



Mechanism to customize a suitable Extended Producer Responsibility model for plastic packaging waste in the Philippines



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Acronyms and Abbreviations

3R – Reduce, Reuse, Recycle
DENR – Department of Environment and Natural Resources
DRS – Data Reporting Sheet
EPR – Extended Producer Responsibility
IWS – Informal Waste Sector
LGU – Local Government Unit
MRF – Material Recovery Facility
NEC – National Ecology Center
NSWMC – National Solid Waste Management Commission
PCX – Plastic Credit Exchange
PO – People’s Organization
PARMS – Philippine Alliance for Recycling and Materials Sustainability
PRO – Producer Responsibility Organization
PPP – Public-Private Partnership
SWM – Solid Waste Management
WWF – World Wide Fund for Nature

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Executive Summary



Extended Producer Responsibility is defined as "an environmental policy in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle."

Proper management of waste, including plastic waste, continues to be one of the pressing concerns in the Philippines despite the existence of many rules and regulations. One of the constraints of the local government units to fully and effectively deliver solid waste management services is the lack of financial resources. One of the ways to address this is through extended producer responsibility (EPR). EPR is defined as "an environmental policy in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle."¹

Hence, the implementation of EPR can be an opportunity to support LGUs in increasing their waste diversion rates and particularly in establishing the necessary waste management infrastructures for proper SWM collection and transport, recycling and recovery, and safe disposal of plastic waste. Recognizing the role that EPR plays in waste management, the Philippine Senate and the House of Representatives filed EPR bills. On January 31, 2022, the EPR bills were approved on the third reading by the House of Representatives and the Senate.

This paper presents the different EPR models and its application to plastic waste management in selected Asian countries. It also describes the recently approved EPR bills by the House of Representatives (House Bill 10696) and the Senate (Senate Bill 2425), the proposed EPR mechanism and standards of the Philippine Alliance for Recycling and Materials Sustainability, and the World Wide Fund for Nature's (WWF) EPR policy recommendations. The existing EPR-similar schemes by the Plastic Credit Exchange and the Plastic Bank to support plastic waste management in the country are also outlined in this paper.



¹ Organisation for Economic Co-operation and Development. (2009). *Extended Producer Responsibility*. Retrieved from OECD website: <https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm>

Considering the guidelines cited from the above-mentioned bills and the learnings from the experiences of organizations doing EPR-related initiatives and EPR-similar schemes, the collaborative framework is proposed for the Philippines with the following recommendations:



1) Mandatory registration of the obliged companies to the EPR scheme;



2) Active partnership or collaboration between obliged companies or their designated Producer Responsibility Organization/s and other relevant actors in the development of waste management infrastructure and systems for effective EPR implementation;



3) The accreditation of waste diverters (recyclers and processors) and of organizations or companies doing EPR-similar schemes to ensure that their activities are in accordance with the EPR guidelines;



4) Promotion of the collaborative activities with and among communities to promote reuse and recycling of plastics and to encourage waste segregation; and



5) Integration of the IWS and other community groups in the waste management system.

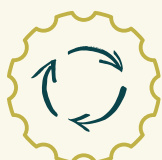
Although there are some challenges such as the lack of waste management infrastructure and the archipelagic characteristics of the country, these can be turned into opportunities by promoting inter-local cooperation, clustering, or public-private partnerships within the EPR scheme.

With the recent approval of EPR bills on January 31, 2022 on the third reading both at the House of Representatives and the Senate and the existence of the EPR-related initiatives and EPR-similar schemes, there is high probability for the effective implementation of the EPR scheme in the country. The adoption of the proposed EPR framework can be an effective, fair, and sustainable approach to properly manage waste plastics and prevent plastic leakage. At the same time, it can be a possible source of income for the LGUs and communities.

1. Concept of Extended Producer Responsibility (EPR) and its application to plastic waste management in selected Asian countries

Extended producer responsibility (EPR) is defined as “an environmental policy in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle.”² The concept of the EPR was initially used for electronic waste and beverage containers.

It was eventually applied to other types of waste such as plastics and other packaging materials. The concept emerged in the 1990s and has been recognized by many countries as a useful approach for accelerating the transition to sustainable waste management and a circular economy. Its basic approach is based on obliging businesses (e.g., manufacturers, importers, and sellers) to assume full responsibility for the products they offer to the public not just during consumption but also during the end-of-life phase or once their products have become waste. It works alongside and complements general waste management systems typically run by the government and citizens.³ It aims to shift the cost of managing consumer packaging waste from local solid waste agencies to the manufacturers who are producing these products.⁴ This strategy may take the form of a reuse, buyback, or recycling and recovery program. The producer may also choose to delegate this responsibility to a third party, a Producer Responsibility Organization (PRO), which is paid by the producer for used-product management.⁵ Generally, EPR has three sets of responsibilities: physical, financial, and informative.



Physical responsibilities

Modification/reengineering to eco-friendly product designs and systems in the operations; collections/recycling/transformation of an institution of product leftovers produced by other entities to another useful item; and retrieval of unserviceable units/parts by their producers subject to recycling/reuse



Financial responsibilities

Provision of financial incentives to people helping out in the recycling process; allotment of funds for the implementation of physical and informative responsibilities such as the establishment of solid waste management (SWM) infrastructure



Informative responsibilities

Information dissemination regarding EPR awareness; promotion of EPR-related activities; and coordinating schemes/waste management systems to be introduced and implemented

² Organisation for Economic Co-operation and Development. (2009). *Extended Producer Responsibility*. Retrieved from OECD website: <https://www.oecd.org/env/tools-evaluation/extendedproducerresponsibility.htm>

³ World Wide Fund for Nature. (2020). *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF Philippines. Retrieved from wwf.org website: https://wwf.org.ph/wp-content/uploads/2020/12/WWF_REPORT_EPR_Philippines_2020.pdf

⁴ Kosior, E., & Mitchell, J. (2020). "Chapter 6: Current industry position on plastic production and recycling". In T. M. Letcher (Ed.), *Plastic Waste and Recycling* (pp. 133–162). <https://doi.org/10.1016/B978-0-12-817880-5.00006-2>

⁵ Biron, M. (2020). *Plastics Sustainability: Drivers and Obstacles*. A Practical Guide to Plastics Sustainability, 557-593. doi:10.1016/b978-0-12-821539-5.00011-2

EPR offers various benefits, such as the increased reuse and recyclability of packaging by encouraging producers to change or redesign packaging design and the reduction of packaging use, which are favorable to the environment. It provides additional funds for waste collection, transport, and environmentally-sound treatment of collected waste products through recycling and recovery.^{5,6}

EPR is also one of the possible policy strategies to address the pressing problem on marine plastic pollution. Asian countries that have applied EPR schemes are Japan, China, and India. In China, the government imposed a recycling fee from producers in 2009 and distributed the fee to recyclers. In India, EPR was applied to plastic waste in 2011 and the responsibility of collecting used multilayered plastic sachets, pouches, or packaging was put on producers in 2016.⁷

The application of EPR has many challenges. It is especially challenging for developing countries that lack or have limited waste collection services, particularly in rural and remote areas where the transportation cost from waste sources to waste management facilities is high. Additional barriers include lack of infrastructure and insufficient pollution control mechanisms, especially in places where collection and recycling activities are also done by informal recyclers.



Other possible challenges include socio-economic safeguards. EPR costs might be passed on to consumers. An EPR scheme must also consider how to ensure the inclusion of the informal waste sector (IWS) in the formalized value chain of the EPR system, the suitability of the EPR model to institutional and legal structures of the country, and safeguarding the reporting and auditing mechanisms, among others. EPR, however, can be designed to support the development of the infrastructure to overcome these challenges. Table 1 shows the progress of EPR implementation in selected Asian countries.


⁶ Rogoff, M. J. (2014). *Collection Approaches. Solid Waste Recycling and Processing*, 19-42. doi:10.1016/b978-1-4557-3192-3.00003-8



⁷ Johannes, H. P., Kojima, M., Iwasaki, F., & Edita, E. P. (2021). *Applying the extended producer responsibility towards plastic waste in Asian developing countries for reducing marine plastic debris*. *Waste Management & Research: The Journal for a Sustainable Circular Economy*, 39(5), 690-702. doi:10.1177/0734242x211013412 (with some modifications and updating by the authors of this report)

Table 1: Progress on EPR implementation in selected Asian countries

Material Waste Stream	Framework	Stage of Implementation
 India		
Carry bags, plastic sheets, cover made of plastic sheet, and multilayered packaging	Plastic Waste Management Rules, 2016	In practice, the Plastic Waste Management Rules 2016, especially about the EPR was evaluated by a specific committee. The Ministry of Environment, Forest, and Climate Change has also created models to uniform the EPR framework.
 Indonesia		
Products, product packaging, and/or containers made from plastics, aluminium can, glass, and paper	Regulation of the Minister of Environment and Forestry regarding Road Map to Waste Reduction by Producers 2019	EPR is still in the preparation stage of a waste reduction plan document by producers. The Packaging and Recycling Association for Indonesia Sustainable Environment (PRAISE) established the Indonesia Packaging Recovery Organization (IPRO), which aims to manage the supply of recyclables to the contracted recyclers.
 Malaysia		
Solid waste	No specific legal basis is in place.	Malaysian Plastics Manufactures Association (MPMPA) is actively proposing the EPR system for plastics packaging to the government since the system can still become a legislative concept without any legal framework for enforcement.

Source: Johannes, H. P., Kojima, M., Iwasaki, F., & Edita, E. P. (2021). *Applying the extended producer responsibility towards plastic waste in Asian developing countries for reducing marine plastic debris*. Waste Management & Research: The Journal for a Sustainable Circular Economy, 39(5), 690-702. doi:10.1177/0734242x211013412 (with some modifications and updating by the authors)

Material Waste Stream	Framework	Stage of Implementation
 Philippines		
Solid waste, electrical and electronic waste	<p>No specific legal basis is in place.</p> <p>Following are some relevant law and bills:</p>	<p>No EPR system in place. However, private companies conducted voluntary initiatives to foster recycling through the Philippine Alliance for Recycling and Material Sustainability (PARMS) and its collective strategy: Zero to Nature Ambisyon 2030</p>
Plastic packaging waste	<p>Ecological Solid Waste Management Act of 2000 (Republic Act 9003)</p>	
Plastic waste	<p>Senate Bill 2425: An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Packaging Waste, Amending for this Purpose Republic Act 9003</p>	<p>Senate Bill 2425 and HB 10696 were both approved on the third reading last January 31, 2022 by the Senate and House of Representatives</p>
Solid waste	<p>HB 10696: An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Products, Amending for this Purpose RA 9003</p>	
Consumption and production of green products and services	<p>National Plan of Action for the Prevention, Reduction and Management of Marine Litter, 2021</p> <p>Final Draft: Guidelines on the Environmentally Sound Management (ESM) of Waste Electrical and Electronic Equipment (WEEE) in 2015</p> <p>Philippine Action Plan for SCP (PAP4SCP)</p> <p>Green Jobs Act</p>	

Material Waste Stream	Framework	Stage of Implementation
 Thailand		
Packaging waste	Specific EPR laws on packaging waste are still at the drafting stage. Plastic waste management, in general, refers to Thailand's Roadmap on Plastic Waste Management 2018–2030.	No EPR system in place.
 Vietnam		
Battery and battery cell, electronic, civil, and industrial electric equipment, a chemical used in industry, agriculture, fishery, and medicine for human, lubricant, grease, inner tube, tyre, and means of transport	The decision on Prescribing Retrieval and Disposal of Discarded Products in 2013, which is revised by Decision on Providing Regulations on Recall and Treatment of Discarded Products in 2015.	The implementation of the decision about EPR in Vietnam still meets some challenges, including a lack of recycling capacity, supporting regulation, and benefit to maintain the system. Meanwhile, PRO Vietnam is expected to be a driver to foster an EPR system for packaging.

Source: Johannes, H. P., Kojima, M., Iwasaki, F., & Edita, E. P. (2021). *Applying the extended producer responsibility towards plastic waste in Asian developing countries for reducing marine plastic debris*. Waste Management & Research: The Journal for a Sustainable Circular Economy, 39(5), 690-702. doi:10.1177/0734242x211013412 (with some modifications and updating by the authors)

Although the EPR emphasizes the responsibility of the producers in moving towards a circular economy and sharing the SWM-related costs, this paper specifically proposes an EPR framework that illustrates collaboration with the national and local government units (LGUs) and the consumers in managing waste and improving the solid waste infrastructure for proper collection, recycling, and recovery of waste. Sections 2 and 3 of this paper provide a background on the EPR-related discussions and initiatives in the Philippines and two EPR-related schemes in the country. Insights from these discussions and experiences serve as input to the conceptualization of the proposed EPR framework tailored to the Philippine context, which will be discussed in detail in Section 4.

2. Background of EPR-related discussions in the Philippines

This section presents information on the approved EPR bills at the Senate and House of Representatives, the EPR-related initiatives of the Philippine Alliance for Recycling and Materials Sustainability (PARMS), and the recommendations for the possible application of the EPR in the country by World Wide Fund for Nature (WWF) Philippines.

Senate Bill 2425

An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Packaging Waste, Amending for this Purpose Republic Act 9003, otherwise known as the “Ecological Solid Waste Management Act of 2000”

Senate Bill 2425 was approved on the third reading by the Senate on January 31, 2022. This is in substitution of Senate Bill Nos. 1331 and 2285, taking into consideration Senate Bill Nos. 40, 114, 156, 333, 557, 811, 880, and 954. Once approved and consolidated with the version from the House of Representatives, this Act shall be known as the “Extended Producer Responsibility Act of 2022.”

In this bill, EPR is defined as the “environmental policy and practice in which obliged companies have the responsibility for the proper and effective recovery, treatment, recycling or disposal of their products after they have been sold and used by consumer with the objectives of reducing packaging waste generation and of improving recyclability or reusability of packaging waste.”⁸



⁸ Senate Bill 2425: Extended Producer Responsibility Bill. (2022). Retrieved from: https://legacy.senate.gov.ph/lis/bill_res.aspx?congress=18&q=SBN-2425

The articles covered by this bill include plastic packaging materials of the goods produced, imported, distributed, or sold by obliged companies. In this bill, obliged companies refer to producers, manufacturers, and importers, and do not include micro, small and medium enterprises (MSMEs).

MSMEs are not precluded from practicing EPR voluntarily. The obliged companies may establish a PRO voluntarily or may authorize a professional organization that will handle the resource recovery of plastic packaging waste on their behalf.

Obliged companies and PROs on behalf of obliged companies are required to register their EPR programs with the Department of Environment and Natural Resources (DENR) through the National Solid Waste Management Commission (NSWMC). Some of the possible programs and activities may include the redesigning of packaging or adopting packaging that improves its recyclability and reusability; withdrawal or phasing out of non-recyclable products and packaging materials; and collaborative activities with LGUs, communities, and the IWS, among others, for the collection, recycling, and recovery of plastic waste. Obliged companies and PROs are required to perform audits on their EPR. The civil society organizations conducting brand audits may register with the National Ecology Center (NEC) for validation. The NEC is also tasked to contract an independent audit for all EPR every two (2) years.

The private sector shall be represented in the NSWMC by a representative from non-governmental organizations (NGOs) with track record in waste reduction measures, a representative from the recycling industry and or PROs, and a representative from the obliged companies. In addition, the NEC shall be established under the NSWMC to (i) facilitate training and education; (ii) establish and manage a SWM database; (iii) maintain an EPR registry containing the EPR programs of obliged companies or PROs; and (iv) monitor compliance of obliged companies and PROs, among others. The NEC shall be multi-sectoral and have a multi-disciplinary pool of experts that includes academics, inventors, practicing professionals, business and industry representatives, youth, women, and other sectors who are screened by the NSWMC.

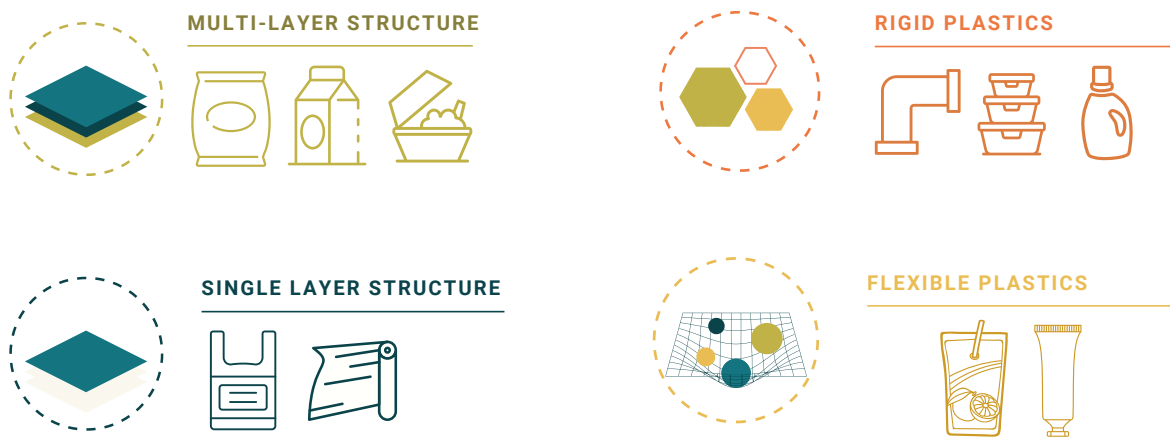
Obliged companies and PROs are required to submit their EPR programs to the DENR through the NSWMC six (6) months upon the effectivity of the Act. Obliged large companies and PROs shall have a recovery rate target of 10% of their plastic waste footprint during the preceding year. The target shall increase annually.



House Bill 10696

An Act Institutionalizing the Practice of Extended Producer Responsibility on Plastic Products, Amending for this Purpose Republic Act 9003, otherwise known as the “Ecological Solid Waste Management Act of 2000”

This bill was approved on the third reading by the House of Representatives on January 31, 2022. This is in substitution of House Bill Numbers 8691, 9859, 10498, and 10646. Once approved and consolidated with the Senate version, this shall be known as the “Extended Producer Responsibility Act of 2022.” In this bill, EPR refers to “environmentally policy approach and practice which make obliged producers environmentally responsible for the entire life cycle of a product, especially its post-consumer or end-of-life stage.”⁹



The DENR, in consultation with the NSWMC and obliged producers or their PRO, shall establish a system to make the PRO sustainable and compliant with the EPR Act. This includes rules and guidelines on the membership, duties and responsibilities of members and the PRO, accreditation standards, reporting and financing mechanism, implementation strategies, and cooperation mechanism with other stakeholders which include distributors, retailers, grocery and store owners, junk shop operators, and individuals in the IWS. The EPR programs shall be established within nine (9) months following the effectivity of this Act and to be submitted to the DENR through the NSWMC.

The Commission is given three (3) months from the date of submission to evaluate and release the approval of registration. Obligated companies are also required to submit appropriate documentation on their plastic product footprint to the DENR. In addition, the obliged producers and their PROs shall establish and implement an auditing system to monitor and assess their compliance. An independent third-party auditor shall be engaged by the obliged producers or their PRO to certify using the uniform standards established by the DENR. The NEC shall be established under NSWMC to provide technical services such as facilitation of training and education, management of SWM database, and monitoring and evaluation of the compliance of obliged producers and PROs, among others.

⁹ House Bill 10696. (2022). *Extended Producer Responsibility Act of 2022*. Retrieved from: https://hrep-website.s3.ap-southeast-1.amazonaws.com/legisdocs/third_18/HBT10696.pdf

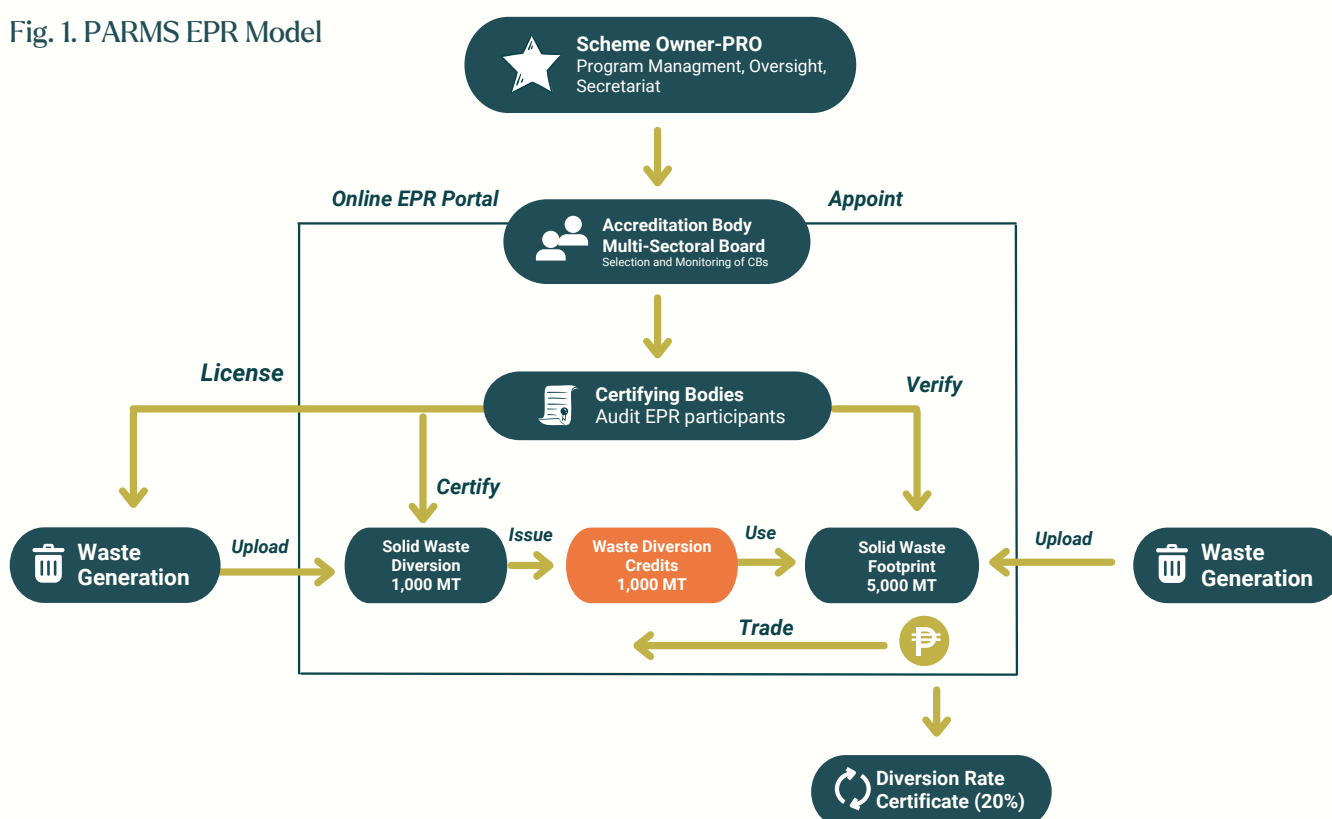
PARMS's Ambition 2030: Zero Waste to Nature

The PARMS is a multi-stakeholder coalition committed to initiate and support efforts to manage plastic waste along with other forms of waste by adopting science-based and practical solutions to manage waste through reduce, reuse, recover and recycle methods. It developed *Ambition 2030: Zero Waste to Nature* (ZTWN 2030), a roadmap to ensure that mismanaged waste does not end in waterways and oceans. The ZTWN 2030 roadmap also supports the Department of Trade and Industry and the Board of Investments' "Greening the Roadmap of the Plastics Industry" for responsible use of plastics through 3Rs (reduce, reuse, and recycle) with emphasis on resource recovery for recycling.

PARMS also developed an EPR System for the Philippines (Figure 1). As shown in Figure 1, it has a single PRO with multiple diverters under a competitive, standardized, transparent, accountable, and inclusive credit scheme diversion model. It also includes multiple diverters on the ground to avoid monopoly, which may increase the cost of diversion.

This mechanism also hopes to integrate the informal system and barangay materials recovery facilities (MRFs), and develop social enterprises among waste diverters. The PRO in this scheme will not directly manage the fund but will perform the administrative roles, such as documentation and reporting through automated online platforms. Producers, on the other hand, will directly engage with waste diverters or waste recovery and diversion organizations. This will also have an integral verification and certification system. PARMS also encourages the industry-level shift from low diversion value (LDV) flexibles (or packaging with very limited options for diversion) to high diversion value (HDV) flexibles (or packaging with multiple diversion options).¹⁰

Fig. 1. PARMS EPR Model



¹⁰ Philippine Alliance for Recycling and Materials Sustainability. (2020). *Zero Waste to Nature Ambisyon 2030: Rigid and Flexible Packaging Applications Strategy Roadmap*.

WWF EPR Policy Recommendations

The study commissioned by the WWF conducted the plastic Material Flow Analysis (MFA) in the Philippines.¹¹ This MFA serves as the basis for the proposed elements and components of an EPR scheme in the country. Some of the highlights of the proposed scheme include the following:

- Mandatory EPR scheme within a clear timeframe (voluntary compliance phase for years 1-3 and mandatory compliance phase for year 3 and beyond);
- Cover all materials from households and equivalent places of origin;
- Establish one non-profit PRO;
- Strict monitoring and control systems; and
- Build high-quality recycling capacity.

WWF's proposed EPR scheme emphasizes that the implementation plan requires capacity building and a holistic and basic waste management.



Analysis

The EPR models proposed by the Senate and House Bills, PARMS, and WWF have key similarities and differences.

- **The establishment of the PRO:** The bills propose that the establishment of the PROs depends on the decision of the obliged companies to implement EPR programs by themselves or to designate an external organization, while WWF and PARMS recommend the establishment of one PRO. WWF's PRO is a non-profit entity, while PARMS's PRO consists of multiple diverters.
- **Proper monitoring and auditing:** All proposals have emphasis on monitoring and auditing.
- **Role of producers:** All of the above-mentioned EPR proposals highlight the significant role of the producers in their commitment to redesign packaging, and reduce packaging waste and extend their responsibility at the end-of-life of materials through recovery. It also emphasizes the relevance of having a clear institutional structure and systems to define the collaboration with the LGUs and other sectors to make EPR feasible.
- **Role of IWS:** The role of the IWS as one of the important players particularly in waste collection and recovery needs is emphasized in all proposals. In 2009, the National Framework Plan for the Informal Sector in Waste Management was formulated. The plan envisions the IWS as an empowered and recognized partner of the public and private institutions, organizations, and corporations in the promotion and implementation of the 3Rs. The participation of the IWS is also seen as a way to alleviate poverty. It hopes to integrate the IWS in the SWM system by "providing them with a favorable policy environment, skills development and access to a secured livelihood, employment and social services."¹²

¹¹ World Wide Fund for Nature. (2020). *EPR Scheme Assessment for Plastic Packaging Waste in the Philippines*. WWF Philippines. Retrieved from [wwf.org website: https://wwf.org.ph/wp-content/uploads/2020/12/WWF_REPORT_EPR_Philippines_2020.pdf](https://wwf.org.ph/wp-content/uploads/2020/12/WWF_REPORT_EPR_Philippines_2020.pdf)

¹² National Solid Waste Management Commission. (2009). *National Framework Plan for the Informal Waste Sector in Solid Waste Management*, page 34.

3. EPR–similar schemes in the Philippines

This section presents the existing EPR-similar schemes implemented in the Philippines by the Plastic Credit Exchange (PCX) and the Plastic Bank.

Plastic Credit Exchange

The PCX is a non-profit organization that mobilizes businesses to help them offset their plastic footprint by reducing the flow of plastic waste into the environment. Using the Plastic Pollution Reduction Standard (PPRS), PCX implements its credible and verifiable plastic-free and offsetting program. As shown in Figure 2, brand owners can purchase plastic credits from PCX as a means to take responsibility for their plastic waste, while PCX handles proper disposal through its group of accredited waste collectors, aggregators, transporters, and processors of plastic waste from waste generators. Aggregators include individuals, groups, government, or NGOs that perform the collection of post-consumer plastics waste and forward them to the processors. The processors include facilities that receive, treat, or convert post-consumer plastic waste into other useful forms through material or energy recovery.¹³

Companies or organizations can also apply for plastic-free, plastic neutral, or plastic negative certifications. A plastic neutral and plastic negative certificate is awarded to an offset buyer who purchases plastic credits equivalent to its plastic footprint or more.

For example, a brand owner produces 100,000 mt of plastics annually. It will be considered plastic neutral if it purchases 100,000 mt worth of plastic credits, and plastic negative if it purchases over 100,000 mt worth of plastic credits. Plastic credits should either be of the same type or are deemed more harmful to the environment.



¹³ Plastic Credit Exchange. (n.d.). *The Plastic Pollution Reduction Standard*

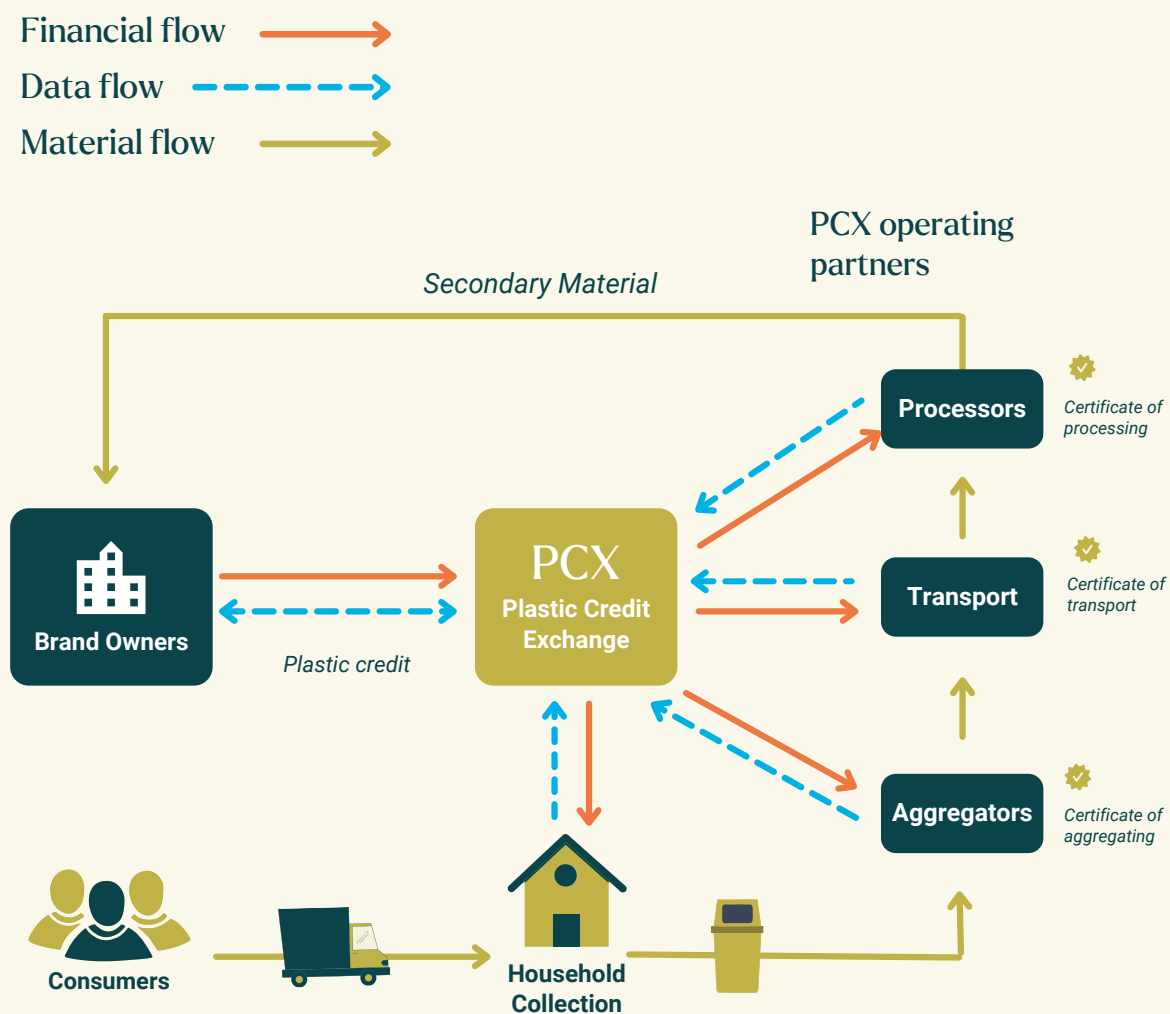


Figure 2: PCX EPR scheme

In addition, PCX also partners with communities and empowers them to clean up plastic waste. PCX equips its Aling Tindera network (its community of women micro-entrepreneurs) with training and resources to implement the plastic waste collection stations (waste-to-cash systems), making them sustainability champions in their communities.¹⁴ The PCX also applies a reliable monitoring scheme in collaboration with big accounting firms.

¹⁴ Plastic Credit Exchange. (n.d.). *The Plastic Pollution Reduction Standard*.

Plastic Bank

Plastic Bank is an organization that sets up recycling ecosystems particularly in countries with high rates of pollution and poverty. It builds its recycling ecosystems in coastal communities by reprocessing the collected materials for reintroduction into the global manufacturing supply chain. The collectors are given a premium price for the materials they collect, which enable them to provide their basic family necessities such as groceries, cooking fuel, school tuition, and health insurance. The collected materials are reborn as Social Plastic®, which can be easily reintegrated into products and packaging as part of a closed-loop supply chain. Social Plastic® is “ethical plastic materials that empower disenfranchised people and the world through recycling.”¹⁵ Rewards are paid to collectors with digital tokens. The Plastic Bank’s Social Plastic Ecosystem is shown in Figure 3.

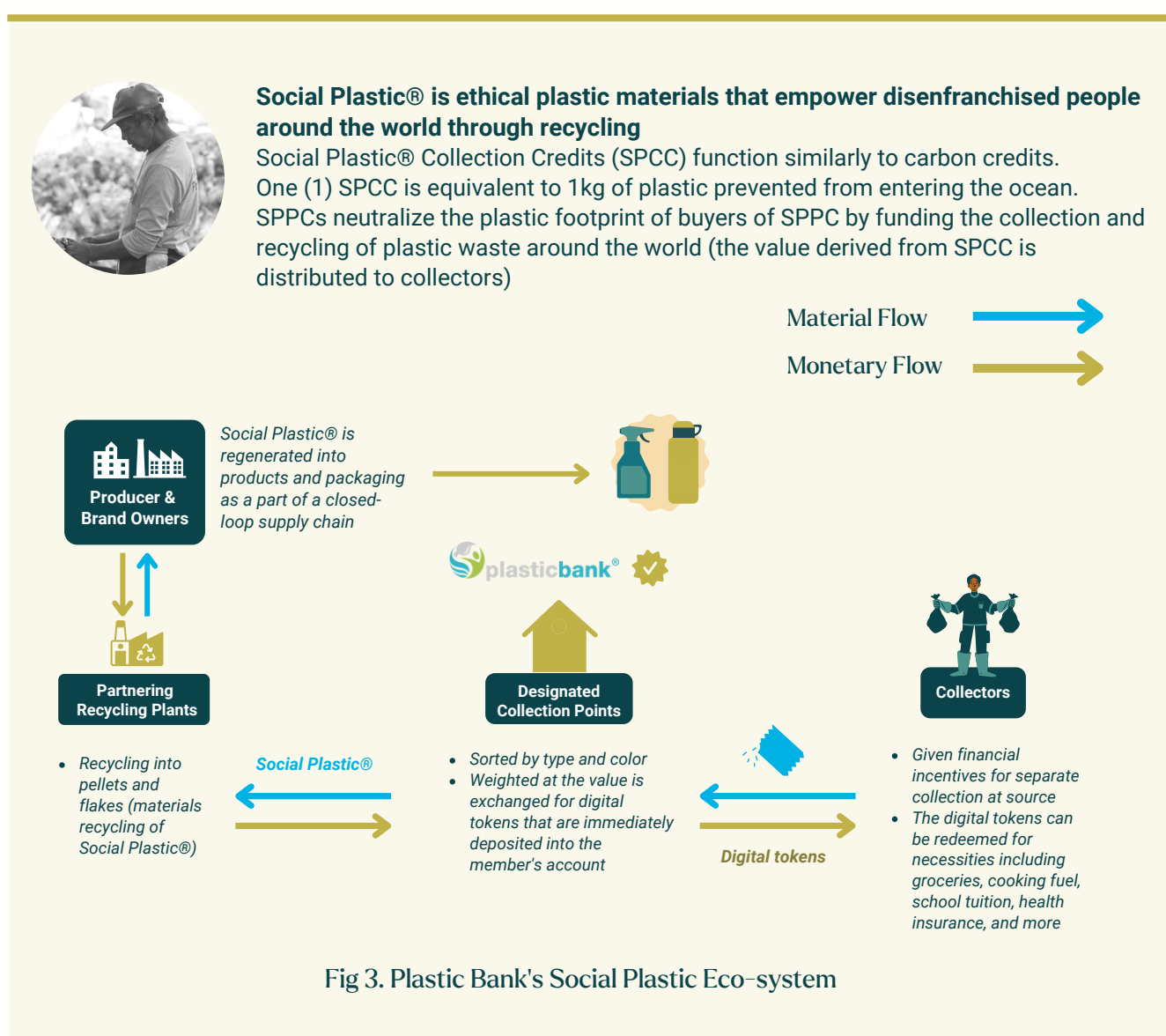


Fig 3. Plastic Bank's Social Plastic Eco-system

¹⁵ Plastic Bank. (n.d.) *Social Plastic Program*. Plastic Bank. Retrieved from: <https://plasticbank.com/social-plastic-program/>



Analysis

The two cases outlined above show how industry-based initiatives give importance to collaboration or partnerships with other stakeholders, such as the obliged companies, LGUs, IWS, and the community. It is vital to analyze how these schemes can be fair and equitable to all parties, especially on recognizing the initiatives of the community on plastic waste collection, recycling, and recovery.

To design an effective EPR scheme, the following factors must be considered:



the mechanism for evaluating different types of plastic-based packaging material (i.e., PP, PE, PET, PVC, plastic composites etc.) for financial contributions;



degrees of recyclability of different plastic packaging;



roles and responsibilities of the different actors such as the producers, PROs, collectors, diverters, and auditors to ensure clarity, accountability, and transparency; and



the provision of incentives (i.e., tax holidays or credits, recognition) for compliance or disincentives (penalties) for non-compliance to encourage producers to comply with the EPR scheme, among others.



4. Framework of proposed EPR policy for the Philippine context

Although the EPR approach primarily focuses on shifting the responsibility to obliged companies, it also shows the relevance of collaboration among other stakeholders such as the government, communities, and consumers. The EPR scheme must remain consistent with the waste management strategies cited in the Philippines' Republic Act 9003 or the Ecological Solid Waste Management Act of 2001, which includes the promotion of the 3Rs. As shown in the previous sections of this paper, PARMS recognizes the relevance of integrating the informal sector in the waste management system, while PCX and Plastic Bank also recognize the contribution of the members of the community with their accredited Aling Tindera Network and the Social Plastic Ecosystem, respectively.

The proposed EPR framework of this paper integrates the prescribed EPR schemes in the approved bills in the Senate and House of Representatives (Figure 4, upper portion), the relevant stakeholders of the EPR programs (Figure 4, middle portion), and the plastic waste diversion flow and possible strategies for its implementation (Figure 4, lower portion).

Line Legend:

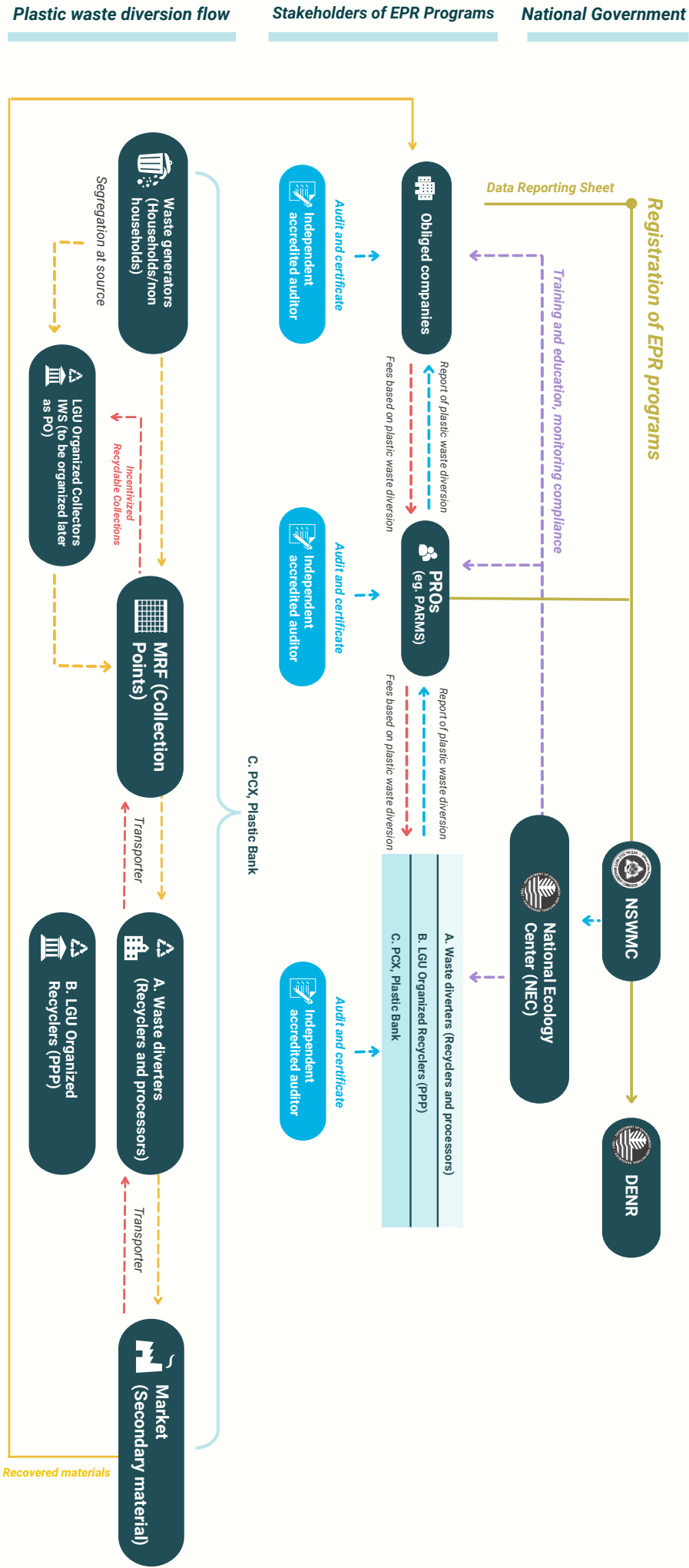


FIGURE 4. COLLABORATIVE APPROACH EPR FRAMEWORK

There is a high probability that the recently approved bills will become a law, hence, this proposed framework considers their basic features such as the mandatory registration of EPR programs by the obliged companies, the roles of the DENR, the NEC, and the NSWMC as shown in the upper portion of this framework. In addition, the obliged companies should accomplish the prescribed Data Reporting Sheets (DRS) through an online portal to promote transparency and more efficient reporting and monitoring.

Aside from the features cited in the bills, this framework also identifies other relevant stakeholders of the EPR programs (Figure 4, middle portion) to make this feasible and sustainable. As shown in the framework, it proposes the fee-based system wherein the obliged companies or PROs are given flexibility to choose among the three possible options in achieving their EPR program or the plastic waste diversion. They can enter into an agreement with the waste diverters (i.e., recyclers and processors), LGUs, or those doing EPR-similar schemes such as the PCX and the Plastic Bank, who will then be in charge for the proper and effective recovery, treatment, recycling or disposal of their end-of-life products. This way, it is expected that there will be increased competition to deliver more cost-effective and reliable waste diversion services. In far-flung areas where the waste management infrastructure is lacking, this system will encourage the obliged companies to collaborate with LGUs by providing financial support to retrieve material from the public sector, which can lead to the establishment of improved waste management infrastructure. This means that this system will also foster inclusivity.



"This EPR framework illustrates the plastic waste diversion flow and possible strategies for its implementation."

The government can decide to have a single or multiple PROs, while ensuring that there will be a single rule on EPR guidelines. To avoid monopoly, the government may also consider setting up at least two PROs to encourage competition and better services. Close supervision and monitoring by NEC are essential. In addition, an independent accredited auditor should be established to promote strict compliance to the EPR guidelines and the credibility of the reports submitted who will then issue a certificate.

This EPR framework illustrates the plastic waste diversion flow and possible strategies for its implementation. It also emphasizes the importance of the strict implementation of waste segregation at source to ensure that plastic waste will not be contaminated with other wastes for proper collection, recycling, and recovery. Most importantly, this proposed collaborative framework highlights the relevance of recognizing the role of the LGUs and the community, including the IWS, in making the implementation of the EPR feasible, fair, and sustainable.

The adoption of a collaborative approach EPR framework (Figure 4) is proposed for the Philippines with the following recommendations:



Mandatory registration of the obliged companies to the EPR scheme



Accreditation of waste diverters (recyclers and processors) and of organizations or companies doing EPR-similar schemes



Promotion of partnership or collaboration between and among obliged companies or their designated PROs and other relevant actors



Promotion of collaborative activities with and among communities to promote reuse and recycling of waste plastics



Integration of the IWS and other community groups in the waste management system



1. Mandatory registration of the obliged companies to the EPR scheme

They are required to submit the prescribed DRS, which includes the company's profile and plastic footprint (Annex 1-A), calculation sheet for plastic footprint (Annex 1-B), and calculation sheet for plastic waste collection and recycling (Annex 1-C) through an online portal.

The company's profile also includes the name of the person in charge of report preparation and the name of the independent auditor for accountability. The company's footprint reports the rigid and flexible plastics in ton/year. The calculation sheet for plastic footprint of rigids and flexibles shows the volume of domestic usage, weight of domestic use of container and packaging, weight of voluntary collection, and estimated weight of plastic container and packaging waste. The sample computation of the total plastic footprint of plastic containers and packaging for domestic use is shown in Annex I-B. For Annex I-C, it is proposed that this calculation sheet for plastic waste collection and recycling will be filled up by waste diverters, not directly by the obliged companies, to avoid double-counting.

For example, the waste pickers sell the collected plastic waste to the junk shops who will in turn sell these materials to the waste diverters (one of the three options with whom the obliged companies can work with to achieve waste diversion as shown in the above proposed framework). When the waste diverters receive the feedstock (input), they will count the amount.

This means that the route or source of plastic waste does not matter; what matters is the amount of plastic waste being brought to the waste diverters for processing. It is the amount of the processed materials (output) that really matters since this is the evidence of the real diversion. In addition, obliged companies are encouraged to reduce packaging and improve recyclability or reusability of packaging and to accept more recycled materials as packaging materials. To promote the use of highly recyclable materials, the government may either incentivize companies for using those types of materials and/or impose higher tax on materials that are difficult to recycle.

The obliged companies are eligible for incentives if they submit their EPR mechanisms and strategies to the DENR through the NSWMC. The EPR portal can also disclose the name of obliged companies that comply with the EPR scheme, which can be a form of recognition or incentive for them. This will encourage especially large companies who highly value their corporate social responsibility and legal compliance.



2. Promotion of partnership or collaboration between and among obliged companies or their designated PROs and other relevant actors

Since the development of the waste management infrastructure is necessary for the effective EPR implementation, obliged companies are encouraged to support LGUs through provision of financial support in the establishment of proper and effective recovery, treatment, recycling, or disposal facilities of their end-of-life products. This can also be done through public-private partnerships (PPP) within the EPR scheme. This kind of partnership with the private sector can also be done through inter-local collaboration or clustering, applicable in small, low-income, and rural areas.

To encourage the obliged companies to retrieve materials from and provide support to far-flung areas, the government may also consider incentivizing them for collaborating and/or providing support to these communities. One of the common challenges among LGUs is the mobilization of the material recovery facilities (MRFs) operators. Obligated companies can extend assistance to the LGUs in the operation of the facilities to ensure that plastic waste, particularly the low-value plastic waste, can be recovered and connected to the potential markets. This kind of activity will encourage participation from LGUs because it will not only manage their plastic waste properly with limited cost, but it will also be their potential source of income which they can use for delivering other important services to the community.



3. Accreditation of waste diverters (recyclers and processors) and of organizations or companies doing EPR-similar schemes

Accreditation will help ensure that their activities are in accordance with the EPR guidelines and the reports submitted are complete and credible. To safeguard the credibility of the recorded data and guarantee traceability and accountability, it is proposed to develop an app-based monitoring system from the waste sources (households and non-households) to the waste collection points, recyclers, processors, and market using a tracking code such as a QR code (see an example in Annex 2).



4. Promotion of collaborative activities with and among communities to promote reuse and recycling of waste plastics

Incentivized recycling, collection, and refilling programs and other similar initiatives will encourage the practice of waste segregation among consumers, which is critical for higher recycling and recovery rates of plastic wastes. In addition, LGUs in collaboration with private sector (i.e., obliged companies or PROs) can also organize activities such as a seasonal recycling contest (i.e., during fiesta, Christmas season, summer break).



5. Integration of the IWS and other community groups in the waste management system

Integration of the IWS and other community groups such as women and beneficiaries of the Pantawid Pamilyang Pilipino Program in the waste management system can be a potential source of additional livelihood for these sectors of the community. The IWS can be organized so that they can be more empowered and have better access to training and financial support compared to working individually. LGUs can also provide support in building their social entrepreneurship skills and improve their economic and social conditions.

5. Challenges and opportunities in implementing EPR in the Philippines

Successfully implementing EPR in the Philippines faces multiple challenges. Among them are the Philippines' archipelagic nature; differing views on solutions to address waste; and lack of or limited waste management collection services in rural or remote areas due to limited resources of the local government. These factors make it difficult for these communities to participate more effectively in waste management activities.

These challenges can become an opportunity if the obliged companies or their PRO can collaborate with the LGU by providing assistance in the establishment of waste management facilities and infrastructure for efficient collection, recycling, and recovery, and safe disposal of plastic waste. It can be done through inter-local cooperation or clustering or PPPs within the EPR scheme.

Another challenge is the lack or limited availability of reliable data on waste management in every LGU. This provides an opportunity for the obliged companies or their PRO and LGUs for a collaborative activity in developing more efficient recording systems through digitization or use of modern technologies.

Republic Act 9003, or the Ecological Solid Waste Management Act of the Philippines, states that the LGU is the main implementor of the law. Compliance to this law is one of the requirements to be awarded for the Seal of Good Local Governance (SGLG). However, many LGUs have limited resources to comply with the law. Partnering with private businesses through EPR can be one of the effective and possible approaches through collaborative activities. The approved EPR bills are amendments to Republic Act 9003. It will be a win-win agreement between the private sector and the LGUs. It will also be beneficial to the environment and society.





6. Future direction of EPR policy in the Philippines

The recent approval of EPR bills by Philippine Congress and its passage into law on July 23, 2022 as Republic Act No. 11898 otherwise known as The Extended Producer Responsibility Act (EPRA) of 2022, the existence of the EPR-related initiatives, and other EPR-similar schemes show that there is high probability for the implementation of the EPRA in the country. The challenges can be turned into opportunities by promoting inter-local cooperation or clustering or through the PPP within the EPR scheme. Co-financing collection, transportation, processing, recycling, and/or disposal of plastic waste should be incorporated in the policies to strengthen accountability and to discourage use of single-use plastics. For a more sophisticated EPR model in the future, the Philippine government can also consider the application of the plastic packaging charges according to their recyclability to incentivize product redesign in the context of circular economy.

Good governance is crucial in ensuring effective and fair EPR implementation through transparency (the availability/accessibility of data and information) and accountability (clarity of roles and delineation of tasks of the various actors). To observe fiduciary and information safeguards, the system should encourage competition and transparency with well-established processes for registration, reporting, monitoring and audits along waste/material and monetary/financial flows. The guidelines on the EPR reporting format (i.e., collection target, recycling and recovery target, redesign programs, collaborative programs) to be established by the DENR through the NSWMC should be clearly understood by the obliged companies or the PROs.

The upcoming implementing rules and regulations to operationalize the EPRA should also ensure that no one and no place is left behind. Implementation guidelines can shape the system to be just and inclusive, providing equitable access to opportunities under the new policy.

Obligated companies should be incentivized by the system to reach out and support LGUs or recyclers in far-flung areas that have no current access to recyclables collection and trade. The guidelines should likewise take into account and optimize the contributions of all stakeholders along the value chain, including levelling the playing field for vulnerable groups such as the informal waste sector to access/participate in the EPR scheme.

Lastly, the sustained provision of technical and financial support to capacitate LGUs in this kind of partnership (i.e., PPP for establishing infrastructure for waste plastic collection, recycling, and recovery, and safe disposal) and the awareness campaigns to encourage the participation of the community need to be strengthened.

The adoption of the proposed collaborative approach involving the EPR framework can be an effective, fair, and sustainable means to properly manage plastic wastes and prevent pollution leakage, and an opportunity for a possible source of income to the LGUs and community.



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Annex 1: Data Reporting Sheet for Obligated Companies

Company's Profile and Plastic Footprint

Company's Profile	
Company's profile	
Name of obliged company	
Category of industry	
Address	
Phone number	
Email address	
Name of person in charge of preparation of the report	
Reporting term	
Name of independent auditor	
Contact of the independent auditor	

Company's Plastic Footprint	
Rigid (PET, PP, PE)	XXXX ton/year
Flexible (other types of plastics)	XXXX ton/year

*cells highlighted in green/filled in are examples

Calculation sheet for plastic footprint

Commodity code	Commodity name	Plastic footprint types (rigid or flexible)	Name of packaging material	Quantity per box (pieces)	Number of sale (box)	Export volume (box)	Volume of domestic usage (box)	Unit weight of container & packaging (g)	Weight of domestic use of container & packaging (g)	Quantity of voluntary collection (box)	Weight of voluntary collection (g)	Estimated weight of plastic container & packaging waste (g)
				A	B	C	D (B-C)	E	F (DxAxE)	G	H (GxE)	(F-H)
XXX	PET Drink	Rigid	PP	50	100	10	90	5	22,500	5	25	22,475
			PET									
		Flexible	HDPE									
			LDPE									
Total plastic footprint of container & packaging for domestic use									22,500	25		22,475

*cells highlighted in green are examples

Name of auditor and signature	
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Annex 1-C: Calculation sheet for plastic waste collection and recycling

Date of calculation & duration	
Name of company/organization diverting plastic waste	

I. Calculation for the plastic waste received						
Source of plastic materials received (Name of LGUs/obliged companies/other organizations)	Composition of plastic waste among the waste brought into the facility	Detail composition of plastic waste processed and/or recycled				Total amount of plastic waste received (g)
		Rigid plastic waste	Amount of rigid plastic waste (g)	Flexible plastic waste	Amount of flexible plastic waste (g)	
			A		B	D (A+B)
For example: Quezon City	PET	PET	5,000,000			5,000,000
	PP	PP (caps)	100,000			100,000
	LDPE			LDPE	300,000	300,000
	HDPE			HDPE	200,000	200,000
						0
						0
						0
						5,600,000

*cells highlighted in green are examples

Annex 1-C: Calculation sheet for plastic waste collection and recycling (cont.)

II . Calculation for the plastic waste diverted						
Total amount of plastic waste received	Detail composition of plastic waste processed and/or recycled				Destination of processed and/or recycled plastic materials (Name of companies handed to)	Total amount of plastic waste diverted (g)
	Rigid plastic waste	Amount of rigid plastic waste (g)	Flexible plastic waste	Amount of flexible plastic waste (g)		D (A+B)
D		A		B		
5,000,000	PET	5,000,000			AAA Plastic compounder company Ltd.	5,000,000
100,000	PP (caps)	100,000			BBB Plastic compounder company Ltd.	100,000
300,000			LDPE	300,000	CCC Cement Manufacturing company Ltd.	300,000
200,000			HDPE	200,000		200,000
0						0
0						0
0						0
						5,600,000

Name of auditor and signature

* Composition analysis should be conducted every year

**cells highlighted in green are examples

Annex 2: App-based monitoring system

	Plastic Waste	Driver 1	Driver 2	Driver 3	Driver 4	Driver 5
Waste Source (Household/Non-Household)	✓	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.
Geolocation	✓	Route tracking	Route tracking	Route tracking	Route tracking	Route tracking
Weight	✓					
Type of waste	✓					
Date/Time	✓					
	Accept OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP
MRF (Collection Points)	✓	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.
Geolocation	✓	Route tracking	Route tracking	Route tracking	Route tracking	Route tracking
Weight	✓					
Type of waste	✓					
Date/Time	✓					
	Accept OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP
Recyclers and Processors	✓	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.
Geolocation	✓	Route tracking	Route tracking	Route tracking	Route tracking	Route tracking
Weight	✓					
Type of waste	✓					
Date/Time	✓					
	Accept OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP
Market	✓	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.	Vehicle no. License no.
Geolocation	✓	Route tracking	Route tracking	Route tracking	Route tracking	Route tracking
Weight	✓					
Type of waste	✓					
Date/Time	✓					
	Accept OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP	Accept/ Generate OTP

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