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Study on Circular Economy Pathways for Waste Management in the Philippines

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Study on Circular Economy Pathways for Waste Management in the Philippines ¹

Abstract

Solid waste management has been a complex and evolving challenge for the Philippines. Since its passage more than two decades ago, Republic Act No. 9003 or the Ecological Solid Waste Management Act of 2000 has anchored the country's waste management initiatives. But challenges persist in the policy's implementation at both the national and subnational levels. The passage of the Extended Producer Responsibility (EPR) Act of 2022 is a positive step towards improving waste management and achieving a circular economy (CE). But issues remain, including the need for clarity in the scope and definition of CE, operationalization of PROs, setting of costs and fees, role of NGAs and LGUs, program targets, and informal sector participation. Nevertheless, recent policy and institutional developments present avenues for better stakeholder cooperation and collaboration, and the application of technological solutions and innovations. The government needs to focus on bridging critical institutional and implementation gaps including the creation and/or operationalization of the NEC and local solid waste management or environment offices, provision of technology, facilities and waste management resources, and facilitation of public-private partnerships for capital and infrastructure needs.

Keywords: Circular economy, solid waste management, Extended producer responsibility

¹ Report prepared and submitted by Atty Gregorio Rafael P. Bueta, Dr. Sonny N Domingo, and Ms Arvie Joy A. Manejar

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Study on Circular Economy Pathways for Waste Management in the Philippines ²

1. Introduction / Background of the Study

1.1. Rationale

The Philippines' solid waste management system is primarily anchored on Republic Act No. 9003 or the Ecological Solid Waste Management Act of 2000. The policy's salient features cover devolution of segregation and collection functions to barangay level, mandatory waste diversion, and forced transition of open dumpsites to sanitary landfill facilities, among others.

Challenges have persisted in the two decades of the policy's implementation. Limited land, and high investment requirements pushed LGUs to cluster landfills while bureaucratic delays for plan implementation, and institutional gaps hindered accomplishment of diversion rates.

Findings from the National Solid Waste Management Commission (NSWMC)'s Waste Analysis and Characterization Study (WACS) in 2015 showed that biodegradable wastes comprise 52 percent of the country's waste volume, followed by recyclables at 28 percent, residuals at 18 percent, and the remaining two percent as special wastes. Total volume in 2020 was estimated to be at around 17M tons, almost one-third of which came from Metro Manila (NSWMC 2018).

NSWMC's aggregate projection estimates annual waste generation to reach 23.6 million tons in 2025. Among regions, CALABARZON, National Capital Region, and Cagayan Valley have the highest figures with 21.8M, 21.7M and 15.3M tons per year.

With these expectations, it bears revisiting the entire waste management framework of the country and harness insights on circular economy adoption from neighboring nations and global community. The framework recycles, repairs, and reuses end-of-life products through circular value chains integrated within industries. This not only protects the environment but uses natural resources more efficiently, develop new sectors, create jobs, and enhance capabilities. The Philippines, and much of the developing economies, is still following a linear economy model of take-make-dispose.

Case studies conducted in Domingo and Manejar (2021) showed alternative pathways for waste management to address the growing volume of generated wastes such as refuse-derived fuel, incineration or waste-to-energy options, plastic ban, and alternative packaging. The recent passage of Republic Act 11898, otherwise known as the Extended Producer Responsibility Act of 2022, aligns with the push in the global waste landscape.

This research aims to assess existing and appropriate circular economy policy and local applications, through the lenses of ecological integrity protection; material and waste management economics; and inclusivity and social justice.

² Report prepared and submitted by Atty Gregorio Rafael P. Bueta, Dr. Sonny N Domingo, and Ms Arvie Joy A. Manejar

1.2. The Global Waste Crisis: Waste Management in the Triple Planetary Crisis World

The United Nations Environment Assembly (UNEA) identified pollution as the third great environmental crisis of our times, along with climate change and biodiversity loss.³ The world is on a trajectory where waste generation will drastically outpace population growth by more than double by 2050.⁴ Unfortunately, the Asia Pacific region is at the forefront of this global crisis. The World Bank estimates that 4.8 to 12.7 million tonnes of plastic enter the oceans annually, with 80% of this total coming from Asia.⁵ Further projections see East Asia and the Pacific generating 602 million tonnes of waste per year by 2030, which increases to 714 million tonnes by 2050.⁶

1.3. The Philippine Waste Crisis Situationer

The issue of solid waste management (SWM) has been one of the main environmental problems of the country for decades.⁷ Its archipelagic geographic structure, a rising population, lack of incentives for reform, and weak implementation and enforcement of regulations result in almost 35% of plastics leaking into the open environment.⁸

Waste management has been a constant challenge for the Philippines for several decades now due to a host of factors ranging from increased consumption and economic activity to an increasing population and urbanization rate.⁹ One of the main drivers of pollution is plastic use and consumption. In recent years, plastic pollution, both from land and sea-based sources, has risen to the top of the global environmental agenda.¹⁰

With a projected population of 110 million by July 2021,¹¹ coupled with a poverty rate of 16.7% in 2018,¹² and an urbanization rate of 51.2% as of 2015,¹³ it comes as no surprise that the Philippines is experiencing a waste crisis. More people, and living in dense, often ill-

³ United Nations Environment Programme. 2021. *Making peace with nature: A scientific blueprint to tackle the climate, biodiversity and pollution emergencies - Key Messages and Executive Summary*. https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/34949/MPN_ESEN.pdf (accessed 12 March 2021)

⁴ See Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. 2018. "What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050." Overview booklet. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO.

⁵ World Bank Group (2021) *Market Study for the Philippines: Plastics Circularity Opportunities and Barriers*. 12

⁶ Silpa Kaza, Lisa Yao, Perinaz Bhada-Tata and Frank Van Woerden, *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050* (Washington DC: International Bank for Reconstruction and Development/The World Bank, 2018): 28. <https://openknowledge.worldbank.org/handle/10986/30317>

⁷ Bueta, ADBI

⁸ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

⁹ United Nations Environment Programme (2022). *A National Source Inventory (NSI) Approach for Marine Litter in the Philippines. Working Paper. Nairobi*.

¹⁰ United Nations Environment Programme (2022). *A National Source Inventory (NSI) Approach for Marine Litter in the Philippines. Working Paper. Nairobi*.

¹¹ PSA. 2021. *Updated Projected Mid-Year Population for the Philippines Based on the 2015 POPCEN Results: 2020 – 2025*. Manila.

¹² ADB (Asian Development Bank). 2021. *Basic Statistics 2021*. Manila: ADB.

¹³ PSA (Philippines Statistics Authority). 2019. *Urban Population in the Philippines (Results of the 2015 Census of Population)*. <https://psa.gov.ph/content/urban-population-philippines-results-2015-census-population>

planned urban areas, in poor living conditions, can only result in more waste that cannot be handled by an already stretched and overburdened waste management system.

This crisis has been brewing for several years. Early projections from the National Solid Waste Management Commission (NSWMC) point to a rising trend in solid waste generation: “yearly amount of waste in the country was expected to increase from 13.48 million tons in 2010, to 14.66 million tons in 2014, to 18.05 million tons in 2020”.¹⁴ Current figures and projections show that in 2020, waste generated was 21.4 million tons—and this is expected to increase to 23.6 million tons by 2025 .¹⁵

Part of the problem is the inadequate waste management infrastructure around the country. There are only 237 sanitary landfills nationwide to service the 1,634 cities and municipalities in the country; and only 11,625 materials recovery facilities (MRFs) to cater to over 42,000 *barangays* (villages).¹⁶ SWM is “constantly challenged by the increasing amount of waste with the limited resources and infrastructures in place. Some of the major challenges include inadequacy of waste facilities due to constraints in funding and manpower, and the poorly implemented regulations for the recyclables market”.¹⁷

The above situation leads to dire consequences for people and the environment. Open dumpsites can cause the following harmful effects (DENR-EMB 2019):¹⁸ “Leachate from solid waste can contaminate groundwater tables and surface waters. Insects and pests in open dumpsites are disease vectors. Methane gases from dumpsites can affect the health of exposed populations and contribute to global warming. Coastal and marine litter affects aesthetics, causes pollution, and harms marine organisms. Improperly managed solid wastes also can result in increased flooding and destruction of infrastructures due to clogged waterways.” Poor waste management also placed the Philippines third among the largest contributors of plastic waste with an estimated 0.75 million metric tons of mismanaged plastic entering the ocean every year.¹⁹ A recent study that conducted a plastic material flow analysis also showed that of the 2.150 million tons of plastic consumed in the country, only 9% is recycled, and 35% is leaked into the open environment.²⁰

1.4. The Circular Economy Model: Solving the Waste Crisis

Circular economy is a concept that has been gaining more attention and traction in recent years, particularly as a conceptual framework and approach to solving the global waste crisis. Laws and policies to advance circular economy are increasingly being adopted nationally and regionally.²¹ According to the Ellen MacArthur Foundation: “A circular economy

¹⁴ DENR-Environmental Management Bureau. 2019. *National Solid Waste Management Status Report 2008-2018*. Manila: DENR.

¹⁵ DENR-EMB. 2021. *Solid Waste Management Statistics*. <https://emb.gov.ph/solid-waste-management-data/>

¹⁶ DENR-EMB. 2021. *Solid Waste Management Statistics*. <https://emb.gov.ph/solid-waste-management-data/>

¹⁷ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

¹⁸ DENR-Environmental Management Bureau. 2019. *National Solid Waste Management Status Report 2008-2018*. Manila: DENR.

¹⁹ Jambeck J, Geyer R, Wilcox C, Siegler T, Perryman M, Andrady A, Narayan R, Law K. 2015. Plastic Waste Inputs From Land Into The Ocean. *Science* 347 (6223): 768-771. DOI: 10.1126/science.1260352.

²⁰ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

²¹ <https://www.frontiersin.org/articles/10.3389/frsus.2023.1154059/full> PERSPECTIVE article

is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems".²² The current linear economy—where resources are taken from the ground to make products, which are used and thrown away when they are no longer wanted—is no longer working for people, business, and the environment.²³

The circular economy (CE) concept prioritizes preventing waste generation and minimizing resource use or, alternatively, reusing, recycling, or recovering wastes for the purpose of sustainable development ([Kirchherr et al., 2017](#)).

As part of improving overall waste management, addressing the waste crisis, and achieving broader sustainable development goals, countries around the world have enacted circular economy laws and policies. Some of these include those in Japan and the European Union,²⁴ with specific examples in France,²⁵ Chile,²⁶ Australia,²⁷ and in the United Kingdom.²⁸

1.5. Objectives

This research aims to assess existing and appropriate circular economy policy and local applications, through the lenses of ecological integrity protection; material and waste management economics; and inclusivity and social justice.

Policy issue(s) and evaluation questions of interest include:

- a) What is the state of the art of the circular economy in the Philippines?
- b) What policy and institutional responses are needed to boost circular economy applications toward ecological integrity protection; improved material and waste management economics; and inclusivity and social justice?

The study generally aims to assess the state of the art of circular economy in the Philippines. Specifically, this research will:

- a) Describe and define circular economy (CE) model and framework in the Philippines;
- b) Assess the benefits and costs of CE adoption and implementation to the country's materials and waste management systems;
- c) Identify enabling policies and institutional structures critical for CE implementation;

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Sec. Circular Economy

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²² EMF (Ellen MacArthur Foundation). 2021. *What is the circular economy*.

<https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>

²³ *Id.*

²⁴ See G. Gordon Davis, JD, and Jessica Anne Hall, JD. _____. Circular Economy Legislation – The International Experience, available at <https://www.reusablepackaging.org/insights/circular-economy-legislation-the-international-experience/>

²⁵ EMF. 2021. France Anti-Waste and Circular Economy Law: Eliminating Waste and Promoting Social Inclusion, available at: https://emf.thirdlight.com/file/24/kLSzgopkL.2CJxQkLb3XkLQIS7_/Case%20Studies%20-%20French%20Anti%20Waste%20Law.pdf

²⁶ EMF. 2021: Chile's Circular Economy Roadmap: Collaboration for A Shared Action Plan. Available at: <https://emf.thirdlight.com/file/24/kLSzgopkLg-9DoTkLb8BkB5ygDV/Case%20Studies%20-%20Chile%27s%20circular%20economy%20roadmap.pdf>

²⁷ See <https://www.globalaustralia.gov.au/industries/net-zero/circular-economy>

²⁸ See: for Scotland - [Making Things Last - A Circular Government Strategy for Scotland](#) ; and Wales - [Plan for a Circular Economy 2021 Wales](#)

- d) Document CE applications aligned with ecological integrity protection; improved material and waste management economics; and inclusivity and social justice;
- e) Compare insights on best practices, lessons, and case CE models from other countries; and
- f) Provide recommendations and ways forward.

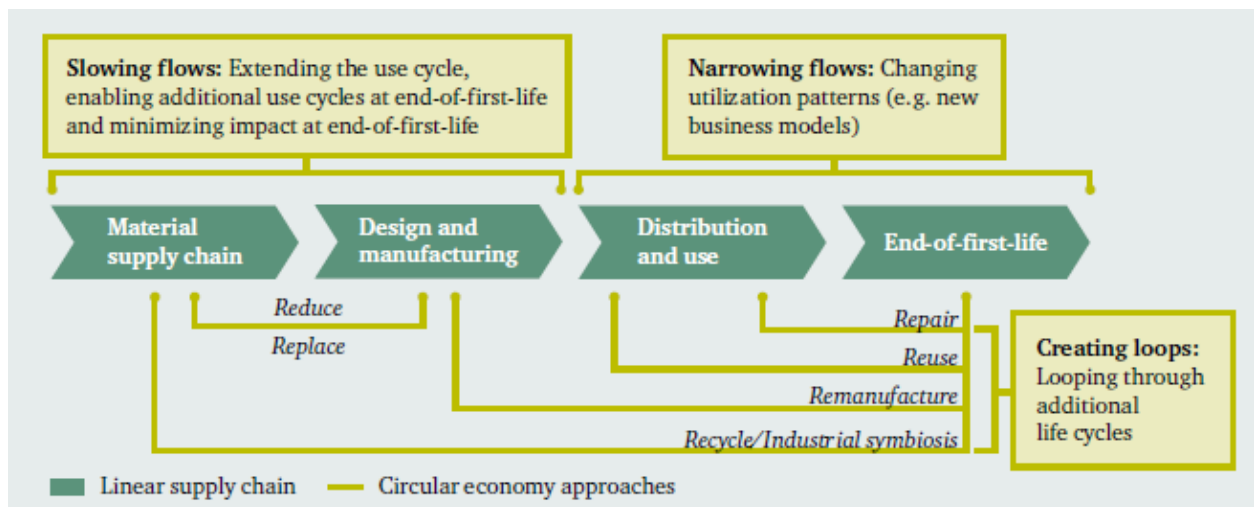
2. Related Literature

2.1. Concept of circular economy

Circular economy (CE) definition is continually evolving around three constant activities as seen in the figure below.

- Creating loops – concepts of reuse, repair, recycle are employed instead of outright disposal
- Slowing flows – delaying the speed of the products along its life cycle. This entails designing and making products that ensure they remain in use for as long as possible.
- Narrowing flows – adopts more efficient utilization patterns and business models (i.e. green manufacturing)

Figure 1. Linear versus circular economy



Source: (Preston, Lehne, & Wellesley, 2019)

The concept is fast becoming a new model for resilient growth. It is an effective solution to meet material needs of growing populations through drastically lower rates of per capita primary resource use.

Circular economy's one of many attractions ties in with climate change. Gue et al. (2022) illustrates this in different scenarios between GDP and material footprint changes. Products with circular material intensity generate the least material footprint while those with linear intensity incurs the highest.

CE also has become a core component in developed countries' climate plans (e.g. European Union member states, China, Japan) whereas developing countries have difficulty adopting CE pathways as brought on by institutional difficulties and infrastructure limitations (Preston, Lehne, & Wellesley, 2019).

Recycling and recovery are most often recommended under circular economy. High income and developed countries lean more towards technological solutions which low income and developing countries cannot afford. Hence, the latter gains more employment prospects and economic benefits from recyclables and recoverables, but the low adoption and implementation rates tell a different story.

Case studies of Brazil, Nigeria, and Indonesia in Oh & Hettiarachchi (2020) share similarly high content of municipal solid waste however, recyclables comprise a lower percentage because material output is minimal while a country is in the development phase. Social inequality is a driving factor in neglected waste management in marginalized neighborhoods; urban areas have access to collection trucks whereas rural and informal settlers have none (Oh & Hettiarachchi, 2020)

Low to middle income countries often lack the resources to address the plastic problem rooting from the lack of collection, management, and disposal infrastructure, and would benefit more from decentralized waste management, particularly for plastics. The process describes post use collection of plastics by local/community waste collectors or pickers to be eventually converted to fuel oil through thermal decomposition. Findings find that this approach is most suitable for countries with (1) low GDP per capita and high population living below poverty line, and those with (2) highest municipal solid waste but has limited land (Joshi, Seay, & Banadda, 2018)²⁹.

The Rizal province in the Philippines already has this arrangement in place with three partner cement corporations (Domingo & Manejar 2021). However, communities are unable to meet the quota required for collection which in turn, influences an overproduction of plastics.

Studies also warn of tokenistic behaviors towards waste-to-energy initiatives. While it is a good innovation for the CE transition, substandard incineration practices tend to do more harm than good. They have higher environmental and human risks, and increase waste streams. Another trade-off that comes with this is the probable displacement of informal workers in resource intensive countries from primary extraction and processing (Preston, Lehne, & Wellesley, 2019).

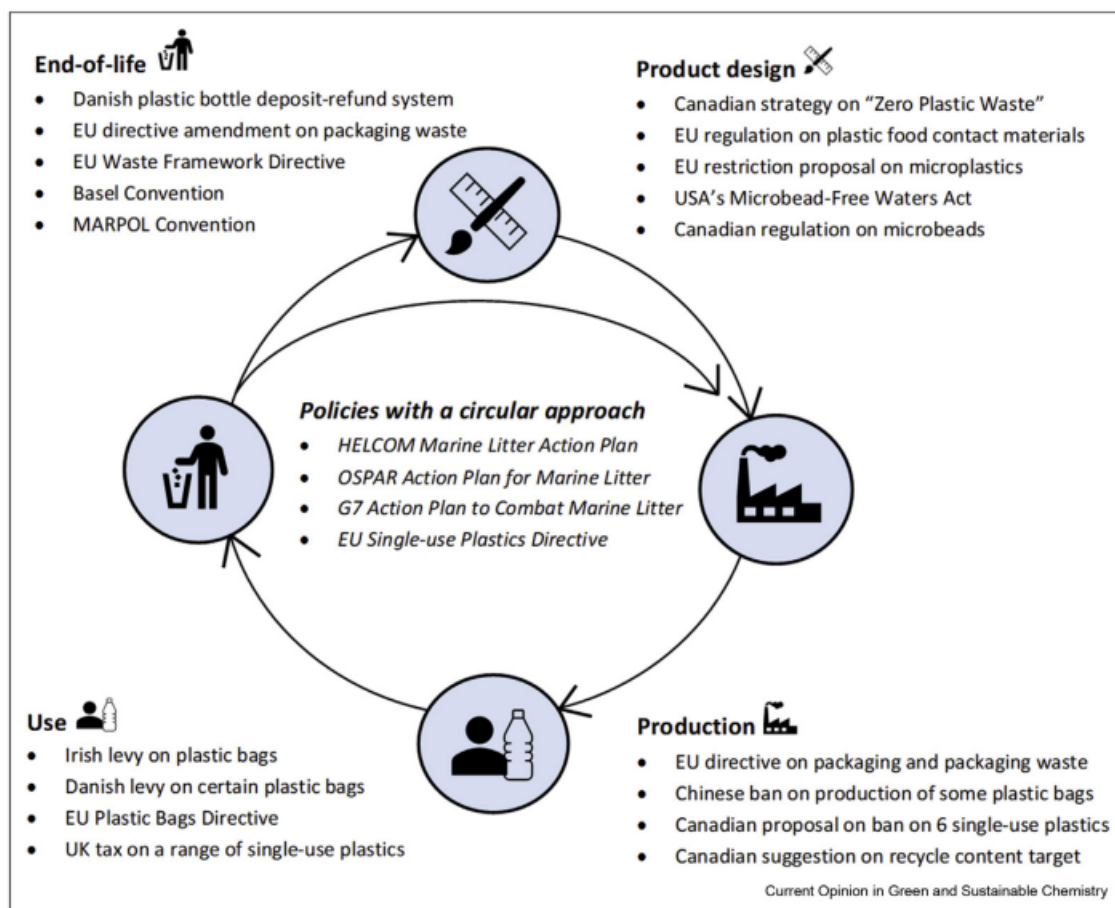
²⁹ The Philippines ranked sixth in the study when environmental indicator is weighed highest.

Other significant barriers cover institutional capacity, access to finance, access to technology, cooperation between different sectors/actors, infrastructure, skills, adoption resistance, and others (consumer awareness, abstract waste definition, inadequate CE) (Preston, Lehne, & Wellesley, 2019).

2.2. CE policies at the global level

Early policies tended to focus mostly on bans and levies to reduce plastic waste at the end stage of a product’s value chain. The overarching umbrella of initiatives has leaned towards encompassing the full value chain. The figure below lists transitory policies covering end-of-life, product design, production, and use, towards a circular approach. In comparison, the Philippines’ policies are concentrated more on end-of-life (RA 9003), and locally, on production (LGU’s resolutions on single-use plastic ban).

Figure 2. International policies



Source: (Syberg, et al., 2021)

Norway's Extended Producer Responsibility law transfers the collection and recycling of discarded vehicles to manufacturers and importers. Tires are prohibited to be disposed in a landfill, along with electrical and electronic products, batteries, and double-glazed glass. Other waste management practices of the country include waste sorting and treatment for household wastes, co-processing, and carbon capture projects through waste-to-energy.

Taiwan facilitated cooperation of its public governance with industrialized manufacturing sectors as the country progressed through different stages of CE implementation. This has driven the success of green initiatives, bringing the landfill wastes down to only two percent. Redesign, reproduction, and reuse mechanisms for textiles, information technology, and electrical and electronic components closed the loop between production and consumption activities (Wu, Hu, & Ni, 2021).

Thailand, on the hand, focused on use and production. Due to the country's high ranking in marine plastic pollution, the national government imposed a nationwide ban on four types of plastic waste namely, thin plastic bags, Styrofoam containers, plastic straws, and single use plastic bags. However, this was eventually reduced to lip service after the implementation lacked follow through. The study highlights that while CE is an attractive framework for waste management, the political economy with all its inequalities, structures, and resources may affect the landscape, thereby diluting the espoused benefits of the framework (Marks, Miller, & Vassanadumrongdee, 2023)

2.3. Policy background in the Philippines

Developing countries are essential in sustaining global CE efforts. As centers of production, they are also set to become global drivers of consumption (Preston, Lehne, & Wellesley, 2019). Given their characteristics however, technologies must be low cost, economically viable, socially acceptable and not adversely impact the environment. Domestic policies and investment should support CE transition. Presence of local markets for resulting by-products play a role in their success (Joshi, Seay, & Banadda, 2018).

Preston, Lehne & Wellesley (2019) recommends that policy structures cover regulation and integration of informal workers. The former could be in the forms of extended producer responsibility, carbon taxation, labelling, waste prevention standard, and green public procurement while the latter looks at formal recognition, proper remuneration, and social inclusion.

The Philippines has the barebones to usher in CE framework. Certain policies align with such recommendations. Executive Order No. 301 s. 2004 establishes a green procurement program for all departments, bureaus, offices and agencies of the executive branch of the government. The Government Procurement Policy Board (GPPB) hopes to cascade this to all branches of the government through a republic act. The proposed Green Public

Procurement Act is currently undergoing readings in the upper and lower legislative houses (House Bill No. 6468³⁰ and Senate Bill No. 1488).

Last July 30, 2022, Republic Act No. 11898 or the Extended Producer Responsibility (EPR) Act lapsed into law. It shifted the responsibility of plastic waste reduction, recovery, and diversion to companies. In theory, it addresses concerns of single use and general use plastic waste production in all phases of the value chain. The National EPR Framework comprises of two major components: product waste recovery programs, and reduction and redesign.

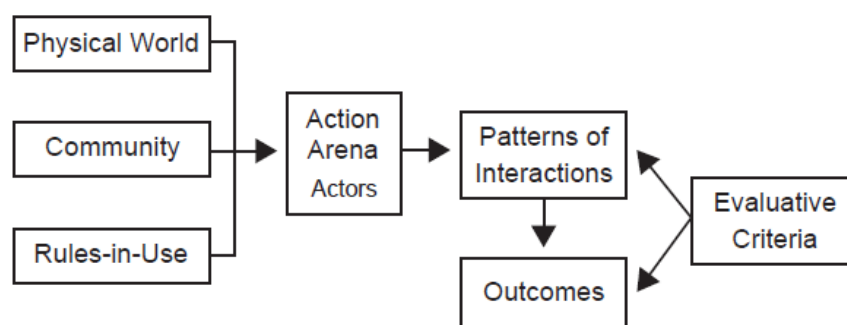
Recovery programs include already existing mechanisms like waste recovery schemes, diversion, transportation, clean up, and local and community partnerships. Specific provisions tackle the institutionalization of waste pickers and junk shops, and significantly includes terms on occupational safety and fair wage policies.

The second component is more expensive and trickier to implement. Reduction and redesign are more expensive and trickier to implement. It would entail higher capital outlay (i.e. upgrading of facilities, materials used, technology) which, in turn, might lead to higher product prices for consumers. In the long run, this would be ideal as it saves both producers and consumers from recycling, collection, and diversion burdens, but status quo waste management in the Philippines and present economic climate (i.e. inflation, rising food prices) makes this difficult to achieve.

2.4. Institutional analysis and development framework

Much of this study's methodology is hinged on Polski and Ostrom's institutional analysis and development framework (IAD). The systematic approach captures work of multiple participants and uses synthesized progress to measure policy outcomes. The analysis primarily looks into three areas that could influence individual and group behaviors: (1) physical and material conditions, (2) community attributes, and (3) rules-in-use.

Figure 3. Basic schematic of IAD framework



³⁰ The House of Representatives approved HB No. 6468 on its third and final reading last December 12, 2022.

The authors outline seven steps to conduct IAD.

Step one is defining policy analysis objective and analytic approach. It is important to check for relevant patterns of interaction in market structure, information flows, and political structures. The approach usually goes in two directions: backward-flowing and forward-flowing diagnostic. The former looks at an outcome of a policy and traces back the factors that influenced it while the latter starts with a general topic.

The second step analyses physical and material conditions related to providing and producing goods and services. This is followed by analyzing community attributes (i.e. demographic features, behavioral norms, extent to which beliefs and preferences are homogenous). Rules-in-use comes next. This is referred to as a minimal set of rules that govern actions, interactions, and outcomes, further subdivided into the following categories: position, boundary, authority, aggregation, scope, information, and pay-off.

3. Results and Discussions

3.1. What is the Circular Economy?

3.1.1. Defining the Circular Economy

Global definitions and conceptualization

- Over 114 circular economy definitions globally (Kirchherr, et, al. 2017)
 - Most frequently depicted as a combination of reduce, reuse, recycle activities
 - Does not often highlight need for a **systematic shift**
 - Explicit link between CE and sustainable development
- A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems” (Ellen MacArthur Foundation)
- An economic system based on the reuse and [regeneration](#) of materials or products, especially as a means of continuing production in a sustainable or [environmentally friendly](#) way (Oxford Dictionary)
- The circular economy is a [model of production and consumption](#), which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the **life cycle of products is extended**. (European Parliament)

Common attributes recognised in the definitions include an economic system where materials are prevented from becoming waste. This is achieved by extending the longevity of products through numerous mediums, the most common being reusing and regeneration through recycling. The circular economy strives to rely upon materials already in circulation (already taken), as opposed to continuing to exploit raw materials. This deviates from the

current linear economy, in which materials are taken from the environment, made into goods, used by consumers and then thrown away. All definitions champion the circular economy as an economic model which alleviates the burden of manmade waste on the environment.

3.1.2. International examples and best practices

Laws and policies on circular economy

i. Australia³¹

By 2030, Australia aims for an 80% resource recovery rate from all waste streams. This equates to an extra 15 million tonnes of material every year.

To encourage this, the government has incentivised investment into onshore recycling facilities, as exhibited in the NSW Bright Smart factory. Moreover, policies for recycling push circular economy principles, such as:

- 100 per cent of packaging to be reusable, recyclable or compostable by 2025.
- 70 per cent of plastic packaging to be recycled or composted by 2025; and
- 50 per cent of packaging to be using recycled materials by 2025.
- phasing out problematic and unnecessary single-use plastic packaging by 2025

ii. France

France's Anti-waste and Circular Economy Law is a great example of cross-sectoral collaboration.³² Policymakers, municipalities, NGOs and businesses worked together with the public administration to identify a richer range of needs, solutions, and policy measures. As a result, the law is ambitious and contributes to a system-wide transition towards a circular economy.

In a study by the Ellen MacArthur Foundation:³³

France adopted in 2020 an ambitious law to shape a system-wide transition towards a circular economy. The French law on the fight against waste and for the circular economy (*Loi relative à la lutte contre le gaspillage et à l'économie circulaire*, referred to in short as the Anti-waste Law) encourages businesses across various sectors, municipalities, and citizens to eliminate waste and adopt more circular practices. The law also aims to promote a societal transformation and support the solidarity economy. 2 It introduced several measures that are a world first, such as the ban on the destruction of unsold goods and the reparability index.”

iii. Chile

Chile has drafted a Roadmap for a Circular Chile by 2040.³⁴ The vision of this roadmap is that, by 2040, a regenerative circular economy will drive Chile towards a sustainable, fair and participatory development that puts people's well-being at the centre; this, through the

³¹ <https://www.globalaustralia.gov.au/industries/net-zero/circular-economy>

³² <https://circulareconomy.europa.eu/platform/en/knowledge/frances-anti-waste-and-circular-economy-law-eliminating-waste-and-promoting-social-inclusion>

³³ https://circulareconomy.europa.eu/platform/sites/default/files/case_studies_-_french_anti_waste_law_aug21.pdf.pdf

³⁴ See <https://economiecircular.mma.gob.cl/wp-content/uploads/2022/01/HOJA-DE-RUTA-PARA-UN-CHILE-CIRCULAR-AL-2040-EN.pdf>

care of nature and its living beings, the responsible and efficient management of natural resources, and a society that uses, consumes and produces in a sustainable and conscious way, promoting the creation of green jobs and opportunities for people and organizations throughout the country.

iv. United Kingdom

In the United Kingdom, the following strategies are in place:

England	Resources and Waste Strategy Waste Management Plan for England 2021
Scotland	Scottish Government Policy Making Things Last - A Circular Government Strategy for Scotland
Northern Ireland	Waste and Recycling in Northern Ireland Waste Management Plan for Northern Ireland 2019
Wales	Recycling Waste and the Circular Economy Plan for a Circular Economy 2021 Wales

1. Chile
2. European Union
3. France
4. UK

- B. Philippine Stakeholder Views/Positions on the Circular Economy
 - i. Government
 - ii. Private sector
 - iii. Civil Society/NGOs

3.2. Circular Economy Legal Frameworks in the Philippines

Despite the absence of a specific circular economy law in the Philippines,³⁵ existing legal frameworks on waste management provide the backbone for circular economy in the country. The general waste management laws and policies directly and/or indirectly relate to circular economy concepts and approaches.³⁶

³⁵ See Asian Development Bank. Technical Assistance Completion Report. *Regional: Supporting Implementation of Environment Related Sustainable Development Goals in Asia and the Pacific (Philippine Subproject)*. Manila: ADB.

³⁶ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at:

The section below will briefly highlight and provide an overview of various laws and policies with significance and relevance to circular economy in the Philippines. The table below provides an overview and summary.

3.2.1. Constitutional Provisions and Laws

1987 Philippine Constitution

Environmental rights in the Philippine Constitution are enshrined in Section 16, Article II.³⁷ According to the celebrated case of *Minors Oposa v. Factoran*, this is a self-executing provision (despite being in the Article in the 1987 Philippine Constitution on Declaration of State Policies) and calls on the government to protect and preserve the environment for current and future generations.³⁸ The *Oposa* decision was groundbreaking also because it recognized the principle of intergenerational equity, recognizing the right of generations yet unborn to a clean, healthy, and safe environment. Rights to a balanced and healthful ecology are “basic rights” which “predate all governments and constitutions” and “need not be written in the Constitution for they are assumed to exist from the inception of humankind.”³⁹

Environment-related provisions in the 1987 Constitution do not stop with Section 16, Article II,⁴⁰ and several of these bear significance for circular economy in the Philippines. Section 2, Article II adopts the “generally accepted principles” as part of the law of the land, and these include international environmental law principles such as the polluter pays, sustainable development, precautionary principle, and sovereignty over natural resources, among others.⁴¹ Section 15, Article II on the right to health is critical because the people’s and the planet’s health are inextricably linked,⁴² and one significant threat to these is from waste pollution.

Article X on Local Governments also has significance since local government units (LGUs) play a critical role in environmental law given that a host of environment-related functions and duties have been devolved to local governments.⁴³ Of particular note are waste management functions which is one of the critical tasks – and challenges – of local governments.⁴⁴

<https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

³⁷ Section 16, Article II: “The State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature.”

³⁸ *Oposa v. Factoran*, G.R. No. 101083, 30 July 1993.

³⁹ Asian Development Bank. 2020. *Climate Change, Coming Soon to a Court Near You: Climate Litigation in Asia Pacific and Beyond*. xiii.

⁴⁰ Bueta, Gregorio Rafael P., *Bernas Legal Giant*

⁴¹ Add Section 2, Article II quote

⁴² SECTION 15. The State shall protect and promote the right to health of the people and instill health consciousness among them.

⁴³ See *La Vina* book

⁴⁴ See provisions of RA 9003 -

Other provisions relevant provisions include recognizing the rights of indigenous peoples and cultural communities,⁴⁵ and also community-based and sectoral-organizations,⁴⁶ which also include informal waste sector workers, cooperatives, and organizations. The constitution also acknowledges the role of the private sector and the provision of investments.⁴⁷

RA 9003, as amended by RA 11898 (EPR Act of 2022)

RA 9003, or the *Ecological Solid Waste Management Act of 2000* is the Philippines’ primary legislation that governs solid waste management – and can be considered as the foundational backbone for circular economy in the country. It was enacted to provide a systematic, comprehensive, and ecological solid waste management program.⁴⁸ Although more than 20 years old and without specific mention of “circular economy” in its provisions, several objectives of the law become relevant for a discussion on circular economy policies.⁴⁹ The table below briefly discusses the relevance of each to circular economy.

RA 9003 Provisions	Relevance to Circular Economy
Set guidelines and targets for solid waste avoidance and volume reduction, which includes recycling and recovery, in accordance with ecologically sustainable development principles	Provides for recycling and recovery as key measures; also includes volume reduction which is related to product re-design and regeneration of natural systems
Encourage greater private sector participation in SWM	Recognizes that circular economy is the responsibility of multiple stakeholders
encourage cooperation and self-regulation among waste generators through the application of market-based instruments	
strengthen integration of ecological SWM and resource conservation and recovery topics into the academic curricula	

Other important provisions under RA No. 9003 include:⁵⁰

- Creation of the NSWMC under the Office of the President;
- Creation of a SWM Board at the city, municipal and provincial levels;
- Creation of a SWM Committee at the *barangay* level;
- Submission of a 10-year SWM Plan (city and municipal levels);

⁴⁵ SECTION 5. The State, subject to the provisions of this Constitution and national development policies and programs, shall protect the rights of indigenous cultural communities to their ancestral lands to ensure their economic, social, and cultural well-being.

The Congress may provide for the applicability of customary laws governing property rights or relations in determining the ownership and extent of ancestral domain.

⁴⁶ SECTION 23. The State shall encourage non-governmental, community-based, or sectoral organizations that promote the welfare of the nation.

⁴⁷ SECTION 20. The State recognizes the indispensable role of the private sector, encourages private enterprise, and provides incentives to needed investments.

⁴⁸ Agcaoili O. 2016. *Law on Natural Resources and Rules of Procedure for Environmental Cases*. Manila: Rex Bookstore.

⁴⁹ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at: <https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

⁵⁰ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

- MRF establishment per barangay or cluster of barangays, and city and municipal centralized MRF;
- Closure of open dumpsites and conversion into controlled dumpsites by 2004 (city and municipal levels); and
- Banning of controlled dumpsites by 2006 (city and municipal levels).

The institutional mechanism to implement RA 9003 places responsibility at both the national and local levels of government. The “NSWMC is the main government entity in charge of SWM policy making and monitoring implementation of law and national and local SWM plans”.⁵¹ Under Section 4 of RA 9003, the Commission is led by the “DENR with fourteen government sectoral members and three private sectoral members (one member each from a non-governmental organization, the recycling industry, and the manufacturing and packaging industries). There is also a National Ecology Center under the DENR created under Section 7 of the law. However, it was only created and constituted by the DENR on December 2021.⁵² It has also been given significant functions in the implementation of the EPR Act of 2022.⁵³

At the local level, cities and municipalities are the primary responsible units in the implementation of Philippine waste management laws. Under Section 12 of RA 9003, “they are tasked to, among others: i) prepare local SWM plans; ii) draft waste reduction policies; iii) manage the collection and disposal of various wastes within their jurisdiction” (including waste segregation and transport to disposal facilities); iv) maintain MRFs; and v) adopt revenue generating measures.

RA 11898, or the EPR Act of 2022, lapsed into law last 22 July 2022; with full implementation set after the effectivity of its implementing rules and regulations last 13 February 2023. It amends RA 9003 to incorporate EPR programs and responsibilities into the Philippine waste management system. The DENR has identified this law as one of the ways of achieving circular economy in the Philippines.⁵⁴ The EPR Act and its provisions will be discussed in more detail in the case studies section of this paper.

RA 6969, Toxic and Hazardous Substances Act

RA 6969 is the Philippines’ implementing legislation for the Basel Convention. It declares as a policy of the State, among others, to regulate, restrict, or prohibit the importation of chemical substances and mixtures that present unreasonable risk and/or injury to health or the environment. It becomes relevant as it is the primary legislation which governs import and exports of waste into the Philippines - waste trade flows impact the amount of recyclable waste in the country, and also affects the capacity of local recyclers to deal with both local and imported wastes.⁵⁵

⁵¹ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

⁵² See <https://www.denr.gov.ph/index.php/news-events/press-releases/3484-nswmc-creates-national-ecology-center>.

⁵³ See Section 5 of RA 11898, amending Section 7 of RA 9003.

⁵⁴ See <https://www.denr.gov.ph/index.php/news-events/press-releases/4751-denr-pushes-for-circular-economy-by-full-implementation-of-extended-producer-responsibility-act-issues-implementing-rules-and-regulations>.

⁵⁵ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at: <https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

Among the recent developments under the Basel Convention is the Plastic Waste Amendment. The Philippines has accepted and ratified this amendment. According to WWF: “The Plastic Waste Amendment aims to make global trade in plastic waste more transparent and better regulated. Exporting countries will now have to obtain consent from countries receiving plastic waste. This ensures quality of plastic waste materials and prevents countries, especially African and Asian nations, to be the dumping ground of developed nations”.⁵⁶ However, the government has not ratified the Basel Ban Amendment,⁵⁷ which came into force in 2020. This results in the continuous entry of so-called recyclable waste for processing or final disposal in the country,⁵⁸ despite the lack of proper infrastructure to deal with domestic waste.

RA 8749, Clean Air Act

RA 8749 is the Philippine primarily law dealing with emissions and tackling air pollution. IT becomes relevant as it impacts what technologies may be used (i.e., incineration and WTE facilities) as part of the overall waste management system forming the so-called loop.⁵⁹ Of particular note is Section 20 which provides for “a general prohibition on the use of incineration and open burning for the disposal of waste”. Under the same section, incineration is defined as the “burning of municipal, bio-medical and hazardous wastes, which process emits poisonous and toxic fumes.”

This provision becomes relevant to circular economy as technological options and solutions being included as part of circular economy initiatives may run counter to the provisions and prohibitions of RA 8749.

RA 10771, Green Jobs Act

The law applies to companies that engage in green jobs—defined as “employment that contributes to preserving or restoring the quality of the environment, be it in the agriculture, industry or services sector.” According to WWF, “[s]pecifically, but not exclusively, this includes jobs that help protect ecosystems and biodiversity, reduce energy, materials and water consumption through high efficiency strategies, decarbonize the economy, and minimize or altogether avoid generation of all forms of waste and pollution.”⁶⁰ Under Section

⁵⁶ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

⁵⁷ “The “Ban Amendment” provides for the prohibition by each Party included in the proposed new Annex VII (Parties and other States which are members of the OECD, EC, Liechtenstein) of all transboundary movements to States not included in Annex VII of hazardous wastes covered by the Convention that are intended for final disposal, and of all transboundary movements to States not included in Annex VII of hazardous wastes covered by paragraph 1 (a) of Article 1 of the Convention that are destined for reuse, recycling or recovery operations.” From

<https://www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx>.

⁵⁸ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at:

<https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

⁵⁹ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at:

<https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

⁶⁰ WWF-Philippines. 2020. *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF: Quezon City.

5 of this law, incentives include availment of “a special deduction from taxable income for skills training and research and development, and tax and duty free importation of capital equipment”.

3.2.2. Policies and Programs

National Solid Waste Management Strategy 2012-2016

The National Solid Waste Management Strategy (NSWMS) for 2012–2016 gives overall guidance for the country’s waste management by outlining medium-term plans to (i) materialize the National Solid Waste Management Framework; (ii) implement the provisions of Republic Act (RA) No. 9003; and (iii) mainstream waste management policies in the Philippines. The strategy consists of seven major and three cross-cutting components.⁶¹

The NSWMS has yet to be updated by the DENR and the NSWMC.

The Philippine Development Plan (PDP) 2023 – 2028

The Philippine Development Plan (PDP) 2023–2028 is a plan for deep economic and social transformation to reinvigorate job creation and accelerate poverty reduction by steering the economy back on a high-growth path.⁶² This growth must be inclusive, building an environment that provides equal opportunities to all Filipinos, and equipping them with skills to participate fully in an innovative and globally competitive economy.⁶³

The PDP 2023 – 2028 identifies as one of its outcomes, under the subchapter of Establish Livable Communities, the improvement of environmental quality.⁶⁴ Specific goals include broaden waste minimization initiatives, and increase access to proper waste disposal facilities. Other outcomes and targets include preventing and reducing food losses and wastes, and the pursuit of optimal solid waste management solutions.

National Plan of Action to Combat Marine Litter (NPOA-ML)

The NPOA-ML is a “strategic document that will provide overall direction, indicators, and targets to manage and minimize marine debris, including plastics” (WWF 2020). The NPOA-ML lists the following programmatic cluster of activities:

⁶¹ These are:

Major Components	Cross-cutting Components
Bridging policy gaps and harmonizing policies	Good solid waste management governance
Capacity development, social marketing, and advocacy	
Sustainable solid waste management financing mechanisms	Caring for vulnerable groups
Creating economic opportunities	
Support for knowledge management on technology, innovation, and research	
Organizational development and enhancing inter-agency collaboration	Reducing disaster and climate change risks
Compliance monitoring, enforcement, and recognition	

⁶² NEDA. The Philippine Development Plan 2023-2028: Abridged Version. 2023, page 7.

⁶³ NEDA. The Philippine Development Plan 2023-2028: Abridged Version. 2023, page 7.

⁶⁴ See <https://pdp.neda.gov.ph/philippine-development-plan-2023-2028/>.

- establish science- and evidence-based baseline information on marine litter;
- promote circular economy and support sustainable consumption and production (SCP)— which includes EPR;
- enhance recovery and recycling coverage and markets;
- prevent leakage from collected or disposed waste;
- implement a sea-based litter prevention and management program; and
- institutionalize a management program for litter already existing in the marine/riverine environment.

Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP)

The Action Plan serves as a guiding framework to influence and steer sustainable behavior and practices towards the production and consumption of green goods and services, and shift towards sustainable and climate-smart practices and lifestyles.⁶⁵

The PAP4SCP's priority programs include the institutionalization of Natural Capital Accounting and a National Eco-Labeling Program. An EPR law is also identified as one of the priority legislation to achieve the plans goals

Sustainable Science and Technology for Solid Waste Management Road Map of the Department of Science and Technology

The development of this Road Map was spearheaded by the Department of Science and Technology, particularly the Philippine Council for Industry, Energy, and Emerging Technology Research and Development. It envisions a circular economy with a solid waste pollution-free environment (DOST- PCIEERD, 2021), and outlines guideposts for how science and technology can support research and development and the enforcement of guidelines and standards. Full implementation of this plan is currently pending.

Sustainable Finance Roadmap

The development of this Roadmap was spearheaded by the Department of Finance, and it was launched in 2021.⁶⁶ It is intended as the Philippines' masterplan for formulating green and sustainable policies to raise the capital and investments needed in reducing the country's GHG emissions while still increasing its economic output.

It seeks to address policy and regulatory gaps in the following areas:

- Promoting sustainable investments through finance;
- Implementing sustainable government initiatives;
- Facilitating investments in public infrastructure; and,
- Developing projects that promote sustainable financing in the Philippines

⁶⁵ <https://sdg.neda.gov.ph/philippine-action-plan-for-sustainable-consumption-and-production-pap4scp/>

⁶⁶ <https://www.dof.gov.ph/wp-content/uploads/2021/10/ALCEP-Roadmap.pdf>

3.2.3. Proposed and Pending CE-related Policies in Congress

Over the years and in almost every previous Congress, numerous measures and bills have been filed in relation to addressing waste management issues in the Philippines. A previous study done by one of the authors show that although only a handful of proposals directly relate to or refer to circular economy, the various categories of proposals (as will be shown below) all have relevance to building the foundations of a robust legal framework for circular economy in the country.⁶⁷

Since July 2010 to January 2022, a total of 415 bills and/or resolutions have been filed in the Philippine Congress relating to various aspects of the circular economy.⁶⁸ Save for the EPR Act of 2022, none of these measures have yet translated into a binding law or policy as of this writing. The author noted that during the 18th Congress, there has been a spike in interest among lawmakers to address the pollution caused by plastic products. A review of the measures filed reveal the following categories of proposals:

- i. Waste management, particularly of toxic and hazardous substances;
- ii. Plastics regulation;
- iii. Waste disposal, particularly food and electronic waste;
- iv. Toxic and hazardous substances in plastics and other products;
- v. Ban on waste importation and regulation of waste trade; and,
- vi. Repealing the ban on incineration and allowing thermal waste-to-energy facilities.

In the 18th Congress, and perhaps for the first time in its legislative history, a proposed bill, HB 7609, entitled *Philippine Circular Economy Act of 2020*, specifically calls for mainstreaming and establishing a circular economy in the country.⁶⁹ The proposal however did not become a law before the adjournment of Congress.

In the current 19th Congress, two bills have again been filed in both the Senate⁷⁰ and the House of Representatives⁷¹ proposing a Philippine Circular Economy Promotion Act. The authors note that the versions in both chambers have the same text.⁷²

The Explanatory Note states that "...the principles and strategies of circular economy and sustainable consumption and production (SCP) serve as guideposts for policy and decision-makers" in "leapfrogging" the Philippine economy to a cleaner future. The Note adds that "A circular economy implies using and reusing resources already in the economy more efficiently to minimize losses and rely less on extracting natural resources." Section declares as a policy that "...the State shall prevent and reduce the impact of certain plastic products, particularly marine litter, on the environment, and human health, as well as promote the

⁶⁷ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at: <https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

⁶⁸ Bueta, Gregorio Rafael. (2022). *Circular Economy Policy Initiatives and Experiences in the Philippines: Lessons for Asia and the Pacific and Beyond*, in PROSPECTS FOR TRANSITIONING FROM A LINEAR TO CIRCULAR ECONOMY IN DEVELOPING ASIA. ADBI. Available at: <https://www.adb.org/sites/default/files/publication/774936/adbi-transitioning-linear-circular-economy-developing-asia-web.pdf>

⁶⁹ See https://www.congress.gov.ph/legisdocs/basic_18/HB07609.pdf.

⁷⁰ See <https://legacy.senate.gov.ph/lisdata/3846434920!.pdf>

⁷¹ See https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/basic_19/HB08791.pdf

⁷² Note: For purposes of the succeeding analysis, the Senate version shall be used by the Authors.

transition to a circular economy with innovative and sustainable business models, products, and materials.”⁷³

It also provides for a definition of the circular economy:⁷⁴ “Circular economy shall refer to a system approach wherein products are designed for durability, reuse and recyclability, and materials for new products come from old products. It minimizes waste and maximizes the use of natural resources.” It further defines sustainable consumption and production as such: “Sustainable Consumption and Production (SCP) shall refer to the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of further generations.”⁷⁵

The law covers and applies to “...producers and consumers involved in value chains of all goods, products, services, and processes contributing to the Philippine economy, and to the mechanisms facilitating the policy, regulatory, and advocacy measures to promote, implement, monitor, and evaluate the strategies on circular economy, complementing thereby the goals and targets of sustainable consumption and production.”⁷⁶ Activities and mandates under the proposed measure include: product or process design,⁷⁷ innovation in products and services,⁷⁸ Single-use Plastic Phase-Out and Source Reduction and Waste Minimization through Polluters Pay Principle / Extended Producer Responsibility Schemes,⁷⁹ a circular public procurement program,⁸⁰ integration of permaculture practices and principles,⁸¹ and mainstreaming circular economy into the national government budget,⁸² among others.

3.3. Case Studies on Circular Economy in the Philippines

This section of the report will present two case studies to highlight the challenges and opportunities, and shed light on the pathways for circular economy in the Philippines. The case studies are as follows:

1. Waste Management Challenges (The Plastic Flamingo; and Brgy. Mintal, Davao City); and,
2. An Analysis of EPR Act of 2022.

The case study respondents were asked the following general questions:

1. What are your views on overall waste management and circular economy in the Philippines;
2. What are some of barriers/challenges you are facing as a waste management stakeholder in the Philippines?;
3. What are some of your organizations' initiatives/best practices on waste management in the country?;

⁷³ Section 2, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁴ Section 3 (g), Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁵ Section 3 (r), Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁶ Section 4, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁷ Section 5, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁸ Section 6, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁷⁹ Section 8, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁸⁰ Section 9, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁸¹ Section 10, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

⁸² Section 14, Senate Bill No. 621, 19th Congress, Senate of the Philippines.

4. What policies and strategies are needed to help you in your role as a waste management stakeholder?; and,
5. What policies are needed to achieve CE in the Philippines?

3.3.1. Case Study 1: Waste Management Challenges for LGUs and the Private Sector

The first case study will examine waste management challenges experienced waste service providers and local government units in the Philippines.

The Plastic Flamingo (Plaf)

Started in 2018, the Plaf, also known as The Plastic Flamingo, is a social enterprise based in the Philippines that collects and transforms plastic waste into a range of sustainable construction materials which can be used to build new schools, housing, and shelters to help make this country more resilient against its many natural hazards the country faces yearly.⁸³ To date, it has already managed hundreds of metric tons of plastic waste from the plastic collection sites it has established through organizations, companies, and dedicated individuals.

The Plaf reports over 250 collection points which resulted in more than 600 tons of managed plastic waste. Their range of products include recycled pellets, eco-lumber, and customized street furniture.

Barangay Mintal, Davao City

Barangay Mintal, located in Davao City, has a population of almost 19,000 people as of the 2020 Census, with a household population of almost 5,000.⁸⁴ Mostly residential, it also hosts markets, a mall, school, and the University of the Philippines in Mindanao campus. In 2020, the barangay became part of a zero waste management project entitled PHINLA which stands for Philippines, Indonesia, and Sri Lanka, which aims to empower the waste collectors in the barangay and address poor waste management concerns.⁸⁵ It is being implemented by World Vision in partnership with Eco Waste Coalition and funded by the German Federal Ministry for Economic Cooperation and Global Development (BMZ).

Brgy. Mintal was provided with the following support: i) the waste collectors provided with equipment like seventeen (17) trisikads, five (5) motorized tricycles, PPEs (gloves, respirators, and raincoats and boots); ii) establishment of barangay Material Recovery Facility (MRF) will be equipped with biodegradable shredder , weighing scale; iii) mobile phones for the BinBank application; and, iv) other supplies for the documentation of the MRF and creation of the Community Savings and Credit Association (CoMSCA).

Observations and Analysis

- a. Continuing general waste management challenges

The Plaf and Brgy. Mintal noted the on-going and continuing waste management challenges in their operations. For the Plaf, it said that plastic waste management and circular

⁸³ See <https://www.theplaf.com/ourimpact>.

⁸⁴ Interview with Brgy Captain Reynaldo Bargamento of Brgy Mintal, Davao City.

⁸⁵ See <https://idisphil.org/wp-content/uploads/2020/11/PHINLA-PR.pdf>.

economy in the Philippines remains very inefficient, disorganized, and underdeveloped. One indicator of this is that it is extremely difficult for international waste management companies specialized in plastic waste handling and recycling to penetrate the Philippines market and develop it. Recycling activities are controlled by monopolies, and corruption at some levels of government. The Plaf adds that there is still no local market for recyclables in the country, and most recycled products are bound for export.

The case study participants also lamented the poor implementation and enforcement of the provisions of RA 9003. Brgy. Mintal noted that on-going challenge of enforcing basic provisions of the law such as segregation at source and proper sorting and handling. Add to this the lack of equipment, resources, and proper infrastructure such as the MRF at the barangay level, up to the sanitary landfills. For example, for several years, the barangay only had one small truck for collection services which made waste management operations challenging and reliant on informal waste workers. For the Plaf, the lack of organized and operational MRFs also proves to be a challenge, particularly for collecting the volumes of plastic waste needed to make their business profitable and sustainable.

The experiences of both the Plaf and Brgy. Mintal also point to the continued reliance on, and importance of the informal waste sector and on community initiatives for general waste management in the Philippines. For the Plaf, most of their collection activities have been organized with IWS stakeholders, cooperatives, and community organizations – with very limited direct engagement with LGUs. This also relates to working with plastic waste providers which are oftentimes disorganized. In Brgy. Mintal, its waste management initiatives in the early 2000s started by working with and organizing the IWS within their jurisdiction. With the support of the project mentioned above, the IWS volunteers were eventually able to set-up the Mintal Resource Collectors Association (MIRCA) which continues to operate and expand its operations until today. Over the years, the barangay government needed to rely on the IWS and MIRCA to be able to meet its waste management responsibilities.

The case study participants also noted the lack of proper and effective waste management infrastructure, funding, and other resources. Aside from the lack of MRFs, accessible SLFs, and large-scale recycling facilities, sufficient funding to support waste management operations, particularly from the national government, was missing to support more manpower, better equipment, and to meet increasing waste generation from households and establishments. The Plaf also noted the high cost of logistics, electricity, rent which makes waste management operations and plastics recycling more challenging.

b. Businesses not incentivized to invest

As noted by the Plaf above, it is very difficult and challenging for international waste management players and stakeholders to enter into the Philippine market for recyclables, particularly of plastics. Admittedly, the government cannot handle waste management alone, especially with all the challenges and issues which a country like the Philippines faces. That is why it is critical for stakeholders such as the business and private sector to work with the government and invest in the waste management sector.

However, barriers and challenges remain. Aside from the disorganized local system, corruption, and multiple players in the waste value chain, an additional challenge which businesses face is the lack of or insufficient incentives. The Plaf notes that businesses are not encouraged to enter the market, or to put in more investments because of these challenges and the lack of support from the national and local governments. The incentives provided for under RA 9003, reiterated in RA 11898 in the implementation of the EPR Act of 2022, are not enough to drive the needed business push. The current waste management environment, with all its challenges and the different barriers identified, do not incentivize

businesses to invest more in the industry and to support government in its waste management efforts.

For Brgy. Mintal, they have yet to see any direct and specific support from businesses and the private sector for their waste management initiatives. Although commercial and businesses establishments in their jurisdiction comply with and support the waste management activities and regulations of the barangay, the local officials are still finding ways to make the private sector more involved and invested in these activities and initiatives. As noted above, the support received by the barangay were from international and national non-profit organizations, and no direct or concrete investments were from the private sector. The barangay officials note that more investments and support from businesses would help scale up and improve existing initiatives.

c. Limited government support and initiatives at the national and local levels

The Plaf and Brgy. Mintal also noted the limited government support and initiatives both at the national and local levels.

In Brgy Mintal, direct national government involvement was very limited, especially for large-scale infrastructure projects such as consolidated MRFs, SLFs, and recycling facilities. At the city level, although there is coordination with the city environment and natural resource office, additional support aside from the budget allocation has been limited. Given this, the barangay needed to be self-reliant, coming up with its own waste management system with the support of local residents, informal waste workers, local junk shops, and cooperatives. This is in addition to the support from NGOs through the project noted above.

For the Plaf, in addition to the issues on incentives noted above, they note that several national government policies either need to be implemented properly or are missing. Full and proper implementation of the EPR Act is critical to encourage more players and investments into recycling and waste management in the Philippines. Implementation guidelines of the EPR Act also need to be clarified. For example, the Plaf is critical of the use of co-processing activities as part of EPR Programs due to environmental and sustainability concerns. The Plaf also noted the need for policies which mandate the use of recycled content in products, particularly of plastics. This will help encourage more investments into the recycling sector, crucial to support EPR implementation and improve waste management in the Philippines.

3.3.2. Case Study 2: Analysis of the EPR Act of 2022

This second case study will analyze the EPR Act of 2022, as one of the primary measures for circular economy in the Philippines.

Overview of the EPR Act of 2022

The EPR Act lapsed into law on 22 July 2022, and its full implementation followed after the passage and effectivity of the law's IRR on 13 February 2023. The DENR-EMB, through the National Ecology Center (NEC) is the main government implementing agency. The NEC is tasked to, among others, maintain an SWM database and the EPR Registry.

The law and its IRR declare as a state policy the institutionalization of EPR mechanism as a practical approach to efficient waste management, focusing on waste reduction, recovery and recycling, and the development of environment-friendly products that advocate the internationally accepted principles on sustainable consumption and

production, circular economy, and producers' full responsibility throughout the life cycle of their product.⁸⁶ It also provides for an EPR National Framework, based on two areas: i) reduction of non-environment friendly products which may include various activities and strategies; and, ii) product waste recovery programs aimed at effectively preventing waste from leaking to the environment.⁸⁷

The law also provided for a definition of circular economy:⁸⁸

“Shall refer to an economic model of creating value by extending product lifespan through improved design and servicing and relocating ways from the end of the supply chain to the beginning. This intends to efficiently utilize resources by its continual use and aims to retain the highest utility and value of products, components, and materials at all times, through sharing, leasing, reuse, repair, refurbishment, and recycling in an almost closed loop.”

Producers, or those responsible under the EPR Act are referred to as obliged entities. They have been defined as: product manufacturer or importer that supplies its commodities for the use of the general consumer or distributes the same as a material product of a brand owner: Provided, That ..., in case the commodities are manufactured, assembled, or processed by a product manufacturer for another obliged enterprise which affixes its own brand name, the latter shall be deemed as the manufacturer⁸⁹

The law covers obliged companies, which include large enterprises that generate plastic packaging waste and whose total assets exceed Php100 million, per RA 9501⁹⁰ Micro, small and medium enterprises are however “encouraged” to practice EPR voluntarily, whether as part of a network or through a PRO.⁹¹

Although the program can cover different types of waste, plastics have been the priority and the first product to be covered. Types of plastic packaging to be covered by EPR include:⁹²

- Sachets, labels, laminates and other flexible packaging products, whether single layer or multi-layered;
- Rigid plastic packaging (including containers for food, beverages, cosmetics, and their coverings, necessities and labels); Plastic bags (including SUP bags); and
- Polystyrene.

Obliged entities have the option of instituting their EPR programs individually or collectively, whether with or without a producers responsibility organization (PRO). However, establishment of a PRO is voluntary.⁹³The DENR, in consultation with the NSWMC, obliged companies or the PRO is tasked with establishing standards, rules, and guidelines on the following:⁹⁴

⁸⁶ EPR Act and IRR _____

⁸⁷ EPR Act and IRR _____

⁸⁸ Section ____, EPR Act of 2022.

⁸⁹ Section ____, EPR Act of 2022.

⁹⁰ Section 44b, RA 9003 as amended by RA 11898.

⁹¹ Section 44b, RA 9003 as amended by RA 11898.

⁹² Section 44c, RA 9003 as amended by RA 11898.

⁹³ Section 44h, RA 9003 as amended by RA 11898.

⁹⁴ Section 44h, RA 9003 as amended by RA 11898.

- Organizational structure, leadership, and membership requirements of PROs;
- Duties and responsibilities, including: a) Implementation parameters of the EPR program, b) Financing mechanisms; c) Cooperation mechanisms with other players and stakeholders, including the informal waste sector; and d) Implementation strategies;
- Standards on plastic neutrality;
- Reporting, verification and auditing of waste footprint generation, recovery and diversion; and,
- Data collection and database maintenance.

Obligated companies or the PRO/s must register EPR programs with the NSWMC within 6 months from the effectivity of the law.⁹⁵ As part of mandatory waste diversion targets, obligated companies that generate rigid or flexible plastic packaging must recover their plastic product footprint generated during the immediately preceding year according to the following schedule:⁹⁶

- 20 percent recovery by 31 December 2023;
- 40 percent recovery by 31 December 2024;
- 50 percent recovery by 31 December 2025;
- 60 percent recovery by 31 December 2026;
- 70 percent recovery by 31 December 2027;
- 80 percent recovery by 31 December 2028, and the succeeding years thereafter.

Observations and Analysis

a. EPR Law a good first step but several issues remain unaddressed

The EPR Act of 2022 has been recognized as a positive step towards improving waste management in the country, and also in the move towards achieving a circular economy.⁹⁷ The Philippines is one of the few countries in ASEAN which have passed and actually implemented mandatory EPR laws. As one co-author puts it, EPR is a positive step because it is: i) a starting point for a cultural and societal shift on waste management; ii) an opportunity for producers to be more responsible and sustainable, and for technological innovation and ingenuity to shine through; and, iii) a challenge for all stakeholders to improve overall waste management.⁹⁸ This complements other efforts at addressing marine litter, promoting sustainable consumption and production, and sustainable finance, among others. In addition, the current and previous governments have also made addressing waste management – including achieving a circular economy – a priority measure.

Yet despite these good developments, several issues on the EPR Act of 2022 have been identified by various studies and experts – pointing to challenges which still lie ahead.

⁹⁵ Section 44d, RA 9003 as amended by RA 11898.

⁹⁶ Section 44f, RA 9003 as amended by RA 11898.

⁹⁷ See: <https://www.denr.gov.ph/index.php/news-events/press-releases/4751-denr-pushes-for-circular-economy-by-full-implementation-of-extended-producer-responsibility-act-issues-implementing-rules-and-regulations>; <https://www.grantthornton.com.ph/insights/articles-and-updates1/from-where-we-sit/extended-producer-responsibility-a-vital-component-of-pap4scp/>; <https://www.parms.com.ph/parms-epr-program>

⁹⁸ Bueta G.R.P., *EXTENDING EPR'S REACH TO MEET ENVIRONMENTAL AND CLIMATE JUSTICE CHALLENGES IN A CIRCULAR ECONOMY WORLD*, presentation for the forum Resilient and Sustainable Future for All: Promoting Circular Economy through Responsible Consumption and Production, 17 May 2023.

A recent GIZ study outlined the following items which needed clarity and greater detail before mandatory EPR programs can be properly implemented:⁹⁹

- i. Operationalizing voluntary PROs;
- ii. Defining EPR costs and fees;
- iii. Clarity on the role of local governments and other government agencies;
- iv. Clarity on waste recovery targets, and priorities for activities and strategies; and,
- v. Clarity on the participation of the informal waste sector.

The EPR Act has also been criticized for instituting a too loose and flexible system. Although the law provides for mandatory requirements and targets, how to achieve these are left mostly to the individual or collective determination of obliged entities. For example, joining or working with a PRO or a collective is not mandatory and a company can have its own individual EPR program. Obligated entities can also choose to work or not with any waste management service provider, either formally or informally organized, or with local government units. Working with LGUs is critical because local governments are primarily mandated to implement waste management laws within their territorial jurisdiction. In addition, there is no clear guidance on EPR fees and costs as these are left to the determination of obliged entities and the service providers they choose to work with. This becomes a wider societal issue as costs to consumers for EPR programs and compliance remains unclear.

Another major criticism of the EPR Act is that it only provides for mandatory waste diversion targets. There is no requirement or target for recycling the products collected or diverted. In addition, there are also no directives for product re-design – for example, to make products easier to recycle, or to use environmentally-friendly alternatives or to eliminate the use of harmful toxics and chemicals in certain plastic products.

The law also fails to concretely identify what the role of the informal waste sector will be in the implementation of EPR programs. This is critical given the role that the IWS play in waste management in many parts of the country. Local governments often rely on IWS for effective waste management, especially at the barangay or community level. Thousands of IWS workers also rely on this for their livelihood. Thus, working with and addressing IWS issues also leads to addressing social and environmental justice concerns.

Lastly, many environmental groups have criticized the law for allowing waste diversion and disposal options such as co-processing and thermal waste-to-energy. As noted by several organizations, these are harmful options and may do more harm than good. Some have also labelled it as false solutions or forms of greenwashing by companies/obliged entities which rely on them.

b. Government capacity to implement and enforce the EPR Act

Government capacity – technical, financial, institutional, among many others – is critical for the success of the EPR Act. Many studies have pointed to the challenges and limitations which government faces in implementing effective waste management, in particular the provisions of RA 9003. Now add to this the mandates of the EPR Act. Under the law, the National Ecology Center was tasked to be the main implementing arm for EPR. However, it was only in 2021 when the NEC was formally institutionalized by the DENR. Its full operationalization, especially at the regional level, has yet to be fully realized. As an example, EPR programs submitted several months ago (i.e., before the February 2023

⁹⁹ GIZ, *EPR Options for Packaging in the Philippines – Policy Brief*. 31 October 2022, pages 7-8.

deadline) have not been reviewed and/or approved by the NEC – this despite the 10-day turn-around time indicated in the law.

There also several details and guidelines that are still needed. Some have noted that EPR implementation has focused only on plastic products, even if there are other items such as electronics which are also equally polluting. No clear standards and guidance on PRO or Collective implementation was given by the law or it's IRR. These have been left to the determination of those which organize the PROs or collectives. In addition, obliged entities and other stakeholders are also awaiting the auditing and certification guidelines for EPR Program reports and compliance. These are critical for the proper monitoring and evaluation of the law's implementation.

c. Lacking crucial upstream measures and compliance by other stakeholders

The current wording of the law only enjoins – not mandates – obliged entities to undertake upstream measures – or activities which focus on reducing product consumption, or those which eliminate wasteful or harmful elements of a product. As noted above, product re-design is only optional and does not need to be part of EPR Programs. Product labelling is also not mandatory and was left to the determination of each EPR program. No guidance on labels – which may aid in and improve recycling and other waste management activities – have also been provided under the law or IRR.

Some groups have also noted that micro, small and medium enterprises (MSMEs) are not covered by the EPR Act. MSMEs – which comprise approximately 90% of businesses in the Philippines – are only encouraged to voluntarily adopt and implement EPR programs. Organizations have pointed out that a lot of the plastic usage, and its associated waste and potential leakage into the environment, happen at the MSMEs level. Without their mandatory compliance, or at least inclusion into EPR programs, the law may have limited impact on address waste from products such as plastics.

d. Circular economy definition missing critical elements

Of note is that the EPR Act provided for a definition of circular economy. This makes the definition part of the Philippine waste management legal framework. However, analyzing this based on other definitions of circular economy, several missing elements can be identified. First, there is no mention of waste reduction, echoing the criticism of the law being weak or lacking on upstream measures. The definition simply focuses on the process of collection and waste diversion, in addition to recycling. Second, there is no mention of circular economy's benefits to nature, or to what some definitions call was regenerating natural systems. One of the stated benefits of the circular economy is the reduced stress on nature and its products and derivatives. By reducing use of new or virgin material and preventing waste leakage into the environment, nature is allowed to thrive and revive itself. Lastly, the definition also fails to refer to the systemic shift which circular economy hopes to achieve. By this concept, a change in production and consumption patterns and behavior is hoped to be achieved through the various circular economy measures. Societal changes are thus made into effect because of the circular economy.

3.4. Analysis: Benefits of the Circular Economy for Waste Management in the Philippines

II. Analysis: Benefits of the Circular Economy for Waste Management in the Philippines

The previous sections discussed circular economy as a concept, legal frameworks in the Philippines, and a glimpse of how this concept plays out in the Philippine context through the case studies on waste management and the EPR Act of 2022. This section will analyze the findings of this study by answering two questions:

- i. Are current legal frameworks and policies in the Philippines aligned with the circular economy?
- ii. What are stakeholder views on the circular economy in the Philippines in terms of definitions, and barriers and challenges?

Are current legal frameworks and policies in the Philippines aligned with the circular economy?

Five limitations inhibiting the effectiveness of CE laws:¹⁰⁰ (1) unclear boundaries and scale, (2) oversimplification of goals, (3) side-lining of justice dimensions, (4) reinforcement of the status quo, and (5) unintended consequences.

What are stakeholder views on the circular economy in the Philippines in terms of definitions, and barriers and challenges?

a. Defining the circular economy and CE in the Philippines

- Knowledge about CE, but recognition of multiple definitions and approaches
- Most refer to the EMF definition as widely accepted
- General acknowledgement that CE definition and conceptualization is not one-size-fits all

- CE already being practiced in the Philippines
 - *Sari-sari* store refilling system
 - Junk shops, repair and refurbish shops
 - Lifestyle of lower income families – practicing CE to cope and survive (oyt of necessity; practicality)
- CE definition in Philippine legal framework and policy through RA 9003
 - But RA 9003 can provide a framework/backbone

b. Barriers and Challenges

- Implementation and enforcement of existing laws remain a challenge
 - Basic waste management (i.e., segregation, sorting, etc) not followed
 - Heavy burden on LGUs

¹⁰⁰ <https://www.frontiersin.org/articles/10.3389/frsus.2023.1154059/full> PERSPECTIVE article

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- Lack of waste management and recycling infrastructure
- Lack of baseline data on waste footprint
- Insufficient funds and other resources (unknown impact of Mandanas ruling)
- Lack of focus on socio-economic aspects of waste management and circular economy
 - Informal waste sector and other vulnerable groups
 - SMEs
- Fragmented institutions (or elements of CE)
 - Different mandates of government agencies (different priorities and plans)
 - No continuity and sustainability of programs, esp at LGU level
- Problematic solutions being offered
 - WTE, co-processing, and other incineration options
 - Too focused on downstream solutions, lack upstream measures
 - Greenwashing and lack of trust
- A confusing waste management landscape
 - Need to know who the different stakeholders and waste management players are (stakeholder mapping)

4 Defining Circular Economy for the Philippines within the Local Context

Key Observations

- CE provides an overarching framework
 - The “glue” which makes related laws and policies stick together
- Addresses some of the critical issues and barriers to waste management
 - Opening space for technological solutions and innovations
 - Venue for stakeholder cooperation and collaboration (i.e., government and private sector in EPR implementation)
- Government needs to clarify between **circularity** and **circular economy**
 - Product focused or system focused?
- Need to work within existing waste management framework
 - Not “reinvent the wheel”; integrate and incorporate on what society is used to
 - BUT this requires full implementation and enforcement of
- **A whole of society approach is needed**
 - Government - political will and commitment to enforcement
 - Private sector - counterpart investments and innovation
 - NGOs - small-scale and “backyard” CE programs
 - Citizens - buy-in secured and compliance

A. Elements of Circular Economy in the Philippines

B. Critical Factors to be Considered

i. Cross-cutting issues that will impact CE implementation

C. Essential actions that need to be taken to lay foundation for CE in the Philippines

i. Missing policy measures?

5 Recommendations and Ways Forward

The Circular Economy Foundation in its recent Circularity Gap Report (2023) stated that rising material extraction has shrunk global circularity from 9.1% in 2018 to 7.2% in 2023. This widens the Circularity Gap as the world predominantly depend on new (not recycled or repurposed) materials for production and consumption. More than

90% of materials are either wasted, lost or remain unavailable for reuse for years. A report by the WorldBank in 2021 showed that the Philippines is a net exporter of plastic scrap and had a recycling gap of 85% compared to its regional neighbors, losing around 78 percent of the value of recyclable resins.

This poor performance indicates significant avenues for improvement to close the circularity gap in both local and global arenas. Nevertheless, recent policy and institutional developments in the Philippines present avenues for better stakeholder cooperation and collaboration, and the application of technological solutions and innovations. The government needs to focus on bridging critical institutional and implementation gaps including the creation and/or operationalization of the NEC and local solid waste management or environment offices, provision of technology, facilities and waste management resources, and facilitation of public-private partnerships for capital and infrastructure needs.

The passage of EPR law signals the country's desire to transition and adopt the tenets of a circular economy. But due attention has to be given on how to localize and make domestically appropriate circularity concepts and grounding arrangements. CE initiatives must build on the gains from implementation of the ecological solid waste management act (RA 9003), while addressing the institutional problems and perennial implementation weaknesses in cascading policy.

The local landscape for circular economy needs tangibility in several dimensions: from localized interpretation of CE tenets, to ensuring institutional and stakeholder responsiveness, participation, and compliance. Innovative options for circularity must also be presented to if material usability is to be preserved and wastes significantly designed out from targeted domestic and industrial processes. To achieve acceptable results, it is critical to enjoin the support, cooperation and compliance among stakeholders from government, private sector and obliged entities, CSOs and even actors in the informal economy.

- CE for the Philippines needs to recognize existing CE practices in Filipino culture
 - Socio-cultural aspect of CE in daily life
- Must pay special attention and focus on impacts on vulnerable and marginalized sectors of society
 - A social and environmental justice issue
 - 4Ps approach – policy, process, price, and PEOPLE
- Emphasis on implementation of basic waste management systems
 - RA 9003 provides backbone and guidance on key CE concepts
- New laws and policies provide pathways – but not a “magic bullet”
 - EPR Act of 2022 and NPOA-ML – allows for private sector participation and focus on problematic and highly polluting products
 - PAP4SCP provides linkages with SDGs and changes in behavior and lifestyle
 - DOST and DOF plans provide support and cover gaps on technology and financing
- Need for clear policy guidance to effectively link all these efforts and observations
 - CE Framework Law/Policy?
 - Institutional leadership by DENR as lead agency for waste management
 - NSWMC Strengthening
 - Operationalization of the NEC at the regional level

CE Showcase

- Technological demo and pilot of a CE system
 - National government involved in preparing infrastructure
 - Sorting and segregation facilities
 - Recycling centers
 - Consolidate LGU efforts – shared infrastructure
 - Data-driven demonstration
- Involvement of private sector/obliged entities
 - Integration of EPR programs with the LGU waste management systems
- Integrate community/informal waste sector into the system
 - Respect and protection of rights on IWS

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