



ERIA Digital Innovation and Sustainable Economy Centre (E-DISC): Visible Initiative for ASEAN and Japan (16 December 2023)

# Study on Circular Value Chains of Electrical and Electronic Equipment (EEE) in ASEAN

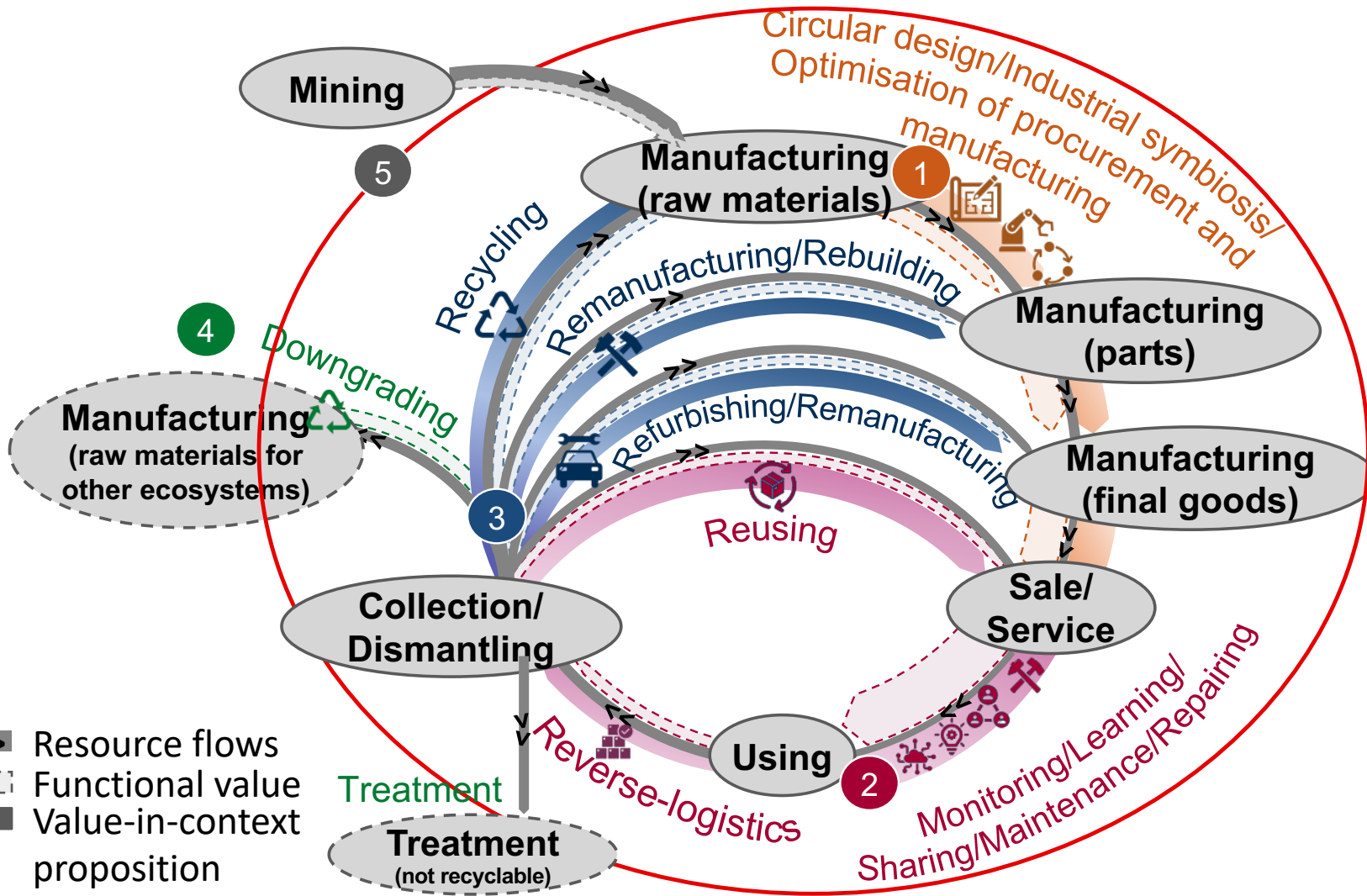
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# Introduction

- This study is a response to a request from ASEAN and Japan for the **ASEAN-Japan Circular Economy Initiative (AJCEI)**.
- The focus is on addressing urgent issues related to **electrical and electronic equipment (EEE) waste**, which is **one of the fastest-growing waste streams**, and presenting policy recommendations for **future collaboration between ASEAN and Japan**.
- The study highlights the importance of **establishing circular value chains for EEE in ASEAN** to maximize resource efficiency and minimize negative environmental impact.

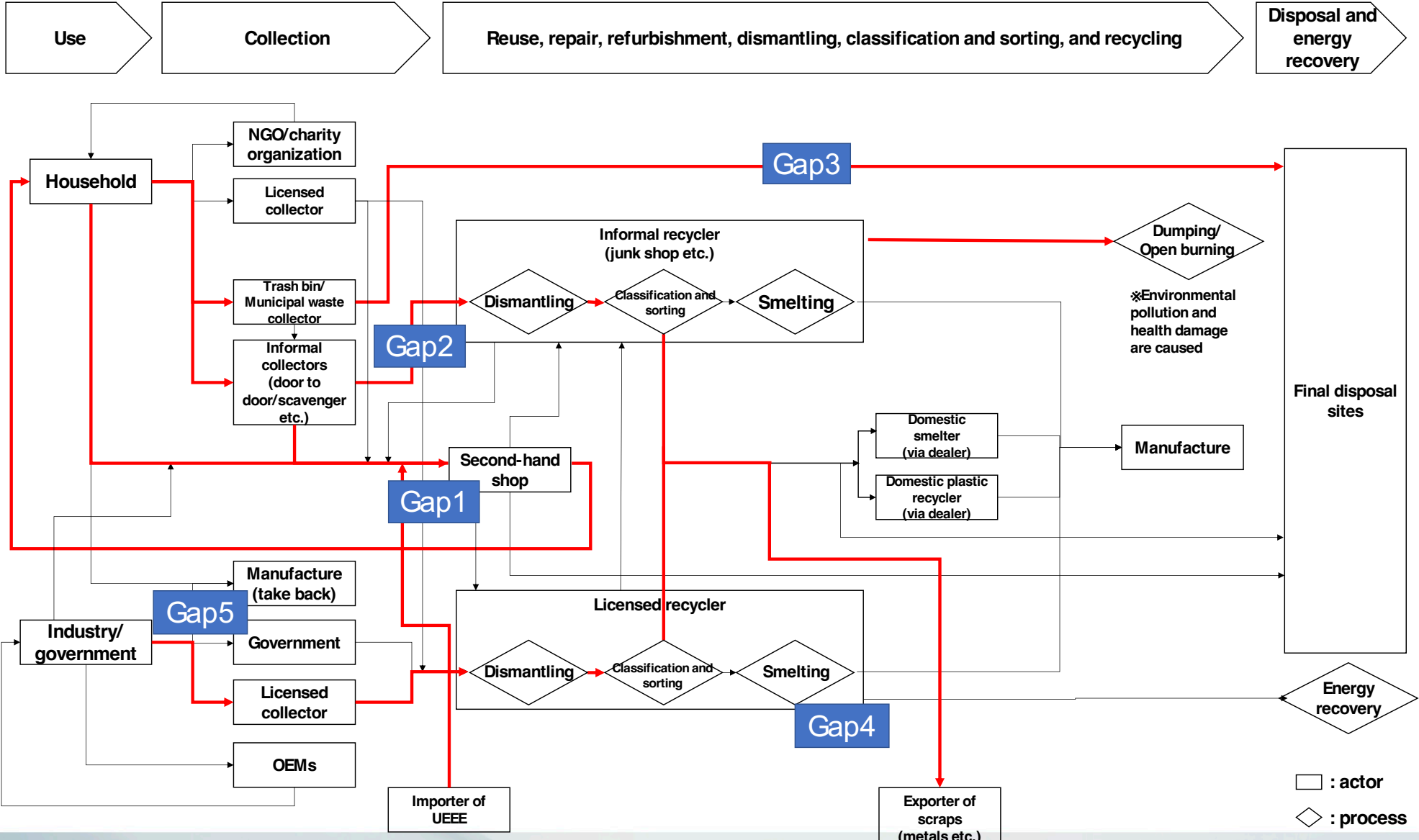
# Circular Value Chains – A Model



- 1 **Creating added values with design and technologies**
- 2 **Retaining values through efficient uses**
- 3 **Recovering the values of used products**
- 4 **Maintaining circulations for rebuilding lost values**
- 5 **Comprehensive support for expanding and transitioning to circular business**

# Chapter1: Current situation on the circular value chains of EEE in ASEAN

# Identified Gap in the Circular Value Chains



# Gap Analysis between Japan and ASEAN

- This study provides the overall information on the circular value chains of electrical and electronic equipment (EEE) in ASEAN countries and Japan.
- This study **aims to investigate the current situation on the circular value chains of EEE in ASEAN countries by literature review and analyze the gap of value chains between ASEAN and Japan and identify the challenges for ASEAN countries** to improve their circular value chains.
- The choice of Japan as a model case is based on its status as an exemplary case in establishing and enforcing legal systems, such as the Act on Recycling of Specified Kinds of Home Appliances (Home Appliance Recycling Act) and the Act on Promotion of Recycling of Small Waste Electrical and Electronic Equipment.



# Gaps and Challenges in the Current Circular Value Chains in ASEAN

1. **Not well-managed reuse activities:** Need certification for compliant and quality-assured reuse shops and traceability for reused products.
2. **Low presence of formal collectors and recyclers:** Establish collection systems from households, enhance capacities of Used EEE (UEEE) and e-waste treatment, and regulate unlicensed collectors and recyclers to prevent risks of environmental pollution and health damage.
3. **E-waste commonly ends up with municipal waste:** Establish infrastructure for e-waste from households and enhance consumer awareness of proper e-waste disposal.
4. **Low capacity of metal scrap recycle:** Enhance domestic capacities and collaborate with countries capable of smelting metals.
5. **Lack of remanufacturing activities:** Establish efficient collection and take-back systems linked to manufactures and develop remanufacturing capacities.

# Chapter 2: Legal systems and standards for improving the circular value chains of EEE in ASEAN countries and advanced countries



# Current situation on legal systems of UEEE and e-waste

Legal system for proper (hazardous) waste treatment



Preparing the legal system for resource circulation is needed.

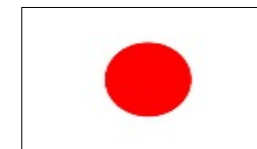
Legal system for resource circulation

Enacting law

Enforcement



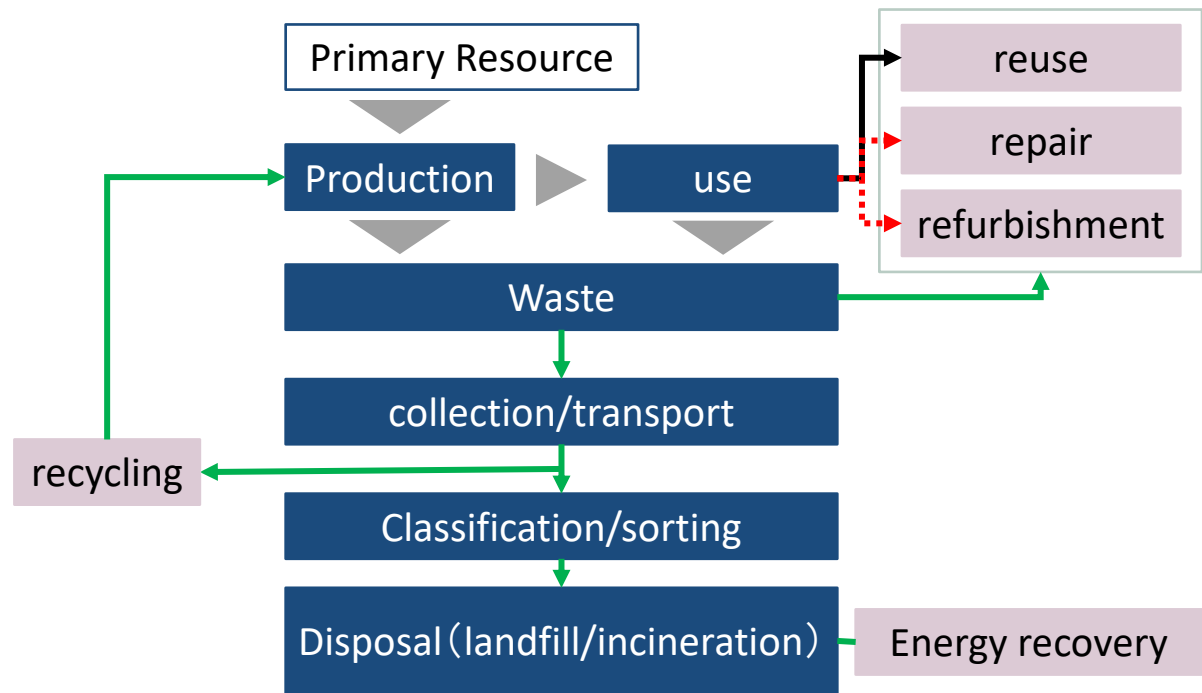
Enforcement of related law is needed.



# Overview of the legal system survey

- One approach to establishing a circular value chain for electrical and electronic equipment (EEE), is to develop a legal system.
- This study focuses on **Japan and the EU as advanced cases**, which have developed various laws, regulations, and systems to promptly address the changing characteristic of waste problems at different stages.
- The focus is on presenting policy recommendations for improving the value chain through the legal system, based **on trends in the development of laws and regulations in ASEAN countries and advanced examples from Japan and the EU.**

# Possibility of using Japanese experience



- ← Legal system established (obligation is prescribed)
- ← The concept is shown in law (particular obligation is not prescribed)
- ← Private companies are taking the initiative (making standards)

## 1. Disposal of Waste Properly

- Clarify the standards and responsibilities that waste generators and processors must adhere to at all stages of waste collection and treatment.
- Establish mechanisms to monitor and penalize improper disposal.

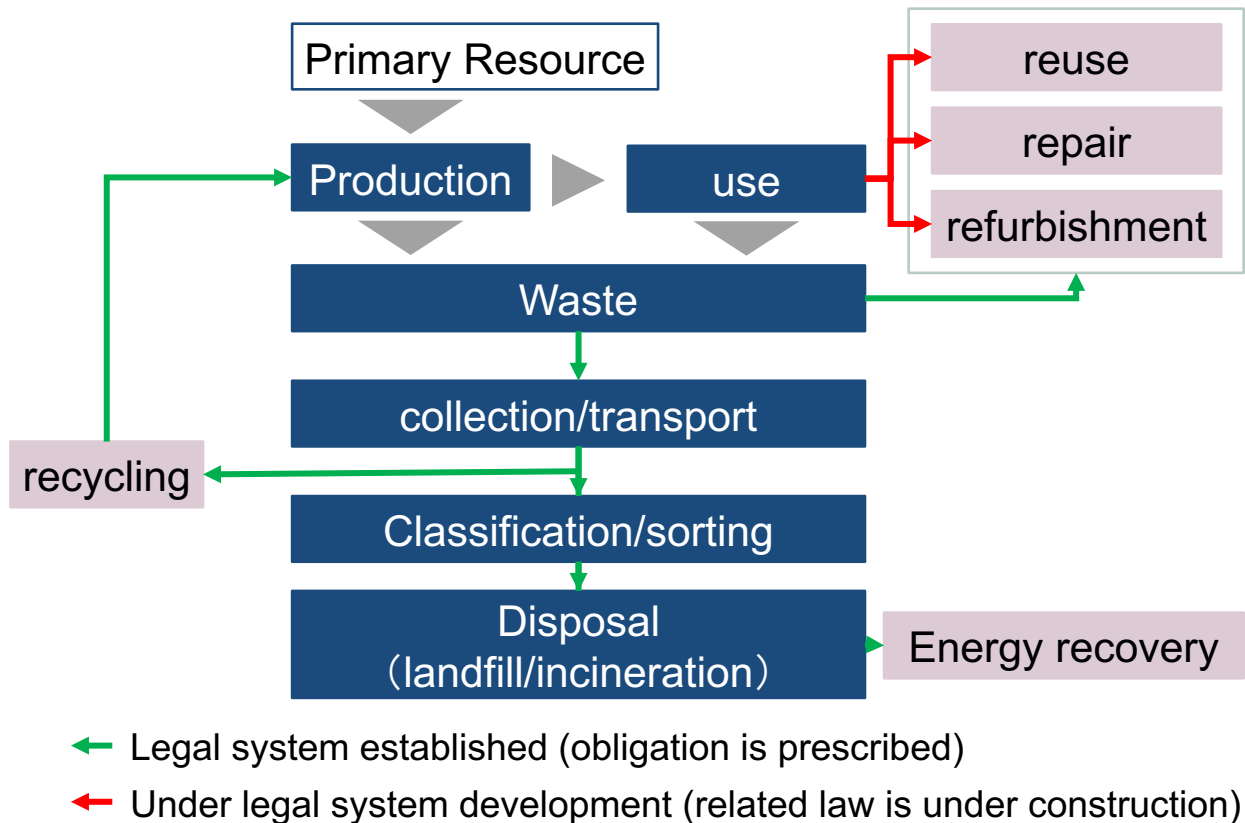
## 2. Establishment the Recycling-based society

- Develop recycling laws for each individual product category.
- Mandatory collection and recycling of e-waste and end-of-life vehicles in accordance with EPR.
- Provide grant programs for the development of waste treatment facilities and for the development and implementation of treatment technologies.

## 3. Transition to a Circular Economy

- Develop the strategy for a growth-oriented, resource-autonomous circular economy.

# Possibility of using EU experience



## 1. Disposal of Waste Properly

- Establish the legal system with shades of legal binding force that takes into account regional characteristics of member countries and other factors.
- Establish a common law (Directive) that sets high goals for the EU Community as a whole, leaving the specific details to the national laws of each country.

## 2. Growth through circular economy

- Develops regulations that are directly binding on member countries.
- Impose strong obligations on the private sector at every stage of the value chain, from product design and manufacture to reuse, repair, reclamation, and recycling.

# Legal Systems in ASEAN (Common)

## Current Situation in ASEAN as a whole

- ASEAN countries have developed legal systems for the proper waste treatment. While some ASEAN countries have developed legal systems and plans for the resource circulation, including e-waste, others are still in the process of developing such systems.
- The implementation of these legal systems varies across countries, and challenges exist within the circular value chains surrounding e-waste.
- In countries where regulations for proper waste management, the informal sector often plays a significant role in processing e-waste.

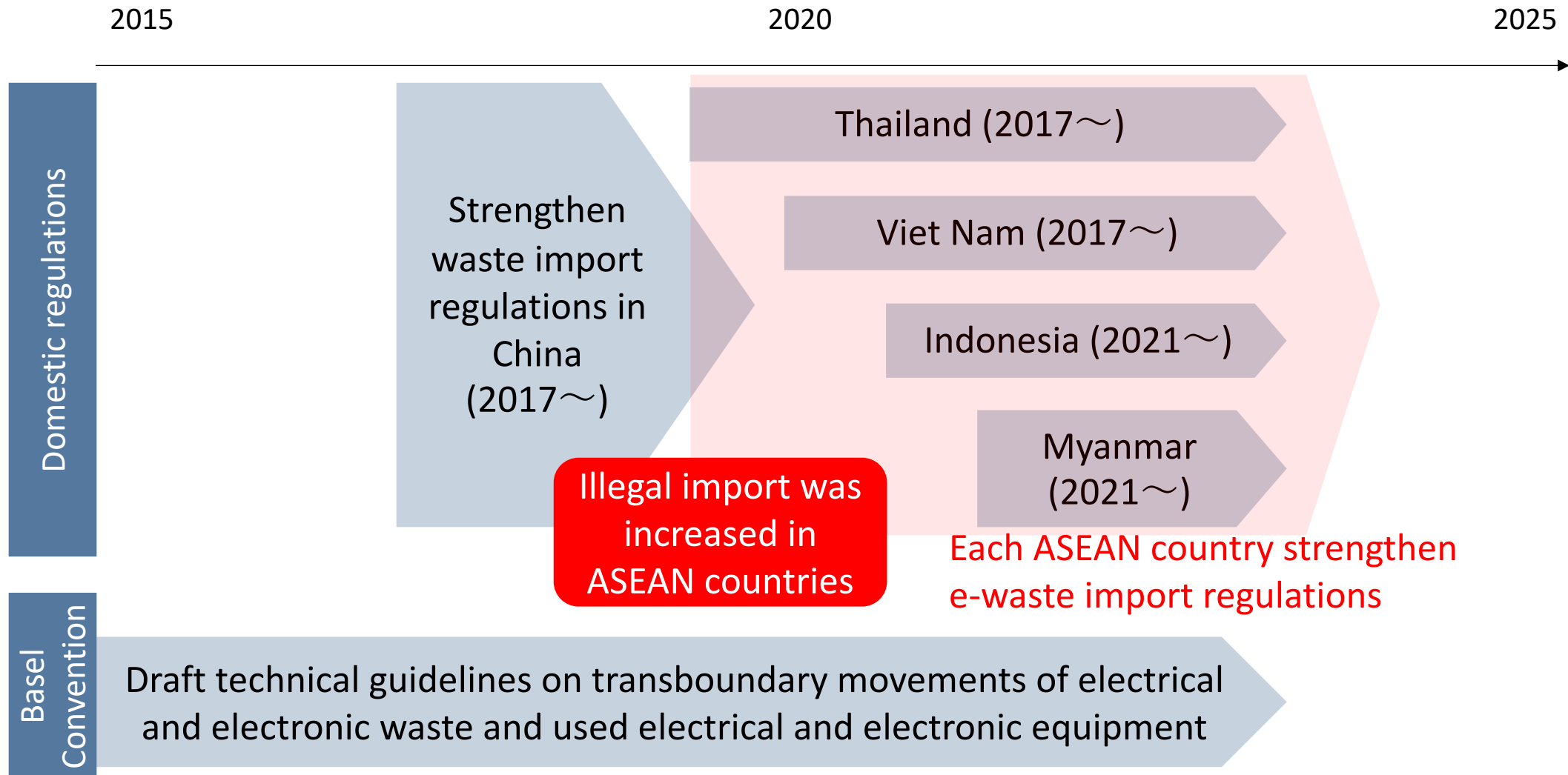
# Challenges in the Current Legal Systems in ASEAN

- 1. Collaborative mechanisms to support legal systems:** Enhance public awareness (e.g. through community-based recycling projects), promote collaboration between ASEAN and Japan through private and intergovernmental initiatives.
- 2. Enhancement of legal systems for resource circulation, especially e-waste management:** Establish the polluter-pays principle, extended producer responsibility, detailed standards and penalties, and address shortages of administrative manpower.



# Chapter 3: International rules and standards on the trade of UEEE and e-waste

# Current situation on the regulation of e-waste and UEEE



# International rules and regulations in ASEAN countries on the trade of UEEE and e-waste

- Import regulations have been established in ASEAN countries to prevent the import of UEEE and e-waste that can cause the environmental pollution, while some international rules are established under the Basel Convention.
- This study reviews related rules under the Basel Convention and regulations on import of UEEE and e-waste in ASEAN countries.
- As a reference case of alignment of rules, this study reviews international rules and standards on the trade of remanufactured goods in U.S.

# Challenges

- Some ASEAN countries ban the import of UEEE, and some countries permit UEEE which meets criteria. It is worth noting that the domestic laws and regulations of each ASEAN country should be taken into account, especially regarding Business-to-Business collaboration and trade facilitation matters.
- However, to promote proper e-waste trade management and smooth trade of permitted UEEE and e-waste, establishing commonly understood and reliable standards (e.g. Basel Convention) among ASEAN and Japan is important as well.
- As for the remanufactured goods, ASEAN and Japan could refer to the rules in the U.S. activities to promote remanufacturing.

Chapter4: Introduction of excellent business cases in Japan, Europe, and the United States, which contributes to improving the circular value chain of EEE

# Selected Excellent Business Cases (excerpt)

Reuse  
Repair  
Refurbish

Remanufacturing



Recycle

- Collection, physical and mechanical treatment

- Smelting





# Overview of Excellent Business Case Study

1. The cases related to the circular value chains of EEE in Japan, Europe, United States and ASEAN countries were collected based on databases and reports.
2. The collected cases were screened based on two criteria.
  - whether an excellent business case can provide the functions which lack in ASEAN countries
3. Excellent business cases related to reuse, refurbish, repair, remanufacturing, recycling are collected. Not only the excellent cases in Japan but also excellent cases in ASEAN countries are found. These cases are considered to be useful when considering future collaboration among ASEAN countries and Japan.

# Selected Excellent Business Cases

## **FUJIFILM** (Remanufacturing)

- The company produced and sold the remanufactured Multifunction Peripherals (MFPs) in Japan.
- They have their own take back system, unique technology for remanufacturing, their standards for distinguishing parts that can be used for remanufacturing and parts that cannot be used for remanufacturing, and their standards for quality and safety assurance.

# Selected Excellent Business Cases

The following smelting companies in Japan recover various non-ferrous metals (Au, Ag, Cu etc./some of them also recover Pb, Zn, Ni) by dry and hydrometallurgical method.

## (Recycling, Smelting)

- The company mainly recovers metals from smelting residue and e-waste (such as smartphones, waste electronic substrates, etc.) .
- There are waste management offices in Indonesia, Thailand and Singapore and Zn smelting plant in Thailand.

## **JX Metals** (Recycling, Smelting)

- The company mainly recovers metals from e-waste (such as smartphones, computers, home appliances, etc.) and industrial waste.
- They collect scraps from their own oversea collection bases (Taiwan, USA).

## **MITSUBISHI MATERIALS** (Recycling, Smelting)

- The company mainly recovers metals from various scraps, batteries and industrial waste.
- They have subsidiary producing and selling electrolytic copper in Indonesia.

# Selected Excellent Business Cases

## (Recycling, smelting)

- The company has license for treating e-waste and the recycling of unfinished EEE with hydrometallurgical method. The company recycles e-waste through the processes including cutting, crushing, milling, separating, smelting, and refining, and recycled materials are exported to the other countries.
- Collaboration with this company could contribute to ensuring e-waste recycling capacity, solving a lack of technologies and equipment for e-waste processing.



**EcoBatt-Energy**  
CAMBODIA

## (Recycle, collection)

- These companies have established collection systems of UEEE and e-waste with in their countries. Especially, Wongpanit has collaborated with informal sectors by formalizing them.
- They would have know-how of collaboration with various actors including informal collectors. Formalizing informal collectors is one of the common and critical issues in ASEAN countries, and these companies could offer useful implication to the other countries.

# Chapter 5: Circular economy strategy and plan in ASEAN countries

# Circular Economy Strategy and Plan in ASEAN

- ASAEN published Framework for Circular Economy and is developing specific implementation plan. Some countries have established circular economy strategy and plan. Circular economy will be promoted in ASEAN based on them.
- Those strategies and plans commonly aim to achieve both economic impacts and environmental impacts and describe various approaches.
- To achieve both economic and environmental goals while involving various players, the close cooperation the bureau which makes economic policies and the bureau which makes environmental policies is important.

**ASEAN :** Framework for Circular Economy for the ASEAN Economic Community (2021)

**Indonesia:** The Future is Circular: Concrete Steps for Circular Economic Initiatives in Indonesia (2022)

**Cambodia:** Circular Economy Strategy and Action Plan (2021)

**Thailand:** BCG concept and main policies (2021)

**Viet Nam:** Approving the circular economy development scheme (2022)



# Chapter6: Policy recommendations for the circular value chain of EEE in ASEAN

# Policy Recommendations

1. **Japan should share its experiences and best practices** in establishing and enforcing effective legal systems and supply chains for recoverable E-waste in ASEAN countries by conducting workshops, while providing opportunities to learn about trade facilitation matters in UEEE and remanufactured goods.
2. **Foster ASEAN-Japan business collaboration** through such as technical cooperation, establishment of joint ventures and international resource circulation, especially focusing on E-waste recycling.
3. **In closer alignment with international rules and standards, and advance trade openness between ASEAN and Japan** by fostering the market and establishing commonly understood and reliable standards for UEEE and recoverable E-waste materials as well as remanufacturing.

Note: Each AMS domestic laws and regulations should be taken into account, regarding the Business to Business collaboration and trade facilitation matters in UEEE, E-waste and remanufactured goods.

Thank you!