



Policy effectiveness assessment of selected tools for addressing marine plastic pollution

Extended Producer Responsibility in Mozambique



ENVIRONMENTAL LAW PROGRAMME



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1 Introduction

1.1 Background

Each year billions of kilograms of trash and other pollutants enter the ocean ranging from tiny microplastics to derelict fishing gear and abandoned vessels.¹ Plastic is the most abundant pollutant in marine litter and makes up over 80% of all debris.² Single-use plastics — items like takeout containers, coffee lids, straws, and shopping bags — make up a large percent of the plastic waste created, some of which ends up in waterways and oceans due to improper management. Packaging is the single biggest market for plastics.³

To address this issue, the International Union for Conservation of Nature (IUCN), with support from the Swedish International Development Cooperation Agency (SIDA), launched the Marine Plastics and Coastal Communities Initiative (MARPLASTICCs), an initiative in Africa and Asia that works in Kenya, Mozambique, South Africa, Thailand, and Vietnam.⁴ IUCN's project includes national guidance and reports on plastic pollution hotspotting, economic and regulatory policy analysis in each country.⁵

According to the *National Guidance for Plastic Pollution Hotspotting and Shaping Action for Mozambique*,⁶ the total amount of plastic waste that is leaking into the marine environment is approximately 17,000 tonnes, which is equivalent to 10% of all plastic waste generated in Mozambique. The largest contributors to marine plastic pollution are plastic bags, while the top leaking polymer is PET plastic from packaging. It should be noted that only 2% of PET is collected for recycling.⁷

Extended Producer Responsibility (EPR), if designed and implemented correctly, can be a highly effective tool to tackle Mozambique's marine plastic pollution. EPR can provide Mozambique with a financing and organisational framework for waste that would otherwise have to operate out of government institutions. It can increase diversion away from landfills and help with littering, and thereby reduce the amount of material that is improperly managed and likely to end up as marine litter. An EPR framework can help close the gap in the country's efforts to tackle plastic marine pollution.

1.2 Objectives & methodology

Objectives

Reclay StewardEdge (RSE) worked with IUCN's Environmental Law Centre (ELC) in developing this report to assess and provide analysis on the effectiveness of EPR as a possible tool to address plastic pollution into the marine environment in Mozambique.*

The overarching goal of RSE's work is to provide an informed knowledge base to enable high-quality analysis of the effectiveness of EPR frameworks in Mozambique regarding the recycling of plastics and plastic packaging to prevent marine pollution.

The final report and research provide IUCN and MARPLASTICCs with a strong, understandable, and practical in-depth assessment report, focusing on analysis of the instrumental, institutional, behavioural, and outcome levels of the state and development of EPR in Mozambique. This can help inform policy-

* This report was prepared by Reclay StewardEdge (RSE) on behalf of and in cooperation with the IUCN Environmental Law Centre.

¹ noaa.gov/education/resource-collections/ocean-coasts/ocean-pollution

² <https://www.iucn.org/>

³ <https://www.montereybayaquarium.org/act-for-the-ocean/plastic-pollution/the-challenge>

⁴ <https://www.iucn.org/theme/marine-and-polar/our-work/close-plastic-tap-programme/marplasticcs>

⁵ <https://www.iucn.org/theme/marine-and-polar/our-work/close-plastic-tap-programme/marplasticcs>

⁶ https://www.iucn.org/sites/dev/files/content/documents/2021/mozambique_-_national_guidance_for_plastic_pollution_hotspotting_and_shaping_action.pdf

⁷ https://www.iucn.org/sites/dev/files/content/documents/2021/mozambique_-_national_guidance_for_plastic_pollution_hotspotting_and_shaping_action.pdf

making to advance Mozambique towards a more circular economy based on international best practices.

Methodology

The research and analysis for this report involved detailed literature reviews and expert interviews on the legal, policy and institutional frameworks that govern marine plastic pollution in Mozambique and packaging waste management in other jurisdictions. The literature review helped to analyse the current political environment in Mozambique and was useful in identifying the unique challenges and barriers that the country faces in reducing marine plastic pollution. The collection of reviewed literature included IUCN's *Mozambique Scoping Study*,⁸ *National Guidance for Plastic Pollution Hotspotting and Shaping Action for Mozambique*,⁹ and an IUCN webinar report on the *Exchange of Perspectives to Define Priorities*.¹⁰ IUCN's *Kenya Policy Assessment*¹¹ was also used as an example of previous work done for this report on other countries. Interviews took place with Isabel Ramos, who is Programme Manager for IUCN Mozambique, Adriaan Tas, Climate Finance Advisor for ENABEL, and Stephane Temperman, President of Associação Moçambicana de Reciclagem (AMOR), to confirm literature review findings and expand on them. Further interviews were conducted with Dr. Fritz Flanderka (Reclay Group, Germany), Fernando Leon (Grupo Urbaser Danner, Chile), and Ken Friesen (CBCRA, Canada), who are EPR and recycling experts in their home countries.

In addition to the primary and secondary sources noted above, this study is based on RSE knowledge and expertise surrounding matters related to material challenges, regulatory obstacles, market developments, innovation in plastics collection, sorting and recycling and usability, and EPR. The overall recommendations will highlight a way forward for tackling marine plastic pollution in Mozambique. An important component of the overall recommendations is a tailored, high-level roadmap developed for Mozambique's transition to EPR, adapting international best practices to Mozambique's unique political, economic, and environmental circumstances.

This report was developed with three guiding questions in mind:

- What are the standards and regulations in plastic waste collection, sorting and disposal?
- What are the major barriers for plastic recycling from a behavioural, infrastructural, and regulatory perspective?
- How can EPR prevent ocean pollution from plastics?
- Overview of Extended Producer Responsibility.

An EPR framework is a financial and operational tool in which a producer is responsible for the full life cycle of their products and packaging, including in its waste stage. This means that producers are given responsibility for managing the waste created by the goods they produce. This is different from the traditional waste model, under which municipalities and other levels of government have complete responsibility for dealing with waste, usually by operating landfills and running various recycling programmes. Instead, under EPR, some or all of this responsibility (50-100% of financing volume, depending on the type of EPR framework) is transferred from governments to producers.

EPR encourages a *circular economy* approach to managing materials, meaning products and packaging discarded by the consumer are recovered, recycled, and reused to make new products. The industry is responsible for managing the life cycle of designated products and consumer packaging they create and generate at the end of life of these products. There can be financial incentives for producers to create better-designed products that can be disposed of responsibly.¹²

⁸ https://www.iucn.org/sites/dev/files/content/documents/mozambique_scoping_study_en_05112020.pdf

⁹ https://www.iucn.org/sites/dev/files/content/documents/2021/mozambique_-_national_guidance_for_plastic_pollution_hotspotting_and_shaping_action.pdf

¹⁰ https://www.iucn.org/sites/dev/files/content/documents/webinar_report_mozambique_en_05112020.pdf

¹¹ https://www.iucn.org/sites/dev/files/kenya_policy_assessment.pdf

¹² <https://recyclebc.ca/about-recyclebc/epr/>

An EPR system helps reduce local government waste disposal costs because municipalities usually pay less, or do not have to pay at all, for the management of recyclables. The reduction of municipal expenses allows for greater investments in waste infrastructure (sorting systems, landfills) and frees up spending room for other government initiatives. EPR frameworks can also reduce the amount of garbage in landfills by increasing waste diversion through the reuse, recycling, and recovery of packaging materials, and less contamination at source through increased public awareness. Littering is often reduced as well. These measures can help decrease plastic leakage that ends as marine pollution.

Although an EPR system is a universally applicable concept that creates incentives to reduce waste and increase recovery and recycling rates, there are requirements that need to be met to ensure effectiveness. The success of an EPR framework depends on a functioning waste management system and will need to be adapted to local conditions. International examples of EPR frameworks vary due to political and cultural values, differences in consumer behaviours and reactions to messaging, and physical geographies and population sizes. An example of how physical geographies can change an EPR system can be seen in Canada, between the provinces of British Columbia and Manitoba. Collection in British Columbia is different as the population is spread out along ocean coastlines and in mountains. In Manitoba, the EPR system has a major focus on one large urban area. Incentive programmes, marketing and advertising, and even collection mechanisms will vary depending on these local conditions. There are also different approaches to promotion and education within an EPR system. This can be seen in the differences between Chile and Germany. Interviews with Dr. Fritz Flanderka (Reclay Group, Germany) and Fernando Leon (Grupo Urbaser Danner, Chile), both of whom have decades of experience in EPR systems in Europe and Chile, confirmed that Chileans reacted more positively to programme incentives, whereas Germans tended to react more positively to rules that are stated in messaging.

2 International best practices

When looking at EPR best practices around the world, four jurisdictions were chosen to be highlighted in this report. The selected EPR systems were chosen because they are all coastal jurisdictions, either with mountains and long coastlines, or with many rivers and lakes. Netherlands is likely one of the most mature EPR systems in Europe and demonstrates a highly effective and collaborative EPR system which addresses marine plastic pollution. British Columbia and Manitoba are tier two EPR systems and demonstrate different geographic EPR systems, and Chile is relatively new to EPR tools (legislation only passed in 2017), with a framework adapted to include the country's informal waste sector.

2.1 Chile

2.1.1 Overview

In June 2016 the Framework Law for Waste Management, Extended Producer Responsibility and Promotion of Recycling was published in Chile, and in March 2017, it was passed into law. This was Chile's first step towards a circular economy, and the country's transition into a form of EPR. Chile modelled its legislation and regulation after German and European Union (EU) frameworks.

Chile established the Extended Liability of the Producer ("REP" in Spanish), making the producer liable for the waste generated by its products, complete from its inception to its final recovery. The EPR system applies to a variety of priority products, which includes:

- Lubricant oils
- Electric and electronic devices
- Containers and packaging
- Tyres
- Batteries

2.1.2 EPR requirements

In 2005, a Comprehensive Policy on Solid Waste Management was drafted "to ensure that solid waste management is carried out with minimal risk to the health of the population and the environment, promoting a holistic view of waste, and ensuring a sustainable and efficient development of the sector."¹³ On September 10, 2013, a new EPR framework bill was presented to the Chilean Chamber of Deputies. This Bill would amend Chile's current framework environmental law (*No. 19300/1994*),¹⁴ and "authorize and standardize a general system of sustainability certification and labeling for goods and services."¹⁵

In 2016, a legal framework (*Ley N°20.920, Ministry of Environment, 2016*)¹⁶ was introduced. In 2019 a draft of the decree on packaging was first published, and in May 2020, the decree was approved by the Council of Ministers.¹⁷ These regulations are now binding and have introduced the establishment of collection and recycling goals, and associated packaging obligations. Chile's packaging producers may join a collective management system or carry out their obligations to manage their packaging waste individually. According to *Law N°20.920, Title III of the Extended Liability of Producers*, these obligations include the organisation and financing of the collection, storage, transportation, and treatment of their packaging waste.¹⁸ *Law N°20.920, Title III of the Extended Liability of Producers* also requires producers to report the quantity in units and weight put on the market to the Ministerio de Medio Ambiente (MMA), Chile's Environment Ministry. Producers are obliged to meet recovery targets that have been set for plastic until 2030.¹⁹ Producers must comply with the waste recovery goals set for each of the components of their packaging. Finally, further obligations for producers include eco-design, certification, signage and labelling of products, deposit, and reimbursement systems.²⁰

2.1.3 Informal sector

Chile's EPR *Law N°20.920, Title II Article 4 & Article 24* was the first national law worldwide which directly ties the existing informal waste sector into the regulated market as a recognised, certified trade.²¹ The framework made informal workers an integral part of the waste management process through a formal certification and authorisation process. The EPR framework contains a *stepped-certification* process for informal workers which:²²

- Provides the necessary education programme to allow informal waste contractors to learn the requirements for managing waste under the applicable regulations.
- Certifies successful programme participants as informal waste contractors (with a 5-year certification window for current waste pickers).
- Requires registration of all interested informal waste contractors under the EPR scheme.
- Permits registered waste contractors to participate in public education campaigns with municipalities regarding consumer participation.
- Authorises these informal waste contractors to directly enter waste collection contracts with municipalities and producer responsibility organisations.
- Mandates that informal workers complete all of the health and safety administrative requirements.

¹³ <https://www.oecd.org/environment/waste/20140526%20Case%20Study%20-%20EPR%20Chileamended.pdf>

¹⁴ <https://www.oecd.org/environment/waste/20140526%20Case%20Study%20-%20EPR%20Chileamended.pdf>

¹⁵ <https://www.oecd.org/environment/waste/20140526%20Case%20Study%20-%20EPR%20Chileamended.pdf>

¹⁶ <https://prevent-waste.net/wp-content/uploads/2020/10/Chile.pdf>

¹⁷ <https://prevent-waste.net/wp-content/uploads/2020/10/Chile.pdf>

¹⁸ <https://www.bcn.cl/leychile/navegar?idNorma=1090894>

¹⁹ <https://www.bcn.cl/leychile/navegar?idNorma=1090894>

²⁰ <https://www.bcn.cl/leychile/navegar?idNorma=1090894>

²¹ <https://www.bcn.cl/leychile/navegar?idNorma=1090894>

²² <https://www.lexology.com/library/detail.aspx?g=e42a6e34-727e-4125-a0ee-bad700f07fd6>

- Waste streams that are not covered by the EPR scheme would be taxed for the buyers, which encourages investment in waste recovery, and separation and recycling.²³

2.1.4 EPR effectiveness

In June 2019, a proposed draft, *Exempt Resolution N° 544 of the Ministry of the Environment*, was published in the Official Gazette for public consultation.²⁴ This proposed draft is not yet in force, as consultations continue, and the Chilean government has not amended the decree. Some of the additions for consultation include:

- 3-year extension to complete implementation by 2034.
- Same target recovery rates of 45% of plastic, 70% of paper and cardboard, 65% of glass, 60% of multilayer boxes (milk and juice boxes), and 55% of soda cans.
- Further formalising waste pickers work through new contracts.
- Installation of additional waste (recyclable) collection infrastructure.
- A target of 80% by 2034 for all households to participate in a door-to-door re-collection system, which is a drastic change from collection points at street corners.
- Compensation of re-collection targets in the first four years of implementation: if a target for one material can't be met, it can be compensated by another material.

Given the early stage of implementation of EPR in Chile, and ensuing revisions, an overall evaluation of the EPR system adopted there is difficult. Fernando Leon (Grupo Urbaser Danner, Chile), who worked on the implementation plan of Chile's EPR framework, noted the following updates regarding the implementation status of EPR for packaging in Chile:

- Chile does not yet meet its targets under the EPR regulation, with plastic recycling rates of 8.5% (2019, *Estudio sobre reciclaje de plásticos en Chile*, ASIPLA)²⁵
- Institutional and EPR actors' roles are clear and well-respected
- The shift away from collection points and towards more kerbside collection is significant as it makes recycling more convenient, but needs to be established in communities used to bringing waste to collection points
- Landfilling is still significant, but the major landfills are managed well, leading to little leakage
- Chile is a pioneer in the integration of waste pickers

2.2 Netherlands

2.2.1 Overview

In the Netherlands, producers and importers of packaged products are legally responsible for the prevention, collection, and recycling of packaging waste through the Waste Management Contribution Agreement (ABBO).²⁶ This EPR system is rooted in Dutch national legislation called the *Environmental Management Act (EMA)*.²⁷ The European Union Directive on Packaging and Packaging Waste is

²³ <https://www.oecd-ilibrary.org/sites/9789264252615-10-en/index.html?itemId=/content/component/9789264252615-10-en>

²⁴ <https://www.carey.cl/download/filebase/newsalert/na-156-draft-that-establishes-goals-and-obligations-for-containers-and-packages-is-published.pdf>

²⁵ <https://www.portalambiental.com.mx/contaminacion/20190327/en-chile-se-recicla-el-85-por-ciento-del-plastico>

²⁶ <https://afvalfondsverpakkingen.nl/a/i/stcrt-2017-75133.pdf>

²⁷ <https://www.government.nl/topics/environment/roles-and-responsibilities-of-central-government/environmental-management-act>

implemented in the Netherlands by the *Packing Management Decree 2014*, which is incorporated and enforced by the *EMA*.²⁸

The EPR system is highly collectivised, with producers obligated to participate in one common, and commonly operated, EPR system to manage their packaging waste. The collective implementation of the EPR system and reaching of national recycling targets is managed by Afvalfonds Verpakkingen (Packaging Waste Fund). Afvalfonds Verpakkingen (AV) was established by producers and importers to collectively meet the EPR framework as stated in the Packaging Decree and Packaging Agreement (*Decree 2014/ [Besluit Beheer Verpakkingen 2014](#)*),²⁹ which implements the European directive on packaging and packaging waste. It is a not-for-profit organisation governed by a board of directors, who are themselves appointed by producers and importers. To cover the associated costs, AV levies a mandatory packaging waste management contribution, which on June 27, 2012, the Ministry of Infrastructure and Water Management (at that time the Ministry of Infrastructure and the Environment), declared universally binding.³⁰ This contribution payment is calculated based on the material and type of packaging, and by the weight in kilograms.³¹

2.2.2 EPR requirements

Producers and importers of packed products are legally obliged to ensure the prevention, collection and recycling of packaging. Netherland's EPR framework regulations mandate that companies that are the first to make packed products available to consumers and businesses, and who remove the packaging on import, are individually responsible for the prevention, collection and recycling of used packing material. Each year AV reports on recycling results.

Article 8 of the Packing Management Decree 2014 and Article 9.5.2(7) of the Environmental Management Act outlines obligations for producers and importers, which include:³²

- Register with AV if the amount of packaging released onto the Dutch market is more than 50,000 kg in a year, and pay the Packaging Waste Management Contribution
- Record and account for packaging released onto the Dutch market
- Meet the Essential Requirements
 - Packaging volume and weight must be the minimum amount to maintain the necessary levels of safety, hygiene, and acceptance for the packaged product, and for the consumer
 - Packaging must be manufactured to permit reuse or recovery in accordance with specific requirements
 - Noxious or hazardous substances in packaging must be minimised in emissions, ash or leachate from incineration or landfill
 - Packaging should be designed in a way that prevents litter

2.2.3 EPR effectiveness

The Waste Management Contribution Agreement (*Afvalbeheersbijdrageovereenkomst, ABBO*), states that the main goal of AV is to implement the Packaging Agreement.³³ To achieve this goal, AV is mandated by the Waste Management Contribution Agreement to coordination and implementation of various tasks such as:

²⁸ <https://www.government.nl/topics/environment/roles-and-responsibilities-of-central-government/environmental-management-act>

²⁹ <https://afvalfondsverpakkingen.nl/en/en/legislative-framework>

³⁰ <https://afvalfondsverpakkingen.nl/a/i/Beleid-Overeenkomsten/Policy-2019.pdf>

³¹ <https://afvalfondsverpakkingen.nl/en/packaging-waste-management-contribution>

³² https://afvalfondsverpakkingen.nl/a/i/Overige/notification_draft_2014_336_NL_EN-Packaging-Decree.pdf

³³ <https://afvalfondsverpakkingen.nl/a/i/stcrt-2017-75133.pdf>

- Establishing and maintaining a waste management system, contracted with municipalities and waste management providers, to achieve national recycling targets
- Working with municipalities and other waste management providers to compensate for the collection or processing of (separated) waste packaging
- The minimisation of packaging litter
- Monitoring and reporting on the usage, collection, and re-use of packaging materials
- Establishing the rates, and collecting contributions from producers and importers

The effectiveness of Netherland's EPR system is seen in the country's high recycling rates, which has placed them as one of the leading countries in Europe. The packaging chain makes a large and active contribution to improve the circularity of the Dutch economy.

Material	Result 2017	Target EU 2017	Target NL 2017
Paper and cardboard	87%	60%	75%
Glass	85%	60%	90%
Plastic	51%	22.5%	48%
Metal	95%	50%	85%
Wood	73%	15%	37%
Total recycling	75%	55%	70%

(Targets set by Ministry of Infrastructure and Water Management, enforced by AV)³⁴

Based on internal research, and the opinions of Dr. Fritz Flanderka (Reclay Group, Germany), the Netherlands are notable for the following:

- Highly efficient EPR system with high targets that are being met
- Little landfilling, but significant incineration of non-recyclable and rejected waste (higher cost, but due to limited space)
- Significant reduction of litter with minimal leakage into the sea
- Highly collectivised producer organisations, leading to little producer innovation and higher recycling costs

2.3 Province of Manitoba, Canada

2.3.1 Overview

Twelve producer responsibility programmes have been approved to manage a comprehensive list of waste products in Manitoba, including:

- Agricultural Chemical Containers
- Automotive Anti-Freeze

³⁴ <https://afvalfondsverpakkingen.nl/en/packaging-waste-fund>

- Domestic Pesticides
- Electronic Equipment
- Fluorescent Lights and Tubes
- Household Hazardous Products
- Lead-acid Batteries
- Mercury-containing Thermostats
- Oil, Containers and Filters
- Packaging and Printed Paper
- Paint
- Pharmaceuticals
- Rechargeable Batteries
- Single-use Batteries
- Tyres.

Preventing plastic marine pollution is important in Manitoba, as the province has a 645-kilometre saltwater coastline bordering Hudson Bay and more than 110,000 lakes, covering approximately 15.6 percent or 101,593 square kilometres of its surface area.³⁵

Looking specifically at plastic containers and packaging pollution, Manitoba's EPR system is managed by the Canadian Beverage Container Recycling Association (CBCRA) Recycle Everywhere programme. The *Waste Reduction and Prevention Act (C.C.S.M. c. W40) and Packaging and Printed Paper Stewardship Regulation*³⁶, forms the legal framework by which the Province of Manitoba mandates the producer responsibility for the recycling of all packaging.

CBCRA operates the beverage container recycling programme in Manitoba and is tasked with meeting the government-mandated target of recovering 75% of beverage containers.³⁷ CBCRA has a specific focus on ensuring that it is convenient to recycle empty beverage containers by setting up a recycling infrastructure across the province. This includes a unique province-wide away from home beverage container recycling programme. This system has no need to bring bottles back for a deposit as the focus of the programme is on providing a high number of accessible recycling bins in all residential, commercial, and public spaces. The opportunity to recycle is everywhere because of the emphasis on the recycling infrastructure and the ease of disposal of beverage packaging. CBCRA partners with communities, municipalities, schools, businesses, institutions, parks, festivals, and events throughout Manitoba to provide them with recycling bins for the space free of charge. Partners arrange for the collection of the recovered beverage containers with a recycler. The high recovery rate for plastics is a result of very convenient consumer disposal because of the recycling infrastructure in place in addition to targeted and significant promotion and education actions taken through advertising, in-person outreach and events support.

According to the *Packaging and Printed Paper Stewardship Regulation's Municipal Services Agreement*,³⁸ the province is responsible for packaging materials and reimburses municipalities for 80% of their net reasonable recycling costs (i.e., municipal reimbursement). Under this system, local

³⁵ <https://www.thecanadianencyclopedia.ca/en/article/manitoba>

³⁶ https://web2.gov.mb.ca/laws/reg/current/_pdf-reg.php?reg=195/2008

³⁷ <https://cbcra-acrcb.org/programs/>

³⁸ <https://www.stewardshipmanitoba.org/wp-content/uploads/2013/10/MMSM-Program-Plan-Renewal-2017-small.pdf>

governments are responsible for both kerbside collection and drop-off facilities, as well as materials sorting.³⁹

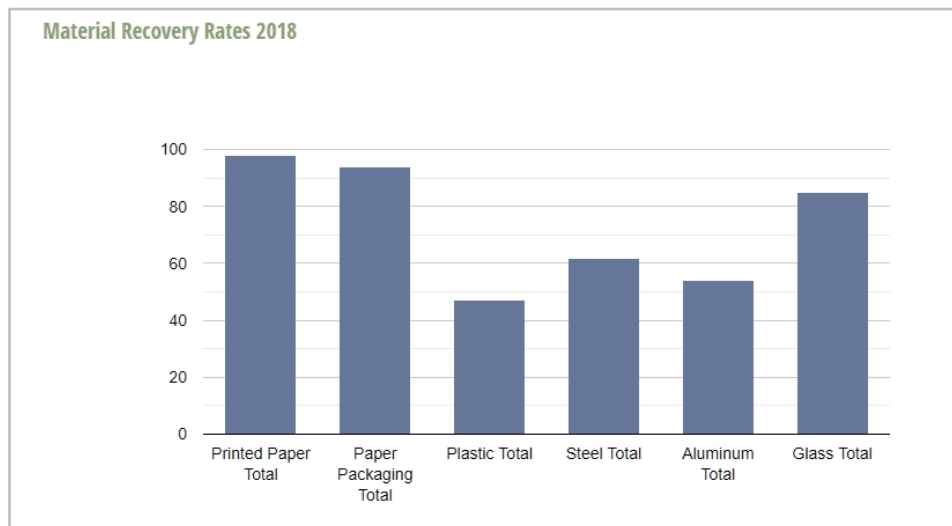
2.3.2 EPR requirements

Producers are required to pay for 80% of the packaging management costs in Manitoba, with municipalities responsible for financing the balance. Municipalities are also responsible for collection and sorting. As a result, they invoice the share (80%) of producer responsibility to producers. To receive this funding, municipal programmes must meet certain efficiency requirements, including operating or contracting for residential recycling services, collecting and recycling all mandatory materials, and promote recycling to their communities. These requirements are in place to prevent runaway costs from recycling by municipal actors and their contractors, and to promote recycling and recovery in municipalities. Fees are based on the costs to recycle materials, and the fee structure assigns revenues only to materials that are sold to recycling markets and assigns additional costs to difficult-to-recycle materials to invest in new options for their end-of-life management.⁴⁰

Beverage producers supplying into the Manitoba market are charged a Container Recycling Fee (CRF) of 1-3 cents (less than 1% of the purchase price) on every non-alcoholic, non-dairy beverage container they supply into the province. This fee is not a regulated fee, but rather a voluntary financing mechanism established by the Canadian Beverage Container Recycling Association to finance the programme. This fee funds the entire operation including infrastructure, signage, technical support, and promotion and education. In addition, the funds pay for up to 80 per cent of the cost to collect, sort and market used beverage containers in residential recycling programmes.⁴¹

2.3.3 EPR effectiveness

Last year, Manitoba recovered 85.7% of packaging and printed paper in the province, thereby exceeding the target of 70% recovery by June 2023,⁴² which was set by the Minister. It should be noted that this is a recovery rate, not a recycling rate.



³⁹ <https://www.stewardshipmanitoba.org/wp-content/uploads/2013/10/MMSM-Program-Plan-Renewal-2017-small.pdf>

⁴⁰ https://cdn.ymaws.com/www.productstewardship.us/resource/resmgr/packaging/2020.03.17_PSI_EPR_for_PPP.pdf

⁴¹ <https://cbcra-acrcb.org/programs/>

⁴² https://stewardshipmanitoba.org/wp-content/uploads/2013/10/guideline_packaging_and_printed_paper_stewardship.pdf

In addition to the packaging target above, there is an additional target of 75% of recovery for beverage containers. CBCRA, which manages the EPR programme for beverage containers, reached a recovery rate of 79% of PET beverage containers in Manitoba in 2020. This is significant as approximately 46% of beverage containers are PET (aluminium and carton are other prevalent materials). CBCRA had the largest increase in beverage container recovery between 2010 and 2016 of any jurisdictions in North America.⁴³

Manitoba is also a highly performing jurisdiction on EPR and its implementation, though not quite to the same level as the Netherlands. According to Ken Friesen (Executive Director of CBCRA, Canada), Manitoba's EPR programme has the following characteristics:

- Clear institutional roles and responsibilities
- Gaps remain in material recovery, but what is not recovered is disposed in sanitary landfills
- Littering is heavily reduced thanks to bin accessibility and messaging
- Minor issues exist with unmanaged plastics, such as fishing gear.

2.4 Province of British Columbia, Canada

2.4.1 Overview

In 2003 British Columbia's Ministry of Water, Land and Air Protection announced a new EPR regulatory structure, and the Environmental Management Act's Recycling Regulation (*B.C. Reg. 449/2004*), which passed on October 7, 2004.⁴⁴ The Recycling Regulation sets out the requirements for EPR in British Columbia. By introducing and regulating industry EPR tools, the British Columbian government moved away from government managed, and tax funded waste management programmes.⁴⁵

In 2015, British Columbia became the first and only coastal jurisdiction in North America to implement a fully industry funded, province-wide EPR programme for packaging. This new Regulation helped address the issue of increasing marine plastic packaging pollution in British Columbia.⁴⁶

2.2.2 EPR requirements

According to British Columbia's Recycling Regulation,⁴⁷ manufacturers and retailers are required to manage the waste from their priority products. Producers of designated products appoint an EPR programme to carry out their duties in accordance with an approved plan. For packaging, the EPR programmes are Recycle BC (a kerbside packaging programme) and Return-It (a beverage container deposit programme). The Recycling Regulation provides a framework that provides producers with the flexibility to design EPR programmes, therefore adapting the EPR tools to the local conditions and environment that work best for their businesses.

A Recycled Plastics Manufacturing Stimulus (RPMS) fund of \$5 million dollars supports technologies to turn used plastics into new products. The programme is funded by the Government of British Columbia's Ministry of Environment to meet its Climate Change Strategy.⁴⁸ Companies with innovative ideas to recycle and recover plastics are encouraged to apply for this funding. The main objective of the RPMS fund is to support the Provincial circular economy of plastics, increase local processing capacity for recycling and create jobs.⁴⁹

⁴³ <https://cbcra-acrcb.org/wp-content/uploads/2016/12/CBCRA-Program-Plan-final-10-7-18-1.pdf>

⁴⁴ https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/449_2004

⁴⁵ <https://www2.gov.bc.ca/gov/content/environment/waste-management/recycling/extended-producer-responsibility/recycling-regulation>

⁴⁶ <https://news.gov.bc.ca/releases/2021ENV0014-000263>

⁴⁷ https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/449_2004

⁴⁸ <https://alacritycanada.com/cleantech/cleanbc-plastics-action-fund/#:~:text=Working%20towards%20recovery%20and%20a,the%20issue%20of%20plastic%20pollution>

⁴⁹ <https://news.gov.bc.ca/releases/2021ENV0014-000263>

2.2.3 EPR effectiveness

Some of British Columbia's Recycling Regulation EPR programme highlights include:⁵⁰

- In 2019, 77% of all beverage containers including 56% of rigid plastics (PET& HDPE) were recovered.
- In 2019, 46% of all residential plastic packaging was recovered for recycling.
- Of the plastics collected by Recycle BC either from beverage containers, or residential plastic packaging, 98% of the materials stay in British Columbia which helps support the recycling and manufacturing sector, thus growing the local circular economy.

According to Ken Friesen (CBCRA, Canada), British Columbia's main characteristics are:

- Strong local recycling industry, leading to few plastic waste exports
- Strong government oversight and institutional roles
- Recovery rates need to increase (considering costs, see next point)
- Very expensive system due to regulatory measures, lack of competition and geography
- Some issues with plastics recovery exist in remote communities (north and mountain regions).

3 Instrumental analysis of Mozambique's recycling framework

Mozambique's government has enacted some legal and regulatory tools (such as bans on dumping of waste in the marine environment) and economic instruments (such as penalties for sea pollution actions) for the management of marine pollution. These are important fundamental steps to signal to producers, consumers, and other actors that the issue is recognised at heart and there is willingness to act. Mozambique is a member State of several Multilateral Environmental Agreements, as well as various regional agreements. However, Mozambique's regulatory framework still suffers from gaps and challenges related to regulatory design and/or its implementation.⁵¹ Examples of these gaps and challenges include missing specific legislation addressing the leakage of plastic pollution from land into the marine environment, the lack of any law that promotes recycling and reuse of plastic waste, and no significant penalties for acts resulting in plastic pollution as well as the roles of various actors (waste management companies, levels of governments, etc.) not being fulfilled adequately.

A *phase-in* implementation for Mozambique's EPR framework would complement the current regulations, compelling producers and manufacturers to manage the entire life cycle of plastic packaging they create and distribute. Mozambique's EPR framework provides budget savings to the government and public by shifting financial responsibility for recycling to producers, and the tools would better manage plastic waste and marine leakage. With an increasing population, rising environmental awareness worldwide and the growing problem of plastic waste, implementing the EPR framework would help national and local municipalities achieve recovery and recycling targets and decrease marine plastic pollution.

3.1 Legal and policy frameworks

Mozambique's participation in several Multilateral Environmental Agreements (MEAs), and their movement to enact environment and waste management policies, align well with EPR principles and are an important foundation to build on. Mozambique has adjusted international environmental

⁵⁰ <http://recyclebc.ca/wp-content/uploads/2020/08/CSSA-Global-Commitment-Report-Final.pdf>

⁵¹ Da Silva, A. (2020). The legal, policy and institutional frameworks governing marine plastics in Mozambique. Bonn, Germany: IUCN Environmental Law Centre.

principles and obligations to local conditions and established and empowered institutions to ensure the implementation of these obligations.⁵² Similarly, implementing the EPR framework would encompass some similar regulations, and will require enforcement of producer obligations.

Entrenched in the Constitution of Mozambique is the protection of the environment through economic, social and cultural rights. The Constitution outlines the right of all citizens to live in a healthy environment and emphasises the duty to protect its environment by banning any act of pollution outside the legally established limits.⁵³ The Constitutional right to live in a healthy environment, and the importance of preventing pollution harmonises with EPR principles of producer responsibility.

Mozambique has enacted other specific environmental laws with provisions related to marine plastic pollution, including the Policy and Strategy of the Sea (POLMAR), which regulates the management of the marine environment including assessing penalties for actions that lead to marine pollution. However, this policy focuses on commercial fishing industry waste (netting) and does not address specific leakage of plastic pollution into the marine environment.⁵⁴ This is a major gap in the country's regulations, as it does not tackle the issues that are causing plastic marine pollution. Future legal developments need to identify the areas of leakage and address why it is occurring.

Mozambique's responsibility for solid waste management falls within the mandate of local authorities and local governments. These roles were established from the Municipalities Law in 1997, and further defined in the Local Government Law in 2003. Both decrees established the decentralisation of powers to municipal governments, and approved regulations for the collection, transport, treatment, and disposal of solid waste within their jurisdictions. Maputo City further defined specific regulations for waste management, and other larger municipalities are now in the process of enacting similar legislation.⁵⁵ These regulatory amendments, both from national and local levels of government are needed to provide waste management a strong legal foundation. The successful implementation of EPR principles will rely on these existing regulations and introducing new regulations to close the loop of plastic packaging.

Furthermore, clear regulatory rules and responsibilities under Mozambique's laws are needed to assign the right roles to the right players under an EPR context and to ensure a well-functioning waste recovery and treatment sector. These legal and policy frameworks are needed as a foundation to an EPR system. For example, it must be clear who regulates EPR and waste, who enforces it and if any level of government has an operational role to play in waste/recycling beyond monitoring, regulating, and enforcing.

3.2 Development of EPR

On 29 December 2017, *Decree 79/2017, of 28 December 2017*,⁵⁶ the Regulation on the Extended Responsibility of Producers and Importers of Packaging came into law. The Decree's objectives are to increase the responsibility of producers and importers of packaging to reduce environmental pollution through EPR obligations. When fully implemented, packaging producers and importers will be responsibility obligated through the following: Internal Management System, Packaging Environmental Fee System, and a Packaging Standardisation System.⁵⁷

⁵² Da Silva, A. (2020). *The legal, policy and institutional frameworks governing marine plastics in Mozambique*. Bonn, Germany: IUCN Environmental Law Centre.

⁵³ Lei No. 1/2018 of 12 June 2018. Art. 90 and 92 (Environmental Rights and Consumers' Rights).

⁵⁴ <http://www.fao.org/faolex/results/details/en/c/LEX-FAOC172386/>

⁵⁵ Da Silva, A. (2020). *The legal, policy and institutional frameworks governing marine plastics in Mozambique*. Bonn, Germany: IUCN Environmental Law Centre.

⁵⁶ <https://www.mta.gov.mz/en/ambiente/gestao-de-residuos-solidos/>

⁵⁷ https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

3.2.1 Packaging environmental fee system

Mozambique introduced a new environmental packaging tax through the *Decree 79/2017, of 28 December 2017*,⁵⁸ called the *Packaging Environmental Fee System*, which many consider a first step to a circular economy for its plastic packaging. The new tax is for companies who are either producers, manufacturers of packaging or those who supply materials for the manufacture of packaging, and those who import or put packaging, materials for the manufacture of packaging, or packaged goods into circulation.⁵⁹ The environmental packaging tax will provide some financial responsibility for the management of packaging, and the tax will be based on a packaging production fee table.⁶⁰ Applicable packaging material categories are metal, plastic, glass, multilayer, paper and hazardous waste. The collection and enforcement of fees will be the responsibility of the Ministry for the Environment, with the cooperation of local municipalities.⁶¹ This will generate an estimated 13 million USD in annual revenues to finance Mozambique's waste management system, however it is uncertain what will happen with the entirety of the money collected and if there will be transparency mechanisms in place. Furthermore, due to the lack of enforcement in other areas of waste management, there will be questions around cooperation between the Ministry of the Environment and local municipalities.⁶² As a result, the tax could have only limited impact on reducing and managing plastic waste in Mozambique. It is likely to be criticised and rejected by producers. However, past examples of EPR development have shown that tax measures can motivate industry to accept and even promote EPR as a tool instead of a tax. Producers typically prefer an EPR system that they can manage, operate, and thus control from a cost and results perspective over a tax that is administered by government, particularly if the revenue distribution of such a tax is transparent or going to non-related initiatives.

3.2.2 Producer Responsibility Organisation (PRO) options

Decree 79/2017 has established two forms of Producer Responsibility Organisations,⁶³ for producers to fulfill their obligations under EPR. The first PRO option is called the direct internal management system, where the producer or importer may opt in individually or jointly, and consumers of products that use packaging pay a specific deposit amount at point of purchase. This deposit is returned once the packaging is returned. This is a strong legal foundation to establish a Deposit Return Scheme (DRS).

The second PRO option is the indirect management system, where the producer or importer is responsible for the end-of-life of the packaging and packaging waste. This responsibility can be transferred contractually to another waste operator to undertake that end-of-life management. The producer or importer of packaging is financially responsible for all costs associated with the collection, infrastructure, sorting, and recovery of packaging waste.⁶⁴ With the indirect management system, this is a strong legal foundation as well to establish a kerbside, or blue box, system.

Packaging Standardisation System

*Decree 79/2017*⁶⁵ introduced a Packaging Standardisation System to provide packaging standards. These new standards include that the packaging should be produced and manufactured with preferably

⁵⁸ <https://www.mta.gov.mz/en/ambiente/gestao-de-residuos-solidos/>

⁵⁹ https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

⁶⁰ <https://www.nordicclimatefacility.com/news/mozambique-transforming-its-waste-management-sector-backed-by-catalytic-funding-from-ncf>

⁶¹ https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

⁶² https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

⁶³ <https://www.mta.gov.mz/en/ambiente/gestao-de-residuos-solidos/>

⁶⁴ https://www.legal500.com/developments/wp-content/uploads/sites/19/2018/11/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

⁶⁵ https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

biodegradable materials, or packaging materials that can be re-used, recycled, or recovered easily. By designing plastic packaging that can be recovered back into market, this will help to divert plastic waste away from disposal in the environment or in dumpsites, thus reducing plastic leakage. Furthermore, by designing packaging to be recyclable, it can be processed back into feedstock for more plastic packaging, creating a circular economy.

3.2.3 Existing EPR framework

The *Packaging Environmental Fee System*, the *Internal Management System*, and the *Packaging Standardisation System* are all scheduled to be fully enforced by 2021.⁶⁶ Although both the environmental packaging tax and new packaging standardisation legislation obligates producers to take on more responsibility, there is still very little incentive for consumers to recycle. Also, there is no end-of-life management plan for material processing and recovery, and the new tax does not lay out responsibilities of all key actors. However, the development and implementation of a full EPR framework will benefit from both the environmental packaging tax and packaging standardisation, as new EPR regulatory processes have begun. Conversations from this tax legislation would pave the way for Mozambique to adopt a full form of EPR tools for plastic waste.

3.3 Overview of regulatory and implementing institutions

Mozambique has endorsed some regulations to address plastic pollution at the producer level. The Regulation on the Extended Producer Responsibility and Importers of Packages⁶⁷ aims to extend the responsibility to the producers and importers of any type of packages for their management when they become waste. These provisions include banning the manufacturing and marketing of plastics with a thickness of less than 30 micrometres.⁶⁸

The Ministry of Land and Environment (MTA) has also mandated these regulations through the National Agency for Environmental Quality Control (AQUA), which oversees the environmental quality in Mozambique. AQUA develops and implements technical procedures and standards for an integrated approach to controlling environmental pollution. AQUA, the National Inspection of Economic Activities (INAE) and the National Maritime Institute (INAMAR) share the responsibility to enforce these standards.⁶⁹ INAE also has the responsibility for ensuring that any economic activity, commercial or otherwise, follows the legal requirements set out by AQUA.⁷⁰ Implementing and enforcing the current EPR framework in Mozambique would require mandatory compliance and reporting requirements, with MTA being the most likely regulatory authority that would have legal mandate for monitoring and supervising that EPR framework obligations are being met.

4 Institutional analysis of Mozambique's recycling framework

A successful EPR system needs support and synergy of Mozambique's various actors that will help develop and implement the framework necessary to create an effective circular economy. The Ministry of Land and Environment's Regulation on Management of Urban Solid Waste⁷¹ classifies plastic waste

⁶⁶ Ibid. Art. 17(1)

⁶⁷ https://www.vda.pt/xms/files/v1/Newsletters/2018/Flash_VdA_MZ_New_Regulation_on_the_Extended_Responsability.pdf

⁶⁸ <https://www.nordicclimatefacility.com/news/mozambique-transforming-its-waste-management-sector-backed-by-catalytic-funding-from-ncf>

⁶⁹ Decreto Presidencial No. 1/2020 of 17 January 2020; Resolução No. 30/2020 of 6 May 2020.

⁷⁰ Decreto Presidencial No. 1/2020 of 17 January 2020; Resolução No. 30/2020 of 6 May 2020 que cria e aprova o Estatuto Orgânico do Ministério da Terra e Ambiente.

⁷¹ Decreto No. 94/2014 of 31 December 2014 Regulamento Sobre a Gestão de Resíduos Sólidos Urbanos. Art. 14; Resolução No. 5/95 of 3 August 1995 aprova a Política Nacional de Ambiente.

as a specific category of solid waste, and the regulation states that plastic waste needs to be separated by producers and/or collection entities prior to disposal.⁷² The institutional analysis investigates three key actors: producers, consumers, and waste/recycling operators and their infrastructure. This analysis will also evaluate the relationship between the producers/consumers/operators with the public institutions, furthering the understanding of the local conditions and allowing Mozambique's roadmap to an EPR framework to consider these roles and responsibilities. There is a direct link between the management of waste from institutions to the amount of plastic pollution that is leaked into the marine environment.

4.1 Producers

Effective EPR legal frameworks identify end-of-life management of products as the responsibility of producers, usually defined as the *brand owners, first importers or manufacturers* of packaging. These are the producers of products themselves, not the producers of packaging: It is the maker of a beverage product or a yoghurt that is defined as the producer of EPR, not the maker of the packaging used to contain the beverage or yoghurt.

In general, producers are responsible for funding the EPR programme and its activities. These activities include cost of collection, collection infrastructure, sorting, sorting infrastructure (Material Recovery Facilities), as well as revenue from materials sold to recyclers, and costs for programme awareness and education campaigns. These costs can be internalised as part of the production expenses, or they may be passed on to consumers of the products, including through visible fees (e.g. eco-fees noted on store receipts).⁷³ Producers and importers of packaging are responsible for the management of packaging once it has become waste and are therefore obliged to take back the packaging materials when they are returned by the end users.

Mozambique is in a unique situation as there is no domestic production of plastic packaging. Since all plastic consumed is imported into Mozambique, the country does not generate any leakage from domestic primary plastics (feedstock for packaging) production. According to the *Hotspotting Mozambique Report*,⁷⁴ almost all plastics collected for recycling in Mozambique come from the packaging sector, however the total of recycled packaging is about 1% of the total packaging consumed. This means the capture rate for plastic packaging is very low, and there will need to be further development in increasing the diversion of plastic packaging away from disposal. The importance of diverting plastic packaging is further highlighted by the fact that the packaging sector contributes to more than 70% of the total plastic leakage with almost 13 kilotons of waste leaking into the marine environment.⁷⁵

Under Mozambique's current EPR framework, it is recommended that producers be involved early in the development of the legal and operational ramifications. Mozambique's EPR Regulation (Decree 79/2017) was adopted and is supposed to be in place. However, interviews with Adriaan Tas (ENABEL) revealed that only the Packaging Environmental Fee System is being implemented at this time, and more specific producer involvement and investment is needed for the success of the other sections within Mozambique's EPR Regulation.

The government should establish a formal consultation mechanism with industry, NGO and external experts to develop an EPR framework best suited to Mozambique's needs and one that has full industry support. These deliberations can help with preferences regarding:

⁷³ <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/overview-extended-producer-responsibility.html>

⁷⁴ National Guidance For Plastic Pollution Hotspotting And Shaping Action: Implemented with Support by the Swedish International Development Cooperation Agency. Final Report for Mozambique. December 2020.

⁷⁵ National Guidance For Plastic Pollution Hotspotting And Shaping Action: Implemented with Support by the Swedish International Development Cooperation Agency. Final Report For Mozambique. December 2020.

- Defining who is the obligated industry (which companies and why)
- Level of EPR financing (50-100%)
- Role of industry (financial participation up to operational management)
- Experiences of industry in other EPR markets
- Reasonable pricing and cost management models
- Infrastructural development requirements (collection and sorting infrastructure).

4.3 Consumers

A consumer may be a group (e.g. a household) or an individual, and is the end-user of a product's value chain. In other words, these are Mozambique's persons or entities that use products and introduce their packaging into the environment. The role of consumers is critical in the implementation of Mozambique's EPR framework because the success or effectiveness of any framework depends on what these key actors do with the waste after consumption. Post-consumer plastics' recyclability and quality dictates the monetary value of the waste, that is, how much commodity revenue could be earned. It is vital for consumers to be aware and have information about their role regarding reuse, return, and take-back and recycling of various post-consumer products and wastes.

Many of Mozambique's population have internally migrated from rural to urban living, and this increase in population in urban settings has created difficult challenges for local municipalities' management of consumer waste.⁷⁶ In Maputo alone, about 70 percent of the city's residents live in informal, or unplanned settlements.⁷⁷ The growing population (expected to double in the next 30 years), poverty levels and macroeconomic situation limit the capacity to deliver sufficient infrastructure to appropriately collect and treat waste while also implying reduced private sector transformational investments and population capacities to pay for more appropriate produce packaging. This increases the challenges and inadequacies in the collection, deposit and treatment of municipal waste, and the influx of populations who settle in informal communities. Furthermore, there is a lack of space to resort to traditional waste management measures such as burning and/or landfilling (sanitary or unsanitary), an issue also being experienced in the Netherlands and other densely populated EU countries.⁷⁸

Consumer habits and tastes are changing as well, including the increased use of single-use plastics. Traditional baskets made of natural and environmentally safe materials and fabrics are being replaced by single-use plastic bags because of economic advantages, and this has been a source of increasing plastic pollution in cities across Mozambique.

An effective EPR framework would require producers and government to articulate, educate and inform consumers about recycling, and offer appropriate incentives for waste sorting at source and take-back at designated collection points to ensure quality flows of post-consumer plastics for recycling. The more convenient the EPR tools are for consumers, the greater the role consumers will play in a successful EPR system. EPR legal frameworks can also ban certain plastics or make them so expensive to manage that they are *de facto* banned.

We recommend that Mozambique identifies the tools and communication methods best suited to reach its local population. This includes understanding how people react to regulatory and punitive measures (e.g. bans and penalties for ignoring rules), how people react to incentives (e.g. a deposit system for bottles or prizes for recycling correctly) and what messages and information consumers need to become better recyclers (e.g. TV/radio marketing, packaging labelling/information, in-person outreach, etc.).

⁷⁶ Da Silva, A. (2020). *The legal, policy and institutional frameworks governing marine plastics in Mozambique*. Bonn, Germany: IUCN Environmental Law Centre.

⁷⁷ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁷⁸ https://sustainabledevelopment.un.org/content/documents/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/mozambique/Waste_Management.pdf

4.3 Waste & recycling operators

Mozambique has seen rapid urbanization of its population over the last decade, which has led to a dramatic increase in the size of municipalities without any basic services and lacking waste infrastructure. Waste operators collect all solid household waste and deposit the waste in official or unofficial dump sites without proper treatment or segregation. This situation has caused a demand for new sanitary landfills and has contributed to plastic pollution leaking into the marine environment from existing unsanitary landfills or dumpsites.⁷⁹ The lack of segregation at the source is largely due to poor waste collection systems and ineffective law enforcement. In the city of Maputo, only half of the waste created is collected, the remaining half is disposed of in the streets and into the environment. EPR principles would obligate the waste operators, formal and informal, to be organised in a way that it supports the recovery of obligated materials.

Due to a lack of clarity on the roles and responsibilities of different governmental agencies, inadequate enforcement of legislation is happening at the institutional level. The roadmap noted below proposes a blueprint for assigning roles and responsibilities for the different players, and ensuring the capacity to develop, implement, govern, and enforce current and potential future EPR framework obligations. A successful EPR framework will implement segregation at source, decreasing the amount of waste that is transferred to landfills and potentially generating work and income for the informal waste sector. EPR tools can help regulate the plastic producers, consumers, and formal and informal waste operators to work in synergy to meet recovery targets and decrease marine plastic pollution.

We recommend that prior to implementing Mozambique's current EPR framework, an inventory and analysis of the formal waste infrastructure and actors be undertaken to assess their readiness and ability to take on the additional demand/requirements of separate collection under EPR. This includes a review of collection methods and infrastructure as well as any sorting infrastructure. As a second step, a gap analysis should be conducted based on anticipated tonnages of plastic packaging in the market, i.e. how many more collection resources and what sorting resources (sorting centres, automated or manual) are required to handle this amount of volume, including from a geographical effectiveness perspective (to avoid unnecessary transfers of materials across the country).

5 Informal sector

5.1 Overview and role of informal waste sector

Informal waste collectors are defined as any individual or group of individuals involved in the waste management sector, but who are not formally registered or formally responsible for carrying out waste management services.⁸⁰ In many countries, particularly those in the southern hemisphere, the informal waste sector is unstructured and fragmented due to the absence of regulations and formalised recognition. As EPR frameworks compel producers to manage their products and packaging's full lifecycle, future participation, cooperation with producers and their service providers, and definition and integration of an informal waste collector's role will increasingly become important for implementing current EPR legislation.⁸¹ In Mozambique, the role of their informal waste sector and the success of an EPR system will be dependent on each other.

⁷⁹ Da Silva, A. (2020). The legal, policy and institutional frameworks governing marine plastics in Mozambique. Bonn, Germany: IUCN Environmental Law Centre.

⁸⁰ <https://www.environmentlawinsights.com/2019/03/08/chile-to-incorporate-informal-waste-sector-into-epr/>

⁸¹ <https://www.environmentlawinsights.com/2019/03/08/chile-to-incorporate-informal-waste-sector-into-epr/>

5.2 Organisational analysis of informal waste sector

5.2.1 Mozambique's catadores

In Mozambique, informal waste collectors are called catadores. The informal waste sector works in parallel with municipal waste actors. According to the *Plastic Pollution Hotspots: Mozambique* report, the plastic waste journey from homes to end-of-life passes through either the formal or informal waste sector. The major population centre, Maputo city produces 1,100 metric tonnes of garbage every day, but only around 50 per cent of the waste is collected by municipal collectors and brought to dumpsites.⁸² The informal waste process involves the selective collection of household waste by informal waste collectors at dumpsites, and the transportation to buy-back centres. These buy-back centres are small recycling schemes who buy plastic waste from the catadores using simple contractual agreements.⁸³ The REICLA cooperative buys plastic from the catadores and produces plastic pellets for sale to end-markets, which are factories producing household utensils. The Mozambican Recycling Association (AMOR) and a local waste management company, 3R Limitada, purchase recycling waste at three "Eco-points" in Maputo.⁸⁴ These "eco-point" locations aggregate the recycling waste (approximately 400 metric tonnes per year) and sell it to international markets, and what cannot be exported is disposed of at a dumpsite.⁸⁵ Overall, Mozambique's lack of a plastic recycling industry creates a difficult environment for informal waste collectors to work in and to make a liveable profit, due to very low prices for plastic and other commodities.⁸⁶

Many informal waste collectors, including children, participate in the informal waste sector. Some estimate that there 500 catadores in Mozambique, however, that number is likely many times higher than that since many are not considered full-time catadores or will reject the label of being an informal waste operator. Ultimately, the total number of catadores working in Mozambique is not known.⁸⁷ Their economy and their livelihoods often depend on any sellable materials they find sorting through selective waste. For Mozambique's current EPR framework to be successful, it will have to include and incorporate the informal waste sector.

There is a 35% VAT added to the purchasers of plastic from the catadores. This is a deterrent for intermediaries who want to purchase from the catadores, and end-markets who want to purchase the processed plastic from the intermediaries. As well, catadores do not invoice or give receipts for their sales to companies who buy their waste, forcing many sales to be "under-the-table" cash transactions on the black market.⁸⁸

We recommend that the organisation, behavior and number of catadores in Mozambique be surveyed. These survey results would be useful to identify an approximate number of informal workers, how and whether they are organised, which materials they handle and in which volumes the waste material flows through the system (from disposal by the consumer to delivery to a recycler). Furthermore, survey results may be useful to determine the needs of informal workers within an EPR framework. Such an informational foundation of the size and structure of the informal sector is also helpful in securing international donor funding to support and integrate the sector in the future of waste management.

5.2.2 The informal waste sector within the EPR system

One of the most challenging questions regarding EPR tools is how to incorporate the existing, and often firmly established, informal waste sector into the regulatory models within the EPR frameworks. For the

⁸² <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁸³ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁸⁴ <https://stopopenburning.unitar.org/guidance-and-examples/mozambique/plastic-reduction-using-waste-transfer-and-recycling-centre/>

⁸⁵ https://www.iucn.org/sites/dev/files/content/documents/2021/mozambique_-_national_guidance_for_plastic_pollution_hotspotting_and_shaping_action.pdf

⁸⁶ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁸⁷ <https://www.taipeitimes.com/News/biz/archives/2014/12/21/2003607211>

⁸⁸ Da Silva, A. (2020). *The legal, policy and institutional frameworks governing marine plastics in Mozambique*. Bonn, Germany: IUCN Environmental Law Centre.

Mozambique EPR scheme to be effective, its tools and framework should allow selective waste collecting from the informal waste sector and combat the often-negative stigma that surrounds the catadores.⁸⁹

When looking at best practices and alternatives for the informal sector within EPR systems, Chile's *stepped-certification* process for informal waste collectors provides a potential pathway to aligning the informal sector with EPR frameworks, objectives, and operations. Chile's EPR framework was the first national law which recognised and certified informal waste collectors as a trade. Within the EPR laws, Chile provided a process for all informal waste collectors to obtain certification and pass safety requirements. Once the informal waste collector is authorised under the EPR framework, they directly enter waste collection contracts with municipalities and producer responsibility organisations.⁹⁰

In Cairo, Egypt's informal waste collectors, who are called zabbaleen, have been a distinctive part of the city's street culture since the 1940's. There are an estimated 150,000 informal waste workers who collect 50-60% of Cairo's waste, recycling 80% of everything they collect.⁹¹ In 2019, CID Consulting and Nestle, backed fully by the Egyptian government, helped create a plastic buy-back scheme for the zabbaleen. This EPR framework requires companies responsible for producing plastic waste to pay the collectors in simple electronic transactions for each allotment of plastic waste that is collected and sent for recycling. In Egypt, the zabbaleen do not become employees of the companies, but act as a type of subcontractor in the collection of plastic packaging.

Mozambique will need to formalise and legitimise the informal waste sector within a new EPR framework for the informal activities to contribute to the country's recycling and waste management objectives. Certified informal waste collectors would be contracted by municipalities outside of Maputo city, therefore solidifying their role in Mozambique's circular economy. An EPR framework would involve setting collection targets for the catadores as well.

For Mozambique's EPR programme to achieve long-term success, it must involve legitimising the catadores because of their important role in waste management of informal communities, as well as their operations at Maputo's dumpsites. The catadores work at collecting plastic and other recyclables from dumpsites and transporting these materials to sell to buy-back centres for processing. A successful EPR programme will also need to have political support from both the regional and national levels, including addressing the 35% value added tax that is added to buy-back centres costs of purchasing plastic waste.

6 Behavioural analysis of potential EPR implementation in Mozambique

Mozambique's EPR system can help motivate changes of behaviour for the country's waste actors, like other legal tools and regulations, if designed and implemented correctly. The analysis will look to understand possible changes in behaviour relating to the environment, and how waste actors should behave when an EPR system is implemented. The analysis identifies possible behavioural changes for regulatory institutions, producers, consumers, the informal sector, and waste and recycling operators.

While an EPR system places financial and organisational responsibilities and obligations of plastic packaging's end-of-life management on the plastic producers (polluter pays system), the system will not succeed without the consideration of public and institutional acceptance and adaptation, especially for monitoring and enforcement.⁹² Implementing an EPR system in Mozambique will affect the actions of different stakeholders in the country, including educational campaigns aimed at increasing

⁸⁹ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁹⁰ <https://www.lexology.com/library/detail.aspx?g=e42a6e34-727e-4125-a0ee-bad700f07fd6>

⁹¹ <https://www.weforum.org/agenda/2021/06/technology-egypt-recycling-circular-economy/>

⁹² <https://journals.sagepub.com/doi/full/10.1177/0734242X12453379>

consumers' environmental awareness and end-of-life decision-making, to the inclusion of catadores into the recycling collection system as recognised waste sector actors.

6.1 Regulatory institutions

Since independence in 1975, Mozambique's government agencies responsible for waste management have struggled with an ineffective and inefficient waste system and respective funding. This is primarily due to a lack of resources, inefficient communication between institutions, and a top-down approach which has failed to address the waste issues in poor informal settlement areas that make up 80% of the country.⁹³ There is a direct link between the management of waste to the amount of plastic pollution that is leaked into the marine environment.

Mozambique's responsibility for solid waste management, including plastic waste, is the mandate of local authorities and local governments, both largely unfunded. Municipal authorities currently have inadequate monitoring and enforcement capabilities which has caused ineffective institutional governance over disposal of waste, leading and contributing to the current problem of plastic pollution leakage. Plastic pollution leakage is caused by the fact that only half of municipal waste is collected, and there are no sanitary landfills to dispose of the waste. Unofficial dumpsites and disposal of waste into the environment cause plastic leakage which ends up on Mozambique's coastlines. If an EPR system is to be effective, it will require regulatory institutions to change their behaviour and increase capacity to enforce producer obligations and requirements. Enforcement of EPR rules remains the responsibility of public sector institutions, even if all financial and organisational responsibility for managing waste is transferred to producers.

A well-designed and financed EPR system would help ease governmental regulatory institutions' requirement for monitoring, tracking and enforcement by shifting financial resource requirements to private sector industries and away from public sector institutions. If the EPR framework legally mandates producer registration and licensing, mandatory reporting, and tracking of their waste, these obligations would no longer be institutional responsibilities, though oversight and enforcement responsibilities remain.

6.2 Producers

Mozambique's producers would assume new obligations as extended producer responsibilities for plastic products and packaging are introduced. Producers would likely have to accept new behavioural changes in the way they approach structures, organisation and responsibilities for waste collection, sorting and eventual recycling, standardisation of packaging, and the funding of collection infrastructures and end-of-life management processes of their waste materials.⁹⁴ Producers would be required to organise through Producer Responsibility Organisations, either individually or collectively, which is an opportunity to create well-funded, privately managed and run operations to recover plastic packaging, sort it and recycle it (with some disposal still occurring for materials collected and sorted that cannot be reprocessed into new products due to contamination or economic considerations). They would also need to organise internally to manage their packaging record and to report on packaging introduced into the market and handled under the EPR system. Key questions are how producers ought to organise themselves, how much they pay (50-100% of system costs) and who they need to build relationships with (government, municipalities, waste management sector, informal sector, consumers).

Mozambique has passed legislation that will require producers to standardise packaging along with an environmental packaging tax. If plastic packaging can be designed in a specific manner, it would increase reuse or recovery, and minimise environmental impacts at the end-of-life stage.⁹⁵ An adoption of these directives on packaging redesign will help reduce Mozambique's plastic waste and increase reuse and recycling by consumers. With higher rates of producers recovering their plastic packaging, it

⁹³ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

⁹⁴ <https://dl.acm.org/doi/abs/10.1145/3364335.3364341>

⁹⁵ European Union Directive 94/62/EC on packaging and packaging waste.

may result in less virgin materials required for production. However, the key will be the development and implementation of material- and packaging-specific design rules, that should keep in mind environmental objectives as well as considerations of economies of scale.

With the right price structures and obligation mandates for producers, the current EPR framework may incentivise the redesign of a producer's plastic packaging to optimise it for easier and more efficient recycling. This can include materials used, material composition, packaging shape and structure as well as labelling. The increase in reusability and recyclability will be important for producers to minimise environmental impacts and allow easier collection and processing of their recovered packaging. In Chile's EPR regulations, producers must follow the European Union Directive on Packaging and Packaging Waste because of economies of scale. If Mozambique considers implementing packaging design rules, it must also do so with economies of scale in mind. As such, it should follow design guidelines from Europe or North America since producers will be wary of designing packaging specifically for the country of Mozambique. Mozambique will also need to have consultations with producers to find consensus on packaging design guidelines.

6.3 Consumers

To transition towards a circular economy, consumer behaviours are key to ensuring that products are disposed of and recycled properly and in environmentally sound ways. Consumers purchase, use, and decide how they manage the end-of-life of plastic products and packaging. The success of Mozambique's EPR system will rely on consumer behaviour and decision making during these stages. An example of the importance of consumer behaviour is the CBCRA programme in Manitoba, Canada. CBCRA's successful EPR programme places emphasis on the convenience of recycling bin infrastructure, there are more than 70,000 bins in schools, parks, businesses, communities, and municipalities across Manitoba. Also, over 200,000 at-home recycling bins were given out to consumers' households. The convenience of finding a recycling bin, with the addition of massive advertising campaigns, informational stickers on the bins, and strong cooperation with waste operators and municipalities, has ensured that collection and processing at MRFs operate in a way that gets plastic packaging recycled. Such a system is relatively low cost and provides significant litter reduction, otherwise only achieved through deposit systems.

Producers will pass additional costs created by EPR obligations along to consumers through visible levies and other strategies such as container recycling fees (CRFs) and price integration (invisible fees). Ultimately, the consumer pays, but thanks to producers' interest in not overpricing their own products, this cost pass-through is more desirable than heavy government taxation or a situation when consumers do not pay. EPR systems lead to price increases on the plastic products and packaging those consumers purchase. The increases are often minimal (0.25% to 1.5% of price per packaging item) but there may be beneficial results from these increases. Consumers can choose to re-use plastic products, lower their disposal rates, and have greater environmental awareness which leads to better decision-making.⁹⁶

An effective collection or take-back infrastructure can increase consumer recycling behaviour because of the convenient locations of the recycling bins, and educational campaigns informing the consumers about how and what to recycle. Furthermore, financial incentive schemes such as deposit-return systems can influence consumer behaviours and can lead to the adoption of better waste disposal practices for end-of-life plastic products and packaging.⁹⁷ Under such a system, consumers pay a refundable fee of 5-10% of the product's value upon purchase. The refund is then executed when the emptied product (beverage container) is returned to an authorised collection point such as a store or a bottle depot. British Columbia is effectively making use of collection points, particularly for beverage containers. Both jurisdiction's EPR systems use kerbside collection as well as collection points depending on citizen's preferences (some like the convenience of at-home disposal, other consumers like collection points, including for bottle deposit redemption). A decision on how to implement

⁹⁶ <https://www.sciencedirect.com/science/article/pii/S2590289X20300062>

⁹⁷ <https://www.sciencedirect.com/science/article/pii/S2590289X20300062>

Mozambique's EPR framework could be informed by an assessment of how the public would react to a convenient take-back infrastructure, educational campaigns, and financial incentive schemes such as deposit-return systems.

6.4 Informal sector

Under an EPR system, Mozambique's informal waste collectors would need to be recognised, and to be integrated with objectives and recycling targets under the EPR system. They could be given defined responsibilities and roles (e.g., collection of specific materials or areas, sorting duties and targets). These changes to how they operate will affect their behaviours and the way that they will do business in the informal waste sector. Catadores and other civil society actors (NGOs, etc.) would need to form associations, or work with advocates to ensure that EPR frameworks include their profession as an official trade, and will not interfere with their livelihood and income.⁹⁸ The formal recognition of waste collectors as a trade, and the integration of informal waste collectors into the country's waste management systems, will ensure that catadores have a greater part in decision making, in signing contracts, arguing for fair commodity pricing, and other rights that must be respected under an EPR framework for Mozambique.

6.5 Waste & recycling operators

Historically, waste collection in major cities such as Maputo was considered an emergency service with very limited funding and resources. Currently, local waste and recycling operators across local municipalities in Mozambique are still not adequately staffed or funded, operate without sufficient infrastructure for proper solid waste management, lack governance, and rarely adhere to the country's environmental laws and regulations.⁹⁹ The consequences of these deficiencies result in plastic leakage from the environment, or from unsanitary dumpsites, which eventually find their way to waterways and the ocean. There are communication disconnects between the municipal governments in Mozambique and the solid waste management providers who are serving the communities. The consequences from these breakdowns in communication have caused discrepancies in the roles of enforcement of the country's waste regulations. It is recommended that all parties who are part of Mozambique's solid waste management systems participate in consultations, and define each department's responsibilities, tasks, and duties of their particular role. To complicate matters further, many of the resource constraints are due to the limited municipal tax base, as it is historically not common practice to take tax payments in Mozambique.¹⁰⁰ However, according to key experts in Mozambique, the country's citizens are now becoming more used to paying waste fees and other taxes that have been introduced.

The effectiveness and success of Mozambique's EPR system depends on a functioning waste management system. Government lobbying, grass roots advocacy and business partnerships with municipal authorities are needed, along with creating better public education and awareness for consumers. Waste operators must increase their capacity to effectively manage waste collection, transportation, and material recovery.¹⁰¹ EPR systems do help reduce local government costs, as municipalities do not have to pay for the management of plastic recyclables. These cost reductions would allow Mozambique's cities and municipalities to invest in better waste infrastructures and assist in the increased capacity of their municipal waste operators. The freed-up funding could also be used to invest in other municipal initiatives.

⁹⁸ https://www.world-psi.org/sites/default/files/documents/research/waste_management_in_africa_2018_final_dc_without_highlights_2019.pdf

⁹⁹ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

¹⁰⁰ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

¹⁰¹ <https://journals.sagepub.com/doi/full/10.1177/0956247818780090>

7 Potential outcomes of EPR implementation for Mozambique

7.1 Outcomes and targets

An EPR system for plastic products and packaging will create environmental, economic, and societal outcomes for Mozambique. Carefully designed EPR frameworks can encourage action towards targets for reducing plastic pollution and recycling. While no existing EPR system is perfect, and while an accurate prediction of all possible results from an EPR system is difficult, there are likely to be positive and negative outcomes. This section highlights some of these potential outcomes.

7.1.1 Positive outcomes

Increased collection and recycling

Collection bins and physical infrastructure exists in Mozambique, but the resources dedicated to the recovery process are very limited. Canada's CBCRA has utilised a large widespread bin system as an integral part of their increased collection and recycling. The convenience of public space bins and at-home recycling improved their recovery process. Utilising the recycling bins that currently exist in Maputo and other cities would enhance convenience for consumers to recycle plastic waste into the collection infrastructure. This increase in collection and recycling will reduce disposal at dumpsites and would result in a significant reduction in plastic leakage entering the marine environment. Most notably, greater diversion and recycling will keep materials out of landfills, which can leak into waterways and eventually, the ocean. It reduces the pressure on sanitary and unsanitary landfills.

Better waste handling practices

According to key experts, Mozambique does not have sanitary landfills in operation in the major municipalities. Plastic waste is disposed of in unsanitary dumpsites, or left discarded in the environment. Implementing an EPR system creates the opportunity to build intermediary infrastructure such as Material Recovery Facilities (MRFs) and sanitary landfills, increasing recovery rates and reducing plastic leakage into the marine environment. While the plastic packaging management can be funded and operated by industry, landfills and/or disposal options organised by government remain a key aspect to avoiding further leakage into the sea. First, even well-operating EPR systems do not divert all waste, so that residue waste after sorting needs to be managed. Second, an EPR system can help alleviate financial pressure on the public sector, that can then use the additional resources to develop disposal options. An EPR system would also encourage sorting and separation of waste at the source, reducing contamination and therefore enabling formal and informal waste collection to be more efficient and effective. It is recommended that during consultations, it would be decided whether producers individually or collectively should manage the waste, and whether they do so on their own or together with municipalities.

Positive consumer attitudes and increased education

Many EPR frameworks include obligations for producers to design and pay for any public information campaigns needed to raise awareness of the system. These public education campaigns provide consumers with information and awareness towards environmental pollution issues, and better waste handling practices at the source. These pro-active education and awareness campaigns can be used as part of a consumer compliance initiative that will increase the demand for environmentally-friendly packaging, and help to inform consumers on how to make better recycling decisions.¹⁰² An education campaign can include a variety of tools, notably marketing/advertising through various channels, information provided directly on waste infrastructure (bins), instructions included with products/packaging and in-person outreach by EPR actors and/or the government.

¹⁰² <https://www.oecd.org/environment/waste/Global%20Forum%20Tokyo%20Issues%20Paper%2030-5-2014.pdf>

Reduced financial burden on public budgets

Mozambique's monetary resources are limited, and there is a major push for investment capital from the international community to help finance their waste management systems. Introduction of an EPR system would shift some of that financial burden from the country's public budgets to the producers and importers. Using net costs for municipal involvement would ease the burden on regional governments and municipalities, potentially increasing the effectiveness of collection and recycling. The Netherlands EPR system is a collaborative system that requires producers to register their tonnages and track accordingly and pay a tax on that tonnage and material type. The environmental packaging tax scheme would add some resources to municipal budgets, again reducing the financial burden.

7.1.2 Negative outcomes

Increase in prices

Price increases are always a potential outcome when implementing producer responsibility policies. Many EPR frameworks require producers to redesign packaging and manage the packaging through its life-cycle.¹⁰³ These requirements add cost to the producers, who often pass these along to the consumer to absorb and often in the form of increases in the price of packaged goods. This price increase could disproportionately affect low-income households in poorer areas of Mozambique and may discourage these consumers from buying environmentally-friendly products.¹⁰⁴ If opportunities to pass costs on to consumers is limited, many producers will not be inspired to make changes that will significantly impact their financial profits.

Conflict with informal waste sector

Mozambique's large informal waste sector can directly impact the success or failure of an EPR system for plastic products and packaging. Using Chile's EPR framework as a best practices example, Mozambique should mitigate any conflicts by inclusion of the informal waste sector in consultations. These consultations should be held throughout the various stages during the process of developing regulations. This is important to ensure participation and proper inclusion.

A stepped approach would ease Mozambique's informal waste collectors into the EPR system and ensure adoption. The informal waste collectors have an important role in the collection and recovery of plastic, and failure to include the informal waste sector into the EPR framework would destabilize the system.

There are challenges to integrating Mozambique's catadores, as many of the workers do not have identification or formal education. The need to register and organise catadores may cause conflict with and within the informal waste sector, and government will need to be actively engaged in discussions with advocates when drafting EPR legislation.

¹⁰³ <https://resource-recycling.com/recycling/2020/10/20/in-our-opinion-how-epr-program-design-impacts-costs/>

¹⁰⁴ <https://www.bcny.org/news/direct-impact-study-shows-least-800-million-cost-proposed-extended-producer-responsibility-act>

8 Roadmap to EPR in Mozambique

An IUCN webinar,¹⁰⁵ co-hosted by the Ministry of Sea, Inland Waters and Fisheries, brought a consensus from all parties that EPR was the most appropriate legal tool to tackle marine plastic pollution. To help facilitate this decision to implement the current EPR framework in Mozambique, a high-level implementation roadmap is outlined to provide a potential path to implementation, including recommendations on how to organise around an EPR framework. RSE is prepared to expand on the development of this roadmap in much greater detail, focusing on legal/regulatory and organisational needs specific to Mozambique.

8.1 Feasibility of EPR

When looking to create a roadmap to implement an EPR system in Mozambique, one must identify and present existing barriers in policy, infrastructure, technology, and economical resources. A gap analysis was performed, and a list of barriers were created that would influence the effectiveness of an EPR system.

These barriers include:

- Weak government enforcement and oversight of environmental regulations
- Municipalities have no means to apply the laws
- Disconnect between national and regional governments
- Minimal financial resources for waste management
- Lack of transparency with funding
- No sanitary landfills or MRFs, which causes leakage into the marine environment
- Only 50% of waste is being collected in Maputo
- Disorganised informal waste sector
- Taxation system (35% value added tax on recycled plastics) deters buyers of plastic waste
- Lack of intermediaries to buy, process and sell plastic to end-markets
- Plastic end-markets are not in Mozambique, all plastics are exported during buying season - when it is not buying season, no collection is done.

The design and implementation of Mozambique's EPR framework based on existing legislation and decrees is crucial to its success. The above barriers must be considered during the design, and the participation and engagement of important stakeholders is necessary to draft an inclusive framework.¹⁰⁶ EPR systems cannot be run by the private sector alone, and there will be a need for the system to be complemented by a wider set of institutional regulations, enforcement, industry action and consistent innovation of packaging design.¹⁰⁷

8.2 Phases and timeline

We recommend the development of a roadmap towards implementation of EPR in Mozambique. Essential steps for this are adequate scoping of the existing EPR framework, intensive consultation with

¹⁰⁵ Webinar report: the legal, policy and institutional frameworks governing marine plastics in Mozambique exchange of perspectives to define priorities. Available at:

https://www.iucn.org/sites/dev/files/content/documents/webinar_report_mozambique_en_05112020.pdf

¹⁰⁶ <https://www.cssalliance.ca/what-is-epr-and-why-is-it-important/>

¹⁰⁷ <https://plastics.ellenmacarthurfoundation.org/epr>

all stakeholders, including informal workers, and the piloting of solutions, potentially while legislation and regulation is being implemented.



Phase 1 – Scoping and analysis of infrastructure (6 months)

The scoping phase will help to develop the topics and agendas of the consulting phase and outline an initial vision of the scope, timeline and implementation of Mozambique’s EPR system based on the existing decrees. This scoping exercise should also identify all the key actors and stakeholders needed to implement a full EPR system and performance analysis of Mozambique’s waste infrastructure is needed, identifying the risks and gaps that need to be addressed.

Phase 2 – Consultation (4-6 months)

In the second phase, we recommend consulting with all the key actors in the waste management sector. These key actors include producers, consumers, waste operators, informal sector, academia, NGO sector, and regulatory authorities. The objectives of the consultations are to create a framework needed for an EPR system.

The consultations would strengthen communication and trust between national and municipal governments and between public sector and private sector actors, citizens, and formal and informal waste operators during engagements. Consultations can help frame roles regarding the regulation, oversight and of the waste system overall.

In the consultation phase, engagement with the catadores and the informal waste sector would be an asset. The inclusion of the catadores is important as much of the waste separation and recycling is done by the informal sector. There are challenges to consulting with Mozambique’s catadores, which need to be considered, as many of the workers do not have identification or formal education.

Phase 3 - Implementation of EPR legislation and existing regulations (1-3 years)

The third phase is the implementation of Mozambique’s EPR legislation and existing regulations. Mozambique’s *Decree 79/2017, of 28 December 2017, the Regulation on the Extended Responsibility of Producers and Importers of Packaging*. Packaging producers and importers were supposed to assume their responsibility through the following: Setup of a PRO, Packaging Environmental Fee System, and a Packaging Standardisation System. However, currently there has been only implementation of the Packaging Environmental Fee System.

While the existing framework (decree) provides the right legal foundation for an EPR system, the detailed functioning of the system, including the mandate(s) of Producer Responsibility Organisations, development of producer inventories/memberships, PRO management systems, budgets and targets (by PRO or by materials), needs further development. We recommend that producers be tasked with this, while the government ensures that producers adhere to the targets, including a set schedule for beginning to operate in an EPR system. Some capacity building inside government institutions and municipalities may also be required. This PRO/EPR system development phase should be based on the results of stakeholder engagement within the boundaries of the regulatory framework.

The implementation of the remaining EPR framework will require strong municipal government involvement to ensure fairness in the private sector, enforce the obligations of producers, and to set environmental standards and targets. Implementing the full regulations will send important signals to waste operators to build intermediaries such as Material Recovery Facilities and sanitary landfills. These developments will be driven by market needs.

The implementation process of Mozambique's EPR framework should include:

- Definitions of producers, consumers, EPR organisations, waste operators and their roles
- Materials covered by the framework (i.e. to which EPR is to apply)
- Targets for recovery and/or recycling of obligated materials
- Collection, sorting and management standards for obligated materials.
- Reporting requirements for all actors in the system
- Enforcement and penalty requirements for non-compliance
- Promotion and education requirements
- Capacity development for public institutions (i.e. on how to monitor and enforce the decree).

The new EPR framework should enable informal workers to form an integral part of the waste management process through a regulation process. The EPR framework should contain a *stepped-certification* process which would help catadores integrate into the waste management system in a phased approach.

Phase 4 - Pilot PRO options in Maputo (1 year)

Decree 79/2017 has established two forms of Producer Responsibility Organisations, direct and indirect management systems.¹⁰⁸ We recommend that voluntary pilot projects with key waste actors simulate different collection, communication, and recyclables management methods and systems be tested, preferably in the city of Maputo. Piloting both PRO options will give an opportunity to assess kerbside/blue box, and the deposit return programme's effectiveness.

Collection infrastructure exists in Maputo, with bins and collection carts available. However, Maputo will need to create more recycling intermediaries to buy plastic waste, processing and selling it to end-markets during the pilot phase. The small existing recycling schemes (3R/AMOR) in Maputo are not enough to create a circular economy for plastic packaging and will not further decrease plastic marine pollution.

During the pilot stage, the informal waste sector participation could be tested. At this phase, municipal collectors and catadores would continue to work in parallel, but the catadores should be regulated. These regulations should include the establishment of plastic recovery objectives and targets, and a better system for commercial transactions.

Phase 5 – National EPR Implementation (4-5 years from now)

The final phase is the national implementation of the EPR system based on the experiences learned in the other phases and the regulatory framework that was developed. Tapping into end-markets (local and international) will be important to ensure year-round recycling and processing and opening the door to better commodity prices. Full inclusion of other priority products to join with plastic would create economies of scale and increase end-markets for exporting materials.

8.3 Steps towards a circular economy in Mozambique

Summary of Recommendations

1. Producers need to be involved early in the development of the legal and operational ramifications. The government should establish a formal consultation mechanism with industry, NGO and external

¹⁰⁸ <https://www.mta.gov.mz/en/ambiente/gestao-de-residuos-solidos/>

experts to implement the existing EPR framework best suited to Mozambique's needs and one that has full industry support.

2. Confirm whether producers individually or collectively should manage the waste, and whether they do so on their own or together with municipalities.
3. All stakeholders must clearly define their roles regarding their legal obligations and responsibilities.
4. Mozambique's existing EPR framework must consider the informal waste sector; the organisation, behavior and number of catadores in Mozambique must be surveyed. This should include identifying an approximate number of informal workers, how and whether they are organised, which materials they handle and in which volumes, and the waste material flows through the system. The informal sector should be assigned targets and roles that support the EPR material goals.
5. The current value added tax on purchases of plastic waste should be removed to help the integration of the informal waste sector into an EPR system. Taxation should only follow when the EPR system and the informal waste collectors are functioning well.
6. The EPR framework must include improvements to Mozambique's waste infrastructure, including organising collection, and the construction of new waste intermediaries such as Material Recovery Facilities and landfills.
7. Utilise the existing waste bins in Maputo and other cities, and convert them into recycling bins for collection, increasing convenience to consumers.
8. Implement better management of residue waste after sorting; even well-operating EPR systems do not divert all waste.
9. EPR systems will help to alleviate financial pressures on the public sector, use the freed up additional resources to develop improved disposal options.
10. Explore and engage donor programmes for required financial support and find champions of EPR systems to increase interest and investment from Mozambique's producers and importers.
11. Develop and implement Mozambique-specific public education campaigns to provide consumers with information and awareness towards environmental pollution issues, and better waste handling practices at the source.

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