Chapter 2

Legal Systems and Standard for Improving the Electric and Electronic Equipment Circular Value Chains of ASEAN and Beyond

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Chapter 2

Legal Systems and Standards for Improving the Electric and Electronic Equipment Circular Value Chains of ASEAN and Beyond

1. Introduction

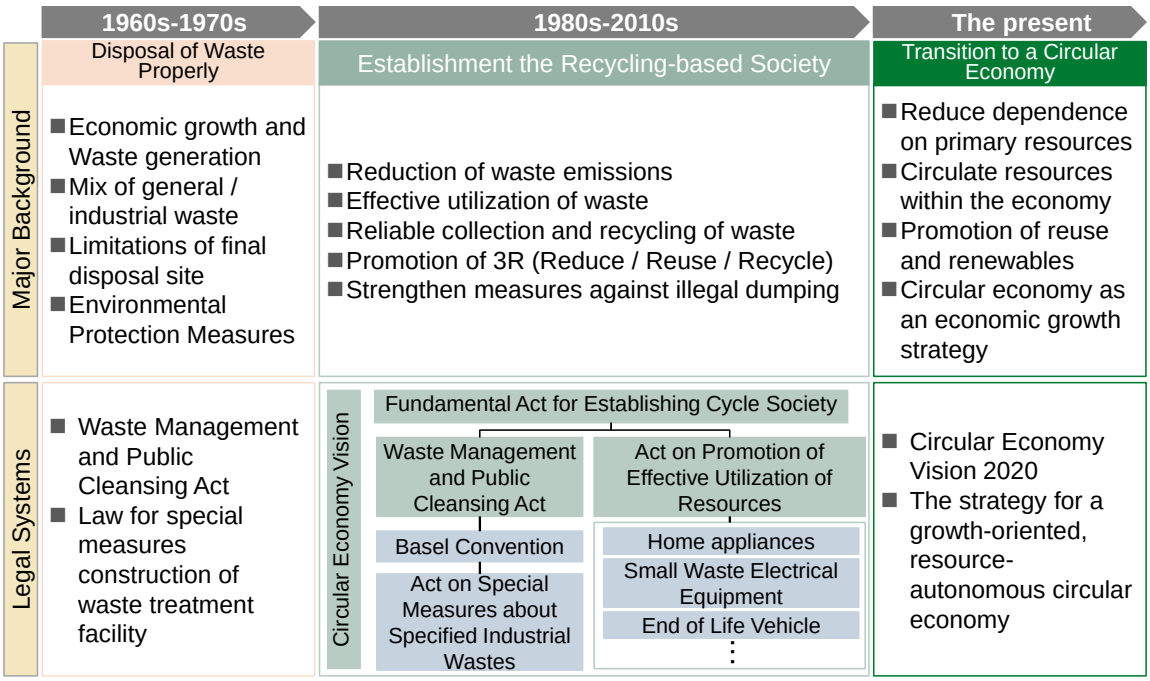
Waste issues are evolving with the global expansion of industrial and economic activities and the improvement of living standards over time. Developed countries have established various laws, regulations, and systems to address these changing characteristics at different stages. This chapter presents an overview of waste management in Japan and the European Union (EU), particularly from the perspective of the development of their associated legal systems. By linking these legal systems to the social background of each place, this section aims to provide guidance for developing legal systems that help address the current waste problems confronting Association of Southeast Asian Nation (ASEAN) Member States (AMS).

2. Waste-Related Legal System in Japan

2.1. Overview

In Japan, waste-related legal systems have changed in accordance with the shifting social background of the country, from proper waste disposal, to the establishment of a recycling-based society, and finally to the transition to a circular economy (Figure 2.1).

Figure 2.1. Overview of the Waste-Related Legal System in Japan



Source: Authors.

From the 1960s, in accordance with economic growth, industrial and other types of waste – including e-waste – increased in Japan. Environmental pollution and health hazards, due to improper waste disposal, became apparent. Therefore, in 1971, Japan enacted the Waste Management and Public Cleansing Act, which established the foundation for Japan's waste disposal system, focussing on proper disposal. The act classified waste into general and industrial, imposing responsibility for industrial waste disposal from business activities. It also secured a waste treatment system through outsourcing, introduced a permit system in which local governments grant and supervise licensed private operators to conduct general and industrial waste collection, and a created a manifest system to confirm that the waste is properly managed until its final disposal.

This act requires, in principle, that waste generators dispose of their waste (i.e. producer responsibility). However, it is impractical for citizens to dispose of general waste themselves; similarly, it is rare for industrial waste generators to have the capacity to properly dispose of industrial waste on their own. The act thus allows outsourcing of the collection and treatment of industrial waste to private operators. These private operators are licensed and supervised by local governments to ensure proper disposal.

The manifest system requires waste generators to confirm – through documents – that industrial waste has been properly disposed of in accordance with contracts when the disposal is outsourced. The purpose is to prevent improper disposal, such as illegal dumping, and to ensure the responsibility of the waste generators. In addition, to ensure the smooth operation of the waste treatment system, the act sets various standards for proper waste treatment, clarifies responsibilities of waste generators and processors, and strengthens regulations through mandatory measures and penalties.

However, emitters still lacked a sense of responsibility for industrial waste treatment costs, so industrial waste often flowed to dischargers that did not properly dispose of the waste and to unauthorised companies, resulting in rampant illegal dumping and improper disposal. Thus, by the 1980s, the mechanisms focussing on large-volume industrial waste disposal reached their limits. It became necessary to address waste generation through emissions control, recycling, and other ways. In 1991, the act thus added the reduction of waste generation to its objectives, and a new law for promotion of effective utilisation of resources was enacted to clarify policies aimed at reducing waste generation. It also set targets for the reduction of industrial waste and monitored the results.

In response to demands of society and the market, companies begun to promote product design and manufacturing that facilitates recycling and reuse and contributes to the reduction of waste generation, which also brought about changes in the industrial structure. In addition, operators that generated a large amount of industrial waste were obligated to formulate treatment plans, implement measures to control emissions, and report to local governments on their associated plans and measures.

At the turn of this century, the government began to establish a preliminary system centred on recycling. The Act on Promotion of Utilisation of Resources and various recycling laws (e.g. Home Appliance Recycling Act, Construction Recycling Law, Food Recycling Law, End-of-Life Vehicle Recycling Law, and Small Home Appliance Recycling Act) were developed in the 2010s, maintaining an emphasis on proper waste disposal. In particular, they enforced emitter responsibility and extended producer responsibility (EPR), introduced stricter penalties for improper disposal, secured appropriate treatment facilities, and developed special measures for industrial waste disposal (METI, 2006).

In the 2020s, Japan is restructuring its policy towards a circular economy, focussing on resource reuse and recycling, resource generation, resource sharing, and long-term use of resources. It aims to establish a growth-oriented, resource-autonomous circular economy. By making the domestic resource circular system self-sustaining and resilient, Japan intends to address the risks of resource and energy constraints, climate-change issues, and waste generation problems, ultimately achieving sustainable and steady economic growth (METI, 2006).

Table 2.1. Established Waste-Related Acts in Japan

Established Act	Contents
Waste Management and Public Cleaning Act (1971)	Preserves the environment, and improves public health through the restriction of waste discharge, appropriate sorting, storage, collection, transport, recycling, and disposal.
	• Clarifies waste disposal responsibilities and disposal standards. • Establishes the Discharger Responsibility Principle. • Creates a permit system for industrial waste collectors and transporters. • Creates standards for collection, transport, and disposal. • Creates a manifest system for collection, transport, and disposal. • Excepts licenses under the Recycler Designation System. • Allows the installation of industrial waste treatment facilities. • Establishes penalties to prevent illegal dumping and other improper disposal.
Act on Promotion of Effective Utilisation of Resources (1991)	Ensures effective use of resources, and promotes effective use of recycled resources and recycled parts even when a significant portion of the recycled resources and parts are disposed of without being utilised. Takes necessary measures to promote effective use of resources, reduces the generation of used products and by-products, and promotes the use of recycled resources and parts, thereby contributing to waste reduction, environmental preservation, and economic development.
	• Regulates environmental considerations at the design and manufacturing stages of products. • Establishes voluntary collection and recycling systems by operators.
Act on Recycling of Specified Kinds of Home Appliances (1998)	Realises sound waste treatment and efficient use of resources through the reduction of waste and full utilisation of recyclable resources for a sound material cycle, and introduces a new framework of recycling whose principle is to place an obligation on manufacturers and retailers of home appliances.
	• Recycles parts and materials by having manufacturers take back used products that are returned by consumers to dealers. • Specifies four post-consumer home appliances: air conditioners, televisions, refrigerators and freezers, and washing machines/dryers.

Established Act	Contents
	• Mandates recycling by manufacturers. • Requires a consumer to pay a collection and transport fee and a recycling fee when disposing of a product.
Act on Recycling of Specified Kinds of Small Waste Electrical Equipment (2015)	Promotes the recycling of small waste electrical and electronic equipment, thereby ensuring proper disposal of waste and effective use of resources and contributing to the preservation of the environment and economic development.
	• Targets electronic devices used by ordinary consumers in their daily lives, such as computers, cell phones, digital cameras, watches, and hair dryers. • Requires citizens to separate and dispose of appliances according to the collection method designated by the municipality in which they reside. • Requires proper recycling through delivery to proper operators.

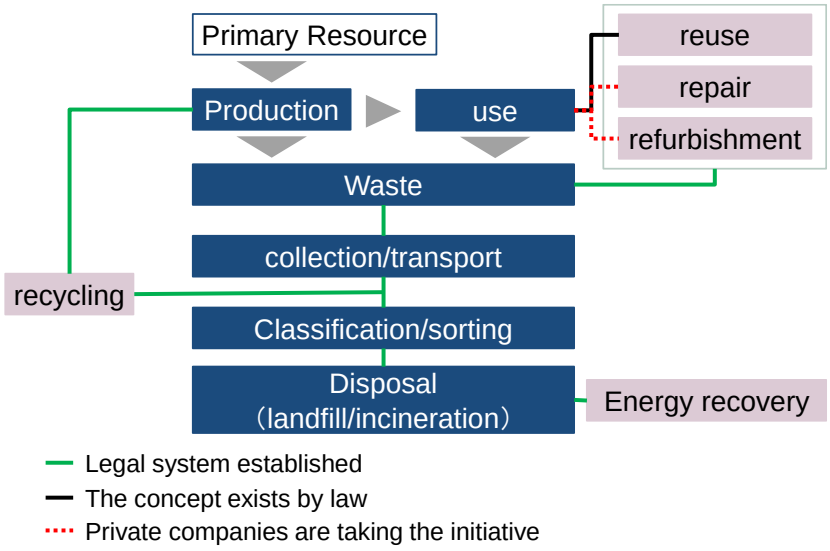
Source: Authors.

2.2. Lessons Learned

Japan has developed a waste management system that encompasses both response measures to properly dispose of the large amount of waste generated by its economic growth as well as preventive measures to control waste generation itself (Table 2.1). An important feature is the clarification of responsibilities, established through standards that must be adhered to by waste generators and processors at all stages of waste collection and treatment. The system also includes mechanisms for monitoring improper disposal and penalties, with the aim of enhancing awareness and competence amongst parties involved in waste management. Furthermore, to maintain the waste management infrastructure, the government provides grants for the development of waste treatment facilities and treatment technologies, fosters cooperation between the central government and local governments, and offers related financial and technical support to the private sector.

The legal system is based on concepts that contribute to reducing waste generation, including the realisation of a circular economy, the 3R principles (i.e. reduce, reuse, recycle), and EPR (Figure 2.2). Under the Basic Law on Resource Recycling, the government set forth goals and developed recycling laws for each product category. The private sector, in accordance with EPR, is thus obligated to collect and to recycle e-waste and end-of-life vehicles. Through the government's proactive enforcement, the private sector has become integral to Japan's domestic waste treatment infrastructure, encompassing activities of waste collection, transport, recycling, and final disposal. In addition, the central and local governments conduct waste management awareness programmes for citizens and businesses, as well as eco-town projects, which are believed to have led to the establishment of a nationwide culture and implementation system for waste management.

Figure 2.2. Value Chain in Japan's Waste-Related Legal System



Source: Authors.

3. Waste-Related Legal System in the European Union

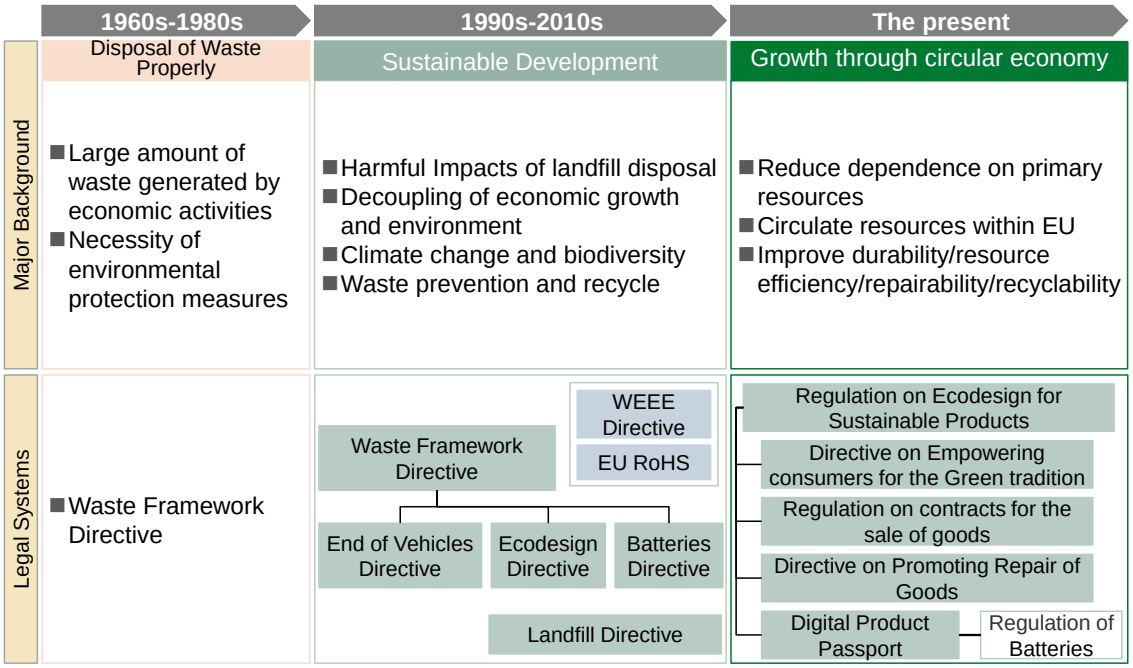
3.1. Overview

As in Japan, the development of the waste-related EU legal system can be divided into two phases: one addressing the proper disposal of large volumes of waste generated alongside economic growth, and the other aimed at reducing waste generation through realisation of a recycling-centric society (Figure 2.3).[18] The EU is further building a legal system to promote reuse, repair, and refurbishment based on the Waste Hierarchy.[19]

[18] Note that this section refers to EU directives and regulations, not to individual national laws of EU countries.

[19] Indicates a priority of a priority order in waste prevention and management legislation and policy. These are the cornerstone of EU waste policies and legislation. The methods of waste prevention and management are arranged in an inverted pyramid, starting with the most preferred means (i.e. prevention, preparing for reuse recycling, other recovery, and disposal).

Figure 2.3. Overview of the European Union's Waste-Related Legal System



EU = European Union, RoHS = Restriction of Hazardous Substances Directive, WEEE = waste from electrical and electronic equipment.
Source: Authors.

In the 1970s, environmental pollution and health hazards caused by waste became apparent across Europe, necessitating a unified waste management policy at the European Community level. The Waste Framework Directive, the basic law for waste management in the EU, was thus established. It defines waste and by-products, establishes a waste hierarchy, sets numerical targets for waste reduction, and defines recycling and treatment standards.[20]

As sustainable development became more important in the 1990s, the EU developed a legal framework to reduce the use of natural resources and amount of waste generated and to promote recycling. In particular, environmental pollution and health hazards caused by the landfilling of e-waste from households were becoming apparent, as proper disposal was not being carried out. Accordingly, the Waste Electrical and Electronic Equipment (EEE) Directive was established, which stipulates classification and design requirements for EEE as well as promotion of reuse and recycling. In addition, the Restriction of Hazardous Substances Directive was developed to limit the use of hazardous heavy metals and to promote the recycling of used EEE. The Battery Directive, which includes regulations for the entire life cycle of batteries that contain many hazardous substances, and the proposed Ecodesign Directive, which requires home appliances to be designed with a low environmental impact, were also promulgated. These directives and regulations have helped create a value chain that anticipates the reuse and recycling of products from their production stage.[21]

[20] European Commission, Waste and Recycling, Environment, https://environment.ec.europa.eu/topics/waste-and-recycling_en

[21] Municipal Waste Europe, Summary of the Current EU Waste Legislation, https://www.municipalwasteeurope.eu/summary-current-eu-waste-legislation

In recent years, the EU has launched an economic growth strategy leveraging the circular economy. It aims to establish a circular economy to keep resources circulating longer by improving legislation and strengthening the value chain, including long-life products, reuse, recycling, and remanufacturing. The proposed Ecodesign for Sustainable Products Regulation will specify requirements for the durability, reusability, and retrofitting/repairability of each product, including EEE. It also requires that a digital product passport be attached to a product or its packaging to disclose such product information to consumers. Furthermore, a draft directive on common rules promoting the repair of goods defines the consumer's right to repair as a new legal concept and imposes repair obligations on manufacturers of products under certain conditions.

Table 2.2. Established Waste-Related Acts in the European Union

Established Act	Contents
Waste Framework Directive (2008)	Establishes basic concepts and definitions related to waste management, including definitions of waste, recycling, and recovery, to address the generation of large volumes of waste and associated environmental pollution.
	• Clarifies waste definition and waste treatment priorities. • Sets numerical targets for waste reduction by the target year. • Defines by-products, and sets recycling criteria.
Regulation on Ecodesign for Sustainable Products (proposal)	Reduces the negative life-cycle environmental impacts of products, and improves the functioning of the internal market. Contributes to the objectives of EU industrial policy to boost the supply of and demand for sustainable goods, delivers on sustainable production, and ensures a level playing field for products sold on the internal market.
	• Targets about 30 products, including air conditioners, refrigerators, and other energy-consuming appliances. • Defines basic requirements for product specifications and a framework for evaluating their conformity. • Establishes various basic requirements commonly required of target products, such as durability, reusability, repairability, and energy efficiency. • Requires disclosure of product information to consumers.
Directive on Promoting Repair of Goods (proposal)	Promotes more sustainable consumption by increasing product repair and reuse, both within and outside of legal warranties.
	• Obligates the repair goods to which reparability requirements under EU legal acts apply. • Informs consumers about producers' repair obligations. • Creates an online national repair platform. • Configures a voluntary EU quality standard for repair services.
WEEE Directive (2003)	Contributes to sustainable production and consumption through creation of waste EEE as a first priority, efficient use of resources and retrieval of secondary raw materials, and improvement of the environmental performance of everyone involved in the life cycle of EEE.

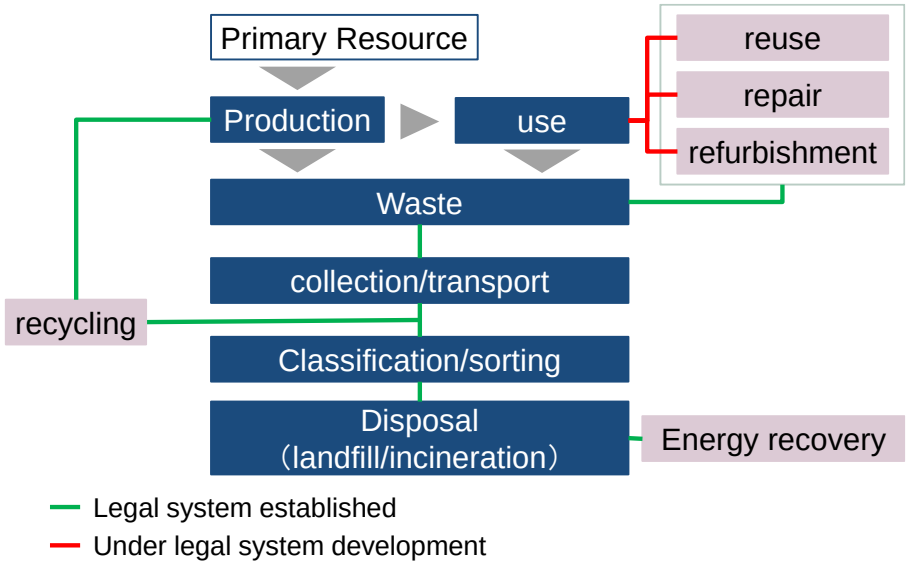
Established Act	Contents
	• Designates the classification of electronic equipment. • Provides for the promotion of recycling through design improvements. • Leaves each country to create specifics of the directive.

EEE = electrical and electronic equipment, EU = European Union.
Source: Authors.

3.2. Lessons Learned

The EU has built a legal system with binding force to realise waste management and the establishment of a circular economy, while taking into account the regional characteristics of member countries (Table 2.2). Waste reduction and the realisation of a circular economy are overall goals; legal systems for waste management generally take the form of directives and are left to the national laws of each country. However, much of the legislation that contributes to the realisation of a circular economy takes the form of regulations that are binding on member countries. It imposes strong obligations on the private sector at each stage of the value chain, from product design and manufacture to reuse, repair, refurbishment, and recycling. The European Commission's top-down legal systems for resource circulation and the solid implementation by businesses support the EU's circular value chain (Figure 2.4).

Figure 2.4. Value Chain in the European Union's Waste-Related Legal System



Source: Authors.

4. Waste-Related Legal System in ASEAN

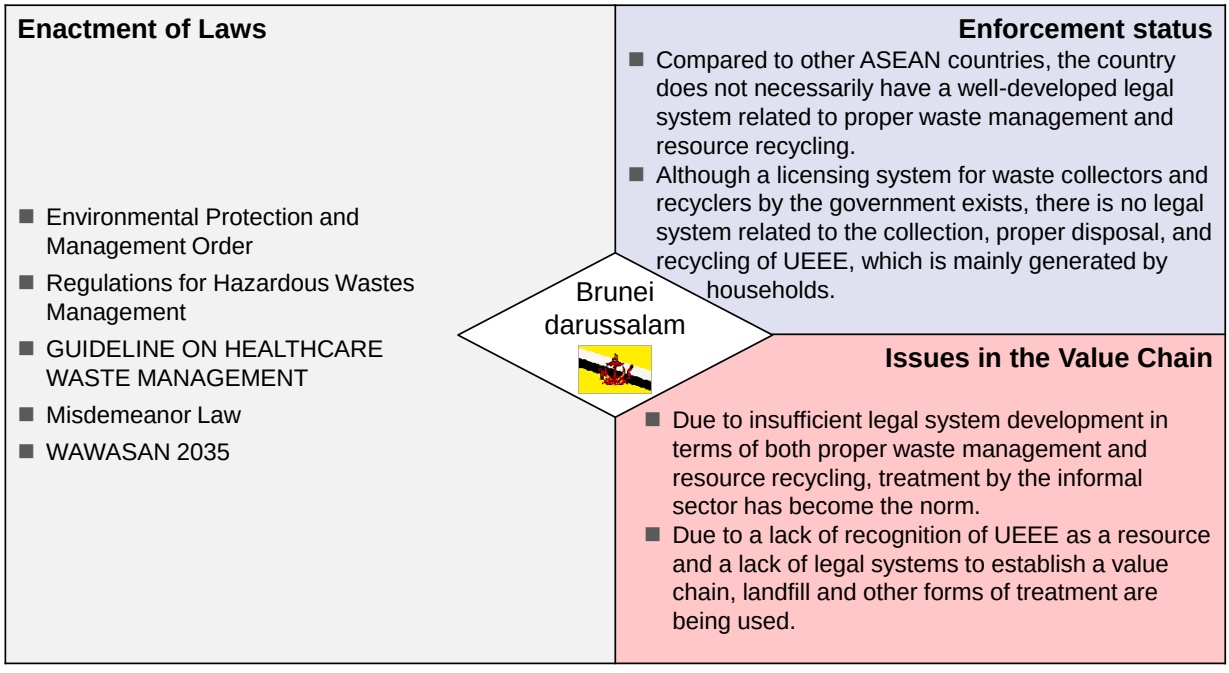
This section provides an overview of the waste-related legal systems or plans in force in AMS, status of their implementation, and challenges in the value chain surrounding EEE. While some AMS have developed legal systems and plans for resource circulation, including e-waste, others are still in the process. The implementation of these legal systems varies, and challenges exist within the circular value chains surrounding e-waste. In AMS where regulations exist for proper waste management, the informal sector still often plays a significant role. Additionally, in some AMS, the actual situation is difficult to grasp.

4.1. Brunei Darussalam

Brunei Darussalam has a basic framework for waste management and legislation on waste management, including hazardous substances. Yet there are no laws regarding the utilisation of used EEE or recycling of e-waste. Only two facilities collect e-waste, and no facilities treat it. Overall, the public is not aware of the proper management of waste and its effects on health.

Effective operation of the waste-related legal system has not been achieved; therefore, it is necessary to establish a system for the proper management of waste, including e-waste. Brunei Darussalam developed *Wawasan 2035* in 2007 as its economic strategy, where it mentions the proper management of waste and enhancement of recycling and reuse. Based on this strategy, the development of related laws and regulations may be underway (Figure 2.5).

Figure 2.5. Waste-Related Legal System in Brunei Darussalam

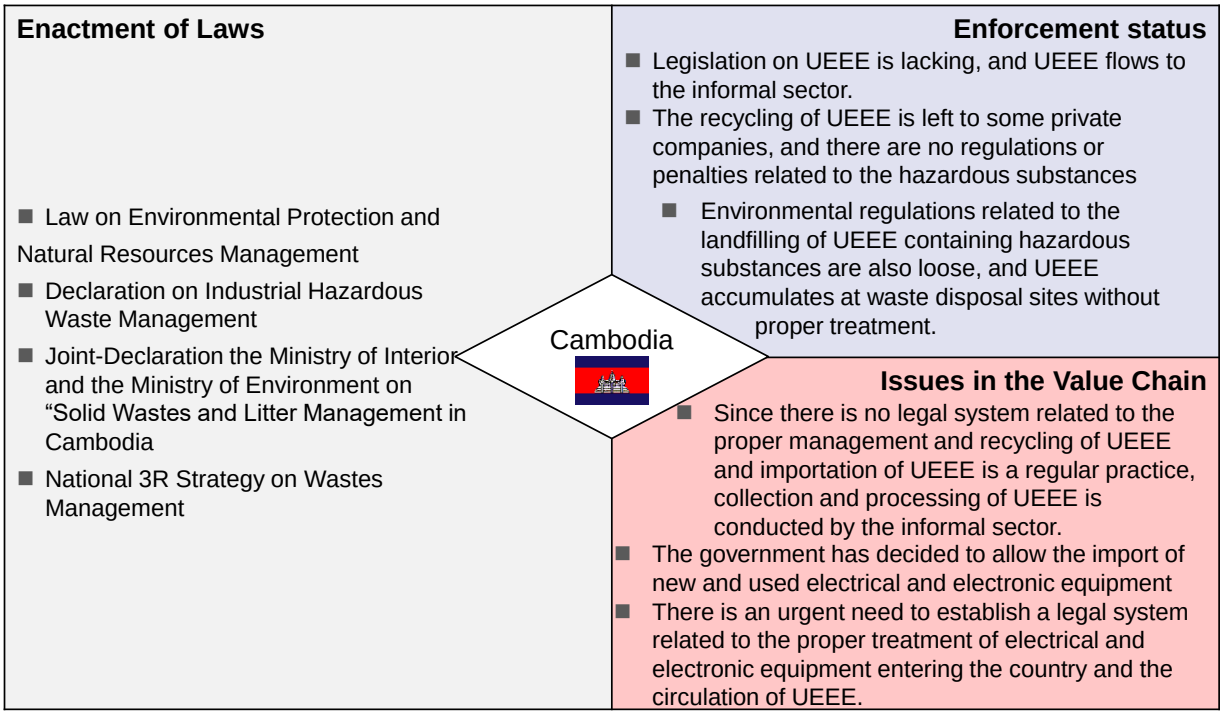


ASEAN = Association of Southeast Asian Nations, UEEE = used electrical and electronic equipment.
Source: Authors.

4.2. Cambodia

Cambodia has a well-developed legal system for industrial waste management, including hazardous substances. It also developed a strategy on the 3Rs as well as guidance on e-waste management (Chin, 2010). Yet the majority of imported used EEE flows to private operators and the informal sector without government control, and the legal system is lagging behind as well. A legal system for the proper collection and recycling of e-waste is needed (Figure 2.6).

Figure 2.6. Waste-Related Legal System in Cambodia

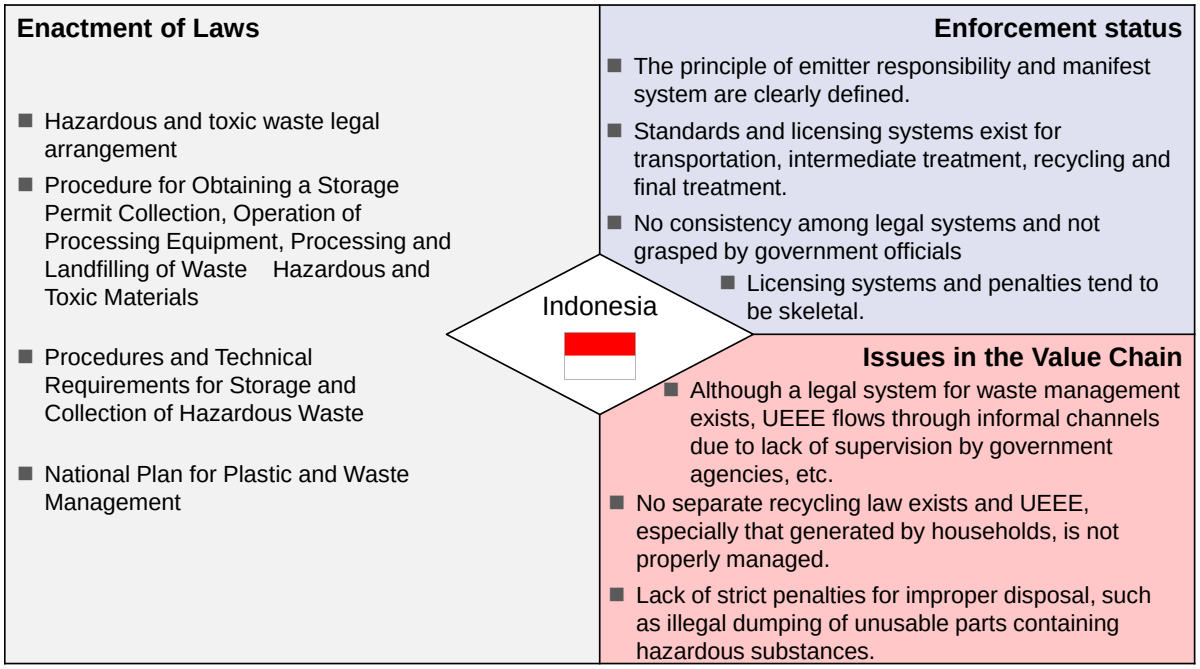


3Rs = reuse, reduce, recycle; UEEE = used electrical and electronic equipment.
Source: Authors.

4.3. Indonesia

In Indonesia, e-waste falls within the framework of waste management. The 3Rs concept is stipulated here, focussing on the reduction of waste generation. On the other hand, the obligations of the general public, manufacturers, retailers, processors, and others involved in waste management are not defined. Furthermore, the regulation of used EEE and e-waste – which often illegally enter the country – has not been kept up to date (MOE, 2016). Therefore, detailed management rules for e-waste and a recycling system for used EEE are required (Figure 2.7).

Figure 2.7. Waste-Related Legal System in Indonesia

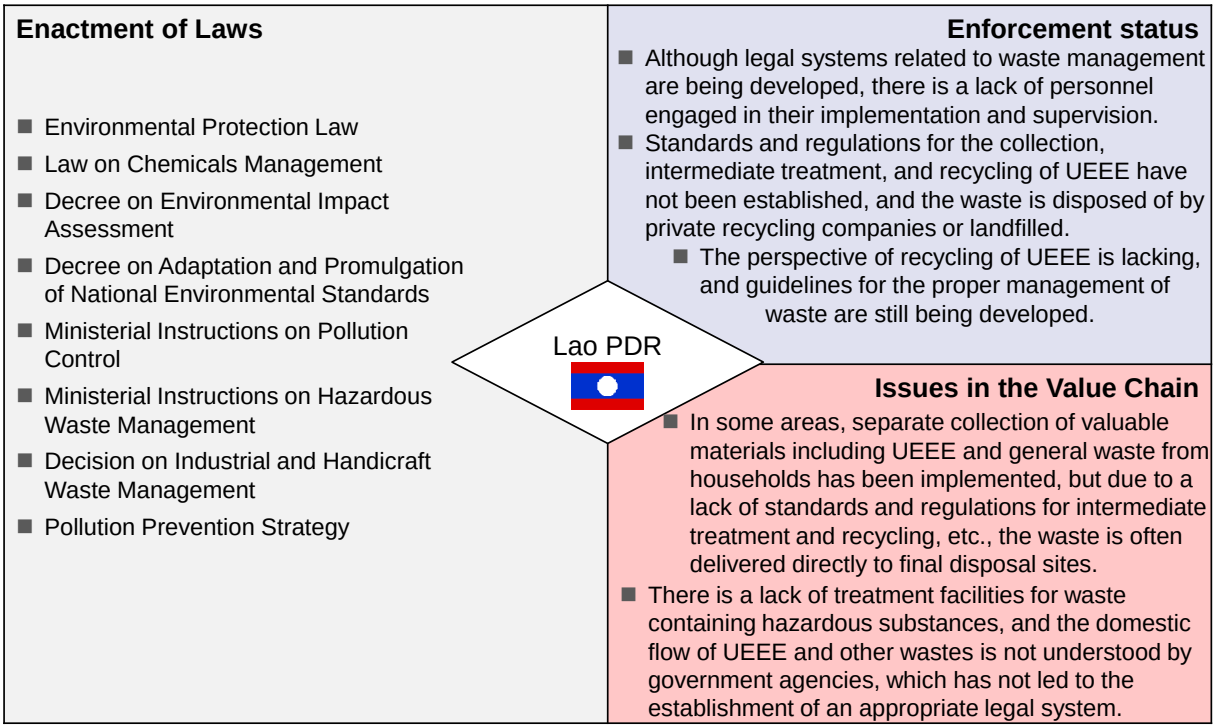


UEEE = used electrical and electronic equipment.
Source: Authors.

4.4. Lao People's Democratic Republic

The Lao People's Democratic Republic (Lao PDR) has a basic framework for waste management as well as regulations for waste containing hazardous substances. However, the general public is generally unfamiliar with EEE such as home appliances, so the problem of e-waste is not as dire as it is in other countries (JICA, 2021). In anticipation of the spread of home appliances and influx of foreign consumers as the economy develops, it will be necessary to establish a legal system for the proper management of e-waste (Figure 2.8).

Figure 2.8. Waste-Related Legal System in the Lao People's Democratic Republic



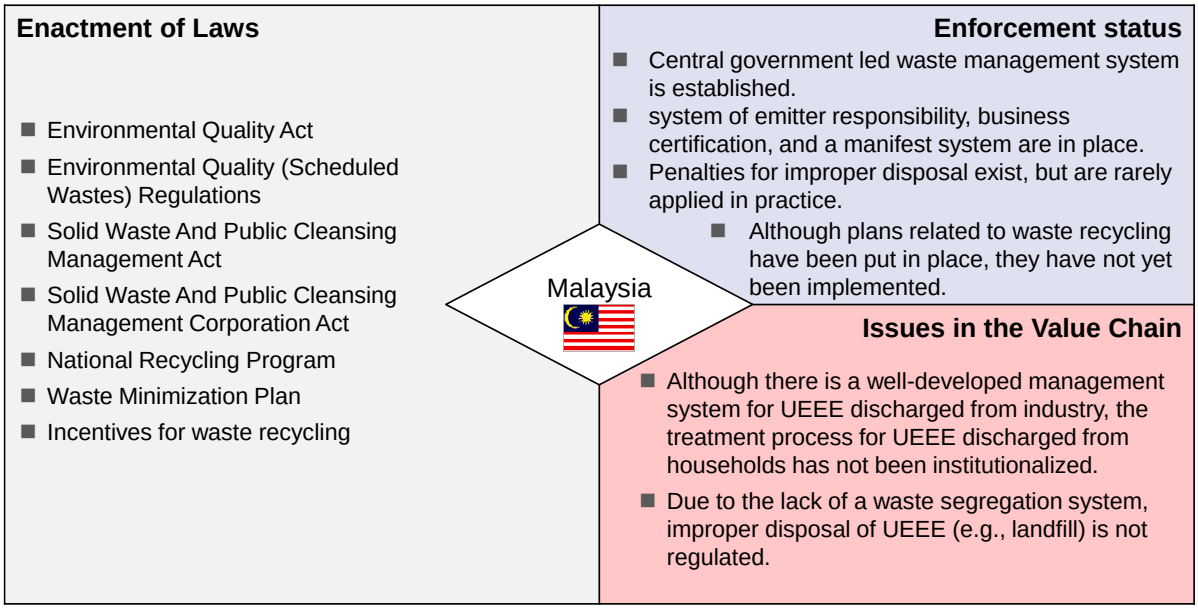
UEEE = used electrical and electronic equipment.
Source: Authors.

4.5. Malaysia

In Malaysia, the establishment of a system for the proper management of e-waste – mainly derived from industrial waste – is ahead of those of other AMS. In collaboration with the Japan International Cooperation Agency (JICA), a project is being carried out from October 2021 to March 2025 to establish a sustainable household e-waste management system, specifically for televisions, refrigerators, washing machines, air conditioners, personal computers, and cell phones. It includes the development of a database module to license and to monitor contractors who collect and process household e-waste; help with the selection, training, monitoring, and review of each contractor; establishment and operation of a financial management system; and development of a recycling support system and staff training. Legislation is being accelerated to implement this e-waste management system as well.

There is also a regulatory framework for the import of e-waste and transboundary movements of used EEE. However, regulations for intermediate businesses that process e-waste domestically are not well developed, and there is no management framework for e-waste generated from households (DOE, 2021). Therefore, the establishment of a domestic e-waste recycling system in Malaysia is needed (Figure 2.9).

Figure 2.9. Waste-Related Legal System in Malaysia

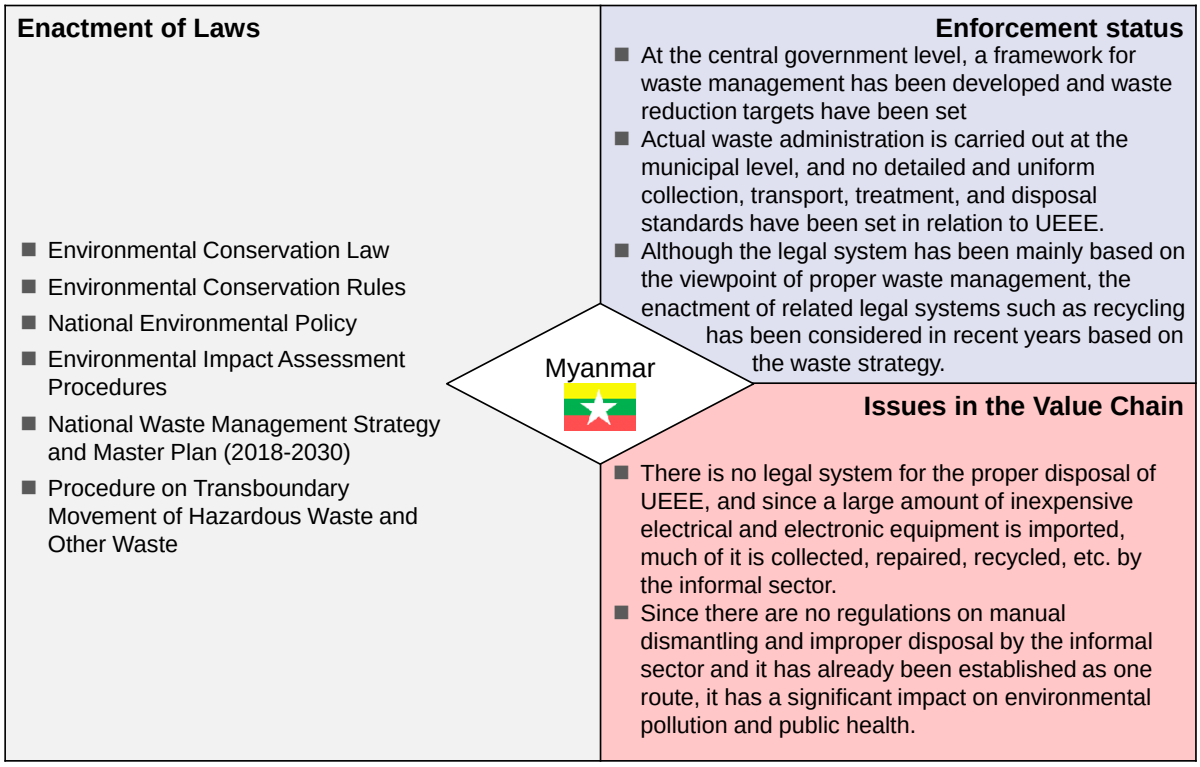


UEEE = used electrical and electronic equipment.
Source: Authors.

4.6. Myanmar

In Myanmar, strict waste management and waste reduction targets have been set at the government level. As in the Lao PDR, EEE is not widespread in households, so problems related to e-waste have not yet become apparent. Yet with economic growth in recent years, the general public is expected to increase their income and consumption, and the market related to used EEE is expected to expand, and e-waste is expected to increase (IGES, 2017). In the future, it will be necessary to establish a legal system for the proper management of e-waste and effective utilisation of used EEE (Figure 2.10)

Figure 2.10. Waste-Related Legal System in Myanmar

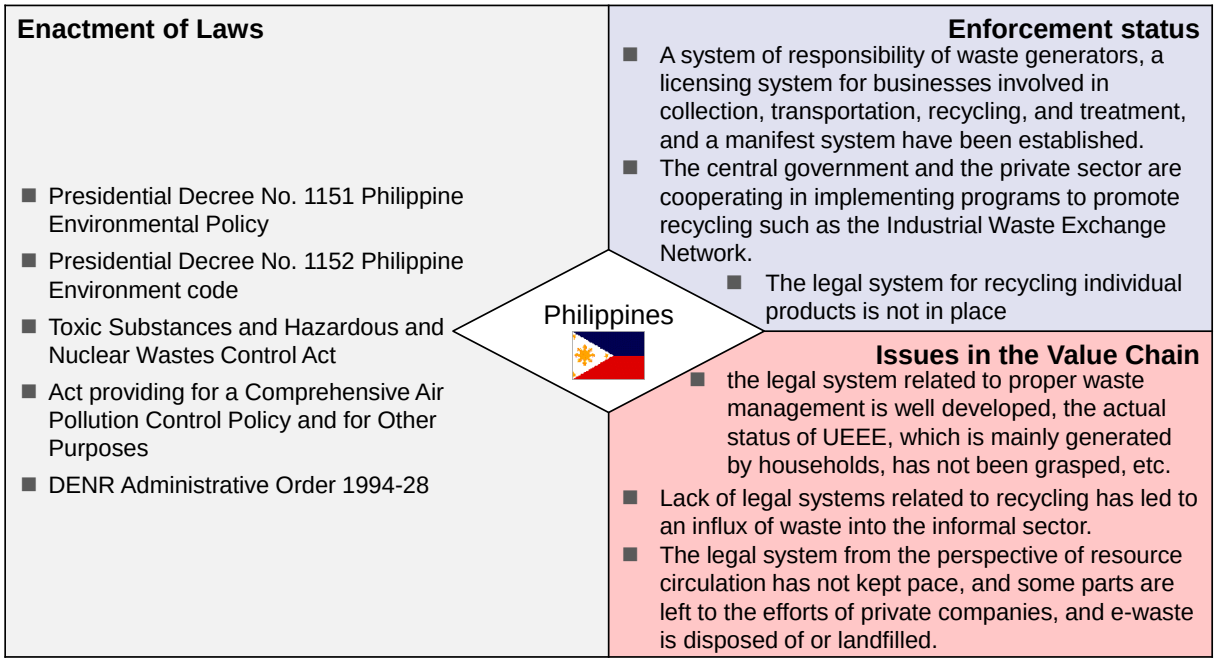


UEEE = used electrical and electronic equipment.
Source: Authors.

4.7. Philippines

The Philippines has a well-developed waste management system that incorporates the concept of emitter responsibility, business certification, and a manifest system. The construction of a waste management system is progressing with the cooperation of the public and private sectors (JETRO, 2020). There is a growing market for imported used EEE, mainly in urban areas, and informal sector does work to recover useful metals from e-waste. Legal systems encompassing these activities thus need to be improved (Figure 2.11).

Figure 2.11. Waste-Related Legal System in the Philippines



DENR = Department of the Environment and Natural Resources, UEEE = used electrical and electronic equipment.
Source: Authors.

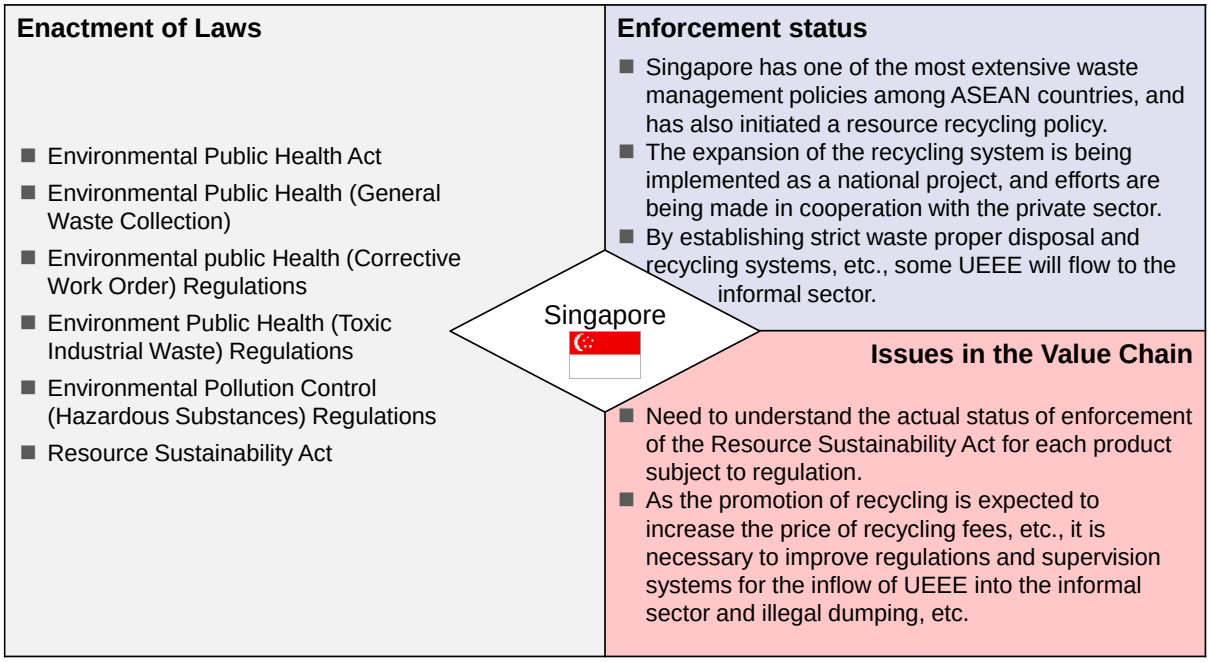
4.8. Singapore

Singapore has a well-developed legal system for the proper management of waste as well as an associated well-functioning supervision system at the central and municipal government levels. Legislation for the proper collection and disposal of e-waste is also being developed.

Singapore has been creating and revising its e-waste management framework since 2015 and has made more progress in its efforts than any other AMS. In 2019, it enacted the Resource Sustainability Act and introduced EPR for EEE. The act imposes high numerical targets for reuse and recycling on certain large waste generators. Target products include printers, computers, routers, modems, air conditioners, refrigerators, televisions, batteries, electric vehicle batteries, lighting, and solar panels.

The management of the large volume of used EEE entering the country has not kept pace, and there is a lack of regulation of its flow into the informal sector (Goh, 2020). Therefore, it is necessary to strengthen the appropriate management system for e-waste, including regulations for the informal sector, and to establish a legal system for the collection and utilisation of used EEE (Figure 2.12).

Figure 2.12. Waste-Related Legal System in Singapore



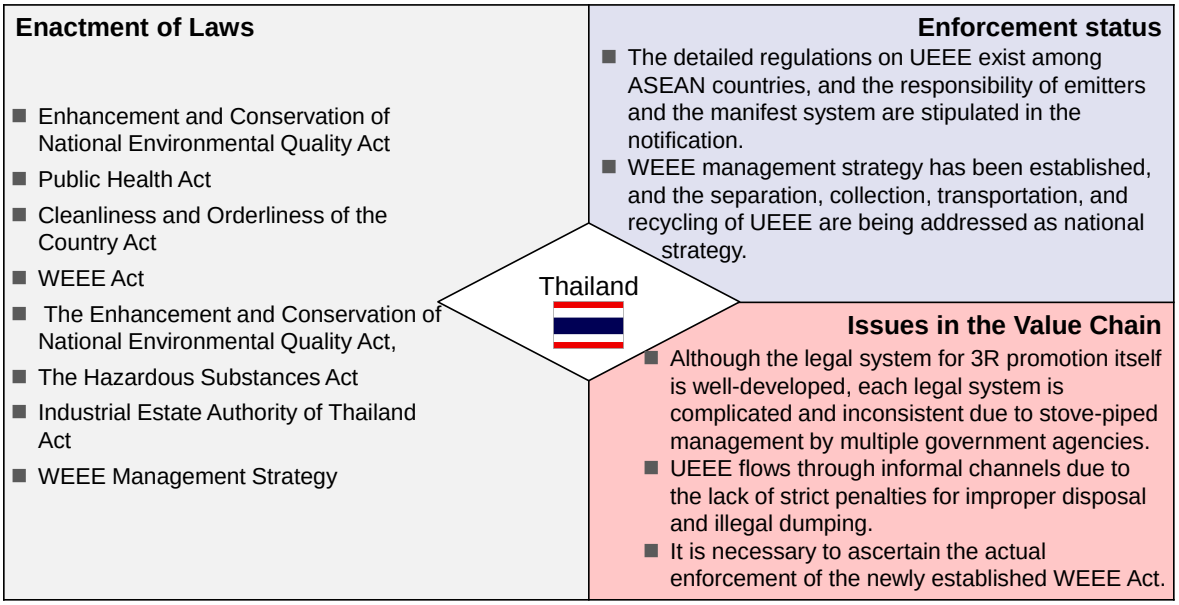
ASEAN = Association of Southeast Asian Nations, UEEE = used electrical and electronic equipment.
Source: Authors.

4.9. Thailand

In addition to a basic framework for proper waste management, Thailand has been working on the proper management of e-waste and effective utilisation of used EEE since the ratification of the Basel Convention in 1989.[22] In December 2022, the Department of Foreign Trade conduced public hearings to revise the current regulations that provide for a ban on e-waste imports; a new notification will be issued within FY2023. The legal systems for the recycling of e-waste and utilisation of used EEE are still being developed (Figure 2.13).

[22] Enviliance Asia, Waste Management in Thailand, https://enviliance.com/regions/southeast-asia/th/th-waste

Figure 2.13. Waste-Related Legal System in Thailand



ASEAN = Association of Southeast Asian Nations, UEEE = used electrical and electronic equipment, WEEE = waste from electrical and electronic equipment.
Source: Authors.

4.10. Viet Nam

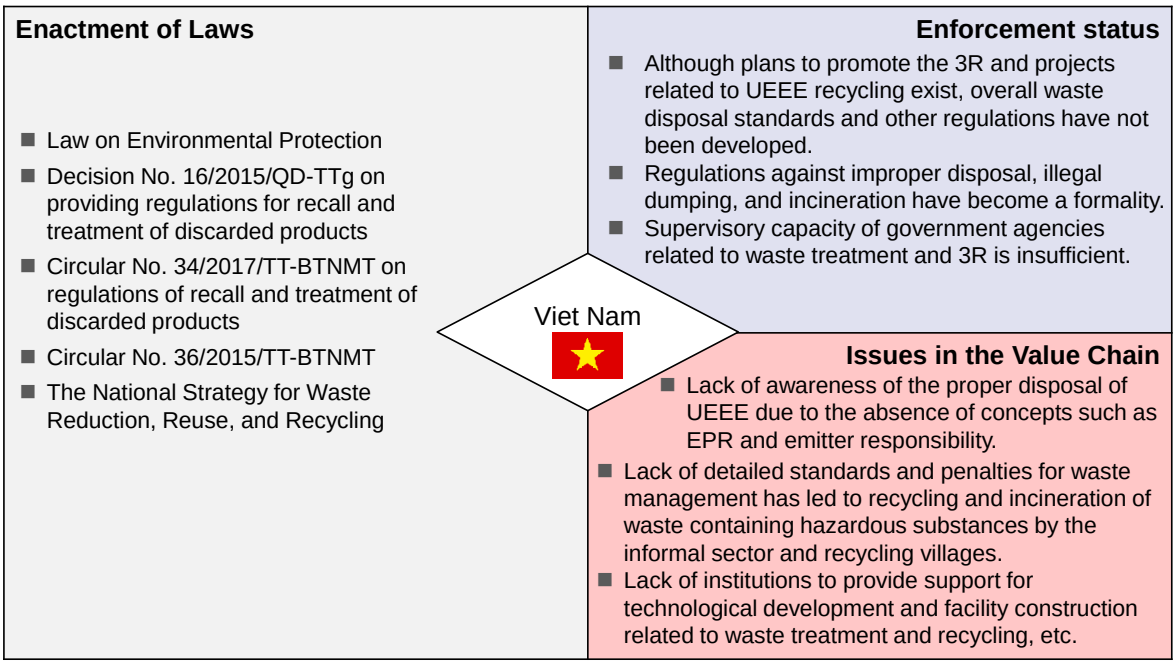
In Viet Nam, the Decision on Collection and Treatment of Waste Products (50/2013/QD-TTg) was issued in relation to a basic waste management framework and the collection and recycling of e-waste. This regulation covers personal computers, cell phones, televisions, air conditioners, refrigerators, and washing machines. The clarification of the responsibility of operators involved in collection and treatment activities and the certification of operators are in progress. Recycling by authorised recyclers is also being promoted.

In 2020, the Law on Environmental Protection (No. 72/2020/QH14) took effect. As of 1 January 2024, it requires product manufacturers and importers to have, under EPR, a recycling system for EEE. It provides detailed rules for the recycling of EEE, establishing a list of regulated products and mandatory recycling rates, payments to an environmental protection fund, obligations for producers to develop recycling plans, disclosure of product information, and reporting of recycling performance.

Regulation of the informal sector, which competes with legitimate recyclers, has not kept pace, and improper disposal of e-waste is rampant.[23] Therefore, it is necessary to tighten the e-waste management system, including regulation of the informal sector, and to establish a recycling system (Figure 2.14).

[23] Vietnam Environment Administration (2020), 'E-Waste Management in Viet Nam', https://www.iep-global.org/wp-content/uploads/2020/01/8.-Vietnam.pdf

Figure 2.14. Waste-Related Legal System in Viet Nam



3R = reduce, reuse, recycle; EPR = extended producer responsibility; UEEE = used electrical and electronic equipment.
Source: Authors.

5. Needs of the Waste-Related Legal Systems in ASEAN

5.1. Collaborative Mechanisms to Establish a Legal System

Proper management of waste and the promotion of resource recycling require a high level of public awareness. In Japan, the government has undertaken initiatives to raise public awareness, including the development of community-based recycling projects involving local governments, residents, and businesses. Similar efforts have been implemented in Singapore. Cebu, Philippines signed an environmental technical cooperation agreement with Kitakyushu, Japan, showing potential effectiveness. For example, Kitakyushu City has dispatched personnel to Cebu City to provide guidance and advice for the collection of home appliances and the establishment of a recycling system.

However, AMS face challenges due to a lack of technology and facilities for waste treatment and recycling. To address this, Japan has collaborated with AMS through various frameworks, such as the Asian 3R Promotion Forum, E-Waste Training Workshop for Asia and the Pacific, and Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes.[24] These initiatives involve knowledge sharing, information exchange, and the transfer of recycling technology, often supported by Japanese private sector investment. While technical efforts are underway – particularly in Indonesia, Malaysia, and Thailand – e-waste management projects with countries such as the Lao PDR and Myanmar have not been substantial. In addition, efforts focussed on the development of waste-

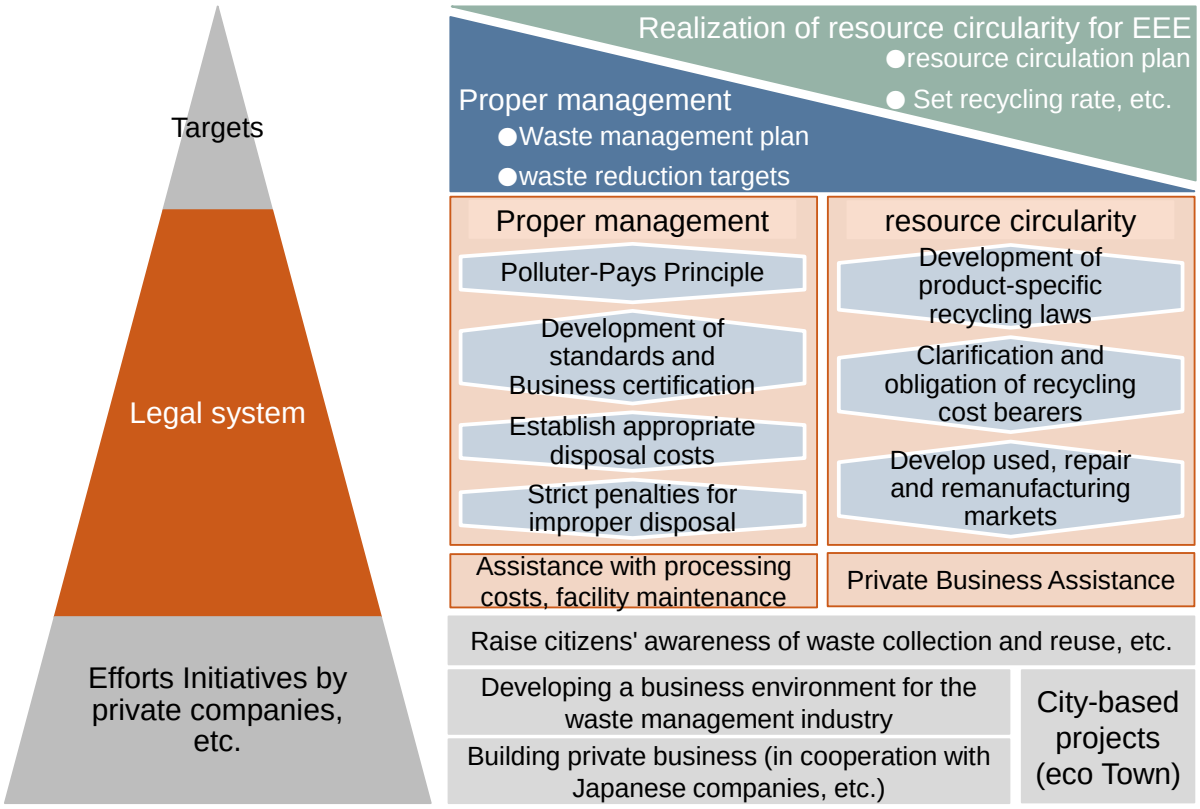
[24] MOE (2009); Government of Japan, MOE, Regional 3R Forum in Asia, http://www.env.go.jp/recycle/3r/en/forum_asia/index.html; Government of Japan, MOE, The Asian Network for Prevention of Illegal Transboundary Movement of Hazardous Wastes, http://www.env.go.jp/en/recycle/asian_net/

related legal systems continue to be lacking.

At the intergovernmental level, AMS and Japan can cooperate in examining legal texts and designing systems that align with the specific conditions of each AMS. This includes clarifying the responsibilities and roles of stakeholders; establishing standards for waste collection, transport, and treatment; defining technical requirements for recycling facilities; and setting up recycling fees. Additionally, providing various types of support, such as capacity building for local staff, is crucial for effective enforcement and the long-term sustainability of waste management and recycling systems.

To develop a well-developed social infrastructure such as waste treatment and recycling facilities necessitates ongoing subsidies and technology transfer, and expansion of waste-related legal systems. These efforts can be facilitated through by promoting cooperation with Japan and other countries. By strengthening these collaborations, AMS can enhance their waste management practices, promote resource recycling, and move towards a more sustainable future (Figure 2.15).

Figure 2.15. Improving the Value Chain through the Waste-Related Legal System



EEE = electrical and electronic equipment.
Source: Authors.

Finally, it would be beneficial to take advantage of ASEAN's unique characteristics as a federation to set a common goal of moving beyond the waste management phase and achieving resource recycling that contributes to the economic growth of the region as a whole. Although no agreed-upon targets have been set for ASEAN, it may be useful to determine common but distinctive numerical targets based on the needs and economic conditions of each AMS, based on discussions amongst representatives of each country. As in the EU, promoting cooperation and coordination amongst

member states would facilitate the development of harmonised policies, sharing of best practices, and establishment of common standards for resource recycling. Although best practices have already been shared amongst AMS, comparative analysis of national management systems and implementation of standards and codes of practice based on such systems have not yet been pursued.

5.2. Enhancement of Legal Systems for Resource Circulation

In ASEAN, most AMS have their own legal systems for waste management, including e-waste. However, there are common challenges that persist throughout the region. One challenge is the lack of an EPR perspective. EPR holds manufacturers accountable for their products throughout their life cycle, including managing the waste generated from their products. Implementing EPR can incentivise producers to design products with recyclability in mind and take responsibility for proper disposal at the end of their life.

Another challenge is the absence of detailed standards and penalties for each stage of the waste management value chain. Without clear standards and penalties, ensuring compliance with environmental and safety requirements becomes difficult. Moreover, the lack of penalties for improper disposal undermines accountability and encourages unsustainable waste management practices. Furthermore, there is a shortage of human resources in administrative agencies responsible for supervising waste management operators, which hampers effective monitoring and enforcement of waste management regulations, leading to non-compliance and improper disposal practices.

To address these challenges, strengthening the waste management value chain is crucial. This can be achieved by developing a comprehensive waste-related legal system that incorporates key elements from established systems, such as that of Japan. Elements to consider include the polluter-pays principle, EPR, the development of standards and business certification, establishment of appropriate disposal costs, and implementation of strict penalties for improper disposal.

In ASEAN, some AMS like Malaysia and Thailand have developed legal systems that encompass recycling and aim to promote the circulation of used EEE beyond the scope of proper waste management. However, these legal systems often lack specific regulations tailored to product-specific recycling. As a result, there may be limited understanding of the value chains specific to different products and the potential for higher value-added circulation. To address this, product-specific recycling laws should be established that provide clear guidance and requirements for recycling various types of products. These laws should include provisions that clarify the responsibilities and obligations of recycling cost bearers. By implementing such laws, it becomes easier to identify the specific recycling needs and opportunities for value-added circulation within product-specific value chains. Japan's legal system related to resource circularity can serve as a valuable reference in this endeavour.

Moreover, AMS possess significant market potential for used and repaired EEE. Looking to the development of reuse and repair legislation in the EU – which is structured to guarantee the right to repair, facilitate access to repair parts, and reduce the cost of repair from the perspective of protecting the general public – efforts should be made to promote reuse and repair initiatives. Initiatives focussed on reuse and repair can contribute to resource conservation, waste reduction, and the development of a circular economy.

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