

KINGDOM OF CAMBODIA
Nation Religion King

TECHNICAL REPORT ON NATIONAL INVENTORY OF USED OF EEE IN CAMBODIA



*Prepared by
Cambodia Environmental Association (CEA)*

May 2007



EX-Cooperation



MoE



CEA



MoE of Japan

TABLE OF CONTENTS



1.0 EXECUTIVE SUMMARY	1...3
2.0 BACKGROUND	4...8
2.1 Specific Objectives	4
2.2 Overview: Actual System and Its Flows	5
2.3 Status of Cambodian EEE Market	6
2.4 Waste Management in different Areas of the Country	6
2.5 Scrap Yards	7
3.0 USED EEE FLOW IN THE KINGDOM OF CAMBODIA	9...26
3.1 Estimation Methods	9
3.2 Desk Study's Outcomes	9
3.3 Field Survey's Outcomes	12
3.3.1 Flow of UEEE and EEW	14
3.3.1.1 Flow of UEEE	14
3.3.1.2 Flow of EEW	15
3.3.2 Stakeholder List	16
3.3.3 Level of Repair/Refurbishment	19
3.3.4 Level of Dismantling and Recycling	21
3.3.5 Disposal Method for Residues	22
3.3.6 Environmental Problems due to Reuse/Recycling and Disposal of EEE	25
4.0 STATUS OF USED EEE AND ITS RESIDUE MANAGEMENT	27...30
4.1 UEEE and EEE Residues Management's Legislations	27
4.2 Hazardous Waste Criteria	28
4.3 Management Status of Imported of UEEE	30
4.3.1 Managerial Procedure	30
4.3.2 Action taken by Manufactures	30
5.0 ESTIMATION OF UEEE AND ITS WASTE GENERATED	31...49
5.1 Amount of Brand-new EEE domestically produced/shipped and imported/exported	31
5.2 Purchase and Use Pattern	31
5.2.1 Analysis of Household Survey Results	38
5.2.2 Analysis of Survey Results of the Business Entities and Institutions	42
5.2.3 Use period of EEE/UEEE	44
5.3 Discarding of UEEE	45
5.4 Amount of UEEE Exported/reassemble and Dismantled by Types	47
5.5 UEEE Residue Generation and Management	48
6.0 CONCLUSION	50...51
Annex-1: List of surveyed UEEE repaired/dismantled/second-hand shops	52-64
Reference	65

LIST OF TABLES



1. Statistics of imported EEE by types in the KoC including their prices	10
2. Summarized survey sources dealing with EEE/UEEE in the KoC	13
3. Ratio of UEEE flow based on the five interviewee sources	15
4. List of interviewed UEEE imported companies	16
5. List of additional UEEE importers	17
6. Partner's list of UEEE repairing shops, and final products buying	18
7. Estimated ratio of reusable/recyclable materials and residues generating from repairing process (final products)	21
8. Estimated ratio of reusable/recyclable materials and residues generating from dismantling process	22
9. Way of residue disposal (repair process)	22
10. Way of residue disposal (dismantling process)	23
11. Purchase/use pattern of TV in the KoC	33
12. Purchase/use pattern of computer in the KoC	34
13. Purchase/use pattern of mobile phone in the KoC	35
14. Purchase/use pattern of refrigerator in the KoC	36
15. Purchase/use pattern of air-con in the KoC	37
16. Average lifetime of EEE/UEEE based on the survey outcomes	45
17. Estimated EEW discard between 2004-2010	45
18. Amount and ratio of annual exported, repaired/reassembled and dismantled UEEE by surveyed sources only	47
19. Amount and ratio of annual residues generated from repaired/reassembled and dismantled UEEE by types	49

LIST OF PICTURES



1. Used air-con/refrigerator selling shop in Kandal Province	6
2. Used TV and VCD player selling shop in PPM	6
3. New and used MP selling shop in Battambang Province	6
4. TV screen's waste found at dumpsite in Kampong Cham	6
5. Computer waste transportation for other purposes in PPM	7
6. Overview of scrap yard in Battambang Province	7
7. Separation of e-waste by types in Battambang Province	7
8. Improper keeping of gaseous block at scrap yard	8
9. EEE waste estimation and possible data sources	9
10. Statistics of imported EEE, 2000-2006	11
11. Map of selected cities and provinces for UEEE survey	13
12. Flow chart of UEEE consumption and e-waste generation in Cambodia	14
13. Flow chart of e-waste generation and its managerial practice in the KoC	16
14. Simple methodology using for TV repairing in PPM	19
15. Simple methodology using for MP repairing in Kampong Cham Province	20
16. Simple methodology using for air-con repairing in PPM	20
17. Simple methodology using for PC repairing in Kandal Province	20
18. The disposal of TV screen mixing with domestic wastes	24
19. Un-environmentally sound disposal of disable use of TV screen, Sihanoukville	24
20. Un-environmentally sound disposal of EEE wastes in area closed to repairing shop	24
21. Unsafe practice for health protection and maintenance during a repairing process, PPM	25
22. Impractical repairing of air-con by local fixers, Kandal Province	25
23. Impractical repairing of refrigerator by local fixers, Kandal Province	25
24. General view of dumpsite where some EE residues were disposed at PPM	26
25. Opened burning of any kind wastes/residues at dumpsite in Kampong Cham Province	26
26. Legal instruments related to EE waste/residue management	27
27. TV waste discard's practices	39
28. Computer waste discard's practices	40
29. MP waste discard's practices	41
30. TV waste discard's practices	42
31. Computer waste discard's practices	43
32. MP waste discard's practices	43
33. Air-con waste discard's practices	44
34. Graph of estimated EEW discard, 2004-2010	46

ABBREVIATION AND ACRONYMS



B	Bought
Air-con	Air conditioner
Air-con(s)	Air conditioners
Dept.	Department
EEE	Electric and electronic equipment
EEW	Electric and electronic waste
G	Give to someone
ILMC	International Lead Management Center
KoC	Kingdom of Cambodia
MIME	Ministry of Industry, Mine and Energy
MoC	Ministry of Commerce
MoE	Ministry of Environment
MoEF	Ministry of Economy and Finance
MP	Mobile phone
N	Brand-new
NGOs	Non-governmental organizations
NSDP	National Strategic Development Plan
O	Others
PC	Personal computer
PC(s)	Personal computers
PCB	Polychlorinated Biphenyls
POPs	Persistent Organic Pollutants
PP	Phnom Penh
PPM	Phnom Penh Municipality
Prov.	Province
RGC	Royal Government of Cambodia
S	Second-hand
SBC	Secretariat of Basel Convention
TV(s)	Television(s)
UEEE	Used electric and electronic equipment
UNEP	United Nations for Environmental Programs
USA	United States of America

1.0 EXECUTIVE SUMMARY

In the Kingdom of Cambodia (KoC), processing of repairing and dismantling of used electronic and electric equipments (UEEE) and related waste disposal are not normally operated in an environmentally sound manner, and there is no specific government institution responsible for managing the UEEE¹. However, the Ministry of Environment (MoE) will take full responsibility in managing related electronic and electric wastes (EEW), other hazardous wastes and some activities which caused impaired and/or harmful impact to the environment and human health, under close collaboration of concerned ministries², line agencies, and international communities as well. By this responsibility, MoE took one step forward to cooperate with UNEP/SBC/ILMC to achieve the preparation of “Action Plan for the Environmentally Sound Management of Used Lead Acid Batteries”. By the national inventory of UEEE, Cambodia will prepare an action plan for the environmentally sound management of electrical and electronic waste in Cambodia in the forthcoming period.

Detailed legislation specifically targeting the management of EEW does not exist, except some related statutory instruments of the environmental law and sub-decrees. The UEEE in this report focused on six items such as: TV, computer, mobile phone, refrigerator, air-conditioner (air-con), and washing machine. Current management practices of wastes related to UEEE seems to be inappropriate, which might caused potential risk to human health and the environment due to its originally hazard and/or toxicity. People who are involved in the related businesses do not care personal safety³ and public health too. This negative aspect should be minimized and phased out, otherwise harmful and irreparable consequences will occur in the future. The adverse health effects are a particular concern because they become another obstacle in the application of the Poverty Alleviation Program, which is the main policy of the present Royal Government of Cambodia (RGC).

The main environmental and health threats arising from current practices are the release of hazardous materials from UEEE and EEW to public dumpsite and/or at opened area closed to repair/dismantling workshops, for example, the open discharging of gases out of compressor (a major part of refrigerator) prior to operational repairing/dismantling operations. These environmentally “unfriendly” activities are all contributors to the pollution of the soil, aquatic ecosystems, and sometimes, domestic air quality as well.

To identify the gaps in EEW management and future requirement of appropriate countermeasures, regulations and action plan, the MoE of KoC got support from SBC and MoE of Japan, to implement the project is namely “Environmentally Sound Management of Electrical and Electronic Waste in Cambodia”. The survey activity, of course, is the primary phase to identify these gaps and future demands. The survey aims at developing an e-waste inventory through gathering data and information, establishing a database required to address the gaps, needs, and finding solutions for the environmentally sound management of used and end-of-life electrical and electronic equipment.

¹ It is under the cooperation of concerned ministries

² It abides by the stipulation in the environmental law and sub-decrees

³ the use of safety facility

By agreement between the MoE of Japan, EX Corporation and the MoE of Cambodia, the technical field study was conducted by local NGO, namely, Cambodia Environment Association (CEA) in a selected sample of provinces and cities that have different socio-economic conditions of high, medium and low income families. In this regard, there are two cities (Phnom Penh and Sihanoukville), and four provinces (Battambang, Kampong Cham, Kandal and Svay Rieng) that meet the criteria.

Two main activities have been for the survey with fruitful outcomes. These comprise: (i) desk study; and (ii) technical field survey. Achieving a few major activities in the desk study include as follows:

- Collection and identification of existing data/information related to UEEE from government institutions and the private sector.
- Collation and identification of any data or information gaps, including the assessment of existing UEEE management and legal instruments such as the Law on Environmental Protection and Natural Resource Management, and related Sub-Decrees.

The importation of EEE/UEEE has been continuously done into the KoC with different amounts responding to internal demands. From 2000 to 2006, imported TVs have 903,334 sets (Color 271291 sets, and black-white 632,043 sets); air-con 193,391 sets; refrigerator 91,935 sets; PC 14010 sets; MP 343,033; and washing machine 30,941 sets. Remarkably, these combined EEE/UEEE statistics have recorded by responsible institutions⁴, while importers registered and asked for permission to import these materials/facilities.

The technical field survey was conducted to seek additional data and information to respond to the assessment of UEEE/EEW management and its future requirement. That is an inventory process at particular sources.

The inventory process in selected provinces and cities (as indicated above) was divided into two main sampling areas, these are, the urban and rural areas. The survey targeted sources include: TV, computer, air-con, mobile phone, and refrigerator and washing machine⁵.

The survey identified the different stages in the life cycle of UEEE such as production, distribution and sale to institutional and private consumers, service life and end of life management. EEW in Cambodia are not disposed of through the public waste collection system or waste dumping sites, except, minor residues occurring from repairing and dismantling process, because most parts of EEW still have less value for waste collecting buyers or scavengers. In the *Sub-section 5.5: UEEE Residue Generation and Management*, the reader will see the table described on the amount and ratio of annual residues generated from repaired/dismantled UEEE by types, which estimated for 2007 (*ref. to the questionnaires Q9 and Q16: how much residues do you generated from repair and dismantling processes?*). The survey finding indicated that generated wastes from TV sector has great amounts of

⁴ Dept. of Customs and Excises; and Dept. of Kamcontrol

⁵ Imported and exported data on washing machines have been also collected

40,983.00 kg, while air-con's wastes have 13,318.80 kg, MP's wastes 2,016.24 kg, and PC's wastes 1,310.40 kg.

Low repairing/dismantling technology with inappropriate facilities is being used in above study areas and these operations threaten the environment and public health. Generally, the people working in these sources of pollution are generally limited in their awareness and knowledge of environmental protection and health care. When interviewed, those people generally did not care about consumer and worker safety⁶ at their premises. Additionally, most interviewees did not reveal their partners⁷ to the Team as requested, although the Team explained on their mission with intervened letter⁸ from the Ministry of Environment.

As a conclusion, the preparation of guidelines and an action plan for the environmentally sound management of electronic and electrical wastes should be developed. The implementation at the national level, the capacity building and closed collaboration among stakeholders should be promoted to effectively manage EEW. Especially, technology transfer through exchanging visits with some countries where similar projects or problems were resolved successfully with beneficial outcomes.

⁶ *They are masks, gloves, goggles, etc.*

⁷ *Name and communication address*

⁸ *Official letter*

2.0 BACKGROUND

The National Strategic Development Plan 2006-2010 (NSDP) of Cambodia reported that GDP per capita is around 340.00 USD. The population is increased remarkably, e.g. 11,437 million (1998), 13.77 million (2003), 14.8 million (2006), and 16.6 million (2011) – based on population projections. This crucial document also addressed the poverty level that should be further improved. In 2005 poverty level in Phnom Penh Municipality (PPM) was 4.6% and other urban area 24.6%, meanwhile rural areas was 39.2%. Therefore, the Royal Government of Cambodia (RGC) pays more attention to promote people's daily living through various ways of helps. In deed, for compromising people to afford UEEE for their living conditions⁹, the RGC permits the importation of UEEE into the KoC, based on available price with desirable quality. In this regard, UEEE is being imported into Cambodian markets to compete with new EEE to meet people's needs.

However, most rural people still do not have capability to afford UEEE for domestic consumption, e.g. TV, air-con, refrigerator, etc., because of: low family income, and no access to electricity supply. Vice versa, the discard of UEEE has caused much generation of EEW via EEE repairing, dismantling and disposal of disable use/repairing parts.

So far, technology and science is being progressed from year to year based on the research and development of various products responding to people's requirements in their daily living. The research and development in developed countries has competed mutually at international markets of technological products, especially, electronic and electric equipment (EEE). Although serving the living style, most products also cause negative consequences when they became wastes or useless, which implies to improper disposal and/or management.

Although EEE products have firmly developed for last few decades, Cambodia still does not have capability and capacity to produce these products. The country faced civil wars around three decades of which human resources, infrastructures including the industrial sector were depleted, especially in Pol Pot regime where everything was completely destroyed.

Up to now, EEE in terms of brand new and second hand are being imported into Cambodia to respond people's demand. Cambodia currently requires import of second hand/used EEE to enable uses by most poor people approximately 34.7% of the population (NSDP 2006-2010).

Consistent with importation and consumption of brand new/second hand EEE, Cambodia starts to concern about due to some imported second hand products that have lower quality (around 10-20% of total imported second hand EEE), which are at most required to be disposed. That is a reason why we need to further consider in strengthening, monitoring and managing imported EEE with reasonable and useable conditions.

2.1 Specific Objectives

Specific objective of the UEEE inventory are to:

⁹ One who has medium and/or low living condition

- a) Identify importation and consumption of UEEE in various sectors and the future trends including the trade flow.
- b) Rapidly assess the local management practices for UEEE recycling and the disposal of related residues.
- c) Identify environmental, occupational and population health risks, and hazards resulting from the disposal and/or recycling of UEEE.
- d) Identify the shortcomings in UEEE management and recycling, and especially, requirements for legal instruments, capacity building, and future action plans, based on the recommendations from stakeholders.

2.2 Overview: Actual System and its Flows

Outcomes of both the desk-top study and site surveys indicated that the attention from line institutions in managing and monitoring the occupations related to used EEE in Cambodia, e.g. TV, refrigerator, air-conditioner, mobile phone, and computer, including its waste disposal, is still limited. The exception being the control of the importation of EEE¹⁰ for domestic demands by the Dept. of Customs and Excises (MoEF) in collaboration with the Dept. of Kamcontrol (MoC) and few related Government institutions, because Cambodia currently cannot produce any EEE to support its domestic needs.

Through the attention of the RGC to promote people's living standard, we found that these used EEE were enable consumed by local people who have low and medium incomes to own EEE. Commonly, brand new EEE are imported from various countries in the region such as Vietnam, Thailand, Japan, South Korea, Singapore, China, and Malaysia, and a few western countries. But second hand EEE were mostly imported from few countries like Japan and South Korea.

The remaining lifetime of used EEE varies from twelve months to sixty months, and some might be more/less than these periods according to quality, using and maintenance conditions. For example, used mobile phones have periods of twelve to twenty-four months based on used quality. Used TVs or computers have used interval around twenty-four to forty-eight months or more than these periods. Beside the importation for domestic uses, there is not available information/data towards the exportation of UEEE to other adjacent countries, although the Team tried to seek it from concerned institutions, including a private sector.

The survey in designated areas substantiated that the process of repairing and/or dismantling of used TVs, mobile phones, air-conditioners, computers, and refrigerators, commonly are very simple but outdated. Additionally, the practice has never focused on environmental and health impacts. For instance, workers in the shops and those who involved with, have never got any technical education from government institutions and other relevant agencies about the correct procedures for repairing and/or dismantling of used EEE, including residue management.

¹⁰ It includes both aspects of brand new and second hand EEE

2.3 Status of Cambodian EEE Market

As general observation, imported new EEE are sold at brand-new shops/centers, and used EEE at second-hand shops. However, some shops sell both new and used EEE products, because selling used EEE can provide them with more profits than new items (it depends on agreed price between two parties, without a fixed price).

On the other hand, most UEEE selling shops have multiple functions such selling, repairing, dismantling and refurbishing. In a short, UEEE is popularly used in Cambodia so far, although imported brand new items from China are cheap. This is because consumers often consider that second-hand items produced by Japan and some developed countries have higher quality responding to their need and are affordable.



Pic. 1: Used air-con/refrigerator selling shop in Kandal Province



Pic. 2: Used TV and VCD player selling shop in Phnom Penh Municipality



Pic. 3: New and used MP selling shop in Battambang Province

2.4 Waste Management in Different Areas of the Country

The survey also substantiated that very little waste was generated by repairing and dismantling process. Most wastes of used EEE occurring from repairing and dismantling process were sold to waste collectors or scavengers, because they still have some value, albeit small. Remaining residues (unvalued residues) were disposed mixing with domestic wastes, and finally, collected by waste collection company and disposed at municipal waste dumpsites.



Pic. 4: TV screen found at dumpsite in Kampong Cham

Some users have to pay to someone¹¹ to taking away his/her EE waste for discarding at dumpsite while municipal waste collector did not provide a collection service. Because their residential areas have narrow roads where waste collection vehicle cannot access. Therefore, residents in these areas have to manage their wastes by enable means, for instance, they have to take their wastes to municipal dust-bins or dumpsite or pay for taking away as said above.

There is no report that pinpoints the location of recycling of used EEE's wastes in the selected areas of Phnom Penh Municipality, Sihanoukville City, Kandal Province, Battambang Province, Kampong Cham Province and Svay Rieng Province, although the survey team tried to find out at these areas, including asking information and report from line institutions at both national and local levels.



Pic. 5: Computer waste transportation for other purposes, PPM

2.5 Scrap Yards

Waste collectors sell collected e-wastes by waste collectors were proceeded to sell to owner/manager of scrap yards. Generally, scrap yards are small in size (or family size). Up to now, Cambodia does not have a specific scrap yard for particular items of e-waste, e.g. TV, computer, air-con, etc. In a short, scrap yard's owner/manager buy any kinds of valuable wastes like metals, plastics and the like as requested by oversea markets. Therefore, at the scrap yard, wastes are separated and kept by type for transporting to recycling facilities/workshops outside of the scrap yards.



Pic. 6: Overview of scrap yard in Battambang Province



Pic. 7: Separation of e-waste by types in Battambang Province

¹¹ Someone who ride tri-cycle or motor-taxi

However at some scrap yards, e-wastes were kept mixing with other valuable wastes. This management practice is unsuitable and might cause potential risk to human health and the environment, e.g. CFC containers were improperly disposed with other recyclable materials/waste, which is a cause of a free leakage of CFC and/or other hazardous substances.



Pic. 8: Improper keeping of gaseous block at scrap yard

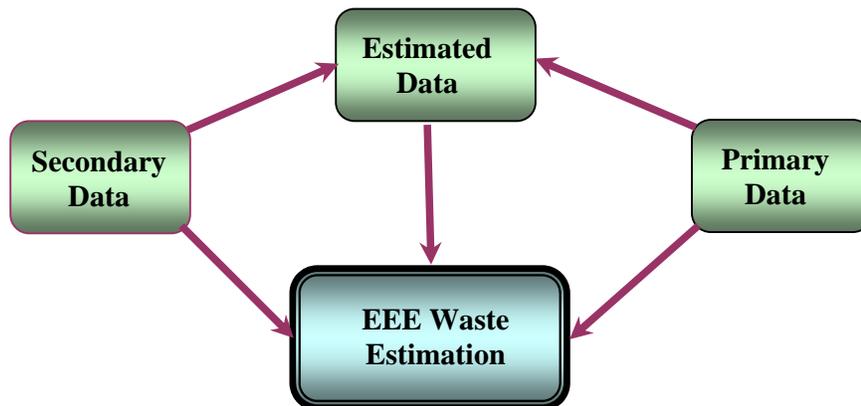
On the other hand, workers at scrap yards commonly as well as at UEEE repairing/reassembling/dismantling workshops do not wear safety gears, e.g. masks, gloves, glasses, etc. It means they have never taken care of occupational health, while they are not aware of this matter. This is mainly because they have never received education and/or advice from concerned institutions or NGOs.

3.0 USED EEE FLOW IN THE KINGDOM OF CAMBODIA

3.1 Estimation Methods

For assessing the UEEE flow in the KoC and its management, the Team collected data/information from both primary and secondary sources. Primary data was produced through direct interviews using questionnaires with EEE/UEEE importers, sellers, users, collectors, dismantlers, and repair shops – that is a field survey. Secondary data was compiled in order to respond to the gaps of primary data and required information. The secondary data was collected from line government institutions – a desk study. There is no EEE/UEEE related association in the KoC so far.

Consistent with both primary and secondary data, the Team still additionally requires an estimated data (combined data) in order to estimate a common status of EE wastes (EEW) disposal in the future. For instance, for simplified estimation of the consumption of UEEE, it will depend on consumption rate and population in a specific determined period/year. In the case of estimation of EEW generation in a specific year, it may be done based on imported EEE/UEEE and consuming lifetime of these products.



Pic. 9: EEE waste estimation and possible data sources

3.2 Desk Study's Outcomes

After debating in the group, the Team determined some relevant Government institutions dealing with UEEE are identified as MoE, MoC, MIME and the Dept of Customs and Excises. Among these institutions, obviously, the Dept of Customs and Excises (MoEF); and the Dept. of Kamcontrol (MoC) have compiled data related to imported EEE. However, these statistics do not separate between numbers of brand-new items from second hand ones.

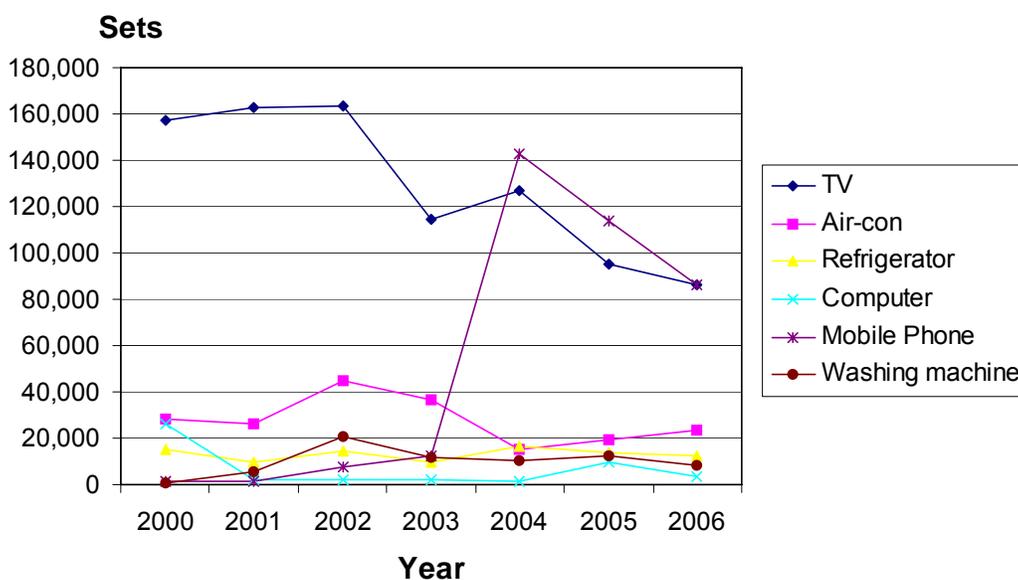
Table 1: Statistics of imported EEE by types in the Kingdom of Cambodia, including their prices

EEE Types		Unit	Numbers	Value (in USD)
Year 2000				
TV	Color	set	66,127	-
	Black-white		90,969	-
Air-con		set	28,408	-
Refrigerator		set	15,172	-
Computer		set	26,342	359,360
Mobile phone		set	1,486	209,013
Washing machine		set	529	47,527
Year 2001				
TV	Color		52,642	-
	Black-white		109,915	-
Air-con		set	26,450	-
Refrigerator		set	9,640	-
Computer		set	1,863	215,976
Mobile phone		set	1,407	45,192
Washing machine		set	5,697	445,416
Year 2002				
TV	Color		44,463	-
	Black-white		119,200	-
Air-con		set	44,920	-
Refrigerator		set	14,645	-
Computer		set	1,990	597,907
Mobile phone		set	7,356	1,735,337
Washing machine		set	20,404	1,780,118
Year 2003				
TV	Color		29,257	2,062,799
	Black-white		85,133	1,648,309
Air-con		set	36,698	-
Refrigerator		set	9,895	-
Computer		set	1,852	983,138
Mobile phone		set	12,222	429,572
Washing machine		set	11,554	1,661,745
Year 2004				
TV	Color	set	29,868	2,100,715
	Black-white		96,887	1,857,516
Air-con		set	15,070	2,245,011
Refrigerator		set	16,606	2,312,055
Computer	Notebook	set	47	30,838
	Desktop		1,467	331,800
Mobile phone		set	142,990	2,272,320
Washing machine		set	10,519	845,467
Year 2005				
TV	Color	set	24,711	2,452,769
	Black-white		70,558	1,273,119
Air-con		set	19,331	3,842,537

Refrigerator		set	13,464	1,639,256
Computer	Notebook	set	149	32,302
	Desktop		9,232	2,452,688
Mobile phone		set	113,605	4,254,019
Washing machine		set	12,213	1,636,363
Year 2006				
TV	Color	set	25,709	2,384,315
	Black-white		60,729	1,141,701
Air-con		set	23,114	3,218,821
Refrigerator		set	12,513	1,881,538
Computer	Notebook	set	14	15,334
	Desktop		3,101	821,996
Mobile phone		set	86,438	4,652,231
Washing machine		set	8,209	1,926,872

Source:

- 1) Dept. of Customs and Excises (MoEF)
- 2) Statistics of Imported EEE 2004-2006; Dept. of Kamcontrol (MoC)



Pic. 10: Statistics of imported EEE, 2000-2006

The sum of TVs between 2000 and 2006 in Table 1 indicated that the importation of black-white TVs in Cambodia is commonly more than color-TVs by 2.3 times in order to respond to people's demands throughout the country, especially those who live in rural and remote areas who use transformed current from batteries. Color-TVs are being used mostly in cities and towns where there is an access to electricity supply. Therefore, during 2000-2006, 632,043 sets of black-white TVs were imported in total while 271,291 sets of color-TVs.

Same as the TV case, the consumption of air-cons, refrigerators, washing machines and computers are commonly used in cities and big towns, because such equipment requires electricity for its functions. Significantly, such equipment is not used in rural areas where there is no electricity and rural people have no capability to afford it.

Two types of computers are imported and being used in Cambodia such as laptop and desktop. The statistics of the Dept. of Kamcontrol indicated that the amount of imported desktop computers is larger than laptop computers. In the period of three years (2004-2006), the total amounts of imported desktop computer are 13,800 sets, but laptop computer only 210 sets.

Mobile phones are popularly used in both urban and rural areas. However, amounts of mobile phone's importation tend to be decreased from year after year. For instance, in 2004, imported mobile phones were 142,990 sets; and this number decreased to 86,438 sets in 2006. As a conclusion, local demand is gradually reduced because of most capable people have mobile phones for consuming already. Therefore, continuous importation is to fulfill domestic demand for changing to updated/modern mobile phones, or for complementing broken mobile phones.

The Team got insufficient information from very few private companies engaging in EEE/UEEE importation, and of course, most of them were concealed or did not provide answer by interviewees, especially, information related to quantity of imported UEEE, including next destination countries to which UEEE is exported. On the other hand, Cambodia does not have associations involving with EEE/UEEE importation and/or exportation.

Based on the interview's outcomes and the imported statistics¹² in above table, we found that the trends of importation of UEEE have remarkably increased since the mid 1990s to respond domestic demands, but it has decreased during 2005-2006 by some reasons. Firstly, most people who have capability to buy UEEE for self-consumption have already bought.

Secondly, the importation trend¹³ of brand-new EEE is being increased, mostly EEE products from China (computers, air-cons, TVs, etc.) with lower prices¹⁴ comparing to product from other countries in the region. The case of MP is differed from other EEE, it means all imported MPs in Cambodia are brand-new. Therefore, flow of second-hand mobile phones occurs from domestic use of brand-new only.

3.3 Field Survey's Outcomes

The guideline proposed to conduct the field survey at major different sources: houses, business entities and institutions, importers/exporters, collectors/repair shops/second shops/dismantlers/processors. For easier understanding, these sources are classified into three groups:

- (i) households
- (ii) offices (business entities and institutions)

¹² The mixed EEE/UEEE data record has been available since 2000

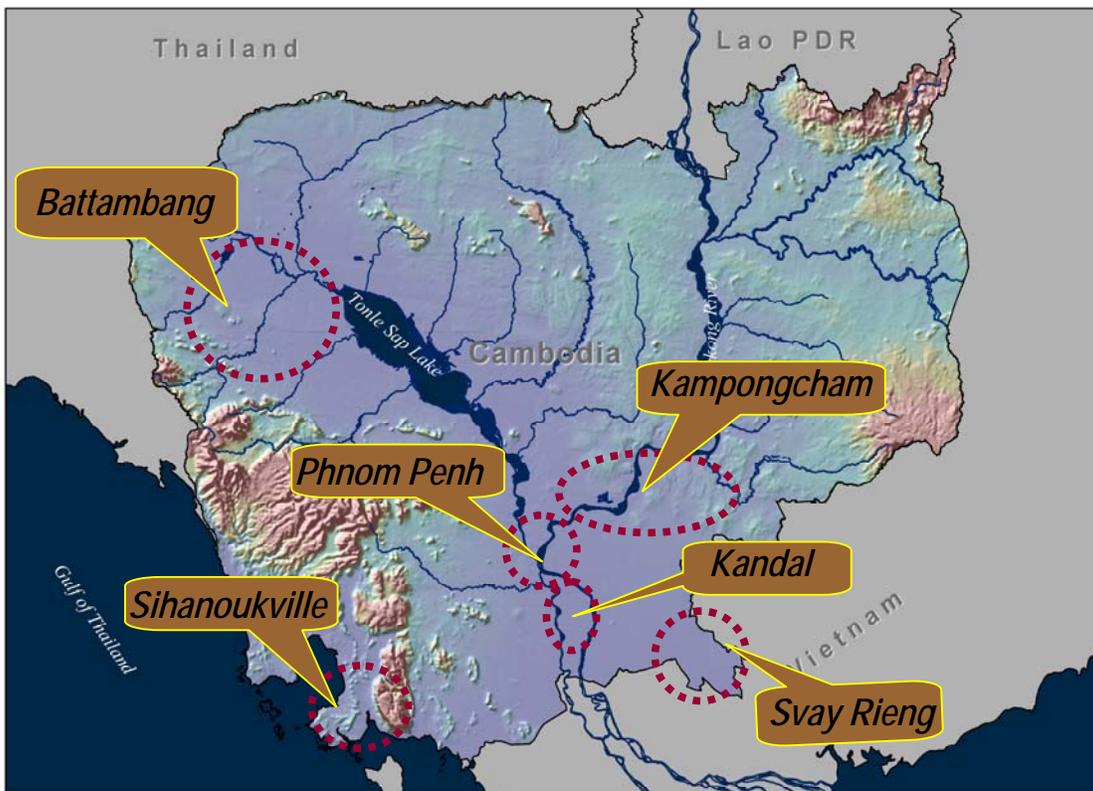
¹³ Most second hand shops' owners addressed their concern to compete the imported brand-new EEE in Cambodian markets

¹⁴ Low prices

- (iii) recyclers (importers/exporters, collectors/repair shops/second shops/dismantlers/processors)

Table 2: Summarized survey sources dealing with EEE/UEEE in the Kingdom of Cambodia

No.	Survey Area	Households	Offices	Recyclers
1	Phnom Penh City	150	100	150
2	Sihanoukville City	50	20	50
3	Kandal Province	50	20	50
4	Battambang Province	50	20	50
5	Kampong Cham Province	50	20	50
6	Svay Rieng Province	50	20	50
Total		400	200	400



Pic. 11: Map of selected cities and provinces for UEEE survey

- The survey on households was conducted at urban and town areas in selected cities and provinces, e.g. the samples were selected from seven districts¹⁵ in PPM

¹⁵ A local call is Khan

based on the real situation of family income (high, medium and low). The same practice was also applied to other selected cities and provinces.

- For the business entities and institutions, the team has surveyed many sources that were presented in the selected areas. These include: private companies/institutions, government institutions, local organizations, hotels and guest houses. Remarkably, most samples are located in urban and town areas (ref. to obvious geography).
- Repairing/dismantling shops, second hand shops were selected and surveyed to identify management practices of UEEE and EEW. The Team also tried to seek information related to importers/exporters during the survey, however, they could not get a positive outcome, because survey sources' owners/managers of importing/exporting companies acted reluctant or tried to conceal this information.
- According to the real situation of local UEEE markets, the Team collected sample of repaired/dismantled/second shops for interviewing. Their handling UEEE is TVs 44.88%, PCs 11%, MPs 29.42%, and Air-cons and Refrigerators 14.70% (ref. to Annex-1).

3.3.1 Flow of UEEE and EEW

3.3.1.1 Flow of UEEE

UEEE imported from abroad by many private companies responding to domestic demands. Imported UEEE were stored at warehouse – that is a whole sale or distributing location/depot. Respective whole sale or distributing location/depot has its own workshop for repairing or dismantling process. These UEEE distributed or sold to second hand/retailed shops in order to be sold to consumers. Some second hand/retailed shops without repairing services, usually send un-functioning UEEEs to repaired shop for fixing. On the other hand, consistent with the progress of people's living standard and economy, the demand for EEE/UEEE is increased from day after day – this is why EEE/UEEE is bought and used in households and offices (see picture below).

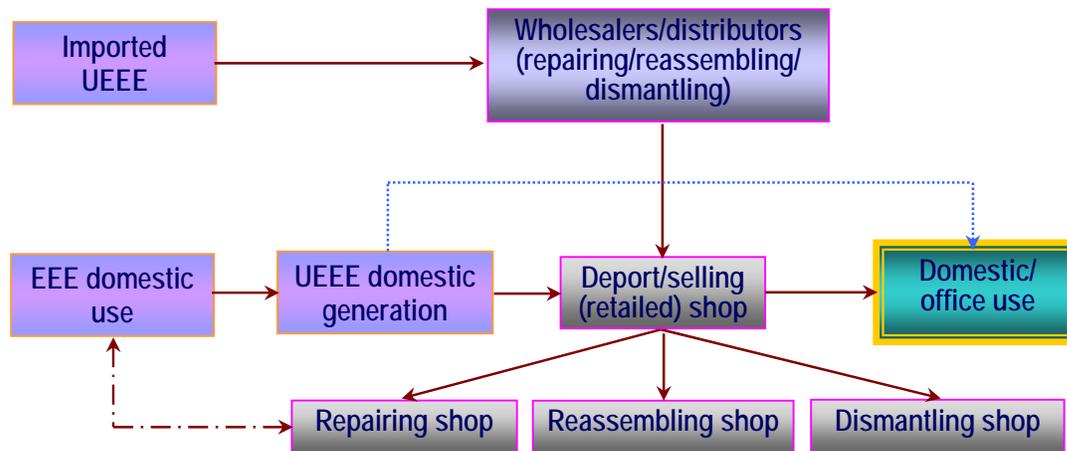


Fig. 12: Flow chart of UEEE consumption in the Kingdom of Cambodia

In other case, UEEE flow is pertained to domestic use also. Consumers in medium and high incomes frequently change their using facilities in complying with updated modern/design. Therefore, their UEEE are either sold to second-hand shops or given to relatives/others¹⁶ for onward use. That is the generating flow of domestic UEEE. The used MPs commonly pose large amount of domestic used MPs rather than other five surveyed UEEE.

Ratio in table below indicated the flow of imported UEEE by types from the five surveyed sources of which distributed to second hand shops, repair shops and dismantlers based on their consuming quality.

Table 3: Ratio of UEEE flow based on the five interviewee sources

UEEE Type		Second-hand shops	Repair shops	Dismantlers
TV	CRT	70	26,60	3,40
	LC	90	10	
Computer	Desktop	100		
	Notebook	100		
Air-con		56,70	25	18,30
Refrigerator		53,30	26,70	20

3.3.1.2 Flow of EEW

In repairing/assembling/dismantling workshops attached to whole sale or distributing locations/depots and independent repairing/dismantling shops of computers, mobile phones, air-con, TV, refrigerator, and the like, recyclable parts are sold to waste-pickers, and other¹⁷ is disposed in dust-bin of domestic wastes¹⁸.

At households and offices (business entities/institutions), on the other hand UEEEs that do not function or are not used anymore are mostly sold to waste-pickers. Waste-pickers generally sell their collected UEEE/EEW¹⁹ to scrap-yard owners for exporting²⁰. Name of exported destination countries were not provided by interviewees same as imported/exported companies. It means all interviewees (private sector) do not satisfy to any questions related to UEEE import/export.

However, some small amount of UEEE was dismantled to recover useable parts (spare-parts) to be used for other sets²¹. Remaining parts (residues) are discarded with domestic wastes, and finally, collected and disposed at dumpsite by urban/town waste collectors²².

On the other hand, small amount of recyclable materials is collected at dumpsites by waste pickers (e.g. metals, plastics, etc.), and it directly sold to scrap-yards' owners

¹⁶ Who have no capability to afford EEE for consumption

¹⁷ Those wastes cannot recycle, reuse and/or sell

¹⁸ Municipal wastes

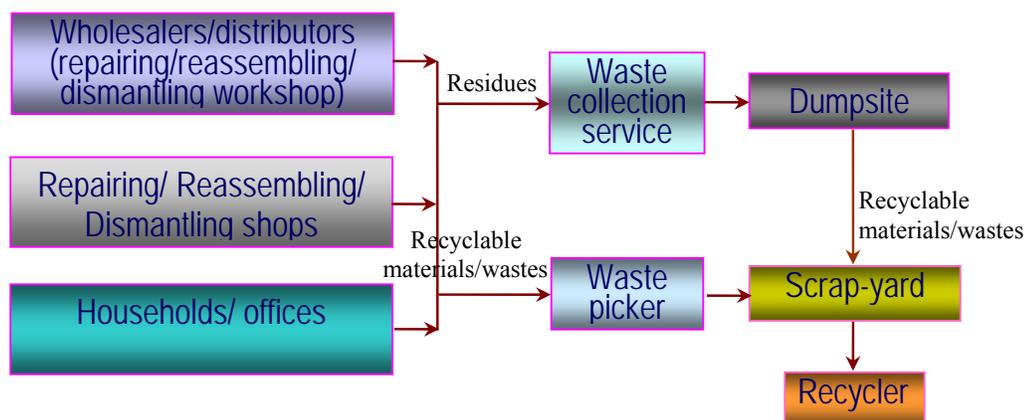
¹⁹ Recyclable parts

²⁰ For recycling purpose

²¹ Parts are not functions and/or broken down

²² That is a private company getting a waste collection service's permission from local authority

too. But the Team cannot get information implicating to pick-able amounts of recyclable materials from dumpsites which do by waste-pickers.



Pic. 13: Flow chart of e-waste generation and its managerial practice in the Kingdom of Cambodia

As an estimation for 2006, EEW about 89.20%²³ and 10.80%²⁴ from respectively repair shops and dismantling shops were disposed at dumpsites through waste collection services.

3.3.2 Stakeholder List

Information about importers/exporters of UEEE in not broadly disseminated. Based on the interviews with UEEE selling/repairing shops, interviewees intentionally did not reveal their UEEE partners to the survey team.

Only five UEEE imported companies were interviewed during the survey, and their names and addresses were listed in the table below.

Table 4: List of interviewed UEEE imported companies

No.	Stakeholder Name	Types of used EEE handled	Contact information Address ²⁵
1	Hong Leng Hour Imported-Export and Transportation Co., LTD	Used TV, air-cons, refrigerators	# 8, Mondol 2, Sangkat 4, Khan Mittapheap, Sihanoukville City Tel: 023 213 112; Fax: 023 215 287
2	Sin Vana	Sale and repair of brand-new and second hand air-cons	#59 Eo, St. 217, Samdech Monireth, Phsar Doeumkor, Khan Toulkok, PP Tel: 012 957 141 / 011 279 541
3	Golden Angkor Computer	Used computers	#155 Eo, St. Kampuchea Krom, Khan Toulkok, Phnom Penh; Tel: 012 494 986
4	Ly Chengheng Sell Electronic Spare Parts	Sale spare-part and used electronic items	#188, St. 107, Orusse, Khan Prampy Makara, Phnom Penh
5	Hong Leng Hour Import-Export and Transportation Co. Ltd.	Sale and repair of air-cons and refrigerators	#29, St 360, Toul Svay Prey I, Khan Chamkarmon, Phnom Penh Tel: 012 840 545

²³ The sum of generated residues in average percentage in the Table 18 in the Sub-section 5.5

²⁴ The sum of generated residues in average percentage in the Table 18 in the Sub-section 5.5

²⁵ There is neither available telephone number nor e-mail address of the imported UEEE stakeholders

However, information obtained from the check-point in Sihanoukville port, which indicated that importations of UEEE via this check-point are done under the strict control/monitor of government institutions before transporting to Phnom Penh Municipality where storage centers and distributed depots are located, including Sihanoukville City. On the other hand, there is not available data/information related to specific imported UEEE. Following is the list of stakeholders who are involved in UEEE importation.

Table 5: List of additional UEEE importers

No.	Stakeholder Name	Types of used EEE handled	Contact information Address ²⁶
1	A Star Holding Co, Ltd	Used air-conditioners and spar part	No.79BC, Kampuchea-Krom 128 Sangkat Monorom, Khan 7 Makara, PP
2	SRM/MP Import-Export Co, Ltd.	Used refrigerators	No.56Ec1, St.336, Boeung Salang, Khan Toulkok, PP
3	NHL Import-Export Co, Ltd	Used electronic items	Group5, Road 2, St.4, Khan Mettapheap, Sihanoukville
4	Visrun Hong Co, Ltd	Used electronic items	#96, St.280, Group34, Olympic, Chamkarmon, PP
5	H.T.N Import-Export Co, Ltd	Used electronic items	Group4, St.2, Khan Mettapheap Sihanoukville
6	Golden Valley International Co, Ltd	Used washing machine	No.79BC, St. 128, Monorom, Khan 7 Makara, PP
7	Yong Te Import-Export Co, Ltd	Used electronic items	No.103C, St.108, Wat Phnom, Khan Don Penh, PP
8	Hong Leng Hour Import Export Transportation Co., Ltd	Used electronic items	No. 8, Mondul 2, Sangkat 4, Khan Mittapheap, Sihanoukville
9	Hong Leng Hour Import Export Transportation Co., Ltd	Used electronic items	No. 29, St. 360, Toul Svay Prey I, Chamkarmon, Phnom Penh
10	Ly Chengheng	Sell electronic spare parts	No. 188, St. 107, Orussey, Khan Prampy Makara, Phnom Penh
11	Golden Angkor Computer	Used computer	No. 155Eo, St. Kampuchea-krom, Khan Toulkok, Phnom Penh
12	Sin Vana	Sell new/second hand and repair all kinds of air-con	No. 59Eo, St. 217 Samdech Monyreth Bulv, Phsar Doem Kor, Khan Toul Kok, Phnom Penh

²⁶ There is neither available telephone number nor e-mail address of the imported UEEE stakeholders

During the survey in selected cities and provinces, the Team got some information from people who work in repairing/dismantling shops about their partners who often bought final products and/or repairing UEEE as given in table below.

Table 6: Partners' list of UEEE repairing shops, and final products buying

No.	Name	Type	Contact information address
Repairing partners			
A. For MP			
1	China Asian I	Domestic	#89+91, Kampuchea Krom, Bldv, Phnom Penh, Tel: 012 901 150
2	China Asian II	-	#44Eo, St.83, Phsar Thmey, Khan Doun Penh , Phnom Penh, Tel: 011 704 979
3	China Asian III	-	#59Eo, St.144, Phsar Kandal, Khan Doun Penh , Phnom Penh, Tel: 011 269 880
4	Sok Pheng I	-	Phnom Penh, Tel: 011 866 669
5	Sok Pheng II	-	Phnom Penh, Tel: 011 955 552
B. For computer			
6	Mr. TY	Domestic	Auressei, Phnom Penh
7	Mr. Kosal	-	Svay Rieng Province
8	Mr. Dara	-	Rattanakiri province
C. Refrigerator and air-con			
9	Mr. Sina	Domestic	St. Kampuchea Krom, Phnom Penh
10	Mr. Nith	-	Bar-Sky, Battambang Province
D. For TV			
11	Mr. SAON	-	Chbar Ampeu, Phnom Penh
Final product buying partners			
12	Meas Saveoun	Final Products	Kampong Chhnang Province
13	Vanna	-	Toul Tompong, Phnom Penh
14	Daneth	-	Toul Tompong, Phnom Penh
Buying partner of reusable/recyclable part			
15	Eng Heng Phere Shop	Reusable part	#251Eo, Monivong Blvd, Phnom Penh, Tel: 012 414 188
16	Hak Se	-	#142Eo, Sihanouk Blvd, Phnom Penh, Tel: 012 339 993
17	TY Hourt	-	#60Eo, St.137, 7 Makara, Phnom Penh, Tel: 016 880 977
18	Ky Hourt	-	#21Eo, St.199, Phnom Penh, Tel: 011 973 111

On the other hand, for understanding the types of second hand shop, repairing/dismantling shop in PPM and major areas, *please see Annex-1*.

In Cambodia, UEEE repairing/dismantling shops are mostly located at urban and town areas. These shops have a small scale (or family level) which locate in urban and town areas. Following is the summarized description company profile implicating the UEEE/EEW.

- Repair shop – a workshop engages the repairing of broken/un-functioning UEEE getting from households, business entities, imported companies and so on. Sometimes, repair shop's owners buy broken/un-functioning UEEEs from households and business entities for self repairing and sale them.
- Dismantler – a particular UEEE dismantling shop does not exist in Cambodia yet. But dismantling process is commonly done in repair shops. For instance, at UEEE warehouses/depots, both repair and dismantled services generally are provided, otherwise, one of the two is done as demanded.
- UEEE collecting company/enterprise does not exist in Cambodia so far. Collector is a waste collecting buyer (*for more understanding see the description in Sub-section 3.3.3 below*) who has an occupation to buy recyclable or reusable UEEE/EEW from households, business entities, and repair/dismantled shops at urban and town areas by using hand-card, bicycle or motorcycle.

3.3.3 Level of Repair/Refurbishment

Cambodian situation differs from other countries in the region. Cambodia does not have a company/enterprise that collects/buys un-functioning or broken UEEE from households and offices, except those who buy recyclable or reusable UEEE/EEW as occupation – in this report, he/she is called the waste collecting buyer (as a family scale). At urban and town areas, waste collecting buyers collect and buy any kind of recyclable and useable materials (e.g. UEEE/EEW, aluminum tin/can, ULAB, plastics, rubber, etc.) and sell finally to scrap yard's owner for external exporting. Un-functioning/broken UEEE, at households and offices, were either separately brought or sold to repairing/dismantling shops, or sold directly to waste collecting buyers. Very few scrap yards related to UEEE were found during the survey, because: (i) survey period was shorter; and (ii) some location were not revealed by concerned agencies and some locations they do not know. However, the Team did not get answers or results from waste collecting buyers and/or scrap-yards' owners during the survey, although the Team tried to seek a way to explain them. Perhaps, the scrap yards' owners considered that answering to the Team's questionnaires will affect to their occupation.

Commonly, repairing processes of few items of TV, air-con, mobile phone, refrigerator, computer, washing machine, and other EEE are simply done because Cambodia so far does not have a modern technology, and sectoral awareness is very limited too. Some broken/un-functioning EEE, (e.g. lap top computer) have to be sent to selling shop, and finally sent to original country for fixing, when this shop cannot operate by itself.



Pic. 14: Simple methodology using for TV repairing in Phnom Penh Municipality

As an observation, very simple methodology has been used to repair UEEE although in cities and towns, especially, mobile phone, TV and desk-top computer, etc. The outdated methodology is being applied so far including:

- Using the testing facility to identify un-functioning/broken parts of EEE/UEEE or identify useable parts (spare-parts) for next using.
- Withdrawal/removal of unfunctioning/broken parts, cleaning and installing spare-parts, and connecting them afterward. In the case of withdrawal /removal of useable parts (from dismantled process), these parts will be used with others to become another appropriate functioned set.
- Re-testing will be done to emphasize whether repaired EEE/UEEE has function or not. If not, re-testing and repairing will do once more. Remarkably, Cambodia does not have a capacity including modern facility to repair a broken part, except using a spare-part instead.



Pic. 15: Simple methodology using for MP repairing in Kampong Cham Province

The method used for repairing the air-con and the refrigerator is very simple too, however, some repaired-shops use a pumping-machine to take gases out before the repairing process. This case indicates that repairing shop's owners have some awareness on atmospheric pollution and public health impact, therefore, they supported and participated in the activities towards environmental and human health maintenance and protection as much as possible.



Pic. 16: Simple methodology using for air-con repairing in Phnom Penh Municipality



Pic. 17: Simple methodology using for PC repairing in Kandal Province

With reference to the respondents' estimation towards receiving of reusable parts, recyclable materials and residues in the process of repairing (based on question to 100 units), we can estimate the total receiving parts²⁷ in a percentage as indicated in table below.

Table 7: Estimated ratios of reusable/recyclable materials and residues generating from repairing process (final products)

Type of UEEE	Reusable parts (in percent)	Recyclable materials (in percent)	Residues (in percent)
<i>a) TV</i>			
CRT	55.5	39.2	5.3
LC	57.4	42	0.6
<i>b) Computer</i>			
Desktop	67.50	31.15	1.35
Notebook	79.50	17.80	2.70
<i>c) MP</i>	65.50	31	3.50
<i>d) Air-con</i>	58	41	1
<i>e) Refrigerator</i>	58.2	40.6	1.20

3.3.4 Level of Dismantling and Recycling

There is no technology that has been presented and used for dismantling and recycling of the selected items of UEEE (e.g. TV, refrigerator, air-con, computer, MP and washing machine) even in Phnom Penh Municipality.

Dismantling is usually applied to un-functioning/broken UEEE which needs serious repairs (with high expenditure but receives low level outcome) – it means this UEEE had been severely damaged. Reusable parts recovered from dismantling process were kept separately (by types) for selling to repair shops on demand basis. Besides reusable parts, recyclable materials are bought by waste collecting buyers (with lower price). As described above, waste collecting buyers sell these recyclable parts/wastes to scrap yard's owners for external export. The rests beside these two types of parts²⁸ are disposed with municipal wastes.

With reference to the respondents' estimation about the generation of reusable parts, recyclable materials and residues in the process of dismantling (based on the answers per 100 units), we can estimate the total recovering parts²⁹ in a percentage as indicated in table below.

²⁷ That is a sum of total outcomes getting from all interviewed repaired shops

²⁸ The two types of parts reusable and recyclable parts

²⁹ That is a sum of total outcomes getting from all interviewed dismantling shops

Table 8: Estimated rations of reusable/recyclable materials and residues generating from dismantling process

Type of UEEE	Reusable parts (in percent)	Recyclable materials (in percent)	Residues (in percent)
<i>a) TV</i>			
CRT	47.50	44	8.50
LC	97	2.6	0.40
<i>b) Computer</i>			
Desktop	57.50	39.50	3
Notebook	68.30	29	2.70
<i>c) MP</i>			
	56	35	9
<i>d) Air-con</i>			
	52.50	44	3.50
<i>e) Refrigerator</i>			
	51.6	37	11.40

Cambodia does not have enough capacity and related facilities (including its technology) for recycling. In this regard, recyclable materials recovered from UEEE are exported to other countries for recycling. On the other hand, little information about exported of recyclable materials was received by the Team during the survey.

3.3.5 Disposal Method for Residues

The residues' disposal method in this report focuses on residues generating from UEEE repair/dismantling processes, and of course, recycling process has not applied in Cambodia yet. The survey result shows that most residues are discarded as municipal wastes. Tables below indicated separately the disposal ways of residues generating from repair/dismantling processes.

Table 9: Way of residue disposal (repair process)

EEW by types	Surveyed sources' number	Way of disposal (in per cent)	Miscellaneous
<i>a) TV</i>			
Glass	54	Disposal as municipal waste (88.90%)	
		Give away (1.85%)	
		Other (9.25%)	Throw away, sharp objects at the fence-top, put at their own lands
Glass with lead (CRT)	68	Disposal as municipal waste (94%)	
		Pay for disposal (1.50%)	Asking a motor-taxi/tri-cycles' drivers to take those wastes to dispose at dumpsite with agreed-payment while waste collection service do not provide
		Give away (3%)	
		Other (1.50%)	Throw away, put at their own lands
Mixture of different types of materials	145	Disposal as municipal waste (100%)	
<i>b) Computer</i>			
Glass	5	Disposal as municipal waste (60%)	
		Other (40%)	Throw away, dispose in slot, put at their own lands

Glass with lead (CRT)	4	Disposal as municipal waste (100%)	
Rechargeable battery	6	Disposal as municipal waste (66.70%)	
		Other (33.30%)	Throw away, dispose in slot, put at their own lands
Mixture of different types of materials	21	Disposal as municipal waste (100%)	
c) MP			
Rechargeable battery	62	Disposal as municipal waste (88.70%)	
		Pay for disposal (6.45%)	Asking a motor-taxi/tri-cycles' drivers to take those wastes to dispose at dumpsite with agreed-payment while waste collection service do not provide
		Other (4.85%)	Throw away, dispose in slot, put at their own lands
d) Air-con and refrigerator			
CFC	56	Destruct on the premises (33.90%)	
		Do not collect (1.80%)	
		Other (64.30%)	Free discharging into the environment

Table 10: Way of residue disposal (dismantling process)

EEW by types	Surveyed sources' number	Way of disposal	Miscellaneous
a) TV			
Glass	22	Disposal as municipal waste (95.45%)	
		Pay for disposal (4.54%)	Asking a motor-taxi/tri-cycles' drivers to take those wastes to dispose at dumpsite with agreed-payment while waste collection service do not provide
Glass with lead (CRT)	26	Disposal as municipal waste (96.15%)	
		Pay for disposal (3.85%)	
Mixture of different types of materials	74	Disposal as municipal waste (97.30%)	
		Give away (1.35%)	
		Other (1.35%)	Throw away, dispose in slot, put at their own lands
b) Computer			
Glass	4	Disposal as municipal waste (50%)	
		Other (50%)	Throw away, dispose in slot, put at their own lands
Glass with lead (CRT)	1	Disposal as municipal waste (100%)	
Rechargeable battery	5	Disposal as municipal waste (80%)	
		Other (20%)	Throw away, dispose in slot, put at their own lands
Mixture of different types of materials	20	Disposal as municipal waste (100%)	
c) MP			
Rechargeable battery	18	Disposal as municipal waste (83.30%)	
		Pay for disposal (11.20%)	Asking a motor-taxi/tri-cycles' drivers to take those wastes to dispose at dumpsite with agreed-payment while waste collection service do not provide
		Other (5.50%)	Throw away, dispose in slot, put at

			their own lands
Mixture of different types of materials	11	Disposal as municipal waste (100%)	
d) Air-con and refrigerator			
CFC	45	Destruct on the premises (29%)	
		Other (71%)	Free discharging into the environment
Mixture of different types of materials	41	Disposal as municipal waste (87.80%)	
		Other (12.20%)	Throw away, dispose in slot, put at their own lands

The residues are not separated specifically for the type of facilities/items. These residues are disposed close to/behind the repairing/dismantling shops in their possessed land, and finally burned by owners in some areas where municipal waste collection service cannot access or this area is located far away from the possible place of disposal.



Pic. 18: The disposal of TV screen mixing with domestic wastes



Pic. 19: Un-environmentally sound disposal of disable use of TV screen, Sihanoukville



Pic. 20: Un-environmentally sound disposal of EEE wastes in area closed to repairing shop, Sihanoukville

These pictures indicated that TV wastes and other EEE wastes are disposed improperly at areas next to repairing/dismantling shops or at opened areas mixed with domestic wastes, even in PPM and other cities/urban areas.

3.3.6 Environmental Problems due to Reuse/Recycling and Disposal of UEEE

As an observation during the survey and interview at designated sources of UEEE repairing and dismantling, the Team didn't find any cause and/or harmful problem to the environment, although environmentally unsound reuse/recycling or disposal of used EEE are practiced. However, some impacts might be occurred to human health, especially those who are directly involved with UEEE repairing/dismantling, when they conduct these processes without using safety equipment³⁰, for example, masks, sun-glasses, gloves, etc. It means those who engage these processes do not pay attention to safety.



Pic. 21: Unsafe practice for health protection and maintenance during a repairing process, PPM

Problems where the Team has identified during the survey occur from works relating to reuse and recycling. In the cases of TV and mobile-phone repair, the unintentionally happened-incidents frequently occur due to either technical mistake or carelessness, for example, capacitor-exploded, cable-fired.

The case of air-con and refrigerator is same as that of TV and Mobile-phone, but additional concerns – that is a free discharge of gases (CFCs) before repairing it. This practice commonly may cause atmospheric pollution while a repairer or dismantler is not aware or is aware but ignores it.



Pic. 22: Impractical repairing of air-con by local fixers, Kandal Province



Pic. 23: Impractical repairing of refrigerator by local fixers, Kandal Province

Based on above pictures, we can conclude that some repairing is conducted without environment consideration, for instance, repairing and refurbishing of air-con and

³⁰ For health precaution purpose

refrigerator was operated on the sidewalks, and of course, other liquid/wastes water and other wastes were disposed on the sidewalks without proper management.

On the other hand, residues of UEEE repairing/dismantling mixed with urban/town wastes are disposed at dumpsites. At most dumpsites, solid wastes and other garbage are unintentionally fired under high temperatures without any control of responsible agencies, except, proper dumpsite of PPM (supporting project by JICA Study Team). Other few cases of fires are also recognized to be occurred at dumpsites in some provinces and cities – these are: (i) improper disposal of lighted cigarette onto the garbage pile by waste pickers; and (ii) burning to reduce large amounts of garbage and other wastes at dumpsites. That is a cause of potential risk and hazard to scavengers³¹ and waste pickers. Taking this matter into deep consideration, the Team can conclude that open burning of UEEE residues and urban/town wastes is not merely harmful impacts to waste pickers and scavengers, but also pollutes ambient air quality, including the release of unintentional POPs by-products (dioxins and furans) into atmosphere.



Pic. 24: General view of dumpsite where some EEE residues were disposed at, PPM



Pic. 25: Opened burning of any kind wastes/residues at dumpsite in Kampong Cham Province

Through these two pictures, we recognize that scavengers/waste pickers usually have to confront to potential risks and hazards because of they directly contact and absorb harmful/hazardous wastes and other pollutants, unless, they have strictly pay attention to health precaution, and proper hazardous waste/residues management.

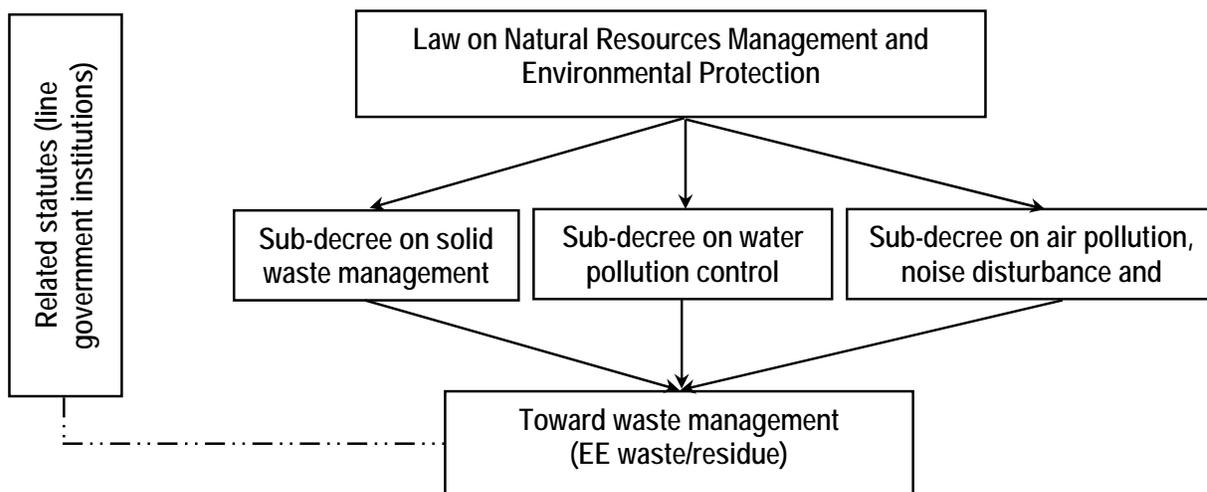
Up to now, there is no annual environmental report and/or newspaper addressing human health and environmental impacts, which caused from un-friendly environmental sound of EEW disposal. Reasonably, awareness and knowledge related to the environmentally sound management of EEW of concerned officers is limited, including an operational activity. However, the environmental report has addressed some concerns of environmental pollution resulted from: (i) opened burning of garbage/solid waste at dumpsite; and (ii) improper disposal at public areas and/or in other receiving sources (e.g. water source, low land areas, etc.).

³¹ Domestic animals

4.0 STATUS OF UEEE MANAGEMENT

4.1 UEEE and EE Residues Management's Legislations

Cambodia does not have a specific law or regulation aiming at managing UEEE/EEW. The Law on Environmental Protection and Natural Resources Management (1996) aims to manage various kinds of hazardous substances/wastes (solid, liquid, and gas) in order to prevent and get rid of public health impacts.



Pic. 26 : Legal instruments related to EE waste/residue management

The Article 13 in Chapter 5 of the Law stipulated that *“The prevention, reduction, and control of airspace, water [and] land pollution, noise and vibration disturbances, as well as waste, toxic substances, and hazardous substances, shall be determined by Sub-decree following a proposal of the Ministry of Environment”*. This stipulation indicates about the scope of the Law towards hazardous substances/wastes management, which is elaborately identified in the Sub-decree.

The Sub-Decree on Solid Waste Management (1999) aims to regulate hazardous substances/wastes and other residues based on the environmentally sound management to ensure the protection of human health and the conservation of biodiversity. A few Articles cover hazardous substances/wastes and UEEE residues management, these include as follows:

- *Article 15: “The storage, transportation and disposal of the hazardous waste shall be performed separately from the household waste which will be stipulated by the Prakas³² of the Ministry of Environment. The disposal of hazardous waste into*

³² A local call (Directive)

public sites, public drainage systems, public water areas, rural areas and forest areas shall be strictly prohibited”.

- *Article 20: “The exportation of the hazardous waste from the Kingdom of Cambodia to abroad could be conducted if there are an agreement from the Ministry of Environment, an export license from the Ministry of Trade, and a permit from the importing country. The exportation of the hazardous waste shall be consistent with the provisions and principles of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal in 1989 which come into force on May 05, 1992.”*

This Article focuses on the proper management in complying with national legal tools and international conventions, especially, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

- *Article 21: “The importation of the hazardous waste from abroad into the Kingdom of Cambodia is strictly prohibited.”*

That is the very strict prohibition of hazardous substance/waste importation into Cambodia for other purposes, although this activity can provide large benefits to the development or increase national incomes. Understanding the large potential hazards of UEEE with poor recovery – will pose high pressures not only on present generation but also our next generations, unless appropriate actions of the Government are taken, therefore, in the National Environmental Conference 2005, the Prime Minister, Samdech Hun Sen addressed clearly that *“Cambodia is not a waste dumpsite of foreign countries”*.

Besides the Sub-Decree on Solid Waste Management (1999), there are two relevant Sub-Decrees³³ such as: (i) Sub-Decree on Water Pollution Control (1999); and (ii) Sub-Decree on Air Pollution and Noise Disturbance (2000). For instance, *the Article 8 of the Sub-Decree on Water Pollution Control, stipulated that “The disposal of solid waste or any garbage or hazardous substances into public water areas or into public drainage system shall be strictly prohibited. The storage or disposal of solid waste or any garbage and hazardous substances that lead to the pollution of water of the public water areas shall be strictly prohibited.”* This Article strictly prohibits to all activities disposing hazardous wastes and other residues into water sources in order to protect and maintain public health and the environment.

The Sub-Decree on Air Pollution and Noise Disturbance will strictly control/monitor emissions from UEEE recycling and/or EEW burning. But this Sub-Decree seems to be unnecessary, because recycling process of UEEE does not existed in Cambodia right now.

4.2 Hazardous Waste Criteria

As mentioned earlier, Cambodia does not have a specific legislation to manage UEEE. However, some wastes are determined as hazardous waste in the Annex of the Sub-Decree on Solid Waste Management. They include as follows:

³³ They regulate open burning of hazardous wastes/residues which released pollutants into atmosphere and residues in water sources

- 1) Fibrous and clothing wastes from textile and garment industry
- 2) Paper waste from paper-mill industry
- 3) Sludge waste from factory wastewater treatment and product manufacturing processes
- 4) Combustion residues from coal-fired power plants
- 5) Plastics waste from production or use of plasticizers
- 6) PCB waste from use of PCB contained in discarded air conditioners, TVs and microwaves
- 7) Rubber waste from production or use of resins and latex
- 8) Oil waste from oil refinery, use of lubrication oils, washing oils
- 9) Acid waste
- 10) Alkali waste
- 11) Metal waste and their compounds: Zinc (Zn), Selenium (Se), Tin (Sn), Vanadium (V), Copper (Cu), Arsenic (As), Barium (Ba), Cobalt (Co), Nickel (Ni), Antimony (Sb), Beryllium (Be), Tellurium (Te), Lead (Pb), Titanium (Ti), Uranium (U), and Silver (Ag)
- 12) Soot and dust waste from incineration facilities, treating exhaust gas
- 13) Wastes from used or discarded electricity lamp
- 14) Wastes from production or use of battery
- 15) Wastes from production and use of paints, lacquers and pigments
- 16) Wastes from production and use of inks and dyes
- 17) Explosive wastes
- 18) Infectious diseases wastes
- 19) Agriculture drugs wastes
- 20) Ash wastes from incinerators
- 21) Wastes from expired products
- 22) Wastes from production and use of film
- 23) Waste from treatment of polluted soil
- 24) Waste from production of drugs and medicines, and expired drugs
- 25) Inorganic fluorine wastes
- 26) Cyanide wastes
- 27) Asbestos wastes
- 28) Phenols wastes
- 29) Ethers wastes
- 30) Wastes from production and use of solvents
- 31) Wastes from production and use of dioxin and furan
- 32) Radioactive wastes
- 33) Wastes produced as a result of treating above item 1-32

By above hazardous waste criteria, we find that some EEWs are under the control of the Sub-Decree on Solid Waste Management. These listed in some points of: 6); 11); 13; 14; and 21).

With regard the limitation of awareness and knowledge of concerned officers, the application of EEW management abides by the Sub-Decree still insufficiency, which requires strengthening and promotion. Significantly, the specific legal instrument aiming at controlling and monitoring activities related UEEE/EEW does not exist.

4.3 Management Status of Import of UEEE

4.3.1 Managerial procedure

All importation of brand new/second hand EEE and other items must be clearly declared in writing by importers to competent authorities, namely, Dept. of Customs and Excises (MoEF), and Dept. of Kamcontrol (MoC) for approval based on the national legal tools and international procedures. Practicably, imported materials/products including EEEs/UUEEs are controlled at check-points by both competent authorities before allowing to transport to a final location³⁴.

In March 2002, the Department of Customs and Excises issued the crucial announcement to SGS office in Cambodia and all custom-officers who do their jobs at offices and at respective check-points. The announcement emphasized the Government principle to intercept and ban the importation of old computer/spare-parts of which enter into force on 01 April 2002, unless this importation for self consumption³⁵ and/or for charity purposes with official permission from competence authorities.

Recently, the Government of Cambodia has adopted the Sub-Decree on Business Facilitation by Risk Management in 2006 which aims to: (i) improve the importation/exportation processes of goods and other facilities in complying with the national laws/regulations and international agreements/protocols; (ii) effective management and monitoring; (iii) lower cost in service compared to other adjacent countries; (iv) authorize functions/duties of line institutions at check-points; and (v) facilitate a rapid and easier way to importers/exporters.

As indicated in the objective (i) *“improve the importation/exportation processes of goods and other facilities in complying with the national laws/regulations and international agreements/protocols”*, this Sub-Decree will effectively monitor/control all UEEE importation processes and other materials/products (including any exportation) to abide by the national legal instruments (e.g. Law on Environmental Protection and Natural Resources Management; Sub-Decree on Solid Waste Management) and international conventions/protocols (e.g. Basel Convention; Montreal Protocol). Countermeasure will be applied when these processes offended these national/international legal instruments.

4.3.2 Action taken by Manufactures

Cambodia so far does not produce any EEE. There is no manufacture engaged in recycling of EEW/residues. The survey could not find a trace of EEW recycling,

³⁴ A specific company warehouse/depot

³⁵ in small amount only

except the repairing/dismantling practice with lowest technology at repairing and dismantling shops. There is no action which taken by foreign manufactures/companies to collect EEW/residue from repairing/dismantling shops. In a short, there is neither EEW collection system nor a buy-back procedure. However, EEW is individually collected by waste pickers³⁶ and sell to local scrap yard owner, according to market demands. Pertaining with this matter, the perception towards the environmentally sound management of UEEE/EEW, including buy-back policy has not existed yet among public and private sectors.

³⁶ *Residues that still have less values*

5.0 ESTIMATION OF UEEE AND ITS WASTE GENERATED

5.1 Amount of Brand-new EEE domestically produced/shipped and imported/exported)

Up to now, Cambodia cannot produce EEE products, and of course, EEE industry also does not present in this country. Therefore, responding to domestic demands, EEE and UEEE are imported from various countries in the region and the globe as well. As mentioned earlier, there is not available information about the exportation of EEE/UEEE to other countries in the region, except importation for self supply (domestic supply).

Outcomes of the Desk-study indicated that the statistics of imported EEE obtained from line government institutions, do not separate brand-new from second hand items, because UEEE has become a new issue for the last few years in the KoC. However, understanding on the environmentally sound management of e-waste is very important to help Cambodian people by which the environment stands in better conditions. This concept is being mainstreamed into line institutions and agencies. Therefore, a separation of statistics of EEE and UEEE will be realized in the forthcoming year.

Imported amount of some selected EEE is indicated in *the Table 1 in Sub-Section: Desk-study's outcomes.*

5.2 Purchase and Use Pattern

The purchase and use pattern in selected areas is almost the same, however, it varies by the scope of use. The survey indicated that Phnom Penh Municipality is a major area using EEE/UEEE more than other provinces, because this Municipality is the centers of economy, business, policy, culture, etc. of the nation. Vice versa, Svay Rieng Province is a low-income province compared to Phnom Penh Municipality and other selected provinces, therefore, the consumption of EEE/UEEE is still limited for households and business entities/institutions.

Table below is separately indicated the survey outcomes of the purchase and use pattern by types of brand-new and second EEE. Please note that for fulfilling the *Questionnaire for Households*, the Team has ranged the family income based on the real family situation/view. This is why local people incomes (cities and provinces) are not the same, and therefore some people have capability to afford EEE/UEEE for consumption, while others still have nothing. In this regard, it will have a great mistake if we conduct an interview merely with high income families.

The Team took different samples of three category incomes of the surveyed families: (i) 61 households for high income families (or 15.25%); (ii) 267 households for medium income families (or 66.75%); and (iii) low income families for 72 households (or 18%).

For the *Questionnaire for Business Entities and Institutions*, the Team has ranged the hotels by rooms (e.g. small: 1-15 rooms; middle: 15-25 rooms; and large is more than 25 rooms), and the offices by employees (small: 1-7 employees; middle: 7-15 employees; and large: more than 15 employees).

Different samples for business entities and institutions (hotels and offices) were taken with different categories as follows:

- a) For hotels: large – 26 hotels (or 48.15%); medium – 16 hotels (or 29.63%); and 12 hotel (or 22.22%) are small.
- b) For offices: large – 31 offices (or 20.80%); medium – 29 offices (or 19.46%); and 89 offices (or 59.74%) are small.

Table 11: Purchase/Use pattern of TV in the Kingdom of Cambodia

Item	User									Business Entry & Institution																									
	Household (by income level)									Hotel (By # of rooms)									Office (by # of employees)																
	High			Middle			Low			Small			Medium			Large			Small		Medium		Large												
(1) Average # of EEE currently possessed (Q1-12)	2.33			1.44			1.11			10.50			22.06			43.55			1.20		1.17		1.90												
(2) Type of EEE currently possessed (Q1-2-1)	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD	CRT	Mono	LCD								
	98.44 %	0 %	1.56 %	95.26 %	3.16 %	1.58 %	96.70 %	3.30 %	0 %	100 %	0 %	0 %	100 %	0 %	0 %	99.37 %	0 %	0.63 %	97.54 %	0.82 %	1.64 %	100 %	0 %	0 %	100 %	0 %	0 %								
(3) Ratio of imported EEE to total EEE currently possessed (Q1-2-2)	100 %			100 %			100 %			100 %			100 %			100 %			100 %		100 %		100 %												
(4) Average duration ³⁷ for used of discarded EEE (in year) (Q1-2-01) and (Q1-2-3)	Branch-new			6			6			6			6			6			7		6		5												
	Second-hand			4			-			4			3			4			-		-		4												
(5) Way to obtain EEE currently possessed (Q1-2-4)	B	G	O	B	G	O	B	G	O	B	G	O	B	G	O	B	G	O	B	G	O	B	G	O	B	G	O								
	97.54 %	2.46 %	-	98.97 %	1.03 %	-	100 %	-	-	100 %	-	-	100 %	-	-	100 %	-	-	99.07 %	-	0.93	100	-	-	100 %	-	-								
(6) Ratio of second-hand and branch-new EEE possessed (Q1-2-5) and	N		S		N		S		N		S		N		S		N		S		N		S												
	89.34 %		10.96 %		82.01 %		17.98 %		75.56 %		24.44 %		53.97 %		46.03 %		67.46 %		32.54 %		81.23 %		18.77 %		79.82 %		20.18 %		88.24 %		11.76 %		90 %		10 %
(7) Disposal method (Q1-2-6)	Discarded ³⁸									100 %			91.58 %			88.89 %			89.47 %			63.16 %			97.66 %			92.86 %		50 %		14.23 %			
	Currently ³⁹ possessed									-			8.42 %			11.11 %			10.53 %			36.84 %			2.34 %			7.14 %		50 %		85.71 %			

Legend:

B: Bought

G: Given to someone N: Brand-new

S: Second-hand

O: Others

³⁷ The calculation of average consuming duration was done based on the answer from interviewees (respondents)

³⁸ It includes: (i) Discard together with the other wastes for municipal waste collection; (ii) Give / sell to the collectors; and (iii) Pay to the collector

³⁹ It includes: (i) Bring to the recycling station/centre etc.; (ii) Keep at home without any specific purpose; and (iii) Keep at home and reuse for specific purposes

Table 12: Purchase/Use pattern of computer in the Kingdom of Cambodia

User		Household (by income level)									Business Entry & Institution																	
		High			Middle			Low			Hotel (By # of rooms)			Office (by # of employees)														
		Item			Item			Item			Small			Medium			Large											
(1) Average # of EEE currently possessed (Q1-12)		1.15			0.59			0.13			0.50			0.94			0.15			6.84			5.90			12.45		
(2) Type of EEE currently possessed (Q1-2-1)		D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book	D.CRT	D.LC	N.book
		75 %	15.63 %	9.37 %	80.52 %	7.14 %	12.34 %	100 %	-	-	100 %	-	-	80 %	20 %	-	80 %	20 %	-	82.45 %	16.70 %	0.85 %	93.02 %	4.46 %	2.33 %	76.94 %	7.25 %	15.81 %
(3) Ratio of imported EEE to total EEE currently possessed (Q1-2-2)		100 %			100 %			100 %			100 %			100 %			100 %			100 %			100 %					
(4) Average duration ⁴⁰ for used of discarded EEE (in year) (Q1-2-0 1) and (Q1-2-3)		Branch-new		5		5		-		-		3		5		5		3		4								
		Second-hand		3		2		-		-		3		-		3		2		2								
(5)Way to obtain EEE currently possessed(Q1-2-4)		B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O
		92.21	7.79 %	-	96.25	3.75 %	-	100 %	-	-	100 %	-	-	100 %	-	-	100 %	-	-	92.18	0.16 %	0.66 %	93.36	6.64 %	-	91.01 %	6.27 %	2.72 %
(6) Ratio of second-hand and branch-new EEE possessed (Q1-2-5) and		N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S			
		68.66 %	31.34 %	54.29 %	45.71 %	66.67 %	33.33 %	80 %	20 %	88.89 %	11.11 %	76.47 %	23.53 %	48.07 %	51.93 %	68.13 %	31.87 %	80.79 %	19.21 %									
(7) Disposal method (Q1-2-6)		Discarded ⁴¹		82.35%		94.12%		-		-		66.67%		40%		56%		79.31%		90.67%								
		Currently possessed ⁴²		17.65%		5.88%		-		-		33.33%		60%		44%		2.69%		9.33%								

⁴⁰ The calculation of average consuming duration was done based on the answer from interviewees (respondents)

⁴¹ It includes: (i) Discard together with the other wastes for municipal waste collection; (ii) Give / sell to the collectors; and (iii) Pay to the collector

⁴² It includes: (i) Bring to the recycling station/centre etc.; (ii) Keep at home without any specific purpose; and (iii) Keep at home and reuse for specific purposes

Table 13: Purchase/Use pattern of mobile phone in the Kingdom of Cambodia

User Item		Household (by income level)									Business Entry & Institution															
		High			Middle			Low			Hotel (By # of rooms)			Office (by # of employees)												
		Small	Medium	Large	Small	Medium	Large	Small	Medium	Large																
(1) Average # of EEE currently possessed (Q1-12)		3.97	2.63	1.3	0.75	1.13	4.33	0.84	1.83	3.94																
(2) Type of EEE currently possessed (Q1-2-1)																										
(3) Ratio of imported EEE to total EEE currently possessed (Q1-2-2)		100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %																
(4) Average duration ⁴³ for used of discarded EEE (in year) (Q1-2-0 1) and (Q1-2-3)	Branch-new	3	3	2	2	3	5	3	3	4																
	Second-hand	3	2	2	—	—	—	3	2	2																
(5)Way to obtain EEE currently possessed(Q1-2-4)		B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	
		98.45%	1.55%	I	98.61%	1.39%	I	100%	I	I	100%	I	I	100%	I	I	97.78%	I	2.22%	98.85%	I	1.15%	96.23%	3.77%	I	97.56%
(6) Ratio of second-hand and branch-new EEE possessed (Q1-2-5) and		N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S			
		91.28%	8.72%	84.49%	15.01%	77.08%	22.92%	100%	I	94.73%	5.27%	97.87%	2.13%	92.05%	70.95%	98.11%	1.89%	91.80%	8.20%							
(7) Disposal method (Q1-2-6)	Discarded ⁴⁴	93.40%	95.81%	96.97%	100%	100%	66.67%	100%	91.67%	86.67%																
	Currently possessed ⁴⁵	6.60%	4.19%	3.03%	—	—	33.33%	—	8.33%	13.33%																

⁴³ The calculation of average consuming duration was done based on the answer from interviewees (respondents)

⁴⁴ It includes: (i) Discard together with the other wastes for municipal waste collection; (ii) Give / sell to the collectors; and (iii) Pay to the collector

⁴⁵ It includes: (i) Bring to the recycling station/centre etc.; (ii) Keep at home without any specific purpose; and (iii) Keep at home and reuse for specific purposes

Table 14: Purchase/Use pattern of refrigerator in the Kingdom of Cambodia

User Item		Household (by income level)									Business Entry & Institution															
											Hotel (By # of rooms)						Office (by # of employees)									
		High			Middle			Low			Small		Medium		Large	Small		Medium	Large							
(1) Average # of EEE currently possessed (Q1-12)		0.93			0.35			0.05			0.83		9.38		35.89	0.52		0.79	1.03%							
(2) Type of EEE currently possessed (Q1-2-1)																										
(3) Ratio of imported EEE to total EEE currently possessed (Q1-2-2)		100 %			100 %			100 %			100 %		100 %		100 %	100 %		100 %	100 %							
(4) Average duration⁴⁶ for used of discarded EEE (in year) (Q1-2-0 1) and (Q1-2-3)	Branch-new	4			6			-			-		-		4	5		-	5							
	Second-hand	3			3			-			-		2		-	3		-	-							
(5)Way to obtain EEE currently possessed(Q1-2-4)		B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	
		98.21%	1.79%		94.85%	5.15%		100%			100%			100%			99.08%		0.92%	100%			100%			97.30%
(6) Ratio of second-hand and branch-new EEE possessed (Q1-2-5) and		N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S					
		94.64%	5.36%	82.47%	17.53%	100%		70%	30%	79.49%	20.51%	93.20%	6.80%	92%	8%	95.65%	4.35%	97.22%	2.78%							
(7) Disposal method (Q1-2-6)	Discarded⁴⁷	88.23%			57.14%			-			-		100%		92.69%		100%		-	100%						
	Currently possessed⁴⁸	11.77%			42.86%			-			-		-		7.31%		-		-	-						

⁴⁶ The calculation of average consuming duration was done based on the answer from interviewees (respondents)

⁴⁷ It includes: (i) Discard together with the other wastes for municipal waste collection; (ii) Give / sell to the collectors; and (iii) Pay to the collector

⁴⁸ It includes: (i) Bring to the recycling station/centre etc.; (ii) Keep at home without any specific purpose; and (iii) Keep at home and reuse for specific purposes

Table 15: Purchase/Use pattern of air-conditioner in the Kingdom of Cambodia

User		Household (by income level)									Business Entry & Institution																							
		High			Middle			Low			Hotel (By # of rooms)			Office (by # of employees)																				
Item		High			Middle			Low			Small			Medium			Large																	
(1) Average # of EEE currently possessed (Q1-12)		1.41			0.18			0			4			17.69			39.81			1.26			2.90			5.68								
(2) Type of EEE currently possessed (Q1-2-1)																																		
(3) Ratio of imported EEE to total EEE currently possessed (Q1-2-2)		100 %			100 %			100 %			100 %			100 %			100 %			100 %			100 %			100 %								
(4) Average duration ⁴⁹ for used of discarded EEE (in year) (Q1-2-0 1) and (Q1-2-3)	Branch-new	5			-			-			3			4			8			7			4			4								
	Second-hand	3			2			-			-			3			4			-			2			4								
(5)Way to obtain EEE currently possessed(Q1-2-4)		B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O	B	L	O
		100%			97.96%		2.04%				100%			100%			100%			97.17%		2.83%			100%			83.52%		14.77%		1.71%		
(6) Ratio of second-hand and branch-new EEE possessed (Q1-2-5) and		N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S	N	S					
		94.67%	5.53%	83.33%	16.67%			65.96%	34.04%	66.30%	33.70%	92.89%	7.11%	80.36%	19.64%	72.09%	27.91%	84.15%	15.85%															
(7) Disposal method (Q1-2-6)	Discarded ⁵⁰	100%			-			-			100%			100%			94.97%			66.67%			86.67%			87.50%								
	Currently possessed ⁵¹	-			100%			-			-			-			5.03%			33.33%			13.33%			12.50%								

⁴⁹ The calculation of average consuming duration was done based on the answer from interviewees (respondents)

⁵⁰ It includes: (i) Discard together with the other wastes for municipal waste collection; (ii) Give / sell to the collectors; and (iii) Pay to the collector

⁵¹ It includes: (i) Bring to the recycling station/centre etc.; (ii) Keep at home without any specific purpose; and (iii) Keep at home and reuse for specific purpose

5.2.1 Analysis of the Household Survey Results

Households produce many kinds of wastes, including hazardous wastes. Many electrical and electronics appliances (e.g. TV, air-con, computer, mobile phone, refrigerator, washing machine, etc.) are recognized to pose serious impacts on the environment and human health when their lifetime is over and they are disposed in an environmentally un-sound manner. In this regard, the survey focused on TV, air-con, computer, mobile phone, and refrigerator. Following is the analytical outcomes of the survey by UEEE types.

a) For TV

Among the surveyed 400 households in the selected areas, larger percentage of households in Phnom Penh Municipality (PPM) own TV rather than other cities and provinces. Reasonably, people in PPM have high income with enough capability to afford it. On the other hand, people in PPM use color TV in many modern designs, while local people mostly use black-white TV with 14-16 inches screen, because it is cheap and can be used with battery⁵². Original countries of TV products of which imported into Cambodia include: China, Hong Kong, Japan, Korea, Netherlands, Singapore, Taiwan, Thailand, Australia, Indonesia, Malaysia, and USA (Statistics of imported EEE, 2004-2006). The average ownership ratio of TVs in the surveyed households in urban areas is very high (1.54 per household).

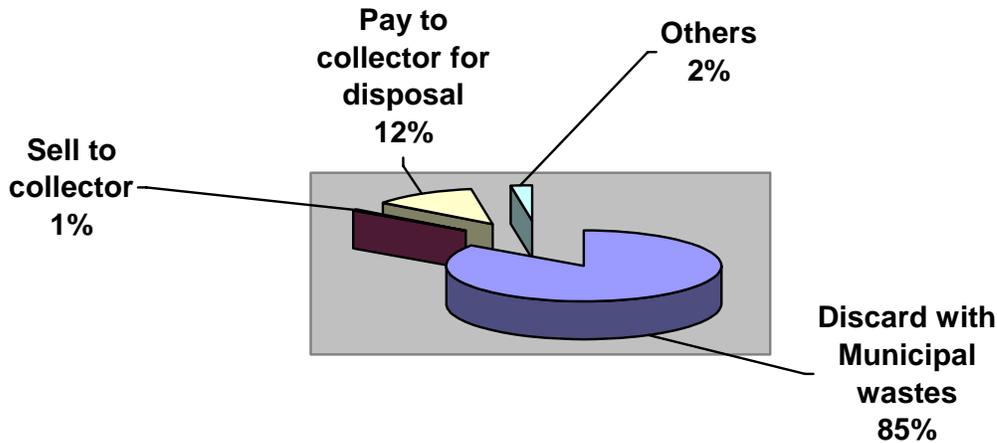
The survey indicated that low income families use black-white TV about 3.30% (ref. to Table 10), but color TVs rise up to 96.70%. These figures seem adverse to a rural people who mostly use black-white TVs, and they also inconsistent to the numbers of imported color and black-white TVs in the *Table 1: Statistics of Imported EEE in the KoC*. In this case, the Team has some crucial reasons to describe as follows:

- The survey has conducted to households at urban and downtown areas.
- Surveyed samples about 66.75% for medium income families, and low income families for 18%.
- In Cambodia, black-white TVs currently can transform to color TVs by repair shops.

The Team found that brand-new TVs were being used in 82.30% of the surveyed households. Unusable and/or improper functioning of second hand TV(s) were variously discarded according to local conditions, for example, discarded with municipal wastes 85%, soled to collectors 1%, and other 2% (donated to someone, or used as a flower/tree planting pot⁵³).

⁵²Most local area do not access to electricity supply, except urban areas and town

⁵³ Soil filling TV frame



Pic. 27: TV waste discard's practices

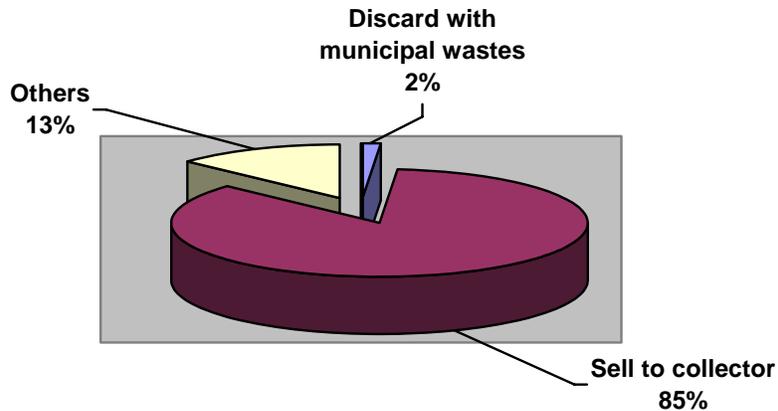
b) For Computer

As for the used personal computers (PCs), the surveyed 400 households have a minor quantity compared to adjacent countries in the region. PPM is actually recognized to use PCs more than other cities and provinces. Desktop computers rather than laptop computers were found during the survey to be used in households. Actually, new PCs are being used in households more than second hand items. The survey indicated that the ratios of second hand PCs and brand-new PCs used in the households are 36.80% and 63.20% respectively.

PCs are imported from many countries in the region and the globe such as: China, Hong Kong, Japan, Korea, Germany, France, Netherlands, Singapore, Srilanka, Taiwan, Thailand, Australia, Indonesia, Malaysia, and USA (Statistics of imported EEE, 2004-2006). The ownership ratio of PCs in surveyed households (age upper than 13 year old) in urban areas is 0.12 unit/person.

Some unusable and/or improper functioning of second hand PC was fixed at or sold to repairing shops or to waste collectors with a low price⁵⁴, or given to someone. The survey results indicated 1.5% was discarded with municipal wastes, sold to collector 85.5%, and other cases 13% (kept somewhere in a house, or donated to someone). On the other hand, beside domestic consumption, imported computers are not transported to other countries (ref. to the revealing of interviewees).

⁵⁴ This price is based on a negotiation between PC owner and shop-owner or waste-picker



Pic. 28 : Computer waste discard's practice

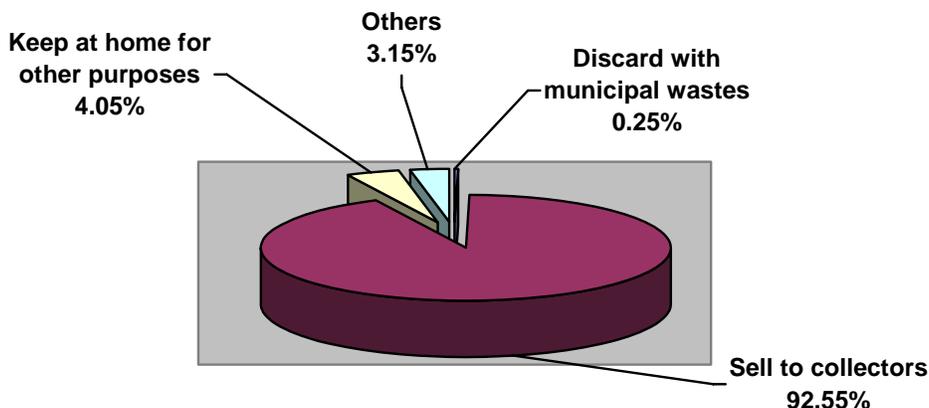
c) For Mobile phone

Used MP is not an imported object into Cambodia. It means Cambodian people use solely an imported brand-new MP⁵⁵, because it is a small item, low cost and difficult to repair when it is broken and/or un-functioned, meanwhile, Cambodia does not have any repairing related technology.

As a result of the survey, MP may be affordable and used by local people (for both urban and rural people). However, some poor people used second hand MP, which bought from repairing/selling shops. As said above, second hand MPs are domestically generated and do not include any importation from outside. People in medium and high-incomes' level often change their MPs to use new ones with modern design, therefore, they can sell their used MPs to selling/repairing shops. Brand-new MP(s) are imported from many countries in the region and the globe such as: China, Hong Kong, Japan, Korea, Germany, Netherlands, Singapore, Taiwan, Thailand, France, Vietnam, Italy, Nicaragua, Australia, Indonesia, Malaysia, and USA (Statistics of imported EEE, 2004-2006). The ownership ratio of MPs in the surveyed households in urban areas is 0.53 unit/person (age from 13 year old and upper).

Large amounts of new MP (84.45%) are being used compared to second hand items (15.55%) in the households surveyed. The survey additionally indicated 92.55% of used MPs were sold to collectors, 4.05% kept at home, and 1.0% disposed with municipal wastes.

⁵⁵ Any kind mobile phones



Pic.29 : MP waste discard's practice

Although Cambodia does not have specific capacity to fix MP, but some of broken and/or un-functioned MPs are dismantled to recover reusable spare-parts.

d) For Air-con

Air-con is generally used in PPM and some urban areas only, because the electricity supply can be sufficiently provided in these areas. Brand-new and second-hand air-cons are produced by China, Hong Kong, Japan, Korea, New Zealand, Singapore, Taiwan, Thailand, France, Switzerland, Vietnam, Italy, Malaysia, and USA (Statistics of imported EEE, 2004-2006). The survey found that 89.0% of air-cons used by the surveyed households are brand-new, and the rest is second-hand items. The ownership ratio of air-cons in the surveyed households in urban areas is 0.33 unit/household.

Air-con(s) that did not properly function were fixed at or sold to repairing shop or to waste pickers with a little price. Among 400 survey households, air-con wastes approximately 90% were sold to collectors and 10% were kept at home for other purposes.

e) For Refrigerator

Same as the case of air-con, refrigerator is mostly used in PPM and some urban areas only due to: (i) lacking of electricity supply in rural areas; and (ii) rural people still cannot afford this equipment because of their lower living conditions. Both brand-new and second-hand refrigerators are imported from original countries of: China, Hong Kong, Japan, Korea, New Zealand, Germany, Netherlands, Singapore, Taiwan, Thailand, Vietnam, Italy, Malaysia, Belgium, Denmark, Sweden, Philippines, Sri Lanka, India, Sweden, and USA (Statistics of imported EEE, 2004-2006). Among the 400 household surveyed, 92.37% of refrigerators owned by them are new, and 7.63% are used items. The ownership ratio of refrigerators in the surveyed household in urban areas is 0.38 per households.

Refrigerators that do properly function are fixed at or sold to repairing shops with little price. Among the 400 surveyed households, around 57.15% waste refrigerators are sold to collectors, and 42.85% are kept at home.

5.2.2 Analysis of Survey Results of the Business Entities and Institutions

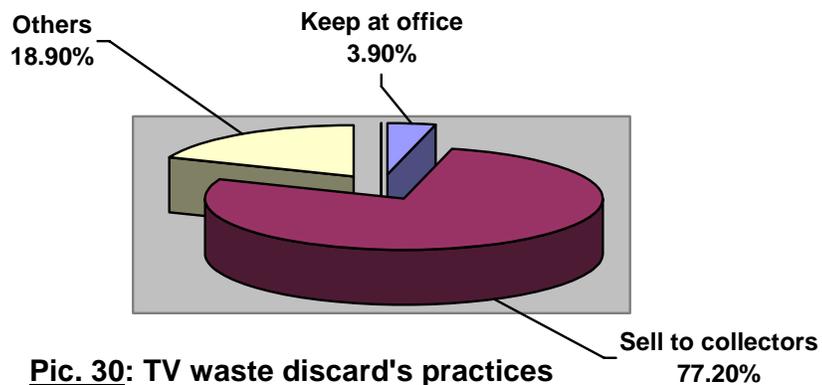
The Team surveyed 200 business entities and institutions comprising of hotels, enterprises, government institutions, organizations, private faculties/institutes, hotels and guesthouse. The survey outcomes are analyzed respectively below.

a) For TV

As mentioned in the household context, the business entities and institution using TV are mostly found in PPM and urban/town areas with access to electricity supply. There was no business entity/institution that use TVs with electricity current transforming from battery. Most TVs used in these entities are color TVs with different screen sizes, 14, 17, 21, 27, 29 inches.

The Team found that 76.78% of TVs are used in the surveyed business entities and institutions are brand-new, and 23.22% are second-hand items. TVs that do not properly function or are broken are sent to repairing shops or sold to waste collectors.

Among the 200 business entities and institutions, about 77.20% of waste TV were sold to collectors, 3.90% were kept at office's warehouse, and others 18.90% (donated to someone, supporting material⁵⁶, and disposed at urban waste disposal sites).



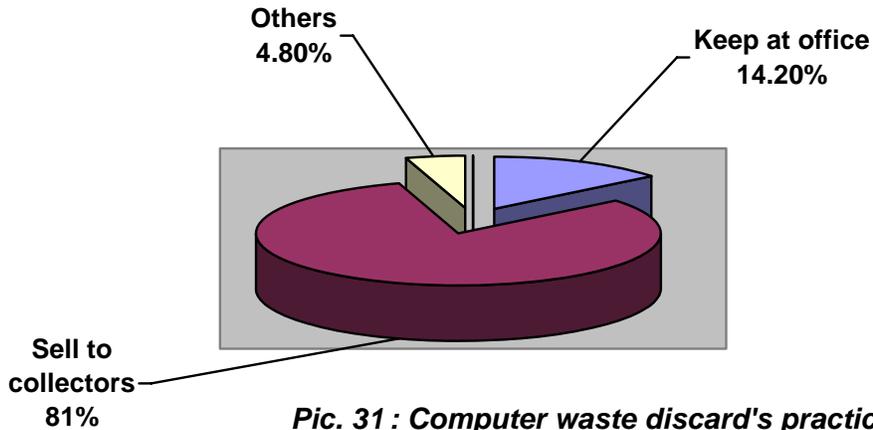
Pic. 30: TV waste discard's practices

b) For computer

Most PCs used in the business entities and institutions are desktop computers with different CPU types such as: Pentium I, II, III, IV, and OS types such as Window 95, 95-Se, 98, 2000, Window Xp, Window me, and the like. The ratio of business entities and institutions using PCs in PPM are higher than other cities and provinces. Desktop computers are being used more than laptop computers. Most of PCs (73.72%) are new, and the rest (26.28%) is second-hand.

⁵⁶ As an object to lift something at desired level

PCs that do properly function are fixed at or sold to repairing shops or to waste collectors with a low price. The survey results indicated computer wastes about 81% waste computers were sold to collectors, 14.20% are kept at warehouses, and donated to someone for 4.80%.

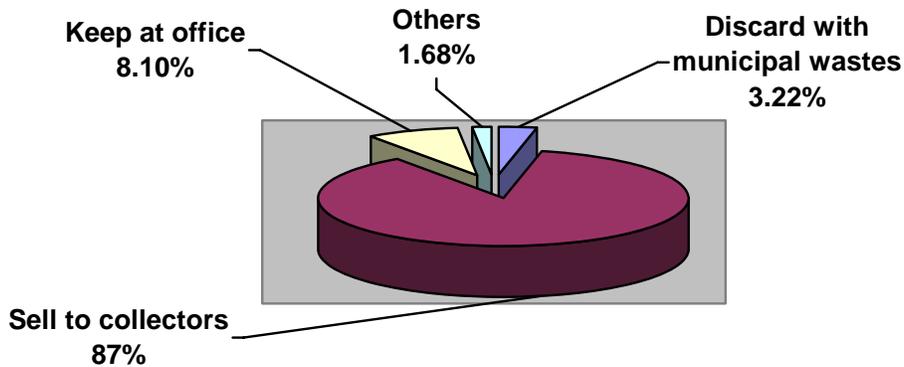


Pic. 31 : Computer waste discard's practices

c) For mobile phone

Most of business entities and institutions surveyed use both MPs and fixed-line phone (IDD). Because of market competition, technology and easy connection, MPs seem to be used more than fixedline phones even in PPM and other provinces and cities. However, both brand-new and second-hand MPs are being used, of which brand-new is 95.76% higher than second-hand items 4.24%.

The survey's outcomes indicated 87.0% of waste MPs were sold to collectors, kept at office's warehouse 8.10%, disposed with municipal waste 3.22%, and others 1.68% (discarded in dustbin, and used as children's toy).



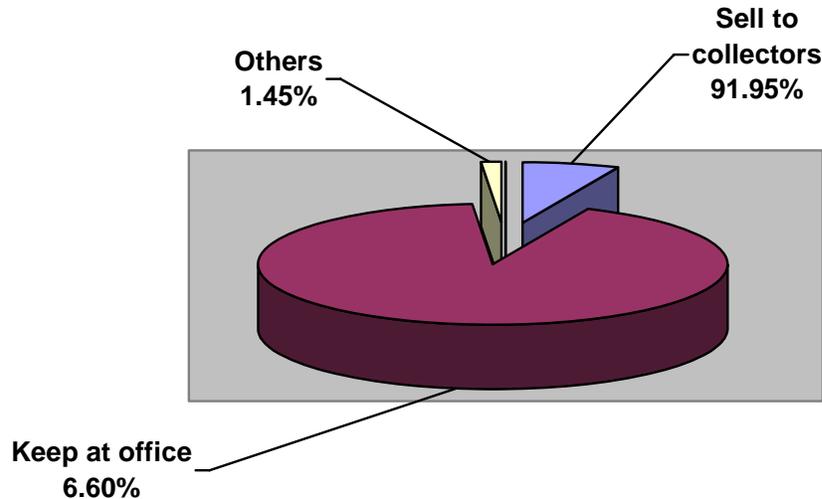
Pic. 32 : MP waste discard's practices

d) For air-con

Like a household condition, the survey on business entities and institutions indicates that both new and used air-con are generally utilized in these entities, even in PPM

and other urban/town areas⁵⁷. The second hand air-con(s) found in surveyed entities for 23% less than new items (77%).

The results also indicate that among the 200 surveyed entities, 91.95% of waste air-con are sold to collectors, kept at office's warehouse 6.60%, and others 1.45% (e.g. donated to someone, being kept on the wall without removal).



Pic. 33 : Air-con waste discard's practices

e) For refrigerator

Both new and second-hand refrigerators are mostly used in PPM and some urban areas as in the case of air-cons. The survey shows that the ratio of brand-new refrigerators currently used in the offices is 87.93% and second-hand 12.07%. In the business entities and institutions surveyed, 93.44% of waste refrigerators were sold to collectors, and 6.56% are kept at office warehouses.

5.2.3 Use Period of EEE/UEEE

The use period of EEE/UEEE varies by type of EEE, original quality, level of self maintenance, and using conditions and the like. In addition, the changing of EEE/UEEE model (updated model) and/or giving to somebody are also a major reason of shorter use period.

The survey has identified the use period of EEE into two cases: (i) brand-new item; and (ii) second-hand item. Second-hand EEE commonly has a shorter use period than a new item (*See table below*).

⁵⁷ Where access to electric supply or self-supply (e.g. by generator)

Table 16: Average lifetime of EEE/UEEE based on the survey outcomes

No.	EEE Product	Use period (year)			Total
		Brand-new	Use period as second-hand	Use period as brand-new ⁵⁸	
1	TV	5	4	6	10
2	PC	5	3	6	9
3	MP	3	2	5	7
4	Air-con	4	3	9	12
5	Refrigerator	5	3	9	12

5.3 Discarding of UEEE

The estimation of EEE waste's discard comprises two methods depending on available data accepting from line institutions and private sector, these include as follows:

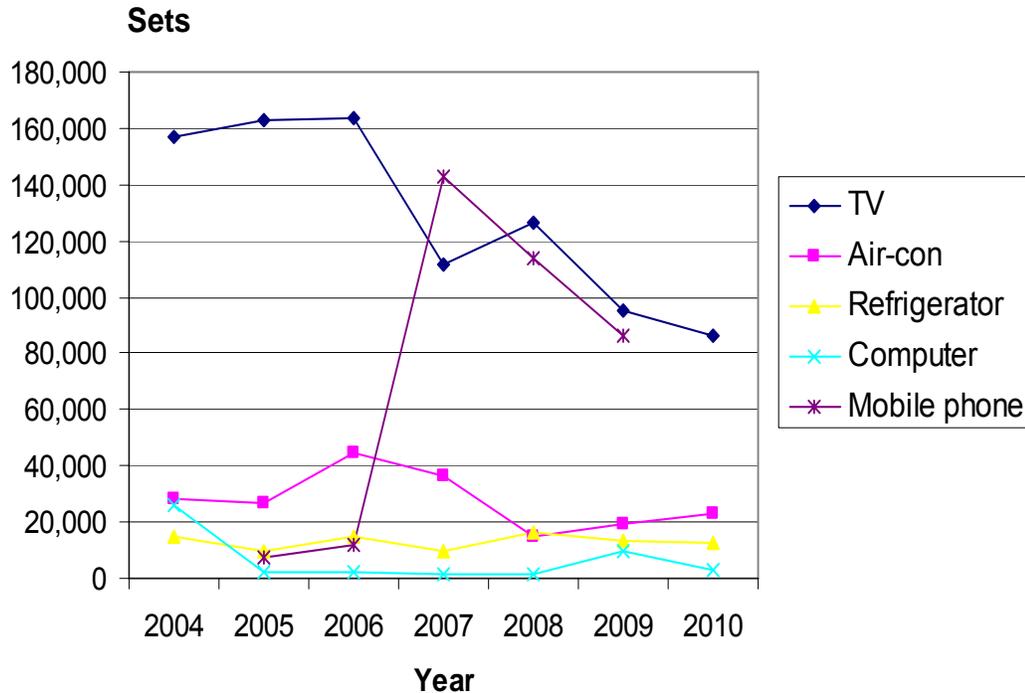
- The estimation based on consuming ratios of UEEE comparing to population number in specific period.
- The estimation based on imported quantity of EEE/UEEE comparing to average consuming lifetime of EEE/UEEE.

Therefore, the estimation of EEE waste's discard in this report was done by the estimated method as raised in b) above.

Table 17: Estimated EEW discard between 2004-2010

Year	Waste EEE Discard (sets)				
	TV	Air-con	Refrigerator	Computer	Mobile Phone
2004	157,096	28,408	15,172	26,342	
2005	162,557	26,450	9,640	1,863	7,356
2006	163,663	44,920	14,645	1,990	12,222
2007	111,538	36,698	9,895	1,852	142,990
2008	126,773	15,070	16,606	1,514	113,605
2009	95,269	19,331	13,464	9,381	86,438
2010	86,438	23,114	12,513	3,115	
Total	903,334	193,391	91,935	46,057	362,611

⁵⁸ The ages of most UEEE found at second hand shops in Cambodia



Pic. 34: Graph of estimated EEW discard, 2004-2010

Base on the outcomes of estimated waste EEE (TV, air-con, refrigerator, computer, and mobile phone) discard in above table and the real situation taking from interview survey, the Team can conclude as follows:

- Amount of TV waste was discarded in 2005 and 2006 for 162,557 sets and 163,557 sets respectively. These amounts are higher than other years between 2004 up to 2010. Remarkably, waste discards will reduce for the next four or five years. For instance, waste discard in 2009 will approximately 58.20% and in 2010 for 52.80% of the waste discard in 2006.
- In 2006 the air-con waste was discarded around 44,920 sets. This figure indicates that TV and air-con wastes were discarded in 2006 high than other recorded years. Waste discard in 2008 will lower than other year (2004-2010) that taking for 35.55% of the year 2006. If looking further to 2010, waste discard will increase for 34.8% comparing to the year 2008.
- Refrigerator waste discard in 2005 was lower than other year (2004-2010) around 9,640 sets and higher in 2008 with total amount 16,606 sets. However, refrigerator waste will discard around 81% and 75.40% in respectively years of 2009 and 2010 comparing to 2008.
- Computer waste discard in 2004 was 26,342 sets, and will follow by 2009 (9,381 sets, equally 35.60% of 2004) which higher than other observed years (2004-2010), while 2005-2008 waste discard are estimated around 5.70 – 7.60% of the year 2004.

- In 2007, mobile phone was estimated to be discarded more than other observed years in amounts 142,990 sets. More MP wastes will consider to be discarded in 2008 around 79.40% of 2007. Remarkably, MP waste discard was estimated to be lower in 2005 around 5.20% of 2007.

5.4 Amount of UEEE exported/reassemble and dismantled by type

As mentioned earlier, EEW collection company/enterprise has not existed in the KoC yet, and this is why a question in this regard is ignored. Hence, the estimation in the table below is significantly focused on the answers of interviewees to questions related to *type, quantity, and source of used EEE currently accepted by your company for repairing and dismantling*.

Conducting an interview with engaged local people by using above questions, the Team got some positive results which can do a sum of annual UEEE exported, repaired and dismantled from them. *(Please note that answer provided by interviewees in amounts per month)*. Remarkably, the total outcome indicated in the Table 18 below – that is a sum of interviewees’ answers, and of course, it cannot represent for entire the country.

The table below indicates the results of field survey on the amount and ratio of annual exported, repaired/reassembled and dismantled UEEE of TV, computer, mobile phone, refrigerator, and air-con during 2006, which gotten from the interviews with owners/managers of repair/dismantling shops and second-hand shops as well.

Table 18: Amount and ratio of annual UEEE exported, repaired, and dismantled UEEE by surveyed sources only

EEE/UEEE Type	Exported		Repaired		Dismantled		
	CRT	LC	CRT	LC	CRT	LC	
TV	set	672	12	37,464	2,172	4,992	168
	%	1.48	0.02	82.40	4.77	10.97	0.36
Personal Computer							
Desktop	set			15,408		1,740	
	%			89.85		10.15	
Notebook	set				15,408		12
	%				89.85		1.0
MP	set				64,464		5,160
	%				92.58		7.42
Refrigerator	set		1,020		12,744		1,056
	%		6.88		85.99		7.12
Air-con	set		900		16,680		1,644
	%		4.68		86.76		8.55

- TV – the outcomes of survey at selected sources indicated that among selected UEEE of six items, there is small amount of TV as well as refrigerator, air-con, was repaired and sold to domestic merchants. However, very small amount of repaired TV was also sold to foreign merchants for his/her consumption with ratio of TV-CRT 1.48%, and 0.02% TV-LC. The maximum ratio of repairing TV-CRT is 82.37% is higher than dismantled TV-CRT is 10.97%.
- Personal computer – two types of personal computer are found at Cambodian markets. Desktop computer has a big variation of ratio of repairing and dismantling between 83.70% to 9.45%, and laptop computer between 6.77% and 0.06% (ref. to surveyed sources).
- Mobile phone – the ratio of repairing mobile phone has a large number of 92.58% rather than dismantled processing which taken merely 7.42% (ref. to surveyed sources). This case can indicate that most broken/un-functioning mobile phones were bought and repaired by repairing/selling shop, and finally sell to merchants for reuse.
- Refrigerator/air-con – both items have the same ratio of repairing of which exceeding ten times rather than dismantling (ref. to surveyed sources).

5.5 UEEE Residue Generation and Management

By using the questionnaires related to residue generation from repair/assembling, and dismantling process per month (Q9 & Q16 in Annex D of the Questionnaire for collectors/repair shops/second-hand shops/dismantlers/processors) and its disposal way to interviewed people, the Team could calculate annual residue quantities generating from the surveyed UEEE repairing/dismantling shops, e.g. TV, MP, PC, air-con and refrigerator. Significantly, during the survey, the Team cannot estimate a percentage of repair shops and dismantling shops for entire Cambodia. It means generated EEW at national level cannot estimate in this case. Of course, the Team can estimate only generated wastes quantities from the surveyed sources of repair/dismantling shops. On the other hand, residues generated from the recycling process cannot be estimated due to non-existence of recycling industry in Cambodia yet.

Residues generated from repairing/dismantling process include glass, glass with lead, CFC, rechargeable and dry cell battery, metal, mixture of different types of metals, etc. Table below indicates residue quantities⁵⁹ of UEEE which generated from surveyed sources⁶⁰ (without classification by waste criteria) by EEE type in kilogram per year.

⁵⁹ These quantities include all type residues

⁶⁰ Repairing and dismantling shops

Table 19: Amount and ratio of annual residues generated from repairing and dismantling UEEE by type

<i>EEE/UEEE Type</i>		<i>Repaired</i>	<i>Dismantled</i>	<i>Total</i>
TV	kg	35,259	5,724	40,983
	%	86.03	13.97	100
PC	kg	1,076.40	234	1,310.4
	%	82.15	17.85	100
MP	kg	1,882.92	133.32	2,016.24
	%	93.39	6.61	100
Air-con& Refrigerator	kg	11,348.40	1,970.40	13,318.80
	%	95.21	4.79	100

Outcomes of above table indicated that generated annual residues from TV repaired shops are approximately 35,259 kg (or 86.03% comparing to TV dismantled shop), and dismantled shops 5,724 kg (or13.97%). Meanwhile the repaired shops of air-con and refrigerator generated residues 11,348.40 kg (or 85.20% comparing to dismantled shop), and follows by mobile phone's repaired shops 1882.92 kg (in 93.40%). But residues generating from PC repaired shops have very little amounts of 1,076.40 kg (or 82.15% comparing to dismantled shop), and dismantled shops 234.00 kg (or17.85%).

Regarding to the managing of generated EEW, it is elaborately described in the *Sub-section 3.3.6: Environmental Problems due to Reuse/recycling and Disposal of UEEE.*

6.0 CONCLUSION

The desk-study and the field surveys of UEEE at selected cities and provinces clearly identified that the main issues associated with un-environmentally sound management of UEEE and its residue disposal include as follows:

- Improper disposal of EEW/residue at public areas, inside or at areas close to the shops/houses. Some hazardous wastes of UEEE were disposed with domestic wastes at urban dumpsite, and openly burnt afterward.
- Discharging of liquid wastes, gases or other pollutants into the environment (soil, water) during the UEEE repairing/dismantling process. Additionally, the storage of EEW at scrap yards might be caused pollution to the environment and human health.
- People who are engaged in the UEEE repairing/dismantling have never considered their personal health and public health too. In other words, they do not consider or pay attention to potential risk and hazard caused by environmentally un-sound management of UEEE/EEW.
- The gaps of related data and information as well as action plan aiming at UEEE/EEW management.
- The cooperation and coordination between concerned parties and the Team in the case of data/information collection⁶¹ is still limited.

Besides above negative aspects, some problems were also highlighted during the survey. Obviously, imported UEEE were not thoroughly checked for quality (e.g. identifying remaining lifetime). Therefore, after shortly period of use, some UEEE are sent to repairing/dismantling shops or sold to waste collectors. Un-control of UEEE quality is a cause of increasing EEW.

There is little activity on UEEE/EEW management, although related legal tools have entered into force. In this regard, EEW/residues are mixed with domestic wastes and disposed at urban dumpsite. Meanwhile, government officers' knowledge about EEW management, human health and environmental risk is limited.

Based on these findings, activities and programs should be considered and developed in the second phases of the project, these include as below.

- Transparent action plan to effectively monitor and control the quality of imported UEEE as well as manage EEW generated from repairing/dismantling processes in an environmentally sound manner.

⁶¹ the field of e-waste survey

- Capacity building and institutional strengthening program should be developed for concerned government officers, and so should be raising of public awareness and the private sector. In this regard, Cambodia should learn more about 5R experience (reduce, recycle, reuse, repair and refurbishment) and the technical guideline from Basel Convention member-countries, and transforms this knowledge to real practices (realizing the environmentally sound management of e-waste).
- Strengthening the application of legal tools via mainstreaming to public and private sectors. This main concept aims at urging public and private sector to fully take care UEEE related occupation and EEW management without harmful to the environment and human health. Consistent with this matter, the understanding of international regulations/agreements/protocols also encourage.
- Developing and promoting the networking system including exchanging experiences in UEEE/EEW with line institutions and other countries in the region.
- Strengthening the cooperation with international communities in the application of Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
- RGC should consider the concept of extended producer responsibility (e.g. UEEE/EEW buy-back policy) with countries in the region, including EEE manufacturing countries in order to elaborate feasible approach to effective management of end-life UEEE and its residues.

Annex – 1: List of surveyed UEEE repaired/dismantled/second-hand shops

No	Shop Name	Address	Telephone / Fax	E-mail
TV Repaired and Sell and Dismantled Shop, and electronic shops				
a) Phnom Penh Municipality				
1.	Kim Seng TV Repair Shop	#186, St. 69, Sangkat Chba Ampeou, Khan Meanchey, Phnom Penh	011 950 395	
2.	Ly Seang Lim Repair and Sales TV Shop	#12, St. Moniret, Sang Kat Steung Meanchey, Khan Meanchey, PP	011 515 243	
3.	Teang Sea Repair and Sales TV Shop	#111E, St. Veng Sreng, Sang Kat Steung Meanchey, Khan Meanchey, Phnom Penh	012 936 142	
4.	Hour TV Repair and Sales Shop	St. Loakla Soen San, Sangkat Kilomet Lek 6, Khan Russey Koe, Phnom Penh	012 846 217	
5.	Lay You Vouch TV Sales and Repair Shop	#850, St. 128, Khan Toul Kok, Phnom Penh	011 589 898	
6.	Sir Dalin TV Sales and Repair Shop	#814A, St. 128, Khan Toul Kok, Phnom Penh	012 383 255	
7.	Bun Sok Repairs and Sales TV Shop	#844, St. 128, Khan Toul Kok, Phnom Penh	012 849 068	
8.	Boun Chay Repairs and Sales TV Shop	#866, St. 128, Khan Toul Kok, Phnom Penh	012 927 998	
9.	Kim Leng Electronic Repair Shop	#678, St. 271, Sankat Phsar Deum Thkov, Khan Chamkamon, Phno Penh.	012 946 922	
10.	Chhay Eng Electronic Repair Shop	#66, St. 310, Sangkat Beung KengKang, Khan Chamkamon, Phno Penh.	012 407 937	
11.	Heng Hout Repair Shop	#29., St. 380, Boeung Keng Kang I, Khan Chamkamon, Phno Penh.	012 614 311	
12.	Sieng Hai Repair Shop	#32, St. 380, Boeung Keng Kang I, Khan Chamkamon, Phno Penh.	012 574 874	
13.	Chour Sokpna Repair and Sales	St. 360, Sangkat Boeung Keng Kang I, Khan Chamkamon, Phno Penh.	012 787 060	
14.	Chay Heng Repair TV, VCD, CD and Tapeplayer	#66, St. 310, Sangkat Boeung Keng Kang III, Khan Chamkamon, Phno Penh.	012 707 737	
15.	Tan Chet Repairs TV, VCD, CD and Tape player	#352, St. 162, Olam Pic, Cham Kamon, Phnom Penh	011 886 709	
16.	Sun Da Ra Repairs TV, VCD, CD and Tape player	#389, St. 163, Olam Pic, Cham Kamon, Phnom Penh	012 457 735	
17.	Ngieng Tham Nam Tape &TV Repair	#1998, St. 369, Sankat Chba Ampov I, Mean Chey, Phnom Penh.	011 724 224	
18.	TV &Tape Repairs Shop	#177, St. 369, Sankat Chba Ampov I, Mean Chey, Phnom Penh.		
19.	TV &Tape Repairs Shop	#178, St. 369, Sankat Chba Ampov I, Mean Chey, Phnom Penh.	012 844 679	
20.	Lou Keang Chung TV & Tape Repairs	#1026, St. N°2, Chak Angre Leu, Mean Chey, Phnom Penh	012 943 147	
21.	Repairs Tape Player and TV	#163B, St. 271, Beung Tompon, Mean Chey, Phnom Penh	012 602 291	
22.	Bun Thean Repairs TV, CD, VCD & Tape Player	#15, St. 271, Tek Thla, Ressey Koe, Phnom Penh	012 308 040	
23.	Por Bunthin Repairs Shop	#92, st. 170, Orussey, 7 Makara, Phnom Penh	092 225 147	
24.	Electronic Services Center	#90, St. 214, Boeung Pralit, 7 Makara, Phnom Penh	012 818 049 012 831 789	
25.	Kim Srun Selling TV and Repairs	#426A, St. 396, Chhba Ampov II, Mean Chey, Phnom Penh	016 937 770	
26.	Mao Vanhou Repair and Sales Shop	#960, St. 128, Toul Kok, Toul Kok, Phnom Penh	012 820 304	
27.	Thei Heng Import and Export	#962, Toul Kok I, Toul Kok, Phnom Penh.	012 810 304	

28.	La Khav Retail and Whole Sale Shop	#966E ₀ +968E ₀ , St. 128, Toul Kok, Toul Kok, Phnom Penh	012 822 583	
29.	Chang Ng Repairs and Sales	St. 215, Phsar Depo II, Toul Kok, Phnom Penh	011 600 985	
30.	Heng Thav Repair and Sales	St. 128, Toul Kok, Toul Kok, Phnom Penh	012 870 085	
31.	Cheng Kong Repair Electronic	#433E ₀ , St. 218, Phsar Depo II, Toul Kok, Phnom Penh	012 187 7531	
32.	Long Kuy Heng Repair and Sales TV	#420E ₀ , St. 128, Mittapheap, 7Makara, Phnom Penh	016 222 330	
33.	Yin Sambath Repairing All Kinds of Stereo, Amplifier & TV	#58B, St. 380, Boeung Keng Kong, Chamkamon, Phnom Penh	016 717 346	
34.	Set Sokhan Samsung Electronic Repair Shop	#167E ₀ , St. Sothearos, Tonlebasak, Chamkamon, Phnom Penh	012 600 288	
35.	Repair TV Shop	#248, St. Monyreth, Tom Nup Tek, Chamkamon, Phnom Penh	012 268 630	
36.	Veasna Sony Repair TV Shop	#128E ₀ , St. 107, Orussey 4, 7 Makara, Phnom Penh	016 811 302	
37.	Tov Chhun Say Selling TV, VCD, Amplifier & Speaker	#124, St. 107, Orussey, 7 Makara, Phnom Penh	012 822 627	
38.	Ngoun Lim Thouk Selling and Repair TV Amplifier	St. Youkunthor, Orussey 4, Orussey, 7 Makara, Phnom Penh	012 506 793 011 252 328	
39.	Leang Hour Repair and Sales TV	#120, St. 107, Orussey, 7 Makara, Phnom Penh	012 926 528	
40.	Repair TV Shop	#83, St. 107, Orussey 4, Orussey, 7 Makara, Phnom Penh	012 938 898	
41.	Selling & Repairing TV, VCD	#122, St. 107, Orussey 4, Orussey, 7 Makara, Phnom Penh	012 667 008	
42.	Hour Leang Selling & Repair TV, VCD	#484, St. 128, Mitapheap, 7Makara, Phnom Penh	012 849 358	
b) Kampong Cham Province				
43.	Heng Bros Repair and Sales TV	#14, Boeung Kok Commune, Kompong Cham District, Kompong Cham Province	011 759 712	
44.	Rith Rat Repair TV	Boeung Snay Village, Sombomeas Commune, Kompong Cham District, Kompong Cham		
45.	Kul Repair and Sales TV	Phrav Village, Phrav Commune Kompong Cham	012 795 401	
46.	Virak Repair and Sales TV	#41, Village 2, Kompong Cham Commune, Kompong Cham District, Kompong Cham	011 764 667	
47.	Kim Thun Repair and Sales TV	Soung Village, Soung Commune, Tboung Khmom District, Kompong Cham Province	012 688 763	
48.	Eang Repair and Sales TV	Veal Vong Commune, Kompong Cham District, Kompong Cham Province	012 187 2926	
49.	Chorn Cheaset Repair and Sales TV	Slapktorng Village, Chup commune Tboung Khmom Distric, Kompong Cham Province	092 285 372	
50.	Ngen Phalmeanleap Repair and Sales TV Shop	Sourng Khang Lech Village, Sourng Commune, Tboung Khmom Distric, Kompong Cham Province	012 361 834	
51.	Moe Repair and Sales TV Shop	#11, St. 7, Sourng Commune, Tboung Khmom Distric, Kompong Cham Province	011 999 682	
52.	Ngov Navy Repair and Sales TV Shop	#4, Eastern Boeung Kok Market, Kompong Cham Distric, Kompong Cham Province	011 603 379	
53.	Eung Veng Kong TV Shop	Soung Village, Soung Commune, Kompong Cham Distric, Kompong Cham Province	011 624 748 012 623 466	
54.	Vathnak Repair TV Shop	St. Throsork Phem, Bueng Kok Commune, Kompong Cham Distric, Kompong Cham Province		
55.	Pich Rithy Sales and Repair TV Shop	Phum 12, Sangkat Kompong Cham, Kompong Cham Distric, Kompong Cham Province	012 757 058	
56.	Marady Sales and Repair Shop	#104, St. Phreah chey Vormanty 7, Kompong Cham District, Kompong Cham Province	012 551 661	
57.	Hort Chan Thy Television Shop	#28, Eastern Kompong Cham Market Kompong Cham Distric, Kompong Cham Province	011 639 595	

58.	Bun Thy Repair Television Shop	St. 6, Phaav Billage, Phaav Commune, Bathay District, Kompong Cham Province	012 631 848	
59.	Heang Nareing TV Shop	#21, Phasr Thmey, Kompong Cham Distric, Kompong Cham Province	011 377 775	
60.	Sophal TV and Mobile Phone Shop	St. 6A, Phaav Village Bathay District, Kompong Cham Province	012 926 117	
61.	Cheang Ath Repair Shop	Phume 14, Boeung Kok Commune, Kompong Cham Distric, Kompong Cham Province	092 225 708	
62.	Hourt Vando Repair Shop	Phume 6, Vealvong Commune Kompong Cham Distric, Kompong Cham Province	092 225 709	
63.	Sopheap Sale and Repair Shop	Sourng Village, Sourng Commune, Tboundg Khmom District, Kompong Cham Province	011 454 569	
64.	Rotha Repair and Sale TV Shop	St. Tro Sork Phem, Bueng Kok Commune Kompong Cham Distric, Kompong Cham Province		
65.	Heng Bonheang Repair and Sale TV Shop	#20, St. 7, Phum Sourng Khang Lech, Tboundg Khmom Commune, Kompong Cham Province	011 873 737	
66.	Davy Repair Shop	St. 7, Phum Thnol Torteng, Chup Commune, Kompong Cham Province	012 227 028	
c) Kandal Province				
67.	Vorn Vath Shop	#501, St 21, Prek Knong Village, Sangkat Prek Koy, Saang District, Kandal Province.		
68.	Sok Touch Shop	#520, St. 21, Prek Koy Village, Sangkat Prek Koy, Saang District, Kandal Province	016 354 175	
69.	Ek Sun Shop	#140 Eo, St. 206, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	012 414 431	
70.	Norng Arun Shop	#449, St. 205, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	012 339 451	
71.	Arunrah Shop	#691, St. 201, Thmei Village, Takmoa Commune , Takmoa District, Kandal Province	012 911 338	
72.	Srun Saran Shop	#140 Eo, St. 206, Prek Samrolung Village, Takmoa Commune , Takmoa District, Kandal Province	016 520 378	
73.	Cheng Heng Shop	#494, St. 107, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	012 628 002	
74.	Sam Sovanny shop	Kbal Kok, Kien Svay, Kandal Province		
75.	Seng Bunhout Shop	#359, St.1, Koki, Kien Svay, Kandal Province	016 525 359	
76.	Khlorc Vandal Shop	Phumthom, Kiensvay, Kandal Province	012 176 6806	
77.	Pok Sarun Shop	#54, St. 104, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	011 609 559	
78.	Seng Song Shop	St. 206, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	012 498 101	
79.	Hoa Pra Shop	St.21, Chong Prek, Prek Koy Commune, Prek Koy District, Kandal Province	012 458 401	
80.	Khourn Saman Shop	#97, St. 206, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	011 653 633	
81.	Darath Shop	Mittapheap District, Sihanouk Ville		
82.	Tim Sophat Shop	Prek Russey, Takmoa District, Kandal Province	012 993 884	
83.	Heng Pich Shop	#015, St. 2, Takmoa, Kandal Province	012 687 007	
84.	Ouch Thou Shop	Prek Russey, Takmoa District, Kandal Province	012 982 825	
85.	Chhum Vibol Shop	Tadol, Takmoa District, Kandal Province	092 980 814	
86.	Nop Ki Shop	#006, St. 2, Takmoa, Kandal Province	011 950 393	
87.	Dinamic Shop	#40 B, St.107, Takmoa, Kandal Province	012 850 532	
88.	Hong Hout	St. 2, Takmoa, Kandal Province.	012 982 900	
89.	Hen Pheap	#181A, St.2, Prek Russey, Takmoa, Kandal	011 529 674	
90.	Sopheap Shop	#74, St.2, Prek Russey, Takmoa, Kandal Province		
91.	So Kum Shop	#139, St. 2, Takmoa, Kandal Province	011 751 660	
92.	Mai Ty Shop	Prek Ho Village, Prek Ho Lech, Kandal Province	011 616 993	

93.	Chathorn Shop	Prek Russey, Takmoa, Kandal Province	011 375 269	
94.	Kong Hout Shop	#467, St. 2, Prek Russey Village, Kandal Province	012 403 674	
95.	Meng Ly Shop	#94, St. 4 Prek Chan Village, Kandal Province	012 373 080	
96.	Hieg Sovannri Shop	#123, St. 2, Takmoa Village, Takmoa District, Kandal Province.	012 306 221	
97.	Choam Chenda Shop	#038, St.206, Takmoa Village, Kandal Province	016 846 699	
98.	Chhay Kim Shop	#040, St. 2, Takmao Village, Takmoa District, Kandal Province	011 955 556	
99.	Ouch Meurn Shop	Chroy Ampel, Kbal Kon, Kandal Province	012 728 120	
100.	Heag Sambat Shop	#091, St.2, Takmoa Village, Kandal Province	012 244 218	
101.	Chea Narin Shop	#69 St 4, Ang Snoul, Kandal Province	012 601 386	
102.	Hol Savet Shop	#69, St. 4 Ang Snoul, Kandal Province	012 833 382	
103.	Ngil Sophanin Shop	#351, St. 1 Korki, Kien Svay, Kandal Province	011 871 072	
104.	Vannak Shop	St. 1, Prek Ek, Kien Svay, Kandal Province	012 620 502	
105.	Prak Davi Shop	Kbal Kok, Kien Svay, Kandal Province		
106.	Chan Sina Shop	Anglongrameart Commune, Kandal Steoung, Kandal Province		
107.	Bun Sopheak Shop	St.2, Chey Chumnas, Kandal Steoung, Kandal		
108.	Koy Sopheak Shop	St.2, Chey Chumnas, Kandal Steoung, Kandal Province		
d) Svay Rieng Province				
109.	Thorng Bun Shop	Svay Rieng Province	092 922 814	
110.	Leng Kry Shop	Svay Rieng Province	012 275 387	
111.	Leap Kuy Shop	Svay Rieng Province	012 934 190	
112.	Pen Mala Shop	Svay Rieng Province	011 762 282	
113.	Sum Nath Shop	Svay Rieng Province	016 527 989	
114.	Meng Ratanak Shop	Svay Rieng Province	012 344 306	
115.	Heng Chamroeun Shop	Svay Rieng Province	011 872 572	
116.	Ly Thong Shop	Svay Rieng Province	011 853 183	
117.	Lim Kong Shop	Svay Rieng Province		
118.	Seng Leang Shop	Svay Rieng Province		
119.	Sourn Phally Shop	Svay Rieng Province	011 450 570	
120.	Cheang Pouv Shop	Svay Rieng Province	011 717 758	
121.	Mok Chanthorn Shop	Svay Rieng Province	012 759 220	
122.	Mey Sean Shop	Svay Rieng Province	016 890 983	
123.	Sok Sopheap Shop	Svay Rieng Province	016 627 606	
124.	Kourng Synat Shop	Svat Rieng Province	011 781 196	
125.	Ponlok Thmay Shop	Svay Rieng Province	011 419 630	
126.	Cheang Thon Shop	St.107, Svay Rieng Province	092 252 881	
127.	Tum Phanny Shop	Svay Rieng Province	011 690 686	
128.	Tep Von Shop	Svay Rieng Province	016 850 450	
129.	Mann Ron Shop	Svay Rieng Province	016 762 036	
130.	Borey Sovann Shop	#51, St.117. Svay Rieng Province	016 951 848	
131.	Ech Rano Shop	Meilung Commune, Svay Rieng Prov.	011 411 380	
132.	Cheang Pek Shop	Veal Yun Market, Svay Rieng Province	016 855 473	
133.	In Rano Shop	Veal Yun Market, Svay Rieng Province	011 919 280	
134.	Muth Sina Shop	Veal Yun Market, Svay Rieng Province	011 607 672	
135.	Ouk Sourn Shop	Svay Rieng Province	012 268 460	
e) Sihanoukville City				
136.	Srey Mom Shop	Tom Nop Rolork Commune, Stoeung Hav District, Sihanouk Ville	011 345 670	
137.	Sok Bora Shop	Mittapheap District, Sihanouk ville	016 752 022	
138.	Savy Shop	#272, St.7Makara, Mittapheap District, Sihanouk Ville	012 355 609	
139.	Reth Shop	#343 Mittapheap District, Sihanouk Ville	012 702 155	
140.	Seak La Shop	#34, Mittapheap District, Sihanouk Ville	012 946 429	
141.	Chaoeun Shop	#068, St.Borey Kamakor, Mittapheap District,	012 180	

		Sihanouk Ville	7895	
142.	Rithy Shop	Stoeung Hav District, Sihanouk Ville	016 765 776	
143.	Sambo Shop	St.4, Prey Noup District, Sihanouk Ville	012571 958	
144.	Chheng Heng Shop	Mittapheap District, Sihanouk ville	012 482 400	
145.	Chea Pouv Shop	Tomnoup Rolork Commune, Stoeung Hav District, Sihanouk Ville		
146.	Be Sokmen Shop	Mittapheap District, Sihanouk Ville	011 775 595	
147.	Sok Chea Shop	Mittapheap District, Sihanouk Ville	016 865 786	
148.	LeapBunnat Shop	Mittapheap District, Sihanouk Ville	016 835 819	
149.	Kep Hul Shop	Tomnoup Rolork Commune, Stoeung Hav District, Sihanouk Ville	011 245 927	
150.	Bunhour Shop	Prey Noup District, Sihanouk Ville	012 968 073	
151.	Ra Shop	Prey Nop District, Sihanouk Ville	012 77 1059	
152.	Borey Amatac Shop	Prey Nop District, Sihanouk Ville	012 573 171	
153.	Ratha Shop	Mittapheap District, Sihanouk Ville	016 913 335	
154.	Leang Hak Shop	Mittapheap District, Sihanouk Ville	016 301 666	
155.	Phou Leng Shop	#0884, St. Tomnup Rolork, Sihanouk Ville	011 686 731	
156.	Sarun Shop	St. Tomnup Rolork, Sihanouk Ville	012 197 2030	
157.	Tep Tym Shop	#69, St. Tomnup Rolork, Sihanouk Ville	016 51 7052	
158.	Sok Peou Electronic Shop	#091, St. Ekareach , Mittapheap Commune, Sihanouk Ville	011 911 292	
159.	Teng Penh Shop	Phsar Leu market, Sihanouk Ville	016 717 767	
160.	Men Shop	Mittapheap Commune, Sihanouk Ville	016 9179 171	
161.	Lim Say Shop	Mittapheap Commune, Sihanouk Ville		
162.	Keo Saren Shop	Mittapheap Commune, Sihanouk Ville	012 787 330	
f) Battambang Province				
163.	Soy Cheat Shop	#83, St.2 Svay Por Commune, Battambang Province	012 930 669	
164.	Bouk Kim Meng Shop	Bek Chan Thmai Village, Prek Preah Sdech Commune, Battambang District, Battambang Province	012 193 7036	
165.	Men Samon Shop	#452, St.2 Kamkor Village, Battambang	012 536 455	
166.	Sony Shop	#419, Svay Por Battambang Province		
167.	Chhieng Ly Shop	Svay Por, Battambang Province	012 489 103	
168.	Heng Cheat Shop	Makara Village, Prek Preah Sdach Commune, BB District, Battambang Prov.	012 193 7039	
169.	Tourn Vuthy Shop	#83, St. 107, Orrusey 4 Commune, 7Makara District, Battambang Province	012 938 898	
170.	Hour Leng Shop	#484, St .Kampuchea Krom, Mittapheap, 7Makara, Battambang Province	012 849 358	
171.	Chai Veasna Shop	Kamkor Village, Svay Por Commune, Battambang Province	092 961 142	
172.	Ven Ke Shop	#116, Prek Preah Sdach Commune, B.B District, Battambang Province	012 181 7145	
173.	Hun Loem Heng	Kamkor village, Svay Por Commune, Battambang Province	012 599 660	
174.	Seng Chhem Shop	#116, St.2 Svay Por Commune, Battambang Province	012 879 101	
175.	Sao Kim Shop	#122 St. 107 Orrusey Commune 4, Battambang Province	012 667 008	
176.	Ourn Vy Shop	Bek Chan Thmai Village, Prek Preah Sdech Commune, Battambang District, Battambang Province	016 959 821	
177.	Ing Korng Shop	#27 St. Larka, Svay Por Commune, Battambang District, Battambang Prov.	012 264 554	
178.	Lim Pao leng Shop	#311, Svay Por, Battambang Province	012 732 662	

179.	Yos Sopheap Shop	Svay Por, Battambang Province	012 1924 059	
180.	My Hokseng Shop	#54. St. 2, Say Por Commune, Battambang District, Battambang Prov.	053 730 014	
Computer Repaired and Dismantled Shop				
a) Phnom Penh Municipality				
181.	Golden Angkor Computer	#155E ₀ , St. 128, Khan Toul Kok, PP	011 200 212 012 494 986	
182.	Gold Star Computer	#428, st. 128, Khan Toul Kok, PP	023 882 582	toch.vandy@gmail.com
183.	Khun Heng Seles, Rpair Computer and Spare-part	#584-586, Dampuchea Krom St., Phsar Depoll, Toul Kork, Phnom Penh.	023987 901	
184.	Lay Meng Computer II	#386AE ₀ , Mao Tse Tong Blvd., Boeung Salang, Toul Kork, Phnom Penh.	016 333 966	
185.	Phan Na Computer Repair and Sales Shop	#472E ₀ , St. Mao Tse Tung, Teuk La Ok, Toul Kork, Phnom Penh	012 689 168	
186.	STS Software Services	#51C, St. 360, Boeung Keng Kong III, PP		
187.	Thearun Computer	#202, St. 143, Boueng Keng Kong III, Chamkarmon, Phnom Penh.	011864 034	
188.	Dano Computer Center	#531E ₀ , Kampuchea Krom Blvd, Phsar Depo II, Toul Kork, Phnom Penh	012 787 776	yang_dano@yahoo.com
189.	Sun Hu Sale & Repair Computer	#691B, St. 128, Teuk La Ok, Toul Kork, PP	016 826 812	
190.	Samay Computer	#551E ₀ , St. Kampuchea Krom, Toul Kork, Phnom Penh	012 795 153	
191.	Chhunny Computer	#557, St. Kampuchea Krom, Toul Kork, Phnom Penh	016 555 874	dymond@hayoo.com
192.	Asia Europe Computer Technology	#830C, St. 128, Teuk La Okl, Toul Kork, Phnom Penh	023 883 088 023 993 388	
193.	Lor Hang Bun Computer	#517E ₀ , St. Kampuchea Krom, Toul Kork, Phnom Penh	012 211 192	
194.	Hour San Computer	#546E ₀ , St. Kampuchea Krom, Toul Kork, Phnom Penh	023 997 799	
195.	Kim Ouy Computer	#626, St. Kampuchea Krom, Toul Kork, Phnom Penh	012 384 766	
196.	Khun Heng Sales, Repair Computer and Spare-part	#584-586, Kampuchea Krom, Toul Kork, Phnom Penh	012 550 660	
197.	Ocean Computer	#724E ₀ , Kampuchea Krom, Toul Kork, Phnom Penh	011 746 167	
198.	Lay Meng Computer	#25E ₀ , St. Phsa Degol, Orussey 2, Orussey, 7 Makara, Phnom Penh	023 357 007	
199.	Hour San Center	#514E ₀ , St. 128, Mettapheap, 7 Makara, Phnom Penh	023 998 899	
200.	Kim Long Computer	#436E ₀ , St. Kampuchea Krom, 7 Makara, Phnom Penh	011 856 538	
201.	Thai San Computer	#416E ₀ , St. Kampuchea Krom, 7 Makara, Phnom Penh	012 488 827 011 900 057	
202.	Veasna Computer	#78, St. 63, Phsar They 3, Doun Penh, Phnom Penh	012 718 780	012718780@mobile.com.kh
203.	New Day Computer	#233E ₀ , St. Kampuchea Krom, 7 Makara, Phnom Penh	011 363 848	newday_cpmputer@yahoo.com
204.	Phnom Penh Computer Technology	# 62E ₀ , St217, Orussey 4, Orussey, 7 Makara, Phnom Penh	012 801844 Fax: 023 987 993	ppcomputer@everyday.com.kh
205.	Heng Heng Computer	#430E ₀ , St. Kampuchea Krom, 7 Makara, Phnom Penh	011 222 332	
206.	Lucky Star Computer	#135E ₀ , St. 128, Orussey 2, Orussey, 7 Makara, Phnom Penh	012 513 787	LSC_computer@mobile.com.kh

207.	You Heng Computer	#396, St. Kampucheakrom, Meatapheap, 7 Makara, Phnom Penh	016 555 655	
208.	Mony Theka Computer	#113, st. 143, Olampic, Toulsvayprey, Phnom penh	012 504 444	012504444@mobitel.com.kh
b) Kampong Cham Province				
209.	Pon Louk Repair and Sales PC	#11, Ang Doung Street, Kam Pongsiem District, Kompong Cham Province	042 941 477 012 785 835	kampongchm@abc.com.kh
210.	CTO Computer Shop	#168, St. Moni Vong, Kampong Cham District, Kompong Cham Province	042 941 977 012 921 951 011 704 949	ctocomputer@yahoo.com
211.	Apsara Computer Shop	Vealvong Village, Vealvong Commune, Kompong Cham Distric, Kompong Cham	012 460 132	
c) Svay Rieng Province				
212.	Cheng Bunthy Shop	Svay Rieng Province	011 923 524	
d) Sihanoukville City				
213.	A.B.C Computer Shop	St. Ekareach, Commune 3, Mittapheap District, Sihanouk Ville	023 933 546	
214.	Vichet Phsar Leu Shop	St. 7Makara, Commune 4, Mittapheap District, Sihanouk Ville	034 393 943 016 451 666	Veasna-ten@yahoo.com
215.	Kin Sier Computer Shop	Mittapheap District, Sihanouk Ville	016 890 350	
216.	TTR Computer School	St. Borey Kamakor Mittapheap District, Sihanouk Ville	012 931 084	Ttr-ksm@yahoo.com
e) Battambang Province				
217.	Lim Pao leng Shop	#311, Svay Por, Battambang Province	012 732 662	
218.	IBC Computer Technologies	#87, St 1 Mittapheap Village, Battambang Province	012 838 266 Fax: 053 953 326	lbc_computer@yahoo.com
219.	Anana Computer	#28, St.3 Svay Por Commune, Battambang Province	012 994 319 Fax:053 952 220	
220.	PTC Computer Technologies	#151-152,St.2 Kampong Krobey Village, Battambang Province	012 765 631 Fax: 0 53 953 854	
221.	Network Computer Center and Service	#342, St. 2,Svay Por Commune, Battambang Province	012 736 060 Fax: 053 953 123	
222.	Yos Sopheap Shop	Svay Por, Battambang Province	012 1924 059	
223.	Asean Computer	#51, St. 152 Svay Por Battambang Province	012 373 546	
224.	CSS Computer	#101, St.3, Svay Por, Battambang Prov.	053 953 678	
Repair and Sale Mobile Phone Shop				
a) Phnom Penh Municipality				
225.	Heng Cham Nab Selling & Repair all Kinds of Telephone	#398E ₀ , Mao Tse Tung Blvd., Soeung Salang, Toul Kork, Phnom Penh.	012 333 316	
226.	Kim Heng Phone Shop	#38, St. 320, Boeung Keng Kong III, Chamkarmon, Phnom Penh	011 899 862	
227.	cheng Neth Phone Repair Shop	#425BE ₀ , Moa Tse Tung Blvd, Boeung Salang, Chamkarmon, Phnom Penh.	012 855 575	
228.	Koung Heng Kirirom	#242E ₀ , St. 274, Boeung Keng Kong II, Chamkarmon, Phnom Penh	012 336 522	
229.	Choun Ty Repair & Sales	#344, St. Preah Sihanouk, Olam Pich, Chamkarmon, Phnom Penh	012 244 442	
230.	Seng Vichet Phone Shop	#38E ₀ , St. 107, Veal Vong, 7 Makara, PhnomPenh	012 400 180	
231.	Do Odom Phone Shop	#134, St. 215, Phsar Depo, 7 Makara, PP	023 880 473	
232.	Kim Hout Phone Shop	#134 BE ₀ , St. 215 Veal Vong, 7 Makara, PhnomPenh	012 856 888	

233.	Hak Seir Repair & Sales	#145, St. Preah Sihanouk, Veal Vong, 7 Makara, PhnomPenh	012 339 333	
234.	Put Hy Repair & Sales Shopping	#136 E ₀ , St. 215, Veal Vong, 7 Makara, PhnomPenh	016 783 938	
235.	Heng Kong Repair & Sales	#173, St. Preah Sihanouk, Veal Vong, 7 Makara, PhnomPenh	012 678 666	
236.	Royal Phone Shop	#137, St. Preah Sihanouk, Veal Vong, 7 Makara, PhnomPenh	012 678 964	
237.	Heng Sophan Shop Mobile Phone	#136 AE ₀ , St. 215, Veal Vong, 7 Makara, PhnomPenh	023 996 375	
238.	Sok Pheng Phone Repair	Sangkat Phsar Depo I, Toul Kork, PP	011 877 779	
239.	Dareth Phone Shop	#B.02E ₀ E ₁ , St. 182, Phsar Depo I, Toul Kork, Phnom Penh	012 750 777	
240.	Mohasal Phone Shop	#133 E ₀ , St. 215, Phsar Depo I, Toul Kork, Phnom Penh	012 700 889	
241.	Sok Peng II	#45 ABE ₀ , St. 124, Phsar Doemkor, Toul Kork, PP	011 866 669	
242.	Kong Sampath Repair and Sales	#212, St. 215, Phsar Depo, Toul Kork, PP	015 767 999	
243.	Bun Toeun Repair and Sales	#234, Phsar Doem Kor, Toul Kork, Phnom Penh	011 388 899	
244.	California Phone Shop	#107E ₀ , Monivong Blvd, Phnom Penh	023 880 833	
245.	Sunshine Phone Shop	#57, St. 13, Phsar Kandal I, Daunpenh, Phnom Penh	016 853 666	
246.	Va Key Sales & Repair Phone	# 24, St. 148, Phsar Kandal I, Daunpenh, Phnom Penh	012 586 646	
247.	Dara Thmey Phone Shop	#117, Conner St.13 and St. 144, Phsar Kandal I, Daunpenh, Phnom Penh	012 495 857	
248.	Tay Meng Sale & Repair Phone	#78E ₀ , Phsar Kandal I, Daunpenh, PP	012 841 933	
249.	Heak Leangkry Phone Shop	#17E ₀ , St. 13, Phsar Chas, Daunpenh, Phnom Penh	012 889 948	
250.	Sok Kim Phone Shop	#58, Conner St.63 and St. 380, Boeung Keng Kong 1, Chamkamon, Phnom Penh	092 605 609 011 711 795	
251.	Ly Hov Sale and Repair Phone	#133, St. 13, Phsar Kondal, Doun Penh, Phnom Penh	012 180 000	
252.	Rany Sale and Repair Phone	#80D, St. 13, Phsar Kondal, Doun Penh, Phnom Penh	016 596 250	
253.	Darith Phone	#42AE ₀ , St. 163, Toul Tum Poug, Chamkamon, Phnom Penh	012 473 573	
254.	Por Sang Phone Shop	#58B, St. 380, Boeung Keng Kong, Chamkamon, Phnom Penh	016 717 346	
255.	Sok Kheang Phone Shop	#129E ₀ , St. 182, Oressey 2, 7 Makara, Phnom Penh	012 383 909	
256.	Tong Ngy Phone Shop	#139, St. 163, Toul Tum Poug, Chamkamon, Phnom	012 319 939	
b) Kampong Cham Province				
257.	Taing Vanak Phone Shop	#3, St. Ketho Mealea, Kompong Cham Distric, Kompong Cham Province	012 622 224	
258.	Viseshatha Phone Shop	#493, Phum 12, St. Monivong, Sangkat Kampong Cham, Kompong Cham Distric, Kompong Cham Province	012 722 909	
259.	Heng Dy Phone Shop	#62, St. Preah Chay Voroman Ty 7, Kompong Cham Distric, Kompong Cham Province	012 858 839	
260.	Pouv Phone Shop	#12, St. Ang Doung, Kompong Cham Distric, Kompong Cham Province	012b944 190	
261.	Center Repair Phone Shop	#37, St. Preah Kethomealea, Phum 12, Kompong Cham Distric, Kompong Cham	012 447 800	
262.	Sin Hour Mobile Phone Shop	#01, St. Preah Sihanouk, Kompong Cham Distric, Kompong Cham Province	011 877 775 012 887 886	

263.	Chip Tong Mobile Phone Shop	St. Thmey, Veal Vong Commune, Kompong Cham Distric, Kompong Cham Province	012 239 310 011 762 757	
264.	Chamroeun Phone Shop	#14, St. Ang Dourng Eastern Kampong Cham Market	012 504 905 011 504 905	
265.	In Nimol Mobile Phone Shop	St. 7, Sourng Commune, Tbong Khmom District, Kompong Cham Province	011 700 044	
266.	Khemra I Mobile Phone Shop	#45, St. Preah Ketomealea, Phum 12, Kompong Cham Distric, Kompong Cham Province	012 924 747	
267.	Heng Ly Mobile Phone Shop	#12, St. 7, Soung Commune, Tbong Khmom District, Kompong Cham	012 916 767	
268.	Kim Rothtana Mobile Phone Shop	St. 7, Kompong Cham Commune, Kompong Cham Distric, Kompong Cham	012 313 002	
269.	Kim Luch Mobile Phone Shop	#73, St. Kampuchea Krom, Boeung Kok Village, Kompong Cham Distric, Kompong Cham Province	012 268 902	
270.	Vin Davit Mobile Phone Shop	St. 7, Soung Commune, Kompong Cham Distric, Kompong Cham Province	012 685 051	
271.	Lor Suheang Mobile Phone Shop	Soung Village, Sourng Commune, Tboung Khmom District, Kompong Cham Province	011 332 880	
272.	Pithou Mobile Phone Shop	Phume 2, Kompong Cham Commune, Kompong Cham Distric, Kompong Cham Province	011 533 559	
273.	Khemara 2 Hand Phone Shop	#67E _o , Kompong Cham Distric, Kompong Cham Province	012 777 407	
c) Kandal Province				
274.	Mean Sarith Shop	#470 Eo, St.206, Takmoa Village, Kandal Province	012 947 339	
275.	Som Keav Shop	#93, St. 103, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	023 983 277	
276.	Chma Prey Shop	#115 Eo, St. 206, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	016 269 666	
277.	Jenny Phone Shop	St. 103, Takmoa Village, Takmoa Commune , Takmoa District, Kandal Province	012 345 007	
278.	Phnom Yat Shop	#587, St. 21, Takmoa Village, Kandal Province	012 278 588	
279.	Piseth Heng Heng Shop	#034, St. 2, Takmao Village, Kandal Province	016 358 836	
280.	Rithy Lina Shop	#097, St. 2, Takmoa Village, Kandal Province	012 333 544	
d) Battambang Province				
281.	Sok Leap Shop	Svay Por, Battambang Province	092 992 366	
282.	Ke Vin Shop	Svay Por, Battambang Province	012 602 102	
283.	Aiwa Shop	#109, St.3, Sway Por, Battambang Prov.	012 953 420	
284.	Ly Len Shop	Svay Por, Battambang Province	012 220 405	
285.	Ban Bunhouy Shop	#871, Svay Por, Battambang Province	092 845 556	
286.	Phat Poline Shop	#1E, Prek Preah Sdach Commune, Battambang District, Battambang Prov.	012 934 190	
287.	Sok Pha Shop	Makara Village, Prek Preah Sdach Commune, Battambang District, Battambang Province	012 52 6909	
288.	Ponleu Australia Shop	#22, St.1 , Kampong Krabei Village, Say Por Commune, Battambang District , Battambang	012 170 0803	
289.	Vanna Sopheak Shop	#371, Say Por Commune, Battambang District , Battambang Province	012 782 339	
290.	Cheng Cheng Shop	#379, Say Por Commune, Battambang District , Battambang Province	012 693 931	
291.	Seng Navy Shop	#379, Say Por Commune, Battambang District , Battambang Province	092 845 559	
292.	Oung Kheng Shop	#47, St.2, #379, Say Por Commune, Battambang District , Battambang Province	011 871 000	
293.	Seng Long Shop	#45, St. 2, #379, Say Por Commune, Battambang District , Battambang Province	012 547 029	
294.	Kim Leng Shop	#12, 14,24, Say Por Commune, Battambang District , Battambang Prov.	016 539 999	

295.	Hiek Kim Seng Shop	#263, Say Por Commune, Battambang District , Battambang Province	012 364 429	
296.	Hang Chengy Shop	#100,St. 3, Say Por Commune, Battambang District , Battambang Prov.	012 978 171	
297.	Kim Leng Shop	#12, Say Por Commune, Battambang District , Battambang Province	012695 247	
298.	Lieng Menghong Shop	#116,St.15 Say Por Commune, Battambang District , Battambang Prov.	011800 023	
299.	Califonia Shop	#95, St.3, Say Por Commune, Battambang District , Battambang Prov.	011 700 075	
300.	Khun Meng Hour	#314, Say Por Commune, Battambang District , Battambang Province	012 977 722	
301.	Battambang Shop	#71, St.3, Say Por Commune, Battambang District , Battambang Prov.	012 403 007	
302.	Pha Rath Shop	#313, Say Por Commune, Battambang District , Battambang Province	012 793 080	
303.	Kim Siekly shop	Say Por Commune, Battambang District , Battambang Province	012 530 049	
304.	Yong Seng Shop	#2,St.1 Say Por Commune, Battambang District , Battambang Province	012 443 331	
305.	Soviet Saveurn Shop	#442, Say Por Commune, Battambang District , Battambang Province	012 573 673	
306.	Eang Hong Shop	#9,St.1 Say Por Commune, Battambang District , Battambang Province	012 283 701	
307.	One,Two Phone Shop	#97, St. 3, Say Por Commune, Battambang District , Battambang Prov.	012781 929	
308.	Holiwood Shop	#92,St. 3, Say Por Commune, Battambang District , Battambang Prov.	092 888 889	
e) Svay Rieng				
309.	Khangna Shop	Svay Reang Province	011 874 874	
310.	Eang Ny Shop	Svay Rieng Province	016 999 776	
311.	Sophal Shop	Svay Rieng Province	011 290 229	
312.	Dararath Shop	Svay Rieng Province	0788 283	
313.	Chanthorn Shop	Svay Rieng Province	011 918 049	
314.	Meas Saren Shop	Svay Rieng Province	012 989 676	
315.	Treng Sopheap	Svay Rieng Province	012 949 730	
316.	Sin Soline Shop	Svay Rieng Province	044 945 687	
317.	San Ean Shop	Svay Rieng Province	012 904 312	
318.	Pen Sourn Shop	Svay Rieng Province	012 47 96 67	
319.	Un Saran Shop	Svay Rieng Province	011 908 555	
320.	Samay Thomnerb Shop	Svay Rieng Province	012 439 086	
321.	Vibol Sok Shop	Svay Rieng Province	011 597 979	
322.	Chhun Sengutdom Shop	Svay Rieng Province	012 03 770	
323.	Nov Ratha Shop	Svay Rieng Province	016 617 666	
324.	Dara Shop	St 209,Svay Rieng Province	012 597 197	
325.	Lay Sitha Shop	Svay Rieng Province		
326.	Srei Neth Shop	Svay Rieng Province		
327.	Socheata Shop	St.209, Svay Rieng Province	011 952 202	
f) Sihanoukville City				
328.	Vichet Mobile Phone Shop	Mittapheap District, Sihanouk Ville	016 923 366	
329.	Mom Sopheap Mobile Phone Shop	Mittapheap District, Sihanouk Ville	012 710 710	
330.	Teav Kim Chou Mobile Phone Shop	#0035, St. Samdach Hunsen, Tomnup Rolork Chas, Sihanouk Ville	016 723 222	
331.	Pothty Phone Shop	Mittapheap District, Sihanouk Ville	034 934 207	
332.	Sengcheya Phone Shop	Mittapheap District, Sihanouk Ville	016 944 343	
333.	Na Reach Shop	Mittapheap District, Sihanouk Ville	016 72 7419	
334.	Roza Handphone Shop	Mittapheap District, Sihanouk Ville	016 528 258	

335.	Lucky Phone Shop	Mittapheap District, Sihanouk Ville	016 524 959	
336.	Sok Chhay Shop	Mittapheap District, Sihanouk Ville	092 939363	
337.	Sok Houch Shop	Mittapheap District, Sihanouk Ville	092 623 170	
338.	Channeun Shop	Stoeung Hav District, Sihanouk Ville	012 373 751	
339.	Keo Brathna Shop	Mittapheap District, Sihanouk Ville	012 976 660	
340.	Ly Thy Mobile Phone Shop	Mittapheap District, Sihanouk Ville	092 740 797	
341.	Sieng Eap Mobile Phone Shop	Stoeung Hav District, Sihanouk Ville	012 797 082	
342.	Dany Mobile Phone Shop	#429 St.Ekareach, Commune 3,District 3, Sihanouk ville	012 314 579	
Air-Con + Refrigerator Repaired and Salle Shop				
a) Phnom Penh Municipality				
343.	Uy Sing Repair and Sales	#369, St. 7c, Mean Chey, Mean Chey, Phnom Penh	012 944 040	
344.	Heng Sambath Selling Repair and Setup all kinds of Air-conditioner	#14A, St.271, Boeung Salang, Toul Kork, Phnom Penh	012 659 979	
345.	Chang Ty Long Installation and repair air-conditioner	#304, St. 128, Toul Kork, Phnom Penh	012 908 678	
346.	Heng Hong Selling Repair and Setup all kinds of Air-conditioner	#476E ₀ , Mao Tse TungBlvd, Teuk La OkII, Toul Kork, Phnom Penh	012 445 557	
347.	Hout Dara Sale, Repair and Installation	#384 BE ₀ , Mao Tse TungBlvd, Boeung Salang, Toul Kork, Phnom Penh	012 710 898	
348.	Long Hong Repair Air-conditioner	#480A, Mao Tse TungBlvd, Teuk La Ok, Toul Kork, Phnom Penh	012 925 468	
349.	Repair Air-Conditioner and Refrigerator Shop	#51, St. 289, Beoung Kork II, Toul Kork, Phnom Penh	011 888 829	
350.	Lim Cheng Hourt Sales and Repair	#286, Preah Sihanouk Blvd, Chamkarmon, Phnom Penh	012 924 373	
351.	Prum Many Sales and Repair	#340 E ₀ , Preah Sihanouk Blvd, Chamkamon, Phnom Penh	016 890 088	
352.	Sharpl Sharpminds Product	#3-20 E ₀ , Preah Sihanouk Blvd, Chamkamon, Phnom Penh	012 923 201	
353.	EAC Full Service Air Conditioner, Refrigerator and Contractor	#44 E ₀ , St. Monireth, Toul Svayprey II, Chamkamon, Phnom Penh	023 353 839	sorya_yieac@yahoo.com
354.	Yong Gong Installation and Repair Air Conditioner	#12E ₀ , St. 217, Toul Svayprey II, Chamkamon, Phnom Penh	012 323 246	yong_gong@yahoo.com
355.	Mohamon Trey Repair Air Conditioner, Refrigerator	#340, St. Sihanouk, Chamkamon, Phnom Penh	012 710 684	
356.	Mekong Air-Conditioner	#64E ₀ , St. Samdach Monireth, Toulsvayprey, Phnom Penh	016 277 271	
357.	So Phear Sale and Repair Air Conditioner, Refrigerator	#182, St. 63, Boeung Keng Kong I, Chamkamon, Phnom Penh	012 843 917	
358.	Sun Long Sale and Repair Air Conditioner, Refrigerator	#560, St. Steng MeanChey, Chamkamon, Phnom Penh	012 662 256	
359.	Selling & Repairing All Kind of Refrigerators	#282E ₀ Preah Sihanouk Blvd, Olympic, Chamkarmon, Phnom Penh	011 260 460 012 609 070	
360.	Tang Srouy Try Repair and Sales	#36A, St. Monireth, Toul Svayprey II, Chamkamon, Phnom Penh	011 903 768	
361.	Sok Sarin Repair and Sales	#712E ₀ , St. 128, Toul Svay Prey II, Chamkamon, Phnom Penh	012 862 186	
362.	Ki Chanthul Repair and Sales	#35, St. 271, Tek Thla, Ressey Keo, Phnom Penh	012 826 480	
363.	Kveang Van Hoy Repair and Sales	#22, st. 149, Veal Vong, 7Makara, Phnom Penh	011 829 196	
364.	New Asia Electronic Shop	#970E ₀ , St. 128, Teuk La Ok, Toul Kork, Phnom penh	023 991 258	

365.	Kim Song Sale and Repair all kinds of Air Conditioner, Refrigerator	# 976A, St. 128, Teuk La Ok I, Toul Kork, Phnom Penh	012 973 602	
366.	Mit Phay Sale and Repair all kinds of Air Conditioner, Refrigerator	#409 E ₀ , Phsar Depo III, Toul Kork, Phnom Penh	011 989 984	
367.	Hak Peng Lim	#119A, St. 215, Phsar Depo II, Toul Kork, Phnom Penh	012409 127	
368.	Tevi Repair all kinds of Air Conditioner, Refrigerator	#581, St. 128, Phsar Depo II, Toul Kork, Phnom Penh	012 588 485	
369.	Ty Heng Sale and Repair all kinds of Air Conditioner, Refrigerator	#714, St. 128, Phsar Depo III, Toul Kork, Phnom Penh	012 918 902	
370.	Narong Repair all kinds of Air Conditioner, Refrigerator	# 10E ₀ , St. 51, Phsa They I, Don Pegn, Phnom Penh	012 857 310	
371.	EAC Repair Air Conditioner & Refregerator I	#46E ₀ , St. Monivong, Toul Svay Prey II, Chamkamon, Phnom Penh	023 353 839	
372.	Hok Chhay Sale & Repair All Kind of Air-Conditioner	#47E ₀ , St. 118, Phsar Thmey I, Doun Penh, Phnom Penh	011 913 872	
373.	Chea Hang Sree Set up and Repair all Kind of Freezer	#486E ₀ , Preah Sihanouk Blvd, Olympic, Chamkamon, Phnom Penh	012 865 235	
374.	Tang Sang Hak Repair All Kind of Air-Conditioner	#747, St. 128, 7 Makara, PhnomPenh	012 918 518 011 918 518	
375.	Thay Long Trade	#285E ₀ , St. 217, Phsar Degol Blvd, Phnom Penh	012 872 482 012 934 407	
376.	Pek Sreng Sales and Repair All Kind of Air-Conditioner	#20A, ST. 432, Boeung Tra Bek, Chamkamon, Phnom penh	012 871 610	
377.	Kim Nay Sales and Repair All Kind of Air-Conditioner	#39, St. 126, Phsar Thmey, Doun Penh, Phnom Penh	023 986 110	
378.	Tong Thong Sales and Repair All Kind of Air-Conditioner	#56, St. 154, Chey Chhom Ness, Doun Penh, Phnom Penh	012 808 073	thong_net@yahoo.com
379.	Sing Long Instalation	#49E ₀ , St. 118, Phsar Thmey, Doun Penh, Phnom Penh	012 889 998 012 401 112	
380.	Ung Yimbun Repair Refrigerator and Air Conditioner	#35E ₀ , St. Pasteur, Phsar Thmey, Doun Penh, Phnom Penh	023 300 367	
381.	Men Narong Sales and Repair Air-Conditioner	#10E ₀ , St. Paster, Phsar Thmey, Daun Penh, Phnom Penh	023 361 343	
382.	Kim Long Installation and Repair Air Conditioner	#675, Monivong Blvd, Boeung Keng Kong III, Chamkamon, Phnom Penh	011 878 300 012 795 022	
383.	Ly Hour Sales and Repair Air-Conditioner	#36, St. 466, Boeung Trabek, Chamkamon, Phnom Penh	012 496 459 011 635 890	
384.	Ramaress Sales and Repair Air-Conditioner	#124, St. 63, Boeung Keng Kong, Chamkamon, Phnom Penh	012 316 909	
385.	Vy Khoa Sales and Repair Air-Conditioner	#462E ₀ , St. 128, Mitapheap, 7 Makara, PhnomPenh	011 977 489	
b) Kampong Cham Province				
386.	Cheang Than Sale and Repair Refrigerator and Air conditioner	St. Thmei, Kompong Cham Distric, Kompong Cham Province	012 796 454	
387.	Cheang Lym Repair Refrigerator and Air conditioner	St. Thmei, Kompong Cham Distric, Kompong Cham Province	092 955 235	
388.	Virak Repair Shop	Vealvong Village, Vealvong Commune, Kompong Cham Distric, Kompong Cham	011 939 487	
389.	Kung Chher Repair Shop	Vealvong Village, Vealvong Commune, Kompong Cham Distric, Kompong Cham	012 872 298	
390.	Keng Meng Try Repair Shop	Vealvong Village, Vealvong Commune, Kompong	011 901 590	

		Cham Distric, Kompong Cham		
391.	Lourn Sopheap Repair Refrigerator and Air conditioner	#135, Phum 3, Vealvong Commune, Kompong Cham Distric, Kompong Cham	012 849 969	
c) Svay Rieng Province				
392.	Chhen Kean Shop	Svay Rieng Province	092 873 058	
393.	Lim Luy Shop	Svay Rieng Province	012 998 499	
d) Sihanoukville City				
394.	Ros Mean Shop	Vithey Ekareach, Mittapheap Sihanouk Ville	034 933 409	
395.	Heng Shop	Vithey Ekareach, Mittapheap Sihanouk Ville	016 384 036	
396.	Kim Ny	#157 Vithey Ekareach, Mittapheap Sihanouk Ville	012848 252	
e) Battambang Province				
397.	Meng Hour Shop	#269,St.5 Say Por Commune, Battambang District , Battambang Province	012 332 594	
398.	Chieng Len Shop	#317, St.25, , Say Por Commune, Battambang District , Battambang Province	012 717 518	
399.	Tep Borey Shop	Say Por Commune, Battambang District , Battambang Province	012 238 782	
400.	Prom Sophal Shop	#288, St2 , Say Por Commune, Battambang District , Battambang Province	012 932 656	

REFERENCES



1. Announcement on the interception and ban of the importation of old computer/spare-parts, 12 March 2002
Prepared by the Department of Customs and Excises on behalf of the Government of Cambodia
2. Law on Environmental Protection and Natural Resource Management (MoE, 1996)
3. Report on the Survey of the Import and the Environmentally Sound Management of Electronic Wastes in the Asia-Pacific Region, December 2005
Prepared by Asia-Pacific Regional Center for Hazardous Waste Management Training and Technology Transfer
4. Sub-Decree on Solid Waste Management (MoE, 1999)
5. Sub-Decree on Water Pollution Control (MoE, 1999)
6. Sub-Decree on Air Pollution, Noise Disturbance and Vibration (MoE, 2000)
7. Sub-Decree on Business Facilitation by Risk Management (MoC, 2006)
8. National Strategic Development Plan 2006-2010
9. Project Proposal on the Environmentally Sound Management of Electrical and Electronic Waste in Cambodia
Prepared by the Department of Pollution Control, MoE, Cambodia
10. Regional Technical Guideline for Inventory of E-waste (Draft)
Prepared by: Ambika Consultants, Jakarta, February 2007
11. Regional Technical Guideline for Inventory of E-waste (Draft)
Prepared by: Ex Corporation, March 2007
12. Statistics of imported EEE (2004-2006); Dept. of Kamcontrol, MoC
13. Statistics of imported EEE, Dept. of Customs and Excises, MoEF
14. Statistical Year Book 2003
Prepared by National Institute of Statistics, Ministry of Planning