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Achieving Circular Economy for the E-Waste Sector in Viet Nam

Jaipur, India, 03-05/3/2025

Introduction

- Vietnam does not have **clear legal definition** of E-waste.
- There is **not official and updated data** on e-waste inventory, thus, the number of e-waste generation is remained unclear and unofficial.
- Nevertheless, e-waste **can be predicted by statistics** of increasing electronic and electrical appliances (EEA).
- There are not much **research on e-waste** in Vietnam, both on inventory of e-waste and recycling technology.
- E-waste is considered **as valuable resource but not waste** in community, and is under the control of informal sector, so the flow is difficult to define and estimate.

Use of Electrical and Electronic Appliances

Some main durable goods per 100 households by urban - rural, region, income quintile, sex of household head and main economic industry of household

Đơn vị tính/*Unit*: Cái/*Piece*

	Loại đồ dùng/*Type of durable goods*										
	Ô tô/ *Car*	Xe máy/ *Motorbike*	Máy điện thoại/ *Telephone*	Tủ lạnh/ *Refri-gerator*	Đầu video/ *Video*	Ti vi màu/ *Colour Tivi*	Dàn nghe nhạc các loại/ *Stereo equipment*	Máy vi tính/ *Computer*	Máy điều hoà nhiệt độ/ *Air-conditioner*	Máy giặt, máy sấy quần áo/ *Washing, drying machine*	Bình tắm nước nóng/ *Water heater*
CẢ NƯỚC/*WHOLE COUNTRY*											
2006	0,2	68,6	51,4	23,0	44,5	82,0	12,8	7,7	3,7	9,3	7,6
2008	0,4	89,4	107,2	32,1	53,4	92,1	14,9	11,5	5,5	13,3	10,1
2010	1,3	96,1	128,4	39,7	54,2	85,9	12,6	17,0	9,4	17,6	13,3
2012	1,8	115,3	154,4	49,7	55,5	97,3	13,6	18,8	11,6	22,7	18,5
2014	2,1	128,6	180,0	60,7	54,8	101,1	12,7	22,7	17,0	28,8	25,0
2016	2,7	138,1	193,3	69,8	43,7	102,4	14,1	23,6	25,3	35,0	29,8
2018	3,3	150,6	205,4	78,6	26,2	100,9	11,7	22,3	35,7	44,7	36,4
2020	4.8	156,2	209.8	85,4	13.1	96.1	10.5	21,8	51,0	54,3	42,6
2022	6.0	165,0	246.0	95.0	10.0	99.0	8.0	35,0	68,0	60,0	52,0

Source: GSO, 2023

(Unit: pieces per 100 households)

E-waste generation in Viet Nam

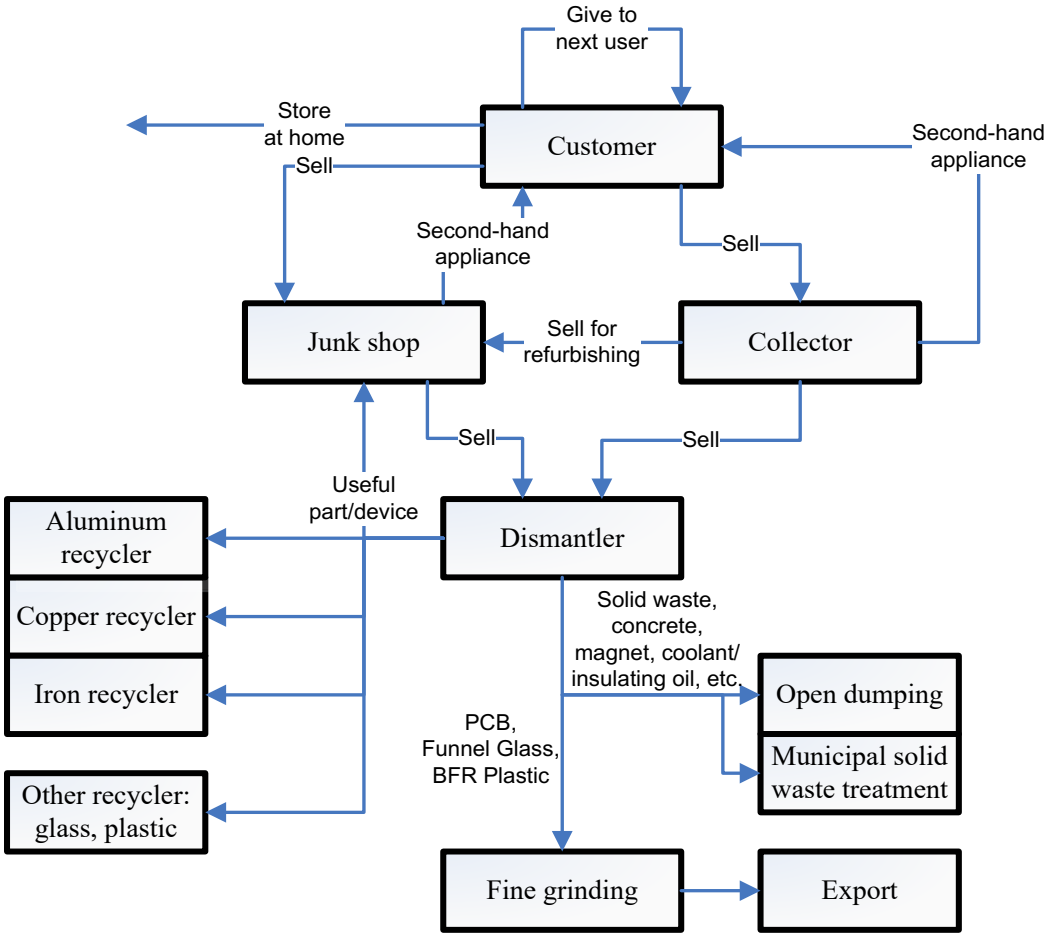
	Generated e-waste volume (thousand ton)			Generated e-waste per capita, (kg/capita)		
	2014*	2020**	2022***	2014*	2020**	2022***
Vietnam	**116**	**257**	**516**	**1.3**	**2.7**	**5.3**
Cambodia	16	19	25	1.0	1.1	1.5
Indonesia	745	1618	1,886	3.0	6.1	6.9
Laos	8	17	27	1.2	2.5	3.6
Malaysia	232	364	411	7.6	11.1	12.2
Myanmar	29	82	76	0.4	1.6	1.4
Philippines	127	425	537	1.3	3.9	4.7
Singapore	110	113	121	19.6	19.9	20.3
Thailand	419	621	753	6.4	9.2	10.5
China	6,033	10,129	12,066	4.4	7.2	8.5
Japan	2,200	2,569	2,638	17.3	20.4	21.2
Korea	804	818	930	15.9	15.8	17.9
Global	41,800	53,600		5.9	7.3	

Source: UNU/UNITAR/ITU, Global E-waste Monitor, 2014, 2020, 2024

E-waste management

Before 2020

- ✓ E-waste is classified and managed as **hazardous waste**
- ✓ Most of the e-waste flow are **under control of informal sector** without any control from the government.
- ✓ Limited treatment by formal sector.



Informal Recycling

- Attached with the **private collection** system; attached with the **illegal flows** (transboundary flow of e-waste).
- **Dismantling is major** process that allows recovery some basic materials (ferrous and non-ferrous metals, plastic, electronic elements).
- Conducted in some **dismantling centers** (Tràng Minh – Hai Phong; Bùi Dâu, Phan Bôi, Dị Sử - Hung Yen, Tề Lỗ - Vinh Phuc, Văn Môn – Bac Ninh, etc.) due to the volume.
- **Manual operation, backward technology and rudimentary equipment** with/without personal protection equipment.
- **High benefit** without taking care on environmental issues; **High environmental impact/pollution** from dismantling or recycling process.

Formal Recycling

- **Small capacity treatment**/recycling line that can not meet the treatment demand of generated e-waste.
- **Simple technology** that cannot recover/utilize all of the valuable materials from e-waste: *Recycling/recovery metals by gravity, hydro-metallurgy, electrolysis*
- **Low benefit (recycling) or even non-benefit (treatment)** processing line that cannot compete with the informal sector and just apply for industrial e-waste.
- **Remaining of environmental issue** such as air emission, solid waste and wastewater.
- **Self-development technology** without collaboration with research institutes (research and research development).

Achieving Circular Economy: E-waste under EPR by LEP 2020

Mandatory recycling rates of WEEE

No.	Product and packaging grouping	Product and packaging catalog	Recycling rate for the first 3 years (%)
1	***Đ.1. Refrigeration Equipment***	Đ.1.1. Refrigerators, Freezers, Air conditioner, Electric stove, Induction cooker, Infrared cooker, Oven and Microwave oven	05
		Đ.1.2. Washing machine, Clothes dryer, Speaker and Amplifier	09
2	***Đ.2. Monitor Devices***	Đ.2.1. Monitor devices: Television and Monitor of Desktop Computer	07
3	***Đ3. Mobile Electronic Devices***	Đ.3.1. Tablet, Laptop, Cameras (including flash) and Camcorder	09
		Đ.3.2. Mobile Phone	15
4	***Đ4. Office Electronic Devices***	Đ.4.1. Desktop Computer (Excluding Monitor), Printer and Photocopier	09
5	***Đ5. Light bulk***	Đ.5.1. Compact Fluorescent Lamp and Fluorescent Lamp	08
6	***Đ6. Solar Panel***	Đ.6.1. Solar panel	03

Source: GOV, 2022. Annex 22, Decree No. 08/2022/ND-CP

Conclusions and ways forward

- There are many challenges in e-waste management: **fast increasing volume** control of **informal sector; cause loss of materials and impact to environment and public health;** formal technology is still **ineffective**, in term of capacity and material recovery, and is still small compared to actual demand.
- EPR is newly established which face **challenges on data base; enforcement; financial mechanism; human resources; M&E**…
- Under EPR schemes, **formalization is needed**: the reforming of e-waste recycling system; informal recycler and dismantler to be involved into a new management system, where most of the valuable material should be recovered, and all of the hazardous matter should be eliminated.
- **Reporting and information exchange** mechanisms are required to be fulfilled by manufacturer, recycler, PROs and these mechanisms are put under the supervision of the government.
- Development of **formal recycling industry** is needed, especially for WEEE.

Thank you for your attention !

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