismantling of E-waste

The residues from repair shops, refurbishers, reassemblers and dismantlers of target E-waste are often discarded to the environment or to landfills as municipal solid waste (MSW). With each type of E-waste have its own residues. The main specific residues for each type of E-waste is as follow:

TVs:
- CRT glass (lead glass)
- Plastic
- PCB (printed circuit board)

PCs:
- Plastic
- PCB (printed circuit board)

MPs:
- Plastic
- ABS-PC (a material to make MP)
- PCB (printed circuit board)

RFs:
- Plastic
- Polyurethane (an insulating material)
- CFC gas

ACs:
- Plastic
- CFC gas

WMs:
- Plastic
- PCB (printed circuit board)

The biggest amount and hazardous residues from above activities are CRT glass, CFC gas, crushed PCB and plastic. The CRT glass (lead glass) and PCB always are discarded to the landfill as MSW. CFC gas always is discarded direct to the environment. At this time the disposal of hazardous residues can not be controlled.

VI. ENVIRONMENTAL PROBLEMS DUE TO REUSE/RECYCLING AND DISPOSAL OF USED EEE

Reference Information sources:
- Annual Report on Environment of Vietnam
- Urban Environment Magazine
- Other magazines and newspapers
- Workshops and seminars on environmental management in Vietnam

1. E-waste categories in Vietnam

There is no accepted definition of e-waste in Vietnam. Broadly, e-waste has been defined as a waste from relatively expensive and essentially durable products used for data processing, telecommunications or entertainment in private households and businesses. The range of these products is given below.

- Television set,
- Computer,
- Mobile phone,
- Refrigerator,
- Air conditioner,
- Washing machine,
- Battery,

- Printer,
- Fax machine,
- Telephone,
- Microwave oven,
- Radio,
- VCR,
- DVD player,
- CD player.
- ...

2. Hazard in E-waste

a. Identification of the problems

Electronic equipment is a large contributor of heavy metals and organic pollutants to the waste stream. Some electronic products – usually those with cathode ray tubes (CRTs), circuit boards, batteries and mercury switches – contain hazardous or toxic materials such as lead, mercury,

cadmium, chromium and flame-retardants. The glass screens or CRTs in computer monitors and televisions can contain as much as 27 percent lead. Electronic products containing these hazardous materials may pose an environmental risk if they are not properly managed at their end-of-life.

E-waste has three primary characteristics

- E-waste is partly very valuable – end of life motherboards for instance may well sell for more than 800 US$ per ton to recyclers who recover metals.

- E-waste is partly very hazardous - e-waste contains over 1'000 different substances, some of which are toxic, and can pose serious risks and create severe pollution upon wrong handling and disposal.

- E-waste is increasing at alarming rates — Due to the fast evolution of e-technologies high rates of obsolescence occur. Combined with an explosion of new applications, e-waste produces high volumes of waste which increase globally very rapidly.

b. Hazard in E-waste

E-waste contains a number of toxic substances such as lead and cadmium in circuit boards; lead oxide and cadmium in monitor cathode ray tubes (CRTs); mercury in switches and flat screen monitors; cadmium in computer batteries; polychlorinated biphenyls (PCBs) in older capacitors and transformers; and brominated flame retardants on printed circuit boards, plastic casings, cables and polyvinyl chloride (PVC) cable insulation that release highly toxic dioxins and furans when burned to retrieve copper from the wires. Due to the hazards involved, disposing and recycling E-waste has serious legal and environmental implications. When this waste is land filled or incinerated, it poses significant contamination problems. Landfills leach toxins into groundwater, and incinerators emit toxic air pollutants including dioxins. Likewise, the recycling of computers has serious occupational and environmental implications, particularly when the recycling industry is often marginally profitable at best and often cannot afford to take the necessary precautions to protect the environment and worker health. The toxic effects of some these substances are given below.

The Hazardous Substances, their Occurrence and their Impacts

Substance	Occurrence in E-waste	Environmental and Health relevance
Halogenated compounds:		
PCB (polychlorinated biphenyls)	condensers, transformers	Cause cancer, effects on the immune system, reproductive system, nervous system, endocrine system and other health effects. persistent and bioaccumulatable
TBBA (tetrabromobisphenol -A) PBB (polybrominated biphenyls) PBDE (polybrominated diphenyl ethers)	fire retardants for plastics (thermo-plastic components, cable insulation) TBBA is presently the most widely used flame retardant in printed wiring boards and covers for components	can cause long-term period injuries to health acutely poisonous when burned
Chlorofluorocarbon (CFC)	cooling unit, insulation foam	Combustion of halogenated sub-stances may cause toxic emissions.
PVC (polyvinyl chloride)	cable insulation	High temperature processing of cables may release chlorine, which is converted to dioxins and furans.
Heavy metals and other metals:		
Arsenic	small quantities in the form of gallium arsenide within light emitting diodes	acutely poisonous and on a long-term perspective injurious to health
Barium	getters in CRT	may develop explosive gases (hydrogen) if wetted
Beryllium	power supply boxes which contain silicon controlled rectifiers, beam-line components	harmful if inhaled
Cadmium	rechargeable NiCd-batteries, fluorescent layer (CRT screens), printer inks and toners, photocopying - machines (photo drums)	acutely poisonous and injurious to health on a long-term perspective
Chromium VI	data tapes, floppy-disks	acutely poisonous and injurious to health on a long-term perspective causes allergic reactions
Gallium arsenide	light-emitting diode (LED)	injurious to health
Lead	CRT screens, batteries, printed wiring boards	causes damage to the nervous sys-tem, circulatory system, kidneys causes learning disabilities in children
Lithium	Li-batteries	may develop explosive gases (hydrogen) if wetted
Mercury	is found in the fluorescent lamps that provide backlighting in LCDs, in some alkaline batteries and mercury wetted switches	acutely poisonous and injurious to health on a long-term perspective
Nickel	rechargeable NiCd-batteries or NiMH-batteries, electron gun in CRT	may cause allergic reactions
rare earth elements (Yttrium, Europium)	fluorescent layer (CRT-screen)	irritates skin and eyes
Selenium	older photocopying-machines (photo drums)	exposure to high levels may cause adverse health effects
zinc sulphide	is used on the interior of a CRT screen, mixed with rare earth metals	toxic when inhaled
Others:		
Toxic organic sub-stances	condensers, liquid crystal display	
Toner Dust	toner cartridges for laser printers / copiers	Health risk when dust is inhaled risk of explosion
Radioactive substances Americium	medical equipment, fire detectors, active sensing element in smoke detectors	May cause cancer when inhaled

Source: Hazadoust Waste Management in Hanoi - URENCO 2004

The Environmental Problems caused by recycling activities of E-Waste or residues of E-Waste in Vietnam

- **Vietnamese craft villages facing with environmental challenges**

According to available statistics, there are 1,450 craft villages widely distributed through 58 provinces and cities across the country. The Red River delta is home to the 800 villages. Provinces with high concentration of craft villages include Ha Tay (280), Thai Binh (187), Bac Ninh (59), Hai Duong (65), Nam Dinh (90), and Thanh Hoa (127). As estimated, the rural craft villages have achieved a high GDP growth of 8% in terms of output values during the last ten years. Table below presents careers mainly developed in the craft villages:

Distribution of Occupational Types in Rural Craft Villages in Vietnam

	Silk reeling, textile, dye, leather	**Agri-product and food processing**	**Waste recycling**	**Handi-craft**	**Builing material porcelain and ceramics**	**Others**
Northern	138	134	61	404	17	222
Central	24	42	24	121	9	77
Southern	11	21	5	93	5	42
Total	173	197	90	618	31	341

(Source: Vietnam Association for Conservation of Nature and Environment - VACNE)

The craft village is an efficient solution to rural economic development. Works provided by the craft village have maximized surplus labour during agricultural off-season. There are 27% of farmer households earning from both farming and other careers while 13% of rural households being professionally engaged in careers other than farming. According to statistics, the craft village activities have attracted ten million of full time workers. Besides, income from the craft village has become a significant source for farmer households. In many of craft villages where the work has become a primary job for earnings for the whole family or some key laborers.

In addition to promising signals of the Vietnamese handicraft sectoral development, a deep concern about risks of environmental pollution placed by the craft village remains. Most of craft villages are characterized by small sized and fragmented operation; obsolete and manual technologies;

spontaneous development that is strongly influenced by markets; and last but not least, lack of understanding of environmental impacts on the health of their workers and neighbourers.

- **Van Chang - The Left Side of a Wealthy Craft Village (Nam Giang Commune, Nam Truc , Nam Dinh)**

Any one who once visited the Van Chang village can not believe in the local environment. People can easily recognize the roar and feel very strong smell and stuffy air at the entrance of the village. The Van Chang river water, a body receiving all wastewater discharge from "the village-based industry", is very black and stinking and, slowly flows. Wastewater effluents in ditch discharged from household-owned aluminum and iron forges are thick and yellow. One family engaged in the aluminum concentration says "thick layers of dusts containing toxic substances attached to the roof of houses are diluted when it rains, hand and foot skins can be burnt if exposed to the contaminated rainwater". Wastewater effluents are directly discharged into lakes, ponds and lands to cause serious pollution to water, land and even air environments. All the 14 plating tanks of the village daily discharge a volume of 40 - 50 m^3 without treatment into the river. The effluents contain many strong acids, and especially cyanide of a concentration that is 65 - 117 times higher than the Vietnam Standard - TCVN. There are many dangerous diseases identified in Van Chang. More than 90% of villagers are infected with dermal diseases, itch, and trachoma; even many villagers died because of cancer. Many women delivered prematurely, or infants died prematurely, and especially the number of abnormal births that has tended to increase for the recent years. The Van Chang villagers' life expectancy is 55, much lower than the average of the whole country.

The Van Chang villagers have no choice but are closely bound up to "the trade" for livelihoods. What a dangerous career, but how can they survive if give it up? Measures are under being discussion and when could the villagers escape from pollution caused by them?

(Source: The Trade Newspaper, No. 77, 28 June 2003)

Workplace conditions in most of craft villages are very poor. The workers live and work at the same places and operate obsolete and rudimentary equipments. Their educational attainments are lower, and their trade is empirically handed down.

- **Environmental pollution caused by Recycling Craft Village**

Solid waste recycling
This group of craft villages maximizes wastes and by-products to make raw materials for other productions resulting in reductions in investment costs and waste amounts discharged into the environment.

For paper recycling craft villages, wastewater is a major pollution. Wastewater effluents are directly discharged without treatment into surface water bodies. The two craft villages - Duong O and Phu Lam (Bac Ninh), daily discharges are around 1,450-3,000 kg of COD and more than 3,000 kg of pulp. Major air pollutants generated from the paper recycling craft villages include dust particles, alkaline, chlorine and H_2S gases. At some production sites, the Cl_2 content exceeds permissible level by three times, the H_2S concentration in gas emitted from garbage dumps and ditches is 1-3 times higher than permissible level.

Plastics recycling craft villages consume a large amount of water for washing waste plastics. This amount accounts for 20 - 25 m^3 per tonne of waste plastics. For example, the Minh Khai plastics recycling craft village, Hung Yen daily discharges about 455,000 m^3 of wastewater. The amount includes inorganic and organic compounds attached to waste plastics, including toxic substances and pathogens. Air pollutants generated from the thermo-processing based granule making and extruding stages include toxic gases such as HCl, HCN, CO, HC, and others. Dust particles are generated from crushing, drying, collecting and sorting stages, and from the coal fired thermo processing units.

Although the craft villages engaged in the recycling of scrap metals consume a small amount of water, wastewater effluents discharged from the metal cleansing and plating stages contain rather high contents of toxic substances, especially heavy metals. In addition, dust particles are generated from the sorting, preprocessing, pickling, melting, grinding, and casting stages. The content of dust particles in surroundings of steel casting furnaces is 10 - 15 times higher than permissible level. Gaseous chemicals identified in ambient air of these craft villages include chlorine, HCN, HCl, H_2SO_4, SO_2, CO, and NO significantly affecting the health of local workers and villagers.

(Source: Vietnam Association for Conservation of Nature and Environment - VACNE)

- **Lead Metal Recycling Craft Village**

At DongMai Craft Village (Vanlam district, Hungyen province) from many years ago, people lived in atmosphere of lead dust. This is a craft village of lead acid battery recycling. People in this village worry about their environment. All recyclers knew about this problem but they have not got enough budgets for investment of flue gas treatment systems for their recycling facilities. The budget of 300 million dong for one air filter system is too big for private recyclers in craft village like Dongmai. As a result, the population must be lived "within dust".

From 1978 when this craft village was established, the money comes in parallel with many problems, especially with the man who are directly engaged in smelting activities of lead metal.

Monitoring data of air and water environment in Dongmai 2003 are shown as follows:

- Lead in water: 0.77 mg/l, 15 times above the national standard.
- Lead in water at a recycling workshop: 3.278 mg/l, 65 times above the national standard.
- Lead dust in air: 26.3 mg/m^3 to 46.4 mg/m^3, 4,600 times above the national standard.

(Source: Education and Era Newspaper, No 82, 10th July, 2003)

- **Some responses and solutions to rural environmental issues**

The Environment of craft villages

The Government of Vietnam has developed and implemented some policies to support the development of craft villages, especially localities such as Ha Tay and Bac Ninh provinces where the density of craft villages is high; the Government has also adopted a number of regulations on the conservation and development of traditional craft villages, and the reverence of traditional artists. While the construction of centralized industrial clusters to accommodate craft villages has been implemented in various localities, and much more efforts have been made by research institutions and management agencies to work out solutions to environmental problems facing the craft villages, but the effectiveness of these responses remains lower. This can be attributed to lack of specifically relevant regulations.

The craft villages should be facilitated to improve their development firstly in a rationally planned manner. The craft villages should be, in combination with the Vietnamese culture based tourist activities, developed through the

construction of small and medium sized industrial clusters to accommodate fine handicraft villages in line with the local development master planning and the maximization of the advantageous potential of their production. Central wastewater treatment systems should be provided for the craft village clusters. The development of environmental improvement solutions should be appropriate to their small sized production, and aim at reducing the consumption of raw materials and pre-treating their wastes. At the same time, education and awareness of environmental protection and environmental friendly craft village development should be raised among the general public. Those craft villages that seriously pollute the environment should be restricted or eliminated.

- **Environmental pollution and community health**

Reports of research teams investigating air, water pollution and community health have shown that all three craft villages discharge wastes at a rate that exceeds the local ecosystem's carrying capacity. Pollution levels exceed government standards for various pollutants in each of the villages.

Air pollution: The dust levels in Da Hoi are 2-12 times above the standard and 2-6 times about the standard in Minh Khai. Noise pollution in Da Hoi exceeds the standard by 13-28 dBA. The CO content in the settlement area close to the industrial zone in Duong O, is 2 times above the standard. The CO content in Minh Khai is 2-6 times above the standard. Air pollution in Minh Khai is especially severe in the waste incinerating and recycling areas where toxic gases containing CN, organic chlorines, dioxins and furans are present.

Water quality: The common form of water pollution for all three villages is organic compounds, petrol and micro-biological organisms. Water pollution is most serious in the paper recycling village. Every day, the industrial zone discharges 2,000 m^3 of untreated wastewater containing a mixture of pulp, petrol and chemicals into the village's irrigation canals. This wastewater then flows directly into the Ngu Huyen Khe River, which runs through many villages and in turn flows into the Cau River. The Cau River is seriously polluted (the government has already called for an investment of more than 100 billion VND to save the river) partly as a result of effluents from the craft villages in Bac Ninh Province. The wastewater discharged into the village's ponds creates a surface of pulp on which one can walk. People living close to the ponds complain about a foul smell during rainy days. A lot of rice in the fields close to the production site has died because of the discharged wastewater. The pollution of a part of Ngu Huyen Khe River running through the village has often caused the death of fish. In order to solve these problems, Bac Ninh Provincial authority has already provided more than half of 1.4 billion VND needed to build a drainage system for the recycling area. The wastewater would be discharged into the drainage canals to a lake located far from the settlement area. The wastewater would then flow into Ngu Huyen Khe River after it has been treated. However, the

financing for the project has faced difficulties.

Solid wastes: All three villages dump solid waste in their ponds and rivers. Recently, Minh Khai has been relying mainly on burning since it has no place for dumping waste. People working in a company located close to the burning site complained about the odour of burning plastics. The villagers close to the burning site also complained about the odour. Thus the district authority has ordered workshops not to burn plastics. However, during the time of survey, Minh Khai villagers were still burning plastics on the site. The commune's people's committee has already contracted Kieu Ki Dump (Gia Lam District, Hanoi) located 7 km from the village. Minh Khai village can dump its waste in Kieu Ki Dump, but it has to pay for the transportation costs. However the villagers thought that this option was costly in comparison with their income. They wish to build an incinerator in the village, which can solve the toxic gas problems.

Local leaders and the villagers recognize that solid waste management is a big problem that needs to be solved immediately. Da Hoi village planned to build a wall in front of the village's houses to surround a new dumping site. This is probably the most feasible option. If the village does not build the dumping site, they would have to contract with an environmental company, and this would be costly. Duong O village has used ponds in front of the industrial zone for dumping. These ponds are public ponds, and when they are full, they will be available for leasing. Minh Khai village have used the incineration methods.

Community health: The survey has shown that common health problems in the three villages include respiratory, ear, nose and throat, skin and nervous disorders. The disorders are related to poor environmental quality, such as dust, noise, chemicals and other occupational hazards. Among the three villages, Da Hoi has the highest rate of people experiencing these disorders (the percentage of people experiencing reduced hearing ability is 56.3), then Minh Khai and Duong O. The percentage of individuals experiencing the disorders in the three village is high, but it is lower than that of specialized workers, such as those working in textiles, removing ship rust, or working in jobs where they are exposed to toxic chemicals or burning asphalt. Usually, the skin and nervous disorders are the biggest problems. In Da Hoi, 87% of people experience abrasions and ulcerations. In Minh Khai, abrasions and ulceration of sores are common disorders among the washing and sorting workers. The percentage of people involved in accidents is high in all three villages. Da Hoi village has the highest rate. The accidents are caused by power presses, by electrical furnaces that were not assembled correctly, by out of date equipment, and by low safety awareness among the workers.

(Source: Report of Waste-Econ Program 2000 to 2005 - National Institute for Science and Technology Policy and strategy - NISTPAS 2006)

7. CHAPTER 5: REGULATORY FRAMEWORK / SYSTEM PARAMETERS

THE RESULTS OF TASK 2

I. REGULATORY REGIMES AND GUIDELINES FOR USED AND WASTE EEE MANAGEMENT IN VIETNAM

Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and Their Disposal entered into force in 1992 with Vietnam ratifying it in 1995. The Convention focuses on the transport and treatment of hazardous waste. The Competent Authority and Focal Point to the Basel Convention is VEPA. Vietnam has undertaken many activities to implement the convention, including training, waste inventories, strategies, legal reform, technical guidelines, and promulgating a hazardous waste management classification system. Under the Environmental Protection Law, Decision No 155/1999/QD-TTg dated July 16, 1999 on management of hazardous wastes and Decision No. 23/2006/QD-BTNMT of December 26, 2006, promulgating the list of hazardous wastes are regulations of Vietnam to implement the Basel Convention.

1. INSTITUTIONAL FRAMEWORK

The main Ministry responsible for the environment in Vietnam is the Ministry of Natural Resources and Environment (MONRE). There are three main Departments within MONRE that play key roles in waste management. Additionally, five other ministries and the provincials People's Committee are also directly involved in waste management activities. Some other ministries have specific role to play in solid waste management.

		Municipal waste	**Hazardous healthcare waste**	**Industrial waste**
Ministry of Natural Resources and Environment (MONRE)	Department of the Environment (DoE)	-Planning, formulating strategies, legislation, and policy nationally and provincially -Guiding on application of Vietnam's environmental standards	- Planning, formulating strategies, legislation, and policy -Guiding on application of Vietnam's environmental standards	- Planning, formulating strategies, legislation, and policy -Guiding on application of Vietnam's environmental standards

		Municipal waste	Hazardous healthcare waste	Industrial waste
	Department of Environmental Impact Assessment and Appraisal (EIA department	-Approving impact assessment reports related to solid waste management systems, including landfills and treatment.	Approving impact assessment reports related to treatment of hazardous healthcare waste projects	-Approving impact assessment reports related to solid waste management systems, including landfills and treatment
	Vietnam Environmental Protection Agency (VEPA)	-Coordinating the environmental inspections of landfills. - Environmental monitoring and coordinating the enforcement of municipalities - Raising public awareness. - Approving treatment and recycling technologies. - Coordinating the planning of landfills.	-Environmental monitoring and coordinating the enforcement of healthcare facilities	- Coordinating the environmental inspections of landfills. -Environmental monitoring and enforcement of industries -Raising public awareness
Ministry of Construction (MoC)		- Formulating policy and legislation, planning and construction of solid waste facilities. - Developing and managing plans for the construction of waste-related infrastructure nationally and provincially.		
Ministry of Health (MOH)		- Assessing impacts on human health	-Overseeing delivery of service for health care waste. -Formulating policies related to waste from	- Assessing working environment and impacts on human health

		Municipal waste	Hazardous healthcare waste	Industrial waste
			healthcare facilities, and supervising their implementation	
Ministry of Industry (MOI)		-Formulating policies - Overseeing operation of IZMB - Supervising and assisting industries to manage waste.		
Ministry of Transport (MOT)		Department of Transportation, Urban and Public works (TUPW)	-Planning and managing infrastructure for air, land, railway and maritime transport nationally and provincially -Overseeing the URENCOs,	
Ministry of Planning & Investment (MPI)		-Overall planning of investment projects and coordination of ODA assistance related to waste management	-Planning investment for industrial zones	
Provincial/Municipal People Committees (PPC)		-Overseeing environmental management within its jurisdiction. - Planning, urban governance, and fee collection	-Overseeing environmental management within its jurisdiction.	-Overseeing environmental management within its jurisdiction. - Planning, urban governance, and fee collection
Public urban environment companies (URENCO) under PPC or TUPW or DOC		-Waste collection and disposal.	-Waste collection and disposal. as contracted	-Waste collection and disposal. as contracted
Industrial Zone Management Boards (IZMBs) under PPC		- Supervision of industrial zones, including environmental management		

2. LIST OF LAW, REGULATION AND STANDARD CONCERNING

Laws, regulations and standards relevant to waste management are listed below.

LAWS:

1. Environmental Protection Law
2. Commercial Law
3. Export and Import Tax Law
4. Customs Law

REGULATIONS:

1. Decree No. 80/2006/ND-CP of August 9, 2006, detailing and guiding the implementation of a number of articles of the Law on Environmental Protection.

GENERAL PROVISIONS

Article 1.- Scope of regulation

This Decree details and guides the implementation of a number of articles of the Law on Environmental Protection regarding environmental standards; strategic environmental assessment; environmental impact assessment and environmental protection commitments; environmental protection in production, business and services; hazardous waste management; and disclosure of environmental information and data.

Article 2.- Subjects of application

This Decree applies to state agencies, domestic organizations, households and individuals; overseas Vietnamese, foreign organizations and individuals engaged in activities in the territory of the Socialist Republic of Vietnam.

SPECIFIC PROVISIONS

Section 1. ENVIRONMENTAL STANDARDS

Article 3.- Principles of application of national waste standards according to roadmap, by region, geographical area and branch

Article 4.- Responsibility to formulate and competence to promulgate and announce national environmental standards for compulsory application

Article 5.- Order and procedures for formulation, evaluation, promulgation and declaration of national environmental standards for compulsory application

Section 2. STRATEGIC ENVIRONMENTAL ASSESSMENT, ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL PROTECTION COMMITMENTS

Article 6.- List of projects subject to making of environmental impact assessment report and guidance on the financial regime applicable to activities of making, appraising and monitoring environmental impact assessment reports

Article 7.- Inter-branch and inter-provincial projects with environmental impact assessment reports to be appraised and approved by the Ministry of Natural Resources and Environment

Article 8.- Conditions and scope of operation of organizations providing the consultancy service on making environmental impact assessment reports

Article 9.- Dossiers of request for appraisal of strategic environmental assessment reports, environmental impact assessment reports and dossiers of registration of written environmental protection commitments

Article 10.- Appraisal of strategic environmental assessment reports

Article 11.- Appraisal of environmental impact assessment reports

Article 12.- Time limit for appraisal of strategic environmental assessment reports and environmental impact assessment reports

Article 13.- Making of additional environmental impact assessment reports

Article 14.- Responsibilities of project owners after environmental impact assessment reports are approved

Article 15.- Responsibilities of state agencies after having approved environmental impact assessment reports

Article 16.- Dossiers, order and procedures for examining and certifying compliance with requirements set in decisions approving environmental impact assessment reports

Article 17.- Registration of written environmental protection commitments

Section 3. ENVIRONMENTAL PROTECTION IN PRODUCTION, BUSINESS AND SERVICE ACTIVITIES

Article 18.- Environment-friendly production and service establishments and products

Article 19.- Environmental protection in the import, temporary import, border gate-to-border gate transport and transit of scraps

Section 4. WASTE MANAGEMENT

Article 20.- State agencies' responsibilities for hazardous waste management

Article 21.- Retrieval and disposal of used or discarded products

Section 5. OTHER PROVISIONS

Article 22.- Appraisal and assessment of environmental technologies and management of

bio-products used in environmental protection

Article 23.- Publicization of environmental information and data

IMPLEMENTATION PROVISIONS

Article 24.- Implementation effect

Article 25.- Implementation responsibilities

2. Decision No. 23/2006/QD-BTNMT of December 26, 2006, promulgating the list of hazardous wastes.

Pursuant to the November 29, 2005 Law on Environmental Protection;

Pursuant to the November 11, 2002 decree no 91/2002/ND-CP of the Government on stipulation of organization and responsiblities of Ministry of Natural Resources and Environment.

Pursuant to the August 9, 2006 decree no 80/2006/ND-CP of the Government on stipulation of detailing and guiding the implementation of a number of articles of the law on environmental protection.

At the proposal of the Environmental Protection Agency,

DECIDES:

Article 1. To promulgate in this decission a list of hazardous waste

Article 2. The list of hazardous waste in this decission to identified, classify hazardous wastes and the list is the basic for hazardous waste management.

Article 3. This decission takes effect 15 days after the day of official gazette.

Article 4. Ministers, leaders of ministerial-level agencies, leaders of Government organization, chairmans of provinces, cities people's commities and all concerned organization, individuals shall have to implement this Decision.

(The detailed list of hazardous waste included in the annex part)

3. Decision No 155/1999/QD-TTg dated July 16, 1999 on management of hazardous wastes.

4. Decision No 152/1999/QD-TTg dated July 10, 1999 ratifying the strategy for management of solid waste in Vietnamese cities and industrial parks till the year 2020

5. Decree No 12/2006/ND-CP dated Jan 23, 2006 on Detailing implementation of Trade Law regulations on international buying and selling of commodities and agent activities including purchasing, selling,

sourcing, outsourcing, border-gate transfer, and transiting of commodities with foreign countries.

Guiding of Ministries for 12/2006/ND-CP implementation:

- Circular No. 04/2006/TT-BTM of April 6, 2006, Guiding a number of contents of the Government's Decree No. 12/2006/ND-CP of January 23, 2006, Detailing the implementation of the Commercial Law regarding International Purchase and Sale of Goods and Activities of Purchase and Sale Agency, Processing and Transit of Goods with Foreign Parties.
- Decision No. 12/2006/QD-BTNMT of September 8, 2006 promulgating the list of scraps permitted to be imported for use as raw materials for production.
- Decision No. 15/2006/QD-BTNMT of September 8, 2006 promulgating the list of refrigerating equipment using CFC which are banned from import.
- Decision No. 20/2006/QD-BBCVT of June 30, 2006 promulgating the List of used information technology appliances banned from import.
- Decision No. 05/2006/QD_BCN of April 7, 2006, promulgating the List of chemicals banned from import and export.

6. Circular No 02/2001/TT-BKHCNMT of February 15, 2001 guiding criteria of high-tech industrial projects, projects on production of new materials, rare and precious materials; application of new bio-technologies, new technologies for production of communication and telecommunications equip-ment; treatment of environmental pollution or waste treatment and processing, which are classified as projects of special investment encouragement; matters related to environmental impact assess-ment reports; import of used machinery; applicable to foreign-invested enterprises in Vietnam.

7. Circular No: 47/2004/TT-BTC dated May 31, 2004 guiding the customs procedures, the regime of customs inspection and supervision and the tax policies for goods traded across borders with the bordering countries under the Prime Minister's Decision no. 252/2003/QD-TTg of Nov 24, 2003.

8. Decision No: 46/2001/QD-TTg dated April 4, 2001 on the management of goods export and import in the 2001 - 2005 period
9. The environmental protection regulation applicable to discarded materials imported for use as production raw material (Decision 03/2004/QD-BTNMT, 2/4/2004)

STANDARDS OF TCVN:

Air quality:

TCVN 5937 - 2005: Ambient air quality standards

TCVN 5938 - 2005: Maximum allowable concentration of hazardous substances in ambient air

TCVN 5939 - 2005: Industrial emission standards - Inorganic subtances and dusts

TCVN 5940 - 2005: Industrial emission standards - Organic substances

Water quality:

TCVN 5942 - 1995: Surface Water (drinking water source protection area)

TCVN 5943 - 1995: Coastal Water

TCVN 5944 - 2005: Ground Water

TCVN 5945 - 2005: Industrial Waste Water Discharge standards

Solid waste:

TCVN 6705 - 2000: Non Hazardous Waste - Classification

TCVN 6706 - 2000: Hazardous Waste - Classification

TCVN 6707 - 2000: Hazardous Waste - prevention and warning signs

TCVN 6696 - 2000: Solid Waste - Sanitary Landfill - General requirements for environmental protection

The abovementioned legal documents can be found in Annex part B - Volume B (9) of this Final Report.

3. ISSUES FOR IMPLEMENTING LAWS AND REGULATIONS

Resources and institutional capability to implement Vietnam's policy framework are lacking at the operational level, and regulations are not effectively enforced. The regulation of waste management operators, industries, and hospitals by MoNRE and other line agencies and authorities,

including Vietnam Ministry of Health (MOH), Vietnam Ministry of Industry (MOI), and Industrial Zone Management Board (IZMB) suffers from major gaps in enforcement and insufficient supervision of waste management practices, largely due to limited human resources, unclear mandates, fragmented and overlapping roles of various government agencies, and limited interagency coordination. This has resulted in limited incentives for proper operation of landfills or investments by industries in waste treatment, and has allowed inexpensive, unsafe methods of disposal such as open dumping to proliferate.

II. MANAGEMENT STATUS OF WEEE CONSIDERED AS HAZARDOUS WASTE

Based on Decision No 155/1999/QD-TTg dated July 16, 1999 on management of hazardous wastes and decision No 23/2006/QD-BTNMT dated Dec 26, 2006 about the list of hazardous wastes, E-waste may be categorized as hazardous wastes if they have the following characteristics. .

Vietnam Code	Name of waste	EC code	Basel code (A/B)	Basel code (Y)	Hazard characteristic	Ordinary state	Hazard limit[1)]
16	***Waste from households and other sources***						
16 01	***Collected and Sorted Waste***	***20 01***					
16 01 07	Waste equipments containing CFC	20 01 23		Y45	Toxic, eco toxic	Solid	**
16 01 12	Waste batteries	20 01 33	A1160 A1170	Y26 Y29 Y31	Toxic, eco toxic	Solid	**
16 01 13	Electric and electronic parts, equipments (capacitors, mercury contact, glass from cathode gun and other active glass)	20 01 35	A1180 A2010	Y26 Y29 Y31	Toxic, eco toxic	Solid	**
19	***Other wastes***						
19 02	***Waste from electric and electronic equipments***	***16 02***					
19 02 03	Waste equipments containing CFC, HCFC, HFC	16 02 11	A3150	Y45	Toxic, eco toxic	Solid	*
19 02 04	Waste equipments containing asbestos	16 02 12	A2050	Y36	Toxic, eco toxic	Solid	*
19 02 05	Waste equipment containing hazardous composition	16 02 13	A1030 A2010 A3180	Y10 Y29 Y31	Toxic, eco toxic	Solid	*
19 02 06	Hazardous components dismantle from waste equipments	16 02 15	A1030 A2010 A3180	Y10 Y29 Y31	Toxic, eco toxic	Solid	**
19 06	**Waste batteries**	**16 06**					
19 06 01	Waste Lead battery	16 06 01	A1160 A1010	Y31	Toxic, eco toxic	Solid	**
19 06 02	Waste Ni-Cd battery	16 06 02	A1170 A1010	Y26	Toxic, eco toxic	Solid	**
19 06 03	Waste Lead battery containing mercury	16 06 03	A1170	Y29	Toxic, eco toxic	Solid	**
19 06 04	Electrolysis liquid from waste battery	16 06 04	A1180	Y31 Y34	Toxic, eco toxic	Solid	**

Note 1)

Hazard limit includes two types as follows:

a. Type 1 (symbol *): is hazardous waste if it has at least one of hazardous characteristics or compositions at the level or concentration equal or higher than the level of hazardous waste according to regulations in force(155/1999/QD-TTg and 23/2006/QD-BTNMT). If there is no standard, use international standard after approval of competent authority on the environment (MoNRE).

b. Type 2 (symbol **): is hazardous waste in all cases.

Decision No 155/1999/QD-TTg dated July 16, 1999 on management of hazardous wastes

- **National Definition of hazardous waste in Vietnam**

1. Waste shall be construed according to Clause 2, Article 2 of the 1993 Law on Environmental Protection;
2. Hazardous waste (HW) is waste containing substances or compounds that bear one of the hazard-causing properties (flammable, explosive, poisonous, corrosive and infectious and other hazardous properties) or may interact with other substances to cause hazards to the environment and human health. The list of HWs is specified in Annex 1 of this Regulation (Secision No. 155/1999/QD-TTg). This list is drawn up by the central-level State management agency in charge of environmental protection (Vietnam Environment Protection Agency VEPA - MoNRE).
3. HW management includes activities of controlling HWs throughout the process, from the generation to collection, transportation, transit, keeping, treatment and disposal of HWs;
4. State management agency(ies) in charge of environmental protection (hereafter abbreviated to SMAE) shall be the Ministry of Science, Technology and Environment at the central level, or the People's Committees of the provinces and centrally-run cities at local level;
5. HW source generator is an organization or individual that owns or manages an establishment where HW is generated.
6. HW collector and transporter is an organization or individual that registers to carry out the HW collection and transportation;
7. HW keeper is an organization or individual permitted to keep HW.
8. HW theater and/or disposer is an organization or individual permitted to carry out the HW treatment and/or disposal;
9. HW collection is the HW collection, classification, packaging and temporary keeping at the approved places or establishments;
10. HW keeping is the keeping and preservation of HW for a given period of time under necessary conditions to ensure that HW does not leak, disperse or emit to the environment until such HW is transported to the approved treatment or destruction places or establishments;
11. HW transportation is the process of transporting HW from the generating places to the keeping, treatment or disposal places.
12. HW treatment is the process wherein technologies or technical solutions (including the waste reclamation, recycling, reuse or incineration) are used to change the characteristics and composition of hazardous waste thus precluding or diminishing the level of hazards caused to the environment and human health.
13. HW disposal is the process wherein technologies are used to isolate (including the burial) HWs, thus incapacitating such waste from

causing hazards to the environment and human health.

14. HW management register shall be granted by the SMAE to the HW source generators;
15. Operation license for HW collection, transportation, keeping, treatment or disposal (hereafter referred to the environment license) shall be granted by the SMAE, clearly specifying the requirements, responsibilities and conditions regarding the environment for the HW collection, transportation, keeping, treatment or disposal;
16. Approved place or establishment is a place where HW is kept, treated or disposed, which is approved by the SMAE.
17. HW-related documents are dossiers accompanying HW when such HW is collected and transported from discharge sources to the keeping, treatment or disposal places or establishments.

Hazard limit is shown in column number 5 of annex 1 of Decision No 155/1999/QD-TTg

III. MANAGEMENT STATUS OF IMPORT OF WEEE

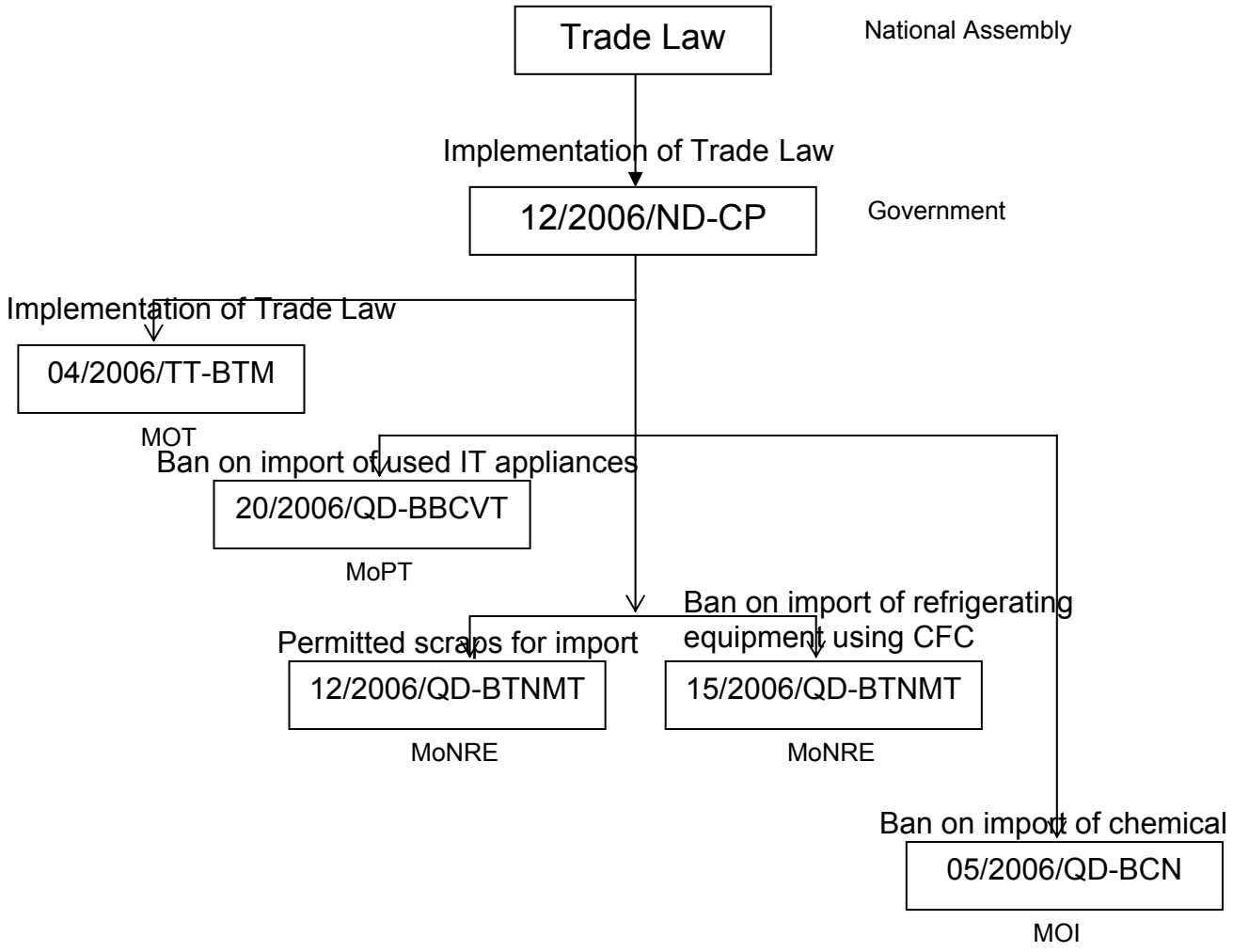
- **About E-waste import in Vietnam**

In Article 7 "Acts to Be Strictly Prohibited" of the Environmental Protection Law of Vietnam (LAW No. 52/2005/QH11) actions prohibited are stipulated as follows.

At item number 9 "**Importing, and transiting wastes under any form;**"

Decree 12/2006/ND-CP provies details of implementation of Trade Law regulations on international buying and selling of commodities and agent activities including purchasing, selling, sourcing, outsourcing, border-gate transfer, and transiting of commodities with foreign countries.

All concerned circulars of ministries guiding a number of contents of the government's decree No. 12/2006/ND-CP are shown below.



- **Ban on import of used IT appliances to Vietnam**

Decision No. 20/2006/QD-BBCVT of June 30, 2006 of the Post and Telematics Ministry gives the detail list of used products that are prohibited from import. The list is shown as follows.

LIST OF USED INFORMATION TECHNOLOGY APPLIANCES BANNED FROM IMPORT

(Promulgated by the Post and Telematics Minister's Decision No. 20/2006/QD-BBCVT of June 30, 2006)

Chapter	Heading	Sub-heading		Description of goods
Chapter 84				
	8469			Typewriters other than printers of heading No. 8471; word-processing machines
				- Automatic typewriters and word-processing machines:
	8469	11	00	-- Word-processing machines [ITA1/A-002]
	8469	12	00	-- Automatic typewriters
	8469	20	00	- Other typewriters, electric
	8469	30	00	- Other typewriters, non-electric
	8470			Calculating machines and pocket-size data recording, reproducing and displaying machines with calculating functions; accounting machines; franking machines, ticket-issuing machines and similar machines, incorporating a calculating device; cash registers
	8470	10	00	- Electronic calculator capable of operation without an external source of electric power and pocket-size data recording, producing and displaying machines with calculating functions [ITA1/A-003]
				- Other electronic calculating machines
	8470	21	00	-- Incorporating a printing device [ITA1/A-004]
	8470	29	00	-- Other [ITA1/A-005]
	8470	30	00	- Other calculators [ITA1/A-006]
	8471			Automatic data processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded forms and machines for processing such data, not elsewhere specified or included
	8471	10	00	- Analogue or hybrid automatic data processing machines

Chapter	Heading	Sub-heading		Description of goods
	8471	30		- Portable digital automatic data processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display [ITA1/A-011] [ITA1/A-191] [ITA1/A-194]:
	8471	30	10	-- Palmtop computers
	8471	30	20	-- Laptop computers
	8471	30	90	-- Other
				- Other digital automatic data processing machines:
	8471	41		-- Comprising in the same housing at least a central processing unit, and an input and output unit, whether or not combined [ITA1/A-012] [other than ITA1/B-194] [ITA1/B-191]
	8471	41	10	--- Personal computers other than laptop computers
	8471	41	90	--- Other
	8471	49		-- Other, presented in the form of systems [ITA/A-013] [ITA1/B-191] [other than ITA1/B-194] [other than ITA1/B-193] [ITA1/B-198] [ITA1/B-200] [other than ITA1/B-198] [other than ITA1/B-196]:
	8471	49	10	--- Personal computers other than laptop computers
	8471	49	90	--- Other
	8471	60		- Input or output units, whether or not containing storage units in the same housing [ITA1/A-015] [other than ITA/B-195]:
	8471	60	11	-- Dot matrix printers
	8471	60	12	-- Ink-jet printers
	8471	60	13	-- Laser printers
	8471	60	19	-- Other printers
	8471	60	21	-- Computer terminals or monitors, color, other than closed circuit television monitors
	8471	60	29	-- Other computer terminals or displays, color, other than closed circuit television monitors
	8471	60	30	-- Computer keyboards
	8471	60	40	-- X-Y coordinate input devices, including mouse, light pen, joystick, trackball and touch sensitive screens
	8471	70		- Storage units: [ITA1/A-016] [other than ITA/B-194]
	8471	70	10	-- Floppy disk drives
	8471	70	20	-- Hard disk drives

Chapter	Heading	Sub-heading		Description of goods
	8471	70	30	-- Cassette drives
	8471	70	40	-- Optical disk drives, including CD-ROM drives, DVD drives and CD-R drives [ITA1/B-196]
	8471	80		- Other units of automatic data processing machines: [ITA1/A-017]
	8471	80	10	-- Control units [ITA1/B-194]
	8471	80	20	-- Adapter units [ITA1/B-194]
	8471	80	30	-- Gateways, including VoIP [ITA1/B-194]
	8471	80	40	-- Automatic data routing apparatuses [ITA1/B-194]
	8471	80	50	-- Wireless bridges and routing apparatuses [ITA1/B-194]
	8471	80	60	-- Firewalls
	8471	80	70	-- Sound cards [ITA1/B-202] and video cards
	8471	80	90	-- Other [ITA1/A-018] [other than ITA1/B-194]
	8471	90		- Other:
	8471	90	20	-- Optical character readers, document or image scanners
Chapter 85				
	8517			Electrical apparatus for line telephony or line telegraphy, including line telephone sets with cordless handsets and telecommunications apparatus for carrier-current line systems or for digital systems; videophones
				- Telephone sets, videophones:
	8517	11	00	- Line telephone sets with cordless handsets [ITA1/A-026]
	8517	19		-- Other:
	8517	19	10	--- Telephone sets
	8517	19	20	--- Videophones
				- Facsimile machines and teleprinters:
	8517	21	00	-- Facsimile machines [ITA1/A-028]
	8517	22	00	-- Teleprinters [ITA1/A-029]
	8517	30		- Telephonic or telegraphic switching apparatus: [ITA1/A-030]
	8517	30	10	-- Telephonic switching apparatus
	8517	30	20	-- Telegraphic switching apparatus
	8517	50		- Other apparatus, for carrier-current line systems or for digital

Chapter	Heading	Sub-heading		Description of goods
				line systems [ITA1/A-031] [other than repeaters ITA1/B-192] [other than ITA1/B-194] [other than ITA/B-202]
	8517	50	10	-- Combined modulators-demodulators (Modems)
	8517	50	20	-- Concentrators, multiplexes
	8517	50	30	-- Line-man test sets
	8517	50	40	-- Settop boxes with a communication function [ITA1/B-203]
	8517	50	50	-- Other apparatus for telephony
	8517	50	90	-- Other
	8517	80		- Other equipment: [ITA1/A-032] [other than repeaters ITA1/B-192]:
	8517	80	10	-- Scrumblers, including speech inverters and online cipher equipment
	8517	80	20	-- Data security equipment
	8517	80	30	-- Encryption devices
	8517	80	40	-- Public key infrastructure
	8517	80	50	-- Digital subscriber line (DSL)
	8517	80	60	-- Virtual private network (VPN)
	8517	80	70	-- Computer-telephone integrated (CTI)
				-- Other:
	8517	80	91	--- For telephony
	8517	80	92	--- For telegraphy
	8517	80	99	--- Other
	8525			Transmission apparatus for radio-telephony, radio-telegraphy, radio-broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; television cameras; still image video cameras and other video camera recorders
	8525	10		- Transmission apparatus:
	8525	10	30	-- Data compression tools
	8525	10	40	-- Settop boxes for television
	8525	10	50	-- For radio-telephony or radio-telegraphy [ITA1/A-]
	8525	20		- Transmission apparatus incorporating reception apparatus: [ITA1/A-049] [other than ITA1/B-197]
	8525	20	10	-- Wireless local-area networks (WLAN)

Chapter	Heading	Sub-heading		Description of goods
	8525	20	20	-- Internet enabled handy phones
	8525	20	30	-- Internet enabled cellular phones
	8525	20	40	-- Internet video conferencing equipment
	8525	20	50	-- Digital radio relay systems
	8525	20	60	-- Mobile data networks
	8525	20	70	-- Settop boxes for television
	8525	20	80	-- Other cellular phones
	8525	20	91	--- Other transmission apparatus for telephony and telegraphy
	8525	40		- Still image video cameras and other video camera recorders, digital cameras:
	8525	40	30	-- Digital cameras
	8525	40	40	-- Other video cameras
	8528			Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus; video monitors and video projectors
				- Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus:
	8528	12		-- Color:
	8528	12	10	--- Settop boxes for television
	8528	12	90	--- Other
				- Video monitors:
	8528	21		-- Color:
	8528	21	90	--- Other
	8544			Insulated (including enameled or anodized) wire, cable (including co-axial cable) and other insulated electric conductors, whether or not fitted with connectors. Optical-fiber cables made of separately insulated fibers, whether or not fitted with electric conductors or connectors
				- Other electric conductors, for a voltage exceeding 80 V but not exceeding 1,000 V:
	8544	51		-- Fitted with connectors
				--- For telecommunications: [ITA1/A-098]
	8544	51	12	---- Telephone, telegraph, radio relay cables, other than submarine cables

Chapter	Heading	Sub-heading		Description of goods
				--- Other:
	8544	51	94	---- Controlling cables
	8544	59		-- Other:
				--- For telecommunications:
	8544	59	12	---- Telephone, telegraph, radio relay cables, other than submarine cables
				--- Other:
	8544	59	94	---- Controlling cables
				- Other electric conductors, for a voltage exceeding 1,000 V:
				-- Other:
	8544	60	92	--- Telephone, telegraph, radio relay cables, other than undersea cables
	8544	70		- Optical-fiber cables [ITA1/A-099]
	8544	70	20	-- Optical-fiber cables (telephone, telegraph, radio relay cables, other than submarine cables)

- **Ban on import of refrigerating equipment using CFC to Vietnam**

Decision 15/2006/QD-BTNMT dated September 8, 2006, listing refrigerators using CFC substance that is prohibited from import.

LIST OF REFRIGERATORS USING CFC SUBSTANCE THAT IS PROHIBITED FROM IMPORT

(Promulgated together with the Natural Resources and Environment Minister's Decision No. 15/2006/QD-BTNMT of September 8, 2006).

No	HS code		Name of product	Description
1	8418	10 21 22 29	Households Refrigerator	- Only Prohibit from import with products use CFC 12 (R12) substance - See catalogue of product to know what substance used (refrigerant) - Subtance CFC 12
2	8418	30 40	Cold Store	
3	8418	50	Stall of Cold Store	

4	8148	61 69	Cold Water Machines	(R12) has chemical name of Dichlorodifluoromethane, and chemical formula of CF_2CL_2

With these legal documents above, from the year of 2006 onwards the E-waste, refrigerating equipment using CFC and used IT appliances can not be imported to Vietnam. Used IT products and WEEE Importation will not be appeared on the flow chart of EEE and E-waste in Vietnam. The quantity of WEEE and used IT products in the flow chart are only from domestic generators.

IV. ACTIONS TAKEN BY MANUFACTURES

- **Hazardous waste management by producers and manufactures**

Unsafe methods of handling and treating hazardous waste predominate in VIetnam. The current monitoring and enforcement of environmental standards for industries and their management on solid waste and hazard substances is extremely weak. This provides few incentives for industries to undertake proper treatment and presents a major barrier to the safe operation of current and future treatment facilities. It is exacerbated by the lack of guidelines, training, and awareness provided to industries on hazardous waste issues, despite a number of laws and regulations for hazardous waste management.

Treatment of industrial hazardous waste from industrial zones is getting more attention. There are plans for development of several centralized HW treatment facilities in the country, such as for the Le Minh Xuan industrial zone in Ho Chi Minh, and for industrial zones in Dong Nai by the IZMB for industries around Viet Tri City. In Hanoi, a treatment facilities for industrial waste was put in operation in 2004 in the Nam Son Solid Waste Treatment Complex Area. Most industrial hazardous waste from larger industries is either treated onsite by simple furnaces or industrial boilers, or by specialized small private enterprises, which recycle part of the waste and use locally made and cheap burning technology at low temperature. As a result, the risk of posing further environmental impacts from air emissions and ash is quite high. For small and medium enterprises, there are even fewer options for proper treatment of industrial hazardous waste. The lack of combined treatment facilities has led industries, especially small and medium enterprises, to practice a variety of unsafe methods of treatment and disposal, including co-disposal with municipal waste, onsite storage, or sales to recyclers.

- **Management of Products containing Hazard Substances by producers and manufactures.**

Before the law on Environmental Protection became effective (July 1, 2006).

There were no legal documents about the producers and manufactures' responsibilities on management of their products containing hazardous substances after the products are discarded by users in Vietnam. Producers and manufactures of EEE in Vietnam had no responsibilities for WEEE and used EEE. Used EEE and E-waste were valuable goods and could be sold by owners to collectors or recyclers. Producers and manufactures only have responsibilities to manage their industrial and hazardous waste from the production processes. Producers and manufactures should sign a contract on collection, transportation and treatment for their industrial and hazardous

waste with an authorized company such as public urban environment companies. Implementation and conformation of laws and regulations on hazardous waste management in industries were very weak. Almost all of the domestic manufactures were lacked of capacity, knowledge and budget for industrial and hazardous waste management. By contrast some foreign producers very strictly observed every legal stipulation on solid waste management.

After July 1, 2006 when the Environmental Protection Law of Vietnam became effective.

In Chapter VIII "Waste Management" - Section 1 "General Provisions of Waste Management" from Article 66 to 69 and section 2 "Hazardous Waste Management" from Article 70 to 76, stipulated on waste management in general and hazardous waste management in particular. At Article 67 of Section 1 "Take-Back and Treatment of Expired or Discarded Products" stipulated that Owners of production, business and service establishments shall have the responsibility to take back the following expired or discarded products:

- Radioactive sources used in production, business and service activities;
- Batteries and accumulators;
- Home and industrial electronic and electric equipment;
- Greases, lubricants and packaging materials that are persistent to natural degradation;
- Mediccal products and chemicals used in industry, agriculture, fisheries, and medicines for disease treatment in humans;
- Means of transport;
- Tubes and tires;
- Other products in accordance with the regulations of the Prime Minister of the Government.

According to this article, the domestic producers, assemblers, importers and business on EEE shall have responsibility to take back the products for treatment.

However as of March 2007, over six months of observation, almost all the domestic producers do not have any specific actions for taking back their products.

In order to implement this provision effectively, all relevant ministries and departments should have detailed guidelines and action plans for EEE, used EEE, WEEE management.

- **Attitudes of manufactures of EEE towards EU Directive RoHS**

The RoHS Directive stands for "the restriction of the use of certain hazardous substances in electrical and electronic equipment". This Directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.
Manufacturers need to understand the requirements of the RoHS Directive to ensure that their products, and their components, comply.
The RoHS EU Directive came into force on 1 July 2006.

Therefore, Vietnamese businesses that want to export their products to the EU market must meet RoHS Directive. In Europe now manufacturers are not only seen as product makers but also environment polluters, posing threat against people's lives. Increasing content of hazardous substances in electric and electronic equipment has become the biggest matter in the EU's waste management strategy, which aims at minimizing use of substances in industrial production and encouraging reproduction. The RoHS and WEEE regulations are included in this strategy.
RoHS and WEEE are applicable to 10 electric and electronic products including big and small home appliances, IT and telecom equipments, consumer equipments, medical equipments, automatic processing machinery, lighting equipments, etc.

Manufacturers and importers of electrical and electronic equipment are subject to the RoHS Directive. Any companies that want to import the electrics and electronics products as listed into the EU market must register for RoHS. If the goods are discovered not to satisfy the regulations, sanction will be imposed.

At this time, most of large producers, manufactures and assemblers of EEE that want to export their products to EU market are trying to develop production technologies that enables their products comply with the RoHS Deirective. In all design for new products, the RoHS will become integrated criteria.

In domestic market, manufactures and businesses started to advertise their products as those comply with EU Directive of RoHS. The Manufactures of Toshiba, HP, IBM... are advertising that their PC and Laptop products comply with RoHS. The producers and sales agents of Nokia, Motorola, LG, Samsung... are advertising that their cell phone products comply with RoHS too. In summary, the EU Directive of RoHS will make great effects on domestic production. Domestic users will be received cleaner and more environmentally sound products.

8. CHAPTER 6: ESTIMATION OF TARGET EEE IN VIETNAM

RESULTS OF TASK 3

I. Quantity of brand-new and used EEE possessed in Vietnam

To estimate the data for target EEE possessed in Vietnam, the Work Team collected information from two sources as (1) National Statistic Office for domestic production data, (2) National Customs Office for import and export data.

The raw data on import/export of EEE were collected from the National Customs Office and divided into brand-new and used EEE by the Work Team. If the import/export data have the description of "used," the Work Team classified them as used EEE. In addition, if the data do not have clear description of "brand-new" and if the unit price is below the following thresholds, the Work Team classificed them as "used."

- TVs: under 100 USD
- PCs: under 100 USD
- MPs: under 20 USD
- ACs: under 100 USD
- RFs: under 100 USD
- WMs: under 50 USD

a. The data for target EEE shipment in Vietnam for the last 5 years are estimated as follow:

For TVs:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	1,376,731	58,247	110,666	1,324,312	23,635	6,992	16,643	1,340,955
2003	1,756,020	270,590	104,238	1,922,372	1,720	9,534	0	1,914,558
2004	2,239,804	314,212	356,485	2,197,531	38,302	5,124	33,178	2,230,709
2005	2,515,300	796,094	390,597	2,920,797	35,464	9,152	26,312	2,947,109
2006	3,093,819	1,080,336	612,045	3,562,110	53,181	7,872	45,309	3,607,419

For PCs:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	126,320	97,355	27,034	196,641	5,681	1,042	4,639	201,280
2003	141,857	178,555	21,684	298,728	7,767	1,169	6,598	305,326
2004	159,305	200,654	24,654	335,305	116,004	16,142	99,862	435,167

2005	178,900	256,321	107,649	327,572	16,516	0	16,516	344,088
2006	220,047	446,536	137,790	528,793	70,953	5,160	65,793	594,586

For MPs:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	0	704,287	3,591	700,696	0	0	0	700,696
2003	0	1,396,260	23,716	1,372,544	53,822	0	53,822	1,426,366
2004	0	2,746,395	15,701	2,730,694	14,403	0	14,403	2,745,097
2005	0	2,806,041	11,558	2,794,483	13,560	0	13,560	2,808,043
2006	0	3,271,410	107,732	3,163,678	67,110	0	67,110	3,230,788

For RFs:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	442,984	60,305	55,448	447,841	5,493	0	5,493	453,334
2003	497,471	132,199	171,653	458,017	7,700	0	7,700	465,717
2004	558,660	228,583	212,189	575,054	87,613	0	87,613	662,667
2005	627,375	246,868	201,480	672,763	42,713	95	42,618	715,381
2006	771,671	416,969	218,668	969,972	16,881	1,479	15,402	985,374

For ACs:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	92,664	79,787	40,246	132,205	319	309	10	132,215
2003	104,062	24,687	20,576	108,173	1,345	0	1,345	109,518
2004	116,861	145,510	142,572	119,799	7,984	0	7,984	127,783
2005	131,235	181,901	210,531	102,605	226,631	3,756	222,875	325,480
2006	161,419	258,357	188,210	231,566	36,513	3,261	33,252	264,818

For WM:

Unit: set

Year	Brand-new EEE				Used EEE			Total domestic shipment
	Production	Import	Export	Domestic Shipment	Import	Export	Domestic Shipment	
2002	372,756	107,589	5,130	475,215	36,009	2,335	33,674	508,889
2003	418,605	76,276	16,747	478,134	42,221	236	41,985	520,119
2004	470,093	183,553	81,058	572,588	10,960	768	10,192	588,042
2005	527,915	318,136	47,747	798,304	127,938	9,699	118,239	916,543
2006	649,335	258,681	25,371	882,645	54,021	5,353	48,668	931,313

See detailed estimation in EXCEL file:
"1_national_data_28may07_revised.xls"

b. Estimation of domestic shipment of target EEE in the past and the future

The domestic shipment of target EEE in Vietnam from 1984 to 2001 and from 2007 to 2020 are estimated as follow:

Unit: set

Year	Estimated Domestic Shipment of EEE					
	TV	PC	MP	RF	AC	WM
1984	129,625	Vietnam IT Association found	1st Vietnam mobile phone network provider found	51,566	5,013	69,985
1985	133,672			52,983	5,232	71,781
1986	137,765			54,409	5,456	73,585
1987	146,087			57,289	5,919	77,213
1988	154,593	30,133		60,207	6,400	80,869
1989	167,696	32,469		64,654	7,157	86,404
1990	204,652	38,970		76,924	9,381	101,469
1991	207,060	39,389		77,711	9,530	102,426
1992	216,803	41,082		80,881	10,138	106,268
1993	268,268	49,912		97,294	13,455	125,892
1994	400,822	72,017		137,644	22,629	172,572
1995	433,428	77,350	12,628	147,254	24,989	183,420
1996	549,159	96,036	48,580	180,626	33,605	220,442
1997	673,298	115,746	80,912	215,419	43,176	258,136
1998	822,508	139,099	86,467	256,216	55,013	301,388
1999	947,201	158,395	103,414	289,646	65,123	336,198
2000	1,095,545	181,144	472,707	328,790	77,355	376,351
2001	1,232,451	201,973	505,268	364,417	88,807	412,407
2002	1,340,955	201,280	700,696	453,334	132,215	508,889
2003	1,914,558	305,326	1,426,366	465,717	109,518	520,119
2004	2,230,709	435,167	2,745,097	662,667	127,783	588,042
2005	2,947,109	344,088	2,808,043	715,381	325,480	916,543
2006	3,607,419	594,586	3,230,788	985,374	264,818	931,313
2007	4,304,796	651,386	3,263,096	1,109,458	363,614	1,112,032
2008	5,119,620	767,866	3,295,727	1,298,866	439,173	1,281,126
2009	6,096,638	906,776	3,328,684	1,523,691	530,519	1,479,285
2010	7,269,021	1,072,623	3,361,971	1,790,936	640,960	1,711,971
2011	8,676,812	1,270,841	3,395,591	2,109,030	774,496	1,985,724
2012	10,368,370	1,507,980	3,429,547	2,488,122	935,969	2,308,389
2013	12,402,097	1,791,945	3,463,842	2,940,444	1,131,233	2,689,380
2014	14,848,544	2,132,272	3,498,480	3,480,735	1,367,375	3,140,002
2015	17,792,945	2,540,468	3,533,465	4,126,767	1,652,964	3,673,840
2016	21,338,292	3,030,429	3,568,800	4,899,973	1,998,371	4,307,228
2017	25,609,044	3,618,927	3,604,488	5,826,211	2,416,142	5,059,816
2018	30,755,625	4,326,220	3,640,533	6,936,683	2,921,456	5,955,253
2019	36,959,856	5,176,778	3,676,938	8,269,051	3,532,678	7,022,021
2020	44,441,531	6,200,157	3,713,707	9,868,783	4,272,029	8,294,425

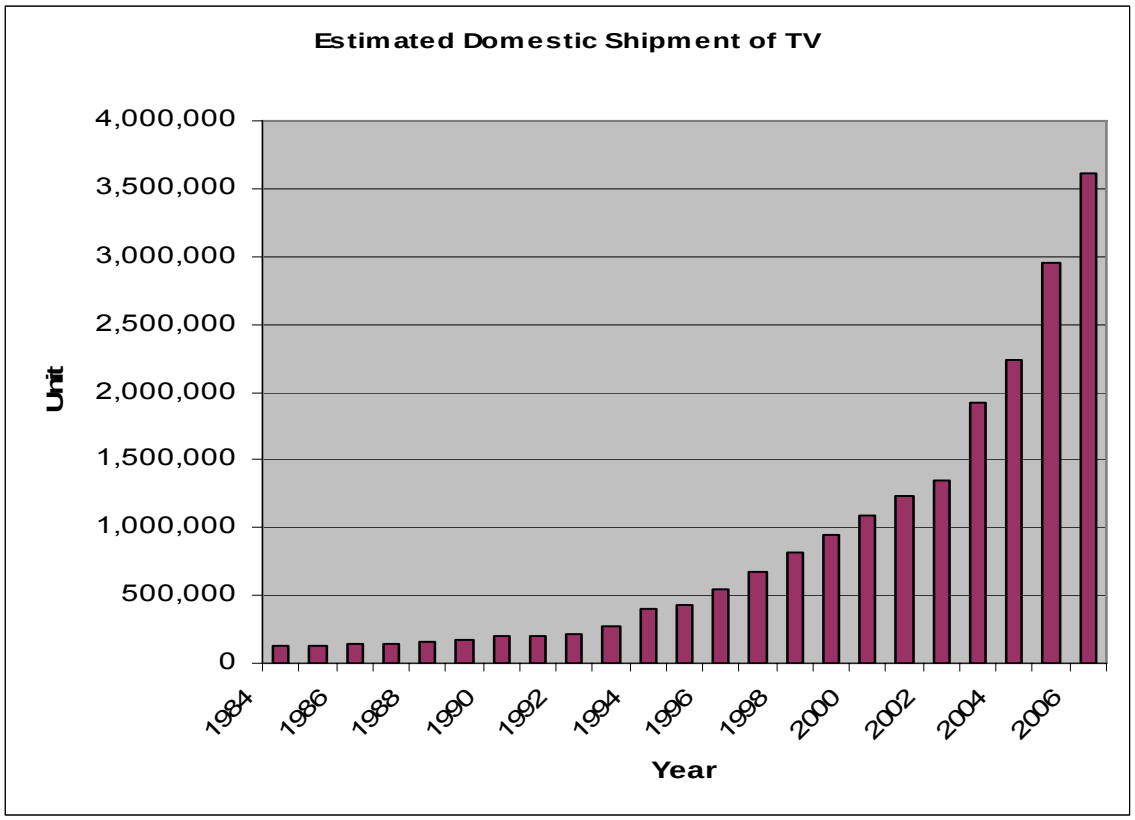
- **Describe the scenarios used for estimating the domestic shipment of EEE in the past and the future**

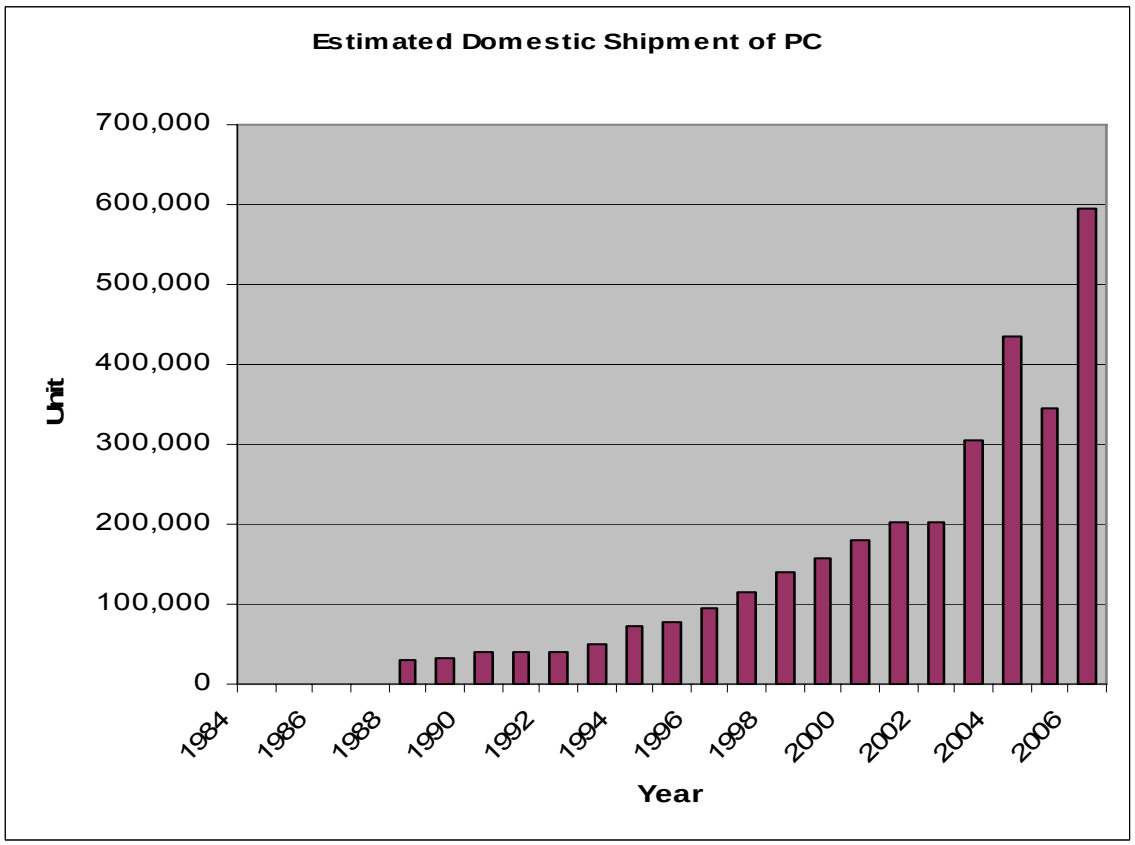
With population, economic and industrial growth rate in Vietnam in last 10 years and socioeconomic conditions and technologies development, The Work Team used statistical data of GDP per capita from 1984 to 2006

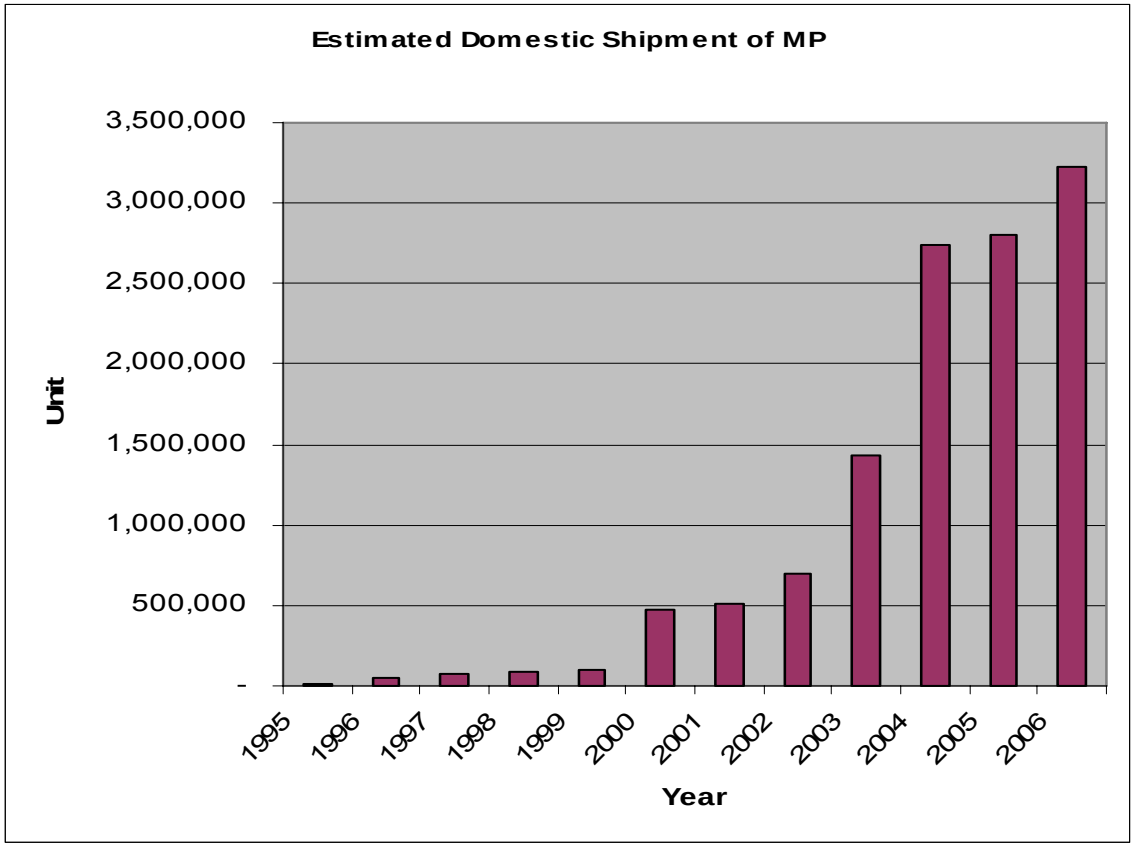
and a scenario of 10% annual for growth rate of GDP per capita from 2007 to 2020 to combine with national statistical data of target EEE shipment in Vietnam from 2002 to 2006 for regression and advance estimation. About the data string of PCs, the Work Team put a supposition of begining on 1987. Because 1987 is the year which Vietnam Information Technology Association was found and the quantity of PCs in 1987 was very little. Similar with PCs, The fisrst Vietnam Mobile Phone Network Provider was found in 1994. So the Work Team used this year for starting point of MPs data string. All other as TVs, RFs, ACs, WMs are commodities appeared for long time ago, so the Work Team used scenarios for regression from 1984.

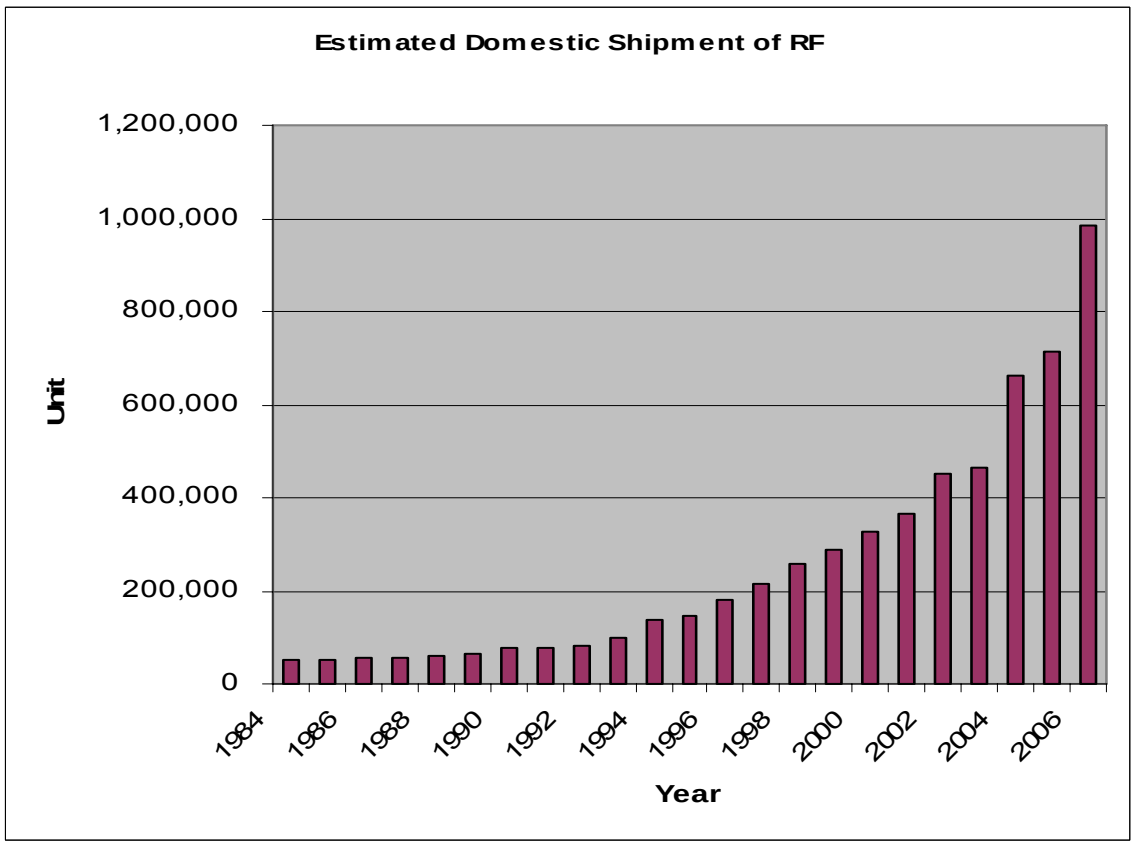
Detailed estimation can see in EXCEL file:
"Regression_Analysis_EEE_11June07_rev.xls".

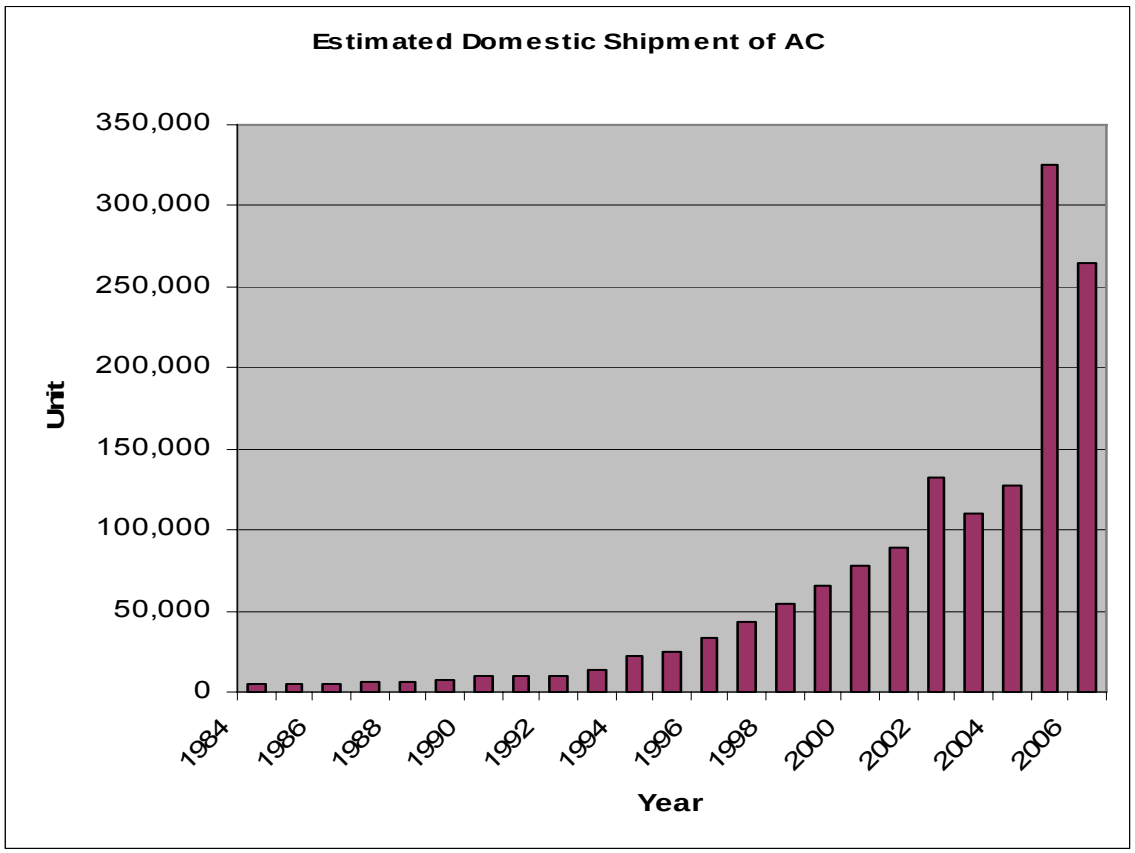
c. Chart of domestic shipment data on target EEE from 1984 - 2006

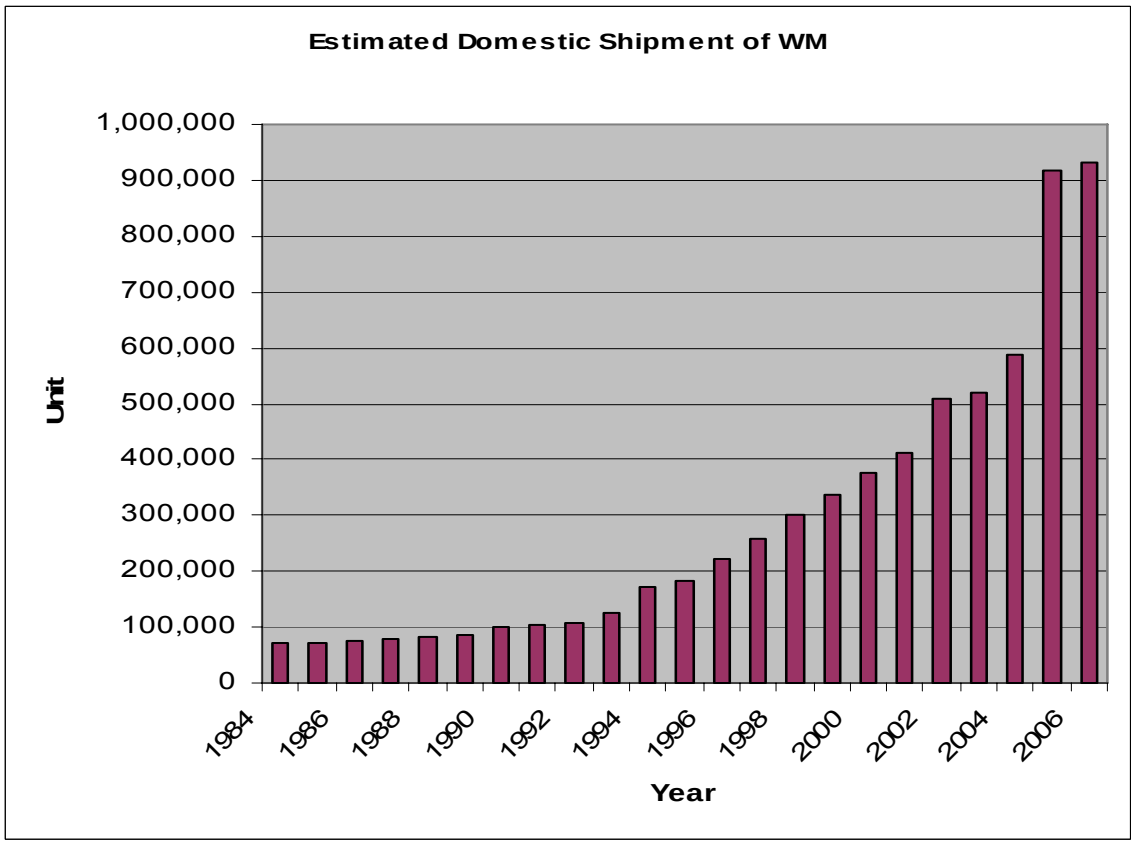





Estimated Domestic Shipment of MP
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
-
Unit
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Year


Estimated Domestic Shipment of RF
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Unit
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year


Estimated Domestic Shipment of AC
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Unit
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year

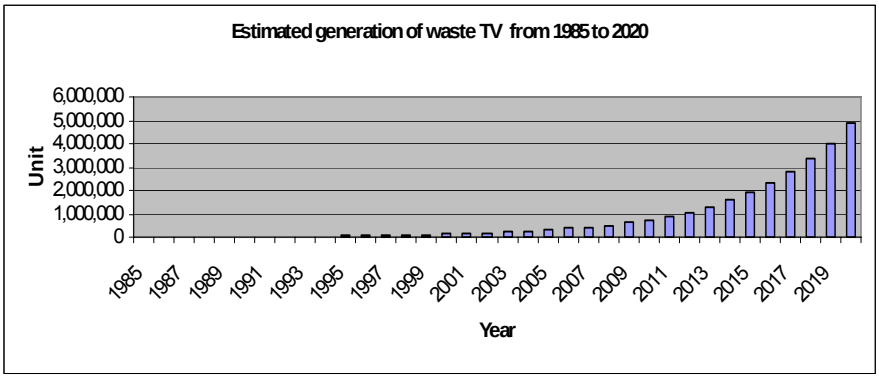

Estimated Domestic Shipment of WM
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Unit
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year

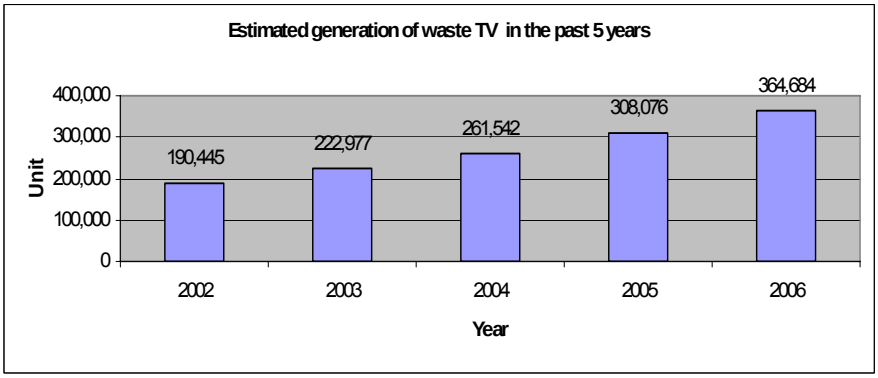
II. Quantity of used EEE discarded at present and in future

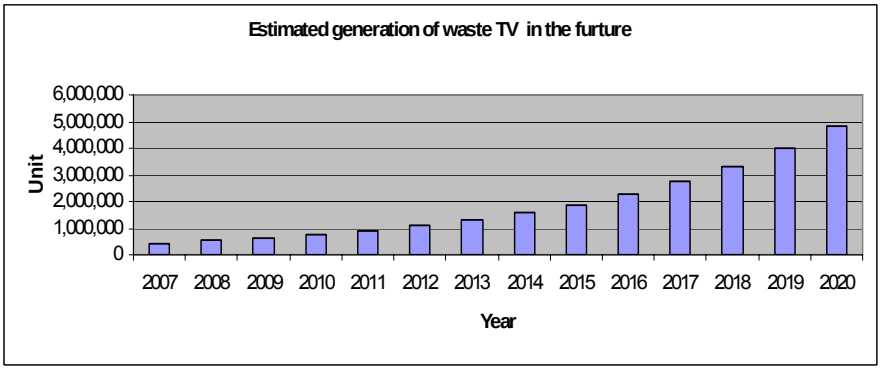
To estimate the quantity of used EEE discarded in Vietnam, the Work Team use National Statically data of domestic sales and the collected data of interview survey to calculate. The quantity of used EEE are estimated by Weibull function according to the Guideline on E-waste Inventory Development (see Annex part A - volume A (1-5)).

For TVs

Year	Waste generation (unit)
1985	10
1986	93
1987	377
1988	1,054
1989	2,385
1990	4,684
1991	8,311
1992	13,645
1993	21,037
1994	30,754
1995	42,934
1996	57,572
1997	74,520
1998	93,544
1999	114,449
2000	137,244
2001	162,298
2002	190,445
2003	222,977
2004	261,542
2005	308,076
2006	364,684
2007	433,651
2008	517,523
2009	619,269
2010	742,509
2011	891,804
2012	1,072,933
2013	1,293,110
2014	1,561,087
2015	1,887,138
2016	2,282,966
2017	2,761,651
2018	3,337,803
2019	4,028,063
2020	4,852,039

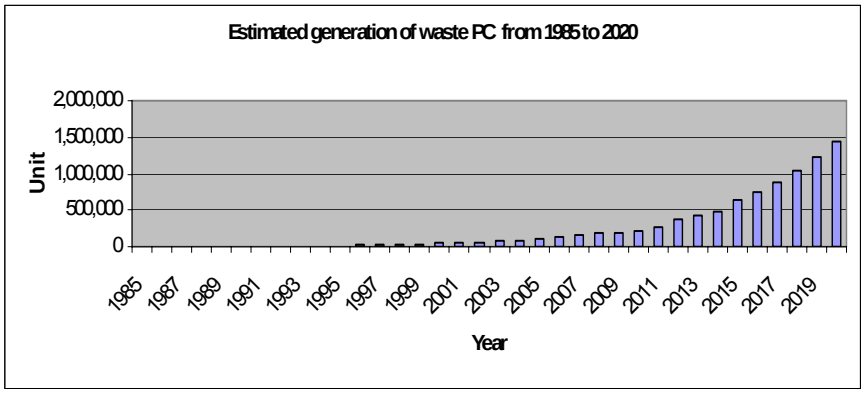


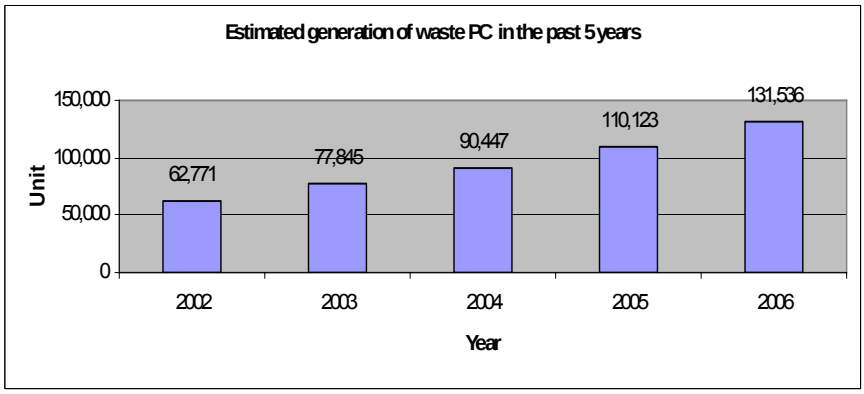


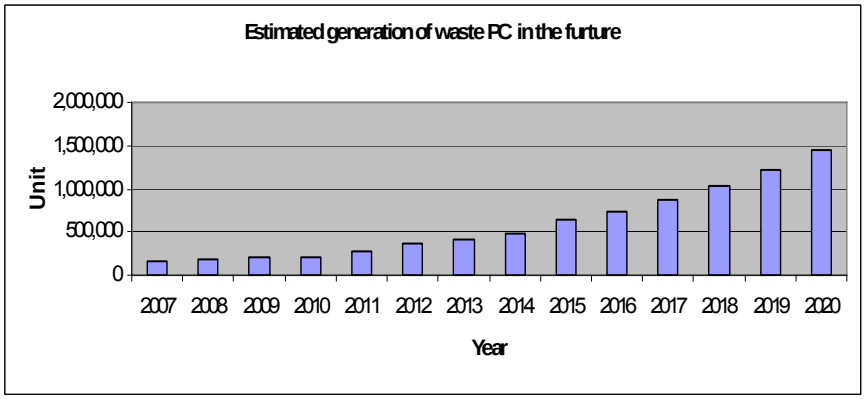


For PCs

Year	Waste generation (unit)
1985	
1986	
1987	
1988	
1989	
1990	
1991	
1992	2
1993	42
1994	461
1995	3,391
1996	15,966
1997	32,190
1998	36,277
1999	39,938
2000	42,039
2001	48,677
2002	62,771
2003	77,845
2004	90,447
2005	110,123
2006	131,536
2007	153,360
2008	174,305
2009	195,514
2010	217,189
2011	270,874
2012	369,061
2013	420,850
2014	486,752
2015	644,208
2016	736,993
2017	869,512
2018	1,028,052
2019	1,217,478
2020	1,444,038

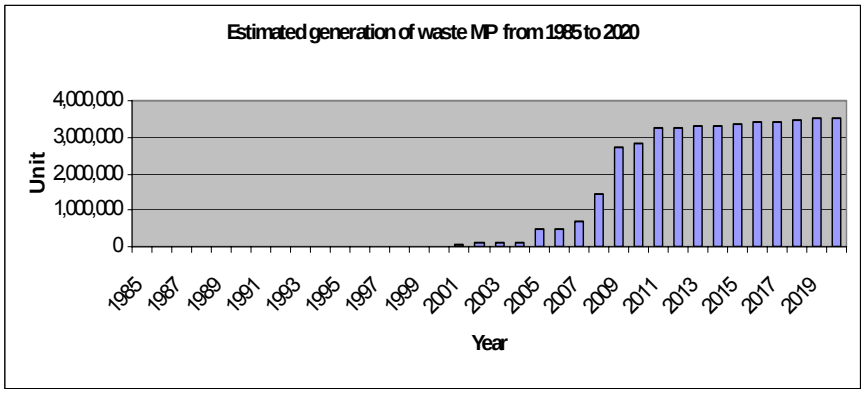


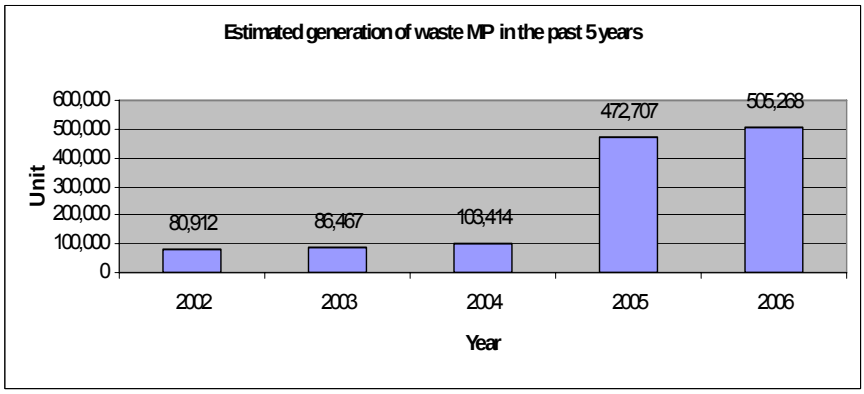


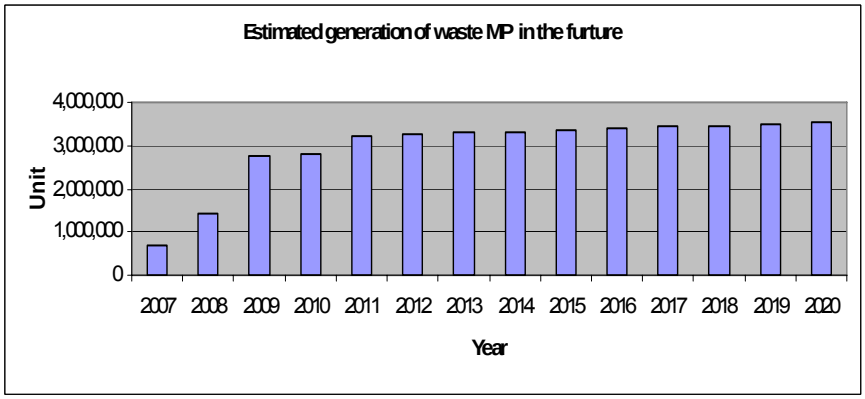


For MPs

Year	Waste generation (unit)
1985	
1986	
1987	
1988	
1989	
1990	
1991	
1992	
1993	
1994	
1995	
1996	
1997	
1998	
1999	
2000	12,628
2001	48,580
2002	80,912
2003	86,467
2004	103,414
2005	472,707
2006	505,268
2007	700,696
2008	1,426,366
2009	2,745,097
2010	2,808,043
2011	3,230,788
2012	3,263,096
2013	3,295,727
2014	3,328,684
2015	3,361,971
2016	3,395,591
2017	3,429,547
2018	3,463,842
2019	3,498,480
2020	3,533,465

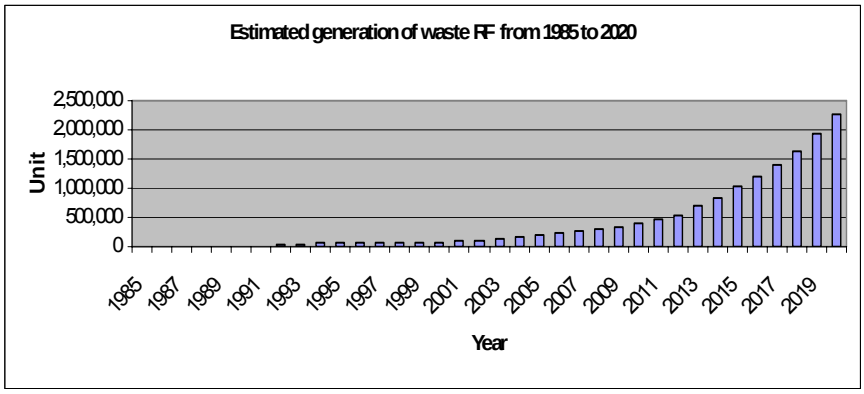


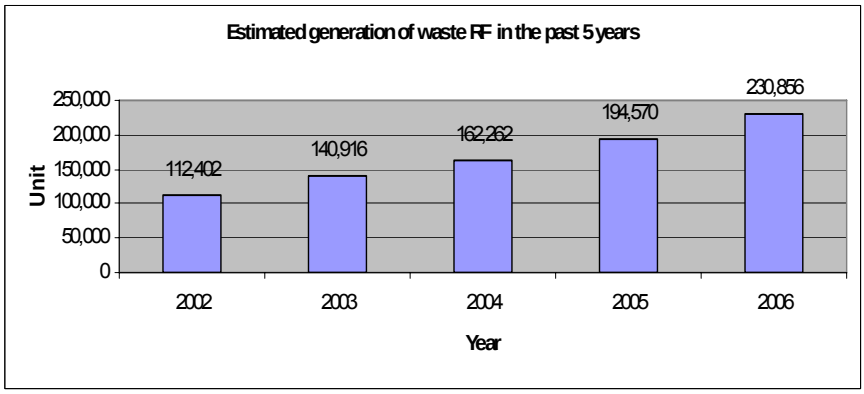


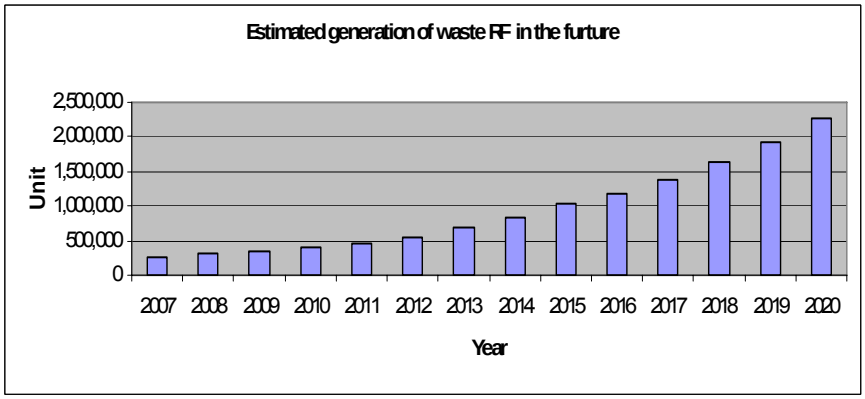


For RFs

Year	Waste generation (unit)
1985	0
1986	0
1987	0
1988	5
1989	73
1990	679
1991	4,434
1992	19,968
1993	47,947
1994	53,487
1995	55,499
1996	58,484
1997	62,497
1998	68,880
1999	76,469
2000	80,491
2001	90,227
2002	112,402
2003	140,916
2004	162,262
2005	194,570
2006	230,856
2007	268,682
2008	305,063
2009	346,036
2010	397,972
2011	467,037
2012	546,733
2013	689,466
2014	825,410
2015	1,026,974
2016	1,190,945
2017	1,392,355
2018	1,634,982
2019	1,923,584
2020	2,267,318

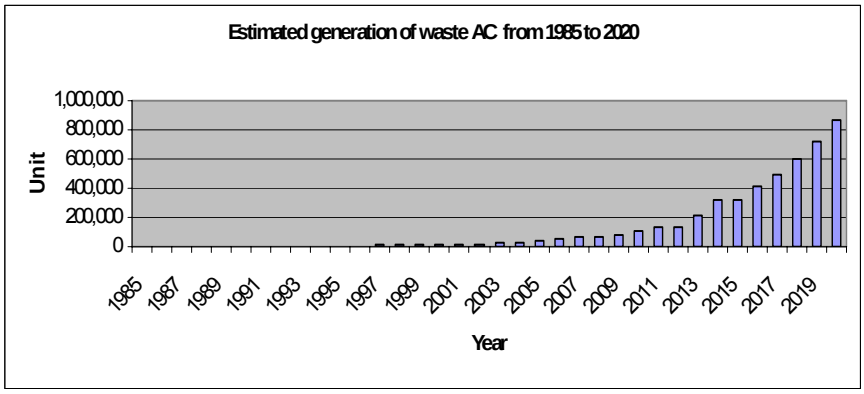


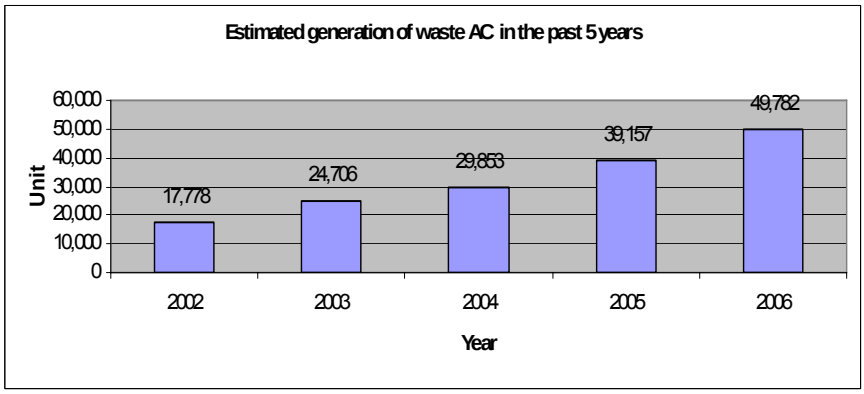


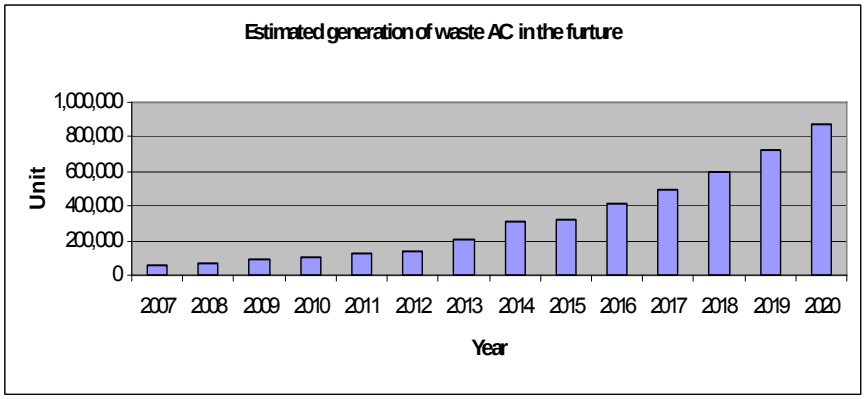


For ACs

Year	Waste generation (unit)
1985	0
1986	0
1987	0
1988	0
1989	2
1990	34
1991	336
1992	2,104
1993	5,200
1994	5,477
1995	5,810
1996	6,316
1997	7,007
1998	8,256
1999	9,708
2000	10,284
2001	12,378
2002	17,778
2003	24,706
2004	29,853
2005	39,157
2006	49,782
2007	61,302
2008	72,676
2009	86,548
2010	107,519
2011	128,000
2012	132,607
2013	209,548
2014	313,336
2015	318,143
2016	409,545
2017	495,011
2018	598,020
2019	722,566
2020	873,163

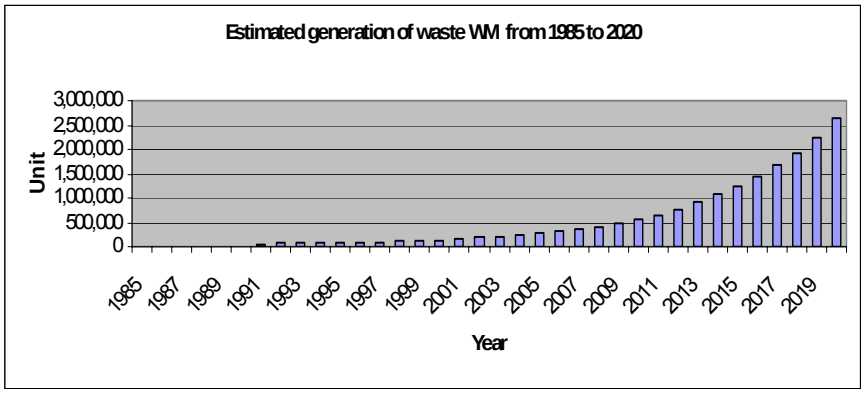


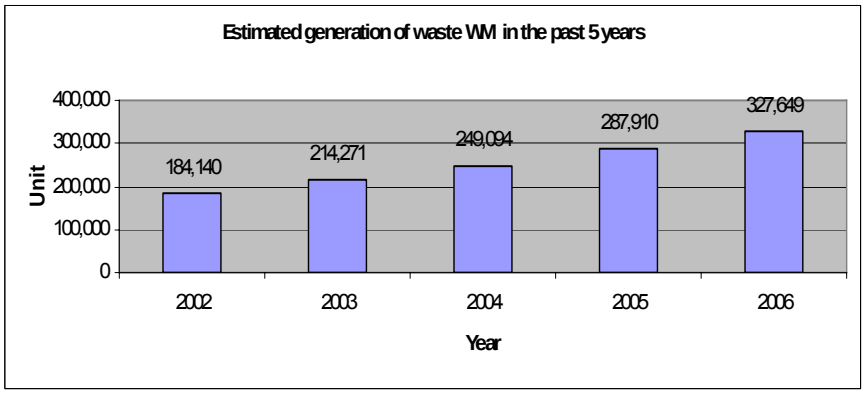




For WMs

Year	Waste generation (unit)
1985	0
1986	15
1987	199
1988	1,272
1989	5,384
1990	16,710
1991	38,244
1992	61,878
1993	73,069
1994	76,822
1995	81,139
1996	87,059
1997	94,692
1998	103,095
1999	112,714
2000	128,902
2001	154,374
2002	184,140
2003	214,271
2004	249,094
2005	287,910
2006	327,649
2007	368,786
2008	415,526
2009	472,631
2010	542,918
2011	636,569
2012	775,838
2013	937,420
2014	1,083,151
2015	1,247,801
2016	1,444,845
2017	1,672,279
2018	1,939,401
2019	2,254,210
2020	2,625,882





III. Purchase/use pattern of target EEE in Vietnam

By the information obtained from the interview survey, the Work Team divided household into 3 types by income level (High, middle and low), hotels and offices into 3 types by number of rooms and employees (Large, medium and small). The estimated data on purchase/use pattern of target EEE in Vietnam shown in tables bellow (see detail information in EXCEL file: "purchase_use.xls"). Because of some collected information with entities and households are low and not enough to summary so that there are some cells with "#value".

For TV:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		2.4	1.9	1.2	43.0	25.2	14.8	3.3	2.9	1.1
(2) Type of EEE currently possessed		Color CRT			Color CRT			Color CRT		
(3) Ratios of domestically produced and imported EEE currently possessed		25.00%			25.00%			25.00%		
(4) Average duration for use of discarded EEE (in year)	Brand-new	2.2	4.7	5.9	5.3	4.8	5.2	5.5	4.4	4.7
	Second-hand	17.0	16.8	16.3	#VALUE!	12.0	#VALUE!	#VALUE!	#VALUE!	16.3
(5) Way to obtain EEE currently possessed		Buy	Buy	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		0.42%	2.95%	13.79%	#VALUE!	10.00%	#VALUE!	#VALUE!	#VALUE!	0.82%
(7) Disposal method		Sell/give away	Sell	Sell	Sell			Sell		

For PC:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		1.6	0.7	0.2	4.5	2.2	2.0	142.1	62.2	10.4
(2) Type of EEE currently possessed		Desktop + Color CRT			Desktop + Color CRT			Desktop + Color CRT		
(3) Ratios of domestically produced and imported EEE currently possessed		10/90			10/90			10/90		
(4) Average duration for use of discarded EEE (in year)	Brand-new	3.1	3.3	1.7	5.1	3.7	5.4	4.8	4.2	3.8
	Second-hand	4.5	7.9	5.0	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	10.5
(5) Way to obtain EEE currently possessed		Buy	Buy	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		2.78%	19.42%	7.69%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0.19%

(7) Disposal method	Sell/give away	Sell	Sell	Sell	Sell

For MP:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		2.6	1.6	0.6	0.7	2.4	#VALUE!	10.3	5.4	0.9
(2) Type of EEE currently possessed		With sim card			With sim card			With sim card		
(3) Ratios of domestically produced and imported EEE currently possessed		Imported			Imported			Imported		
(4) Average duration for use of discarded EEE (in year)	Brand-new	2.8	2.6	2.8	#VALUE!	6.0	#VALUE!	6.4	4.9	3.9
	Second-hand	4.5	7.0	5.7	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	7.0
(5) Way to obtain EEE currently possessed		Buy	Buy/from someone	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		1.94%	12.50%	11.54%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	2.36%
(7) Disposal method		Sell/give away	Sell/give away	Sell	Sell/Keep in			Sell/Keep in		

For RF:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		1.2	0.9	0.5	34.5	25.2	14.0	1.6	1.4	0.9
(2) Type of EEE currently possessed		-			-			-		
(3) Ratios of domestically produced and imported EEE currently possessed		10/90			10/90			10/90		
(4) Average duration for use of discarded EEE (in year)	Brand-new	3.9	4.5	3.9	4.4	5.0	4.4	4.7	5.1	4.3
	Second-hand	#VALUE!	12.9	14.5	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(5) Way to obtain EEE currently possessed		Buy	Buy	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		#VALUE!	4.04%	22.22%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(7) Disposal method		Sell/give away	Sell	Sell	Sell			Sell		

For AC:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		1.5	0.3	0.0	37.3	22.8	11.3	37.2	19.4	4.1
(2) Type of EEE currently possessed		-			-			-		
(3) Ratios of domestically produced and imported EEE currently possessed		15/85			15/85			15/85		
(4) Average duration for use of discarded EEE (in year)	Brand-new	2.9	2.6	4.0	4.5	4.3	4.1	4.9	4.8	4.1
	Second-hand	#VALUE!	11.0	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(5) Way to obtain EEE currently possessed		Buy	Buy	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		#VALUE!	1.64%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(7) Disposal method		Sell/give away	Sell	Sell	Sell			Sell		

For WM:

User / Item		Household (by income level)			Business Entity & Institution					
					Hotel (by # of rooms)			Office (by # of employees)		
		High	Middle	Low	Large	Medium	Small	Large	Medium	Small
(1) Average # of EEE currently possessed		1.0	0.5	0.0	3.0	3.0	0.8	0.2	0.1	0.0
(2) Type of EEE currently possessed		-			-			-		
(3) Ratios of domestically produced and imported EEE currently possessed		10/90			10/90			10/90		
(4) Average duration for use of discarded EEE (in year)	Brand-new	3.3	4.3	3.7	5.8	4.3	5.0	8.5	7.0	3.3
	Second-hand	#VALUE!	11.0	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(5) Way to obtain EEE currently possessed		Buy	Buy	Buy/from someone	Buy			Buy		
(6) Ratios of second-hand and brand-new EEE possessed		#VALUE!	10.85%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
(7) Disposal method		Sell/give away	Sell	Sell	Sell			Sell		

IV. Estimation data of E-waste in Vietnam by Weibull function

- **Characteristics of data samples used to estimate parameters**

Households:

Type of EEE	# of total data	# of effective data	Ratio of Effective data	Ratio of EEE			
				New		Used	
Television	858	703	82%	706	97%	23	3%
Personal Computer	608	327	54%	301	89%	38	11%
Mobile Phone	1,070	643	60%	612	94%	42	6%
Refrigerator	483	358	74%	373	96%	17	4%
Air Conditioner	487	170	35%	211	98%	5	2%
Washing Machine	441	218	49%	225	94%	15	6%

Offices:

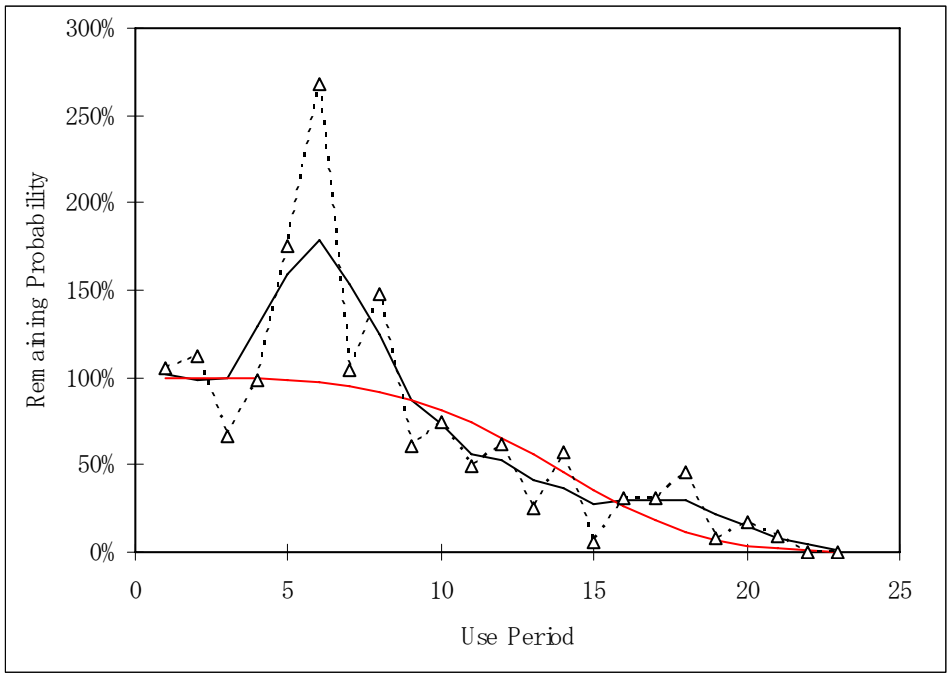
Type of EEE	# of total data	# of effective data	Ratio of Effective data	Ratio of EEE			
				New		Used	
Television	1,177	913	78%	906	98%	14	2%
Personal Computer	7,491	6,963	93%	6,979	100%	6	0%
Mobile Phone	935	416	44%	412	99%	5	1%
Refrigerator	988	676	68%	774	100%	0	0%
Air Conditioner	3,064	2,772	90%	2,806	100%	0	0%
Washing Machine	440	51	12%	51	100%	0	0%

- **Estimated parameters**

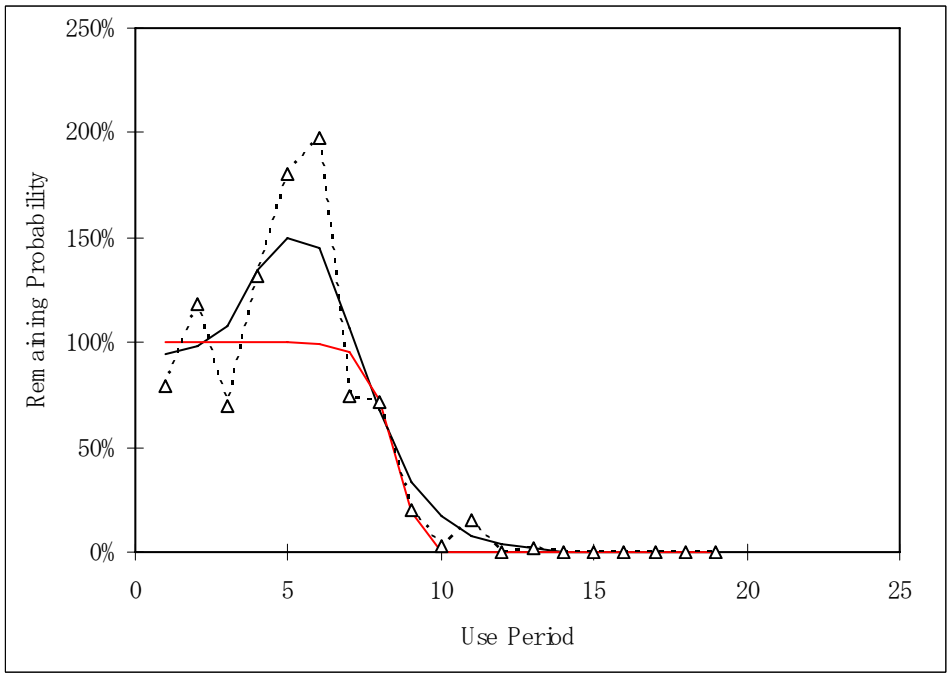
Households and offices:

Type of EEE	Average Use Period (Parameter a)	Parameter b	r2
Television	14.90	4.00	4.45
Personal Computer	8.70	13.90	1.94
Mobile Phone	n/a	n/a	n/a
Refrigerator	9.00	13.00	6.97
Air Conditioner	8.80	15.70	4.30
Washing Machine	7.80	7.20	1.05

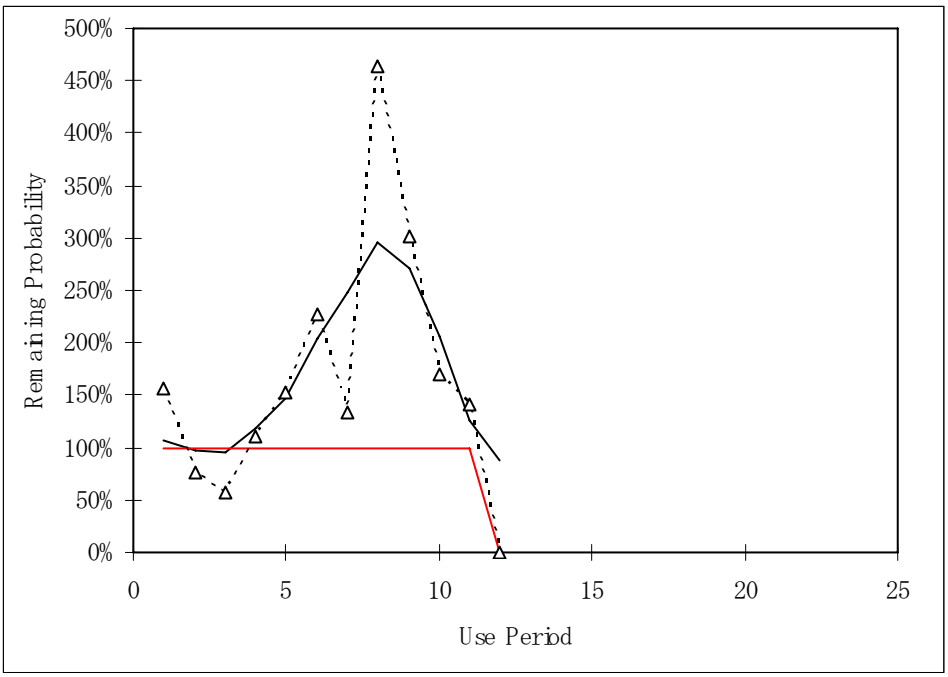
- **Graphs plotting raw data and the approximated curve (Weibull function) for estimating use period of EEE**



Result of fitting Weibull function for TVs

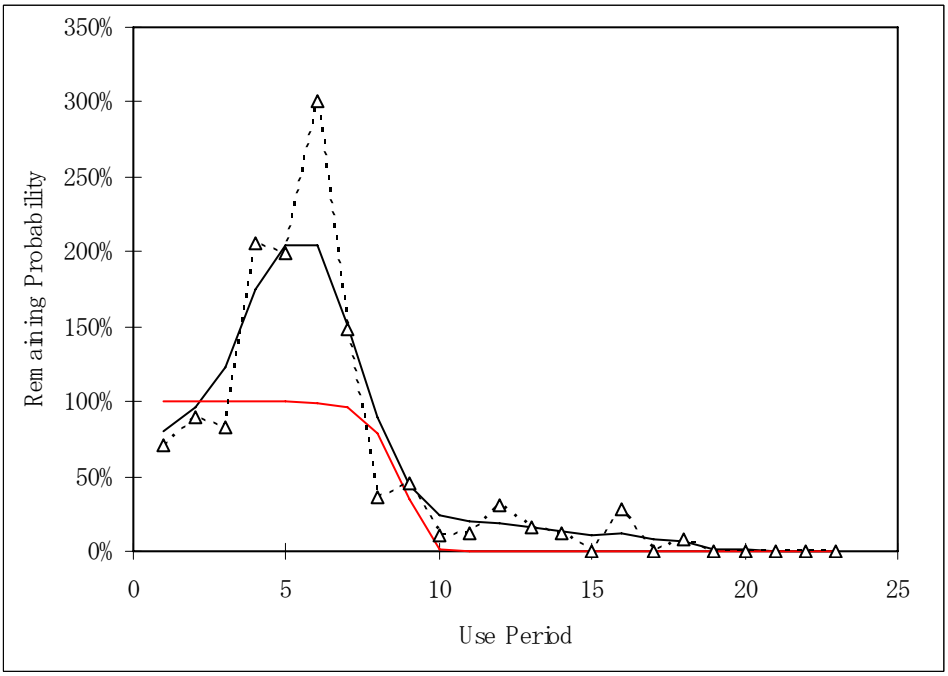


Result of fitting Weibull function for PCs

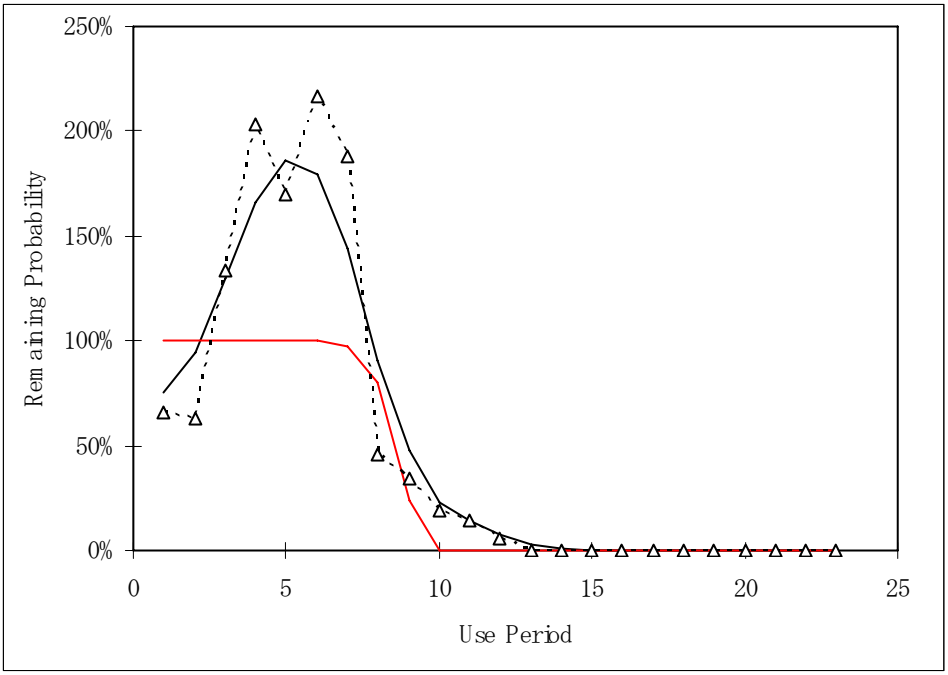


Result of fitting Weibull function for MPs

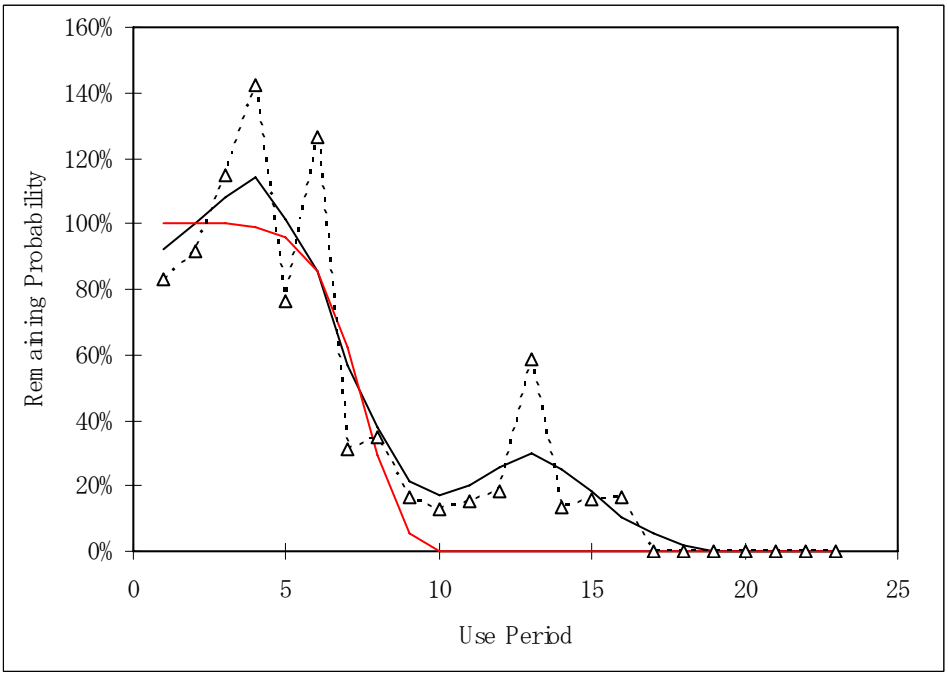
Above result was unusable; therefore data are estimated by simple way as follows.
"# of discarded MP in the year (i) = # of domestic shipment of MP in the year (i - X)"
where X is the average use period of MP.



Result of fitting Weibull function for RFs



Result of fitting Weibull function for ACs



Result of fitting Weibull function for WMs

9. CHAPTER 7: THE NATIONAL WORKSHOP ON E-WASTE MANAGEMENT AND INVENTORY IN VIETNAM 2007

- **Workshop 's Agenda**

ORGANIZATION PLAN OF WORKSHOP

E-WASTE MANAGEMENT AND INVENTORY IN VIETNAM 2007

1. **PRESIDING ORGANIZATIONS:**
   - MINISTRY OF ENVIRONMENT OF JAPAN (MOE)
   - MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF VIETNAM (MONRE)
   - VIETNAM URBAN ENVIRONMENTAL ASSOCIATION (VUREA)

2. **IMPLEMENTATION ORGANIZATION:**
   URBAN ENVIRONMENTAL COMPANY LTD (URENCO)
   VIETNAM ENVIRONMENTAL TECHNOLOGIES COMPANY (ENTEC)

3. **TIME:**
   From 9h00 AM to 17h00 PM: 10th March, 2007 (Saturday)

1. **LOCATION:**
   Meeting room 3 - 18 Cao Ba Quat – Ba Dinh - Hanoi

2. **OBJECTS:**
   Current Situation of E-Waste Management and Inventory in Vietnam 2007

3. **PARTICIPANTS:**

President:	Mr **Chu Van Chung**	– Vice President of VUREA
	Mr **Nguyen Xuan Bao Tam**	– Deputy Director General ICD - MONRE
	Mr **Dinh Xuan Hung**	– National Coordinator Senior Officer - ICD - MONRE

*** List of Participants:**

No	Organization	Representative	pers
	Total		**45**
1	MONRE	- Mr Nguyen Xuan Bao Tam – Deputy Director General – ICD - MoNRE - Mr.Dinh Xuan Hung – Senior Officer – ICD – MoNRE	02
2	VUREA	Mr Chu Van Chung- Vice President of VUREA	01
3	JICA and experts of 3R HN Project	- Representative	03
4	EX Corporation	- Representative	02
5	Experts	- Dsc Nguyen Duc Khien - Dsc Dang Kim Chi – Deputy Director General of Institute of Environmental Technologies and Science – Hanoi University of Technologies (HUT) - Dsc Huynh Trung Hai - HUT - Dsc Nguyen Kim Thai – CEETIA – Civil Engineering University	04
6	MOI	- Representative	02
7	MOT	- Representative	02
8	National Custom Office	- Representative	01
9	DoNRE-Hanoi	- Representative	01
10	TUPWP-Hanoi	- Representative	01
11	Other Stakeholders	- Representative	05
12	URENCO	- Mr Nguyen Van Hoa - Deputy Director General of URENCO - Mr. Pham Van Duc – Director of ENTEC - Sale Dept - ICD - Technical Dept - Industrial Waste Management Enterprise - Vietnam Environmental Technologies Co - Work Group of E-Waste Inventory Project and other collaborators	01 01 01 01 01 02 02 10

4. Agenda

E-waste management and inventory in Vietnam 2007

Time	Contents	Speaker
8h30-9h00	Welcome and register	Organization board
9h00 - 9h5	Introduction on Object and Participants	Organization board
9h5 - 9h15	General Introduction of National project on E-Waste	Mr. Nguyen Xuan Bao Tam ICD - MoNRE Mr. Chu Van Chung VUREA
9h15 - 9h30	General Introduction on National Project of E-waste Management and Inventory 2007	Mr. Dinh Xuan Hung ICD - MoNRE
9h30 - 9h45	Report on E-waste Inventory in Vietnam 2007	Mr. Dinh Dang Hai ENTEC – URENCO
9h45 - 10h00	3R HN Project in Hanoi and E-waste management in Japan	Mr. Hisashi Yamauchi Team leader JICA 's Experts Group
10h00 - 10h15	Break	
10h15 - 10h30	Status of Hazardous Waste & E-waste Management in Vietnam	Dsc. Nguyen Duc Khien

Time	Contents	Speaker
10h30 - 10h45	Status of E-waste Management in Hanoi and proposed way forward	Dsc. Huynh Trung Hai HUT
10h45 - 11h00	Status of pollution in recycling villages in Vietnam	Dsc. Dang Kim Chi HUT
11h00 - 11h15	Hazardous Waste Management in Industrial Park – Resposibilities of Manufactures with EEE contained hazardous substances	Dsc. Nguyen Kim Thai CEU
11h15 - 11h45	Discussion	All Participants
11h45 - 12h00	Conclusion and Evaluation	Organization board Mr. Chu Van Chung Mr. Dinh Xuan Hung
11h45 - 13h30	Lunch	
13h30 - 17h00	Site Visit (Recycling Village – Industrial Waste Facilities in Nam Son)	Register with Organization board

- Invitation Letter

FOR SUSTAINABLE DEVELOPMENT

MOE - MONRE - VUREA

INVITATION

To :.....

.....

AGENDA

8h30'- 9h00': Welcome and register

9h00'- 9h10': Introduction on Object and Participants

9h10'- 9h20': Speech of ICD - MONRE

9h20'-9h40': Speech of VUREA and URENCO

9h40'-11h10': Speeches of Experts

11h10'-11h30': Discussion

11h30'-11h40': Conclusion and Evaluation

13h30'-17h00': Site Visit

BỘ MT NHẬT BẢN (MOE) - BỘ TNMT VN (MONRE) - HỘI MTĐT VN (VUREA)

Invite:

.....

.....

TO WORKSHOP ON

"E-WASTE MANAGEMENT AND INVENTORY IN VIETNAM 2007"

- **Time :** 9h00' AM 10th March, 2007 (Saturday)

- **Địa điểm :** Meeting Room 3 - Urban Environmental Company URENCO - 18 Phố Cao Bá Quát - Ba Đình - Hà Nội

Your present is our happiness and honor ./.

ON BEHALF OF ORGANIZATION BOARD
VIETNAM URBAN ENVIRONMENTAL ASSOCIATION
VUREA

CHU VAN CHUNG
Vice president

- Results of the Workshop

The result of the National Workshop on E-waste Management and Inventory in Vietnam on 10th March, 2007 will be shown as follow.

1. Participants:

E-waste management in Vietnam is a big matter and concerned by many stakeholders, especially environmental experts and managers. The Workshop on E-waste was organized at the beginning of 2007 year and attracted relevant stakeholders from ministries and local governments. There are about 50 participants from many institutions for this Workshop;

2. Contents:

Introduction of Work Team:

- The Work Team of URENCO - VUREA have been introduced all tasks of the Work in Vietnam and description on background of this Work. The methodologies and draft final results were introduced. Implementation plan and all others were introduced in brief.

Suggestions of the PSC:

- Mr. Dinh Xuan Hung - The National Coordinator of the Project, Senior Officer of ICD, MoNRE - the representative of the PSC stated views as follow.

* Results of the Work will be used for reference on E-Waste Management in both national and local level.

* Data and all other information will be used for reference in next activities of the national project on Sound Management of E-waste.

* The MoNRE will find the donors, sponsors for next activities, especially

for the step of input data and information for electronic data base and data update every year for this type of waste.

* The MoNRE and PSC highly appreciated hard work and professional of the Work Team of URENCO - VUREA, tried to finish the Work in limited time.

* The Work Team should contact in close coordination with EX Corporation to court the technical assistance for the Work.

Views of experts:

* JICA 's experts team of 3R HN project highly appreciated the interest of ministries and other stakeholders in this matter. Inventory of E-waste and other kind of waste are necessary preparation for sound management of solid waste. The most expected result of 3R HN and SM of E-waste always is reduction of solid waste generated.

* Environmental experts highly appreciated the consideration of authority organizations on E-waste and hazardous waste inventory in Vietnam. These data are basis for all actions in waste management.

* Others relevant organizations expect the final result of the Work and whole project will be finished in schedule with high quality.

- Photos of the National Workshop


10 9:45


HỘI NGHỊ
CÔNG TÁC QUẢN LÝ VÀ KIỂM KÊ CHẤT THẢI ĐIỆN & ĐIỆN TỬ
TẠI VIỆT NAM - NĂM 2007
(E-WASTE MANAGEMENT AND INVENTORY IN VIETNAM 2007)
10 11:05


10 10:00


IN VIETNAM 2007)
10 11:10


Chất thải điện tử (E-Waste)
• E-Waste là gì? (What is E-Waste)
– Là loại chất thải mới xuất hiện từ cuối thế kỷ 20
– Chưa có định nghĩa thống nhất
– Nhiều trường hợp E-Waste là một thuật ngữ chỉ các sản phẩm điện & điện tử cũ, hỏng
– Danh sách các loại chất thải điện tử rất nhiều và ngày càng mở rộng cùng với sự phát triển của các sản phẩm điện và điện tử.
– Chất thải điện & điện tử thường thấy là: Máy vi tính, Tivi, điện thoại cell, điều hoà không khí, đồ chơi điện tử

10. CHAPTER 8: ENVIRONMENTAL IMPACTS AND PROPOSED WAY FORWARD

E-waste contain of toxic substances such as lead and cadmium in circuit boards; lead oxide and cadmium in monitor CRTs; mercury in switches and flat screen monitors; cadmium in computer batteries; PCBs in order capacitors and transformers; and brominated flame retardants on printed circuit boards, plastic cases and cables and polyvinyl chloride (PVC) cable insulation that release highly toxic dioxins and furans when burned to retrieve copper from the wires.

Due to the hazards involved, disposing and recycling E-waste has serious legal and environmental implications. When E-waste is landfill or incinerated, it poses significant contamination problems. Landfill leach dioxin into ground water and incinerator emit toxic air pollutants. Likewise, the recycling of E-waste has serious occupational and environmental implications, particularly when the recycling industry is often marginally profitable at best and often can not afford to take the necessary precautions to protect the environment and worker health.

- **URENCO 's proposed way forward**

1. Inventory of E-Waste Generation (this Work)

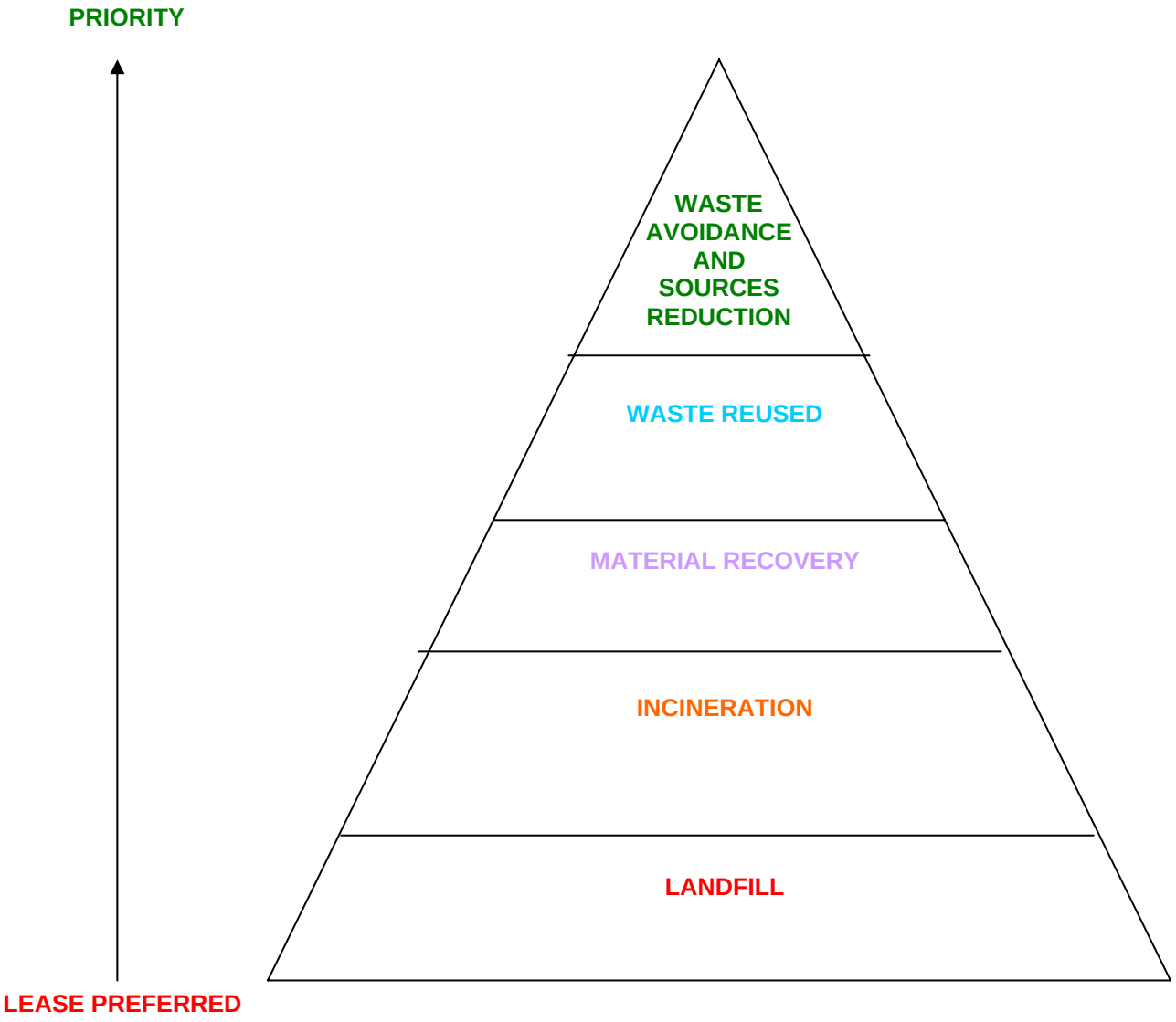
2. Preparation of a "Review on the existing national and international legislation on monitoring and control of transboundary movements of E-Waste and their environmentally sound management"

3. Harmonization of waste lists in Vietnam with the Basel Convention

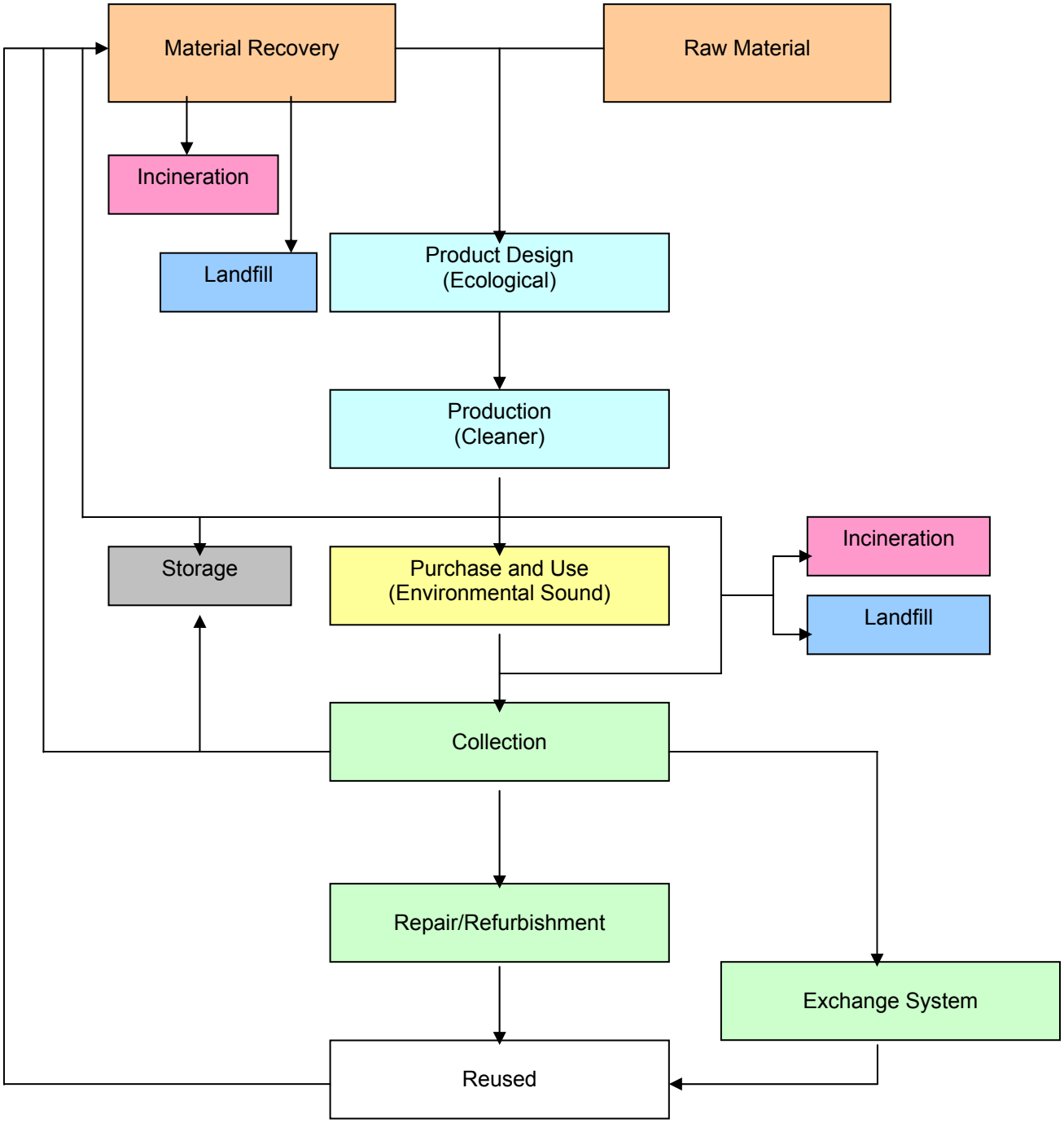
4. Workshop on the strengthening of cooperation between the chemicals and hazardous wastes conventions.

5. National workshop for the preparation of a national approach for the environmentally sound management of POPs as wastes in Vietnam

- **URENCO 's proposed hierarchy for E-waste management**



- **URENCO 's proposed life cycle for E-waste management**



10. ANNEXES:

Annex part A

Volume A (1 to 5)

1. The Project of E-waste Management in Vietnam
2. The Contract for Activity 1 between EX Corporation and URENCO
3. The Draft Guidelines for Development of E-waste Inventory
4. The Annexes for Interview Survey
5. Basel Convention Text

Annex part B

Volume A (1 to 8)

1. Detail list of interviewees/stakeholders involved
2. Map of Vietnam with implementation cities and Specific Map.
3. Photos of interview survey in 7 cities.
4. List of sample analysis results 7 types of E-waste.
5. Report of Vietnam on Environment Monitors 2004 - Solid waste management
6. Statistical Yearbook of Vietnam 2005 (Extract)
7. Vietnamese industry in 20 years of renovation and development (Extract)
8. The Vietnamese international merchandise trade 1986-2005 (Extract)

Volume B (9)

9. Legal documents on waste management in Vietnam

Volume C (10)

1. Estimation data of EEE, used EEE and E-waste in Vietnam
2. Estimation data of E-waste in Vietnam by Weibull function

Annex part C

Volume A (1)

3. The original questionnaires of interview survey in Langson (1 volume)

Volume B (2 to 5)

4. The original questionnaires of interview survey in Hanoi (4 volumes)

Volume C (6 to 8)

5. The original questionnaires of interview survey in Haiphong (3 volumes)

Volume D (9)

6. The original questionnaires of interview survey in Nghean (1 volume)

Volume E (10)

7. The original questionnaires of interview survey in Danang (1 volume)

Volume F (11)

8. The original questionnaires of interview survey in Binhduong (1 volume)

Volume G (12 to 14)

9. The original questionnaires of interview survey in Hochiminh (3 volumes)