SEA-MaP

REGIONAL GUIDEBOOK ON

FINANCIAL MECHANISMS FOR INVESTMENTS IN PLASTIC WASTE MANAGEMENT



An ASEAN project supported by the World Bank

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LIST OF ACRONYMS

Acronym	Expanded Form
ABN	Amandina Bumi Nusantara
ADB	Asian Development Bank
AMS	ASEAN Member State(s)
ASEAN	Association of Southeast Asian Nations
BPOM	[Translation] Drug and Food Control Agency (Indonesia)
CAPEX	Capital Expenditure
CCEP	Coca-Cola Europacific Partners
DRS	Deposit Refund Scheme
EPR	Extended Producer Responsibility
ESG	Environmental, Social, and Governance
EU	European Union
FMCG	Fast-Moving Consumer Goods
FX	Foreign Exchange
IDR	Indonesian Rupiah
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
IVL	Indorama Ventures
JV	Joint-Venture
KPI	Key Performance Indicator
LGU	Local Government Unit
LAR	Landscape Analysis Report
MoEF	Ministry of Environment and Forestry (Indonesia)
MRF	Materials Recovery Facility
MRV	Monitoring, Reporting and Verification
MSMEs	Micro, Small and Medium Enterprises
NEA	National Environment Agency (Singapore)
NGOs	Non-governmental Organizations
OPEX	Operating Expenditure
PET	Polyethylene Terephthalate
PLN	Perusahaan Listrik Negara
PPE	Personal Protective Equipment
PPP	Public-Private Partnership
PWM	Plastic Waste Management
rPET	Recycled Polyethylene Terephthalate
SEA	South-East Asia
SGD	Singapore Dollar
UNOPS	United Nations Office for Project Services
USD	United States Dollar
VND	Viet Nam Dong
WtE	Waste-to-Energy

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EXECUTIVE SUMMARY

Managing plastic waste is a region-wide priority across ASEAN, with strong policy momentum and growing investments in national strategies, regulations, and partnerships. As ASEAN Member States (AMS) work to advance collection, recycling, treatment, and broader circular-economy outcomes, a key gap often arises in determining how to mobilize financing that is suited to different initiative types, implementation conditions, and institutional arrangements.

This Guidebook is designed to help address that gap. Developed in alignment with Action 1 of the ASEAN Regional Action Plan for Combating Marine Debris, it provides policymakers and practitioners with a structured, evidence-based approach for selecting and implementing financial mechanisms for Plastic Waste Management (PWM) that are feasible, inclusive, and well-aligned to national and local contexts.

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THE GUIDEBOOK BRINGS TOGETHER THREE CORE ELEMENTS

A **principles-based lens** synthesizes **seven Guiding Principles** and explains how they shape mechanism design and selection:

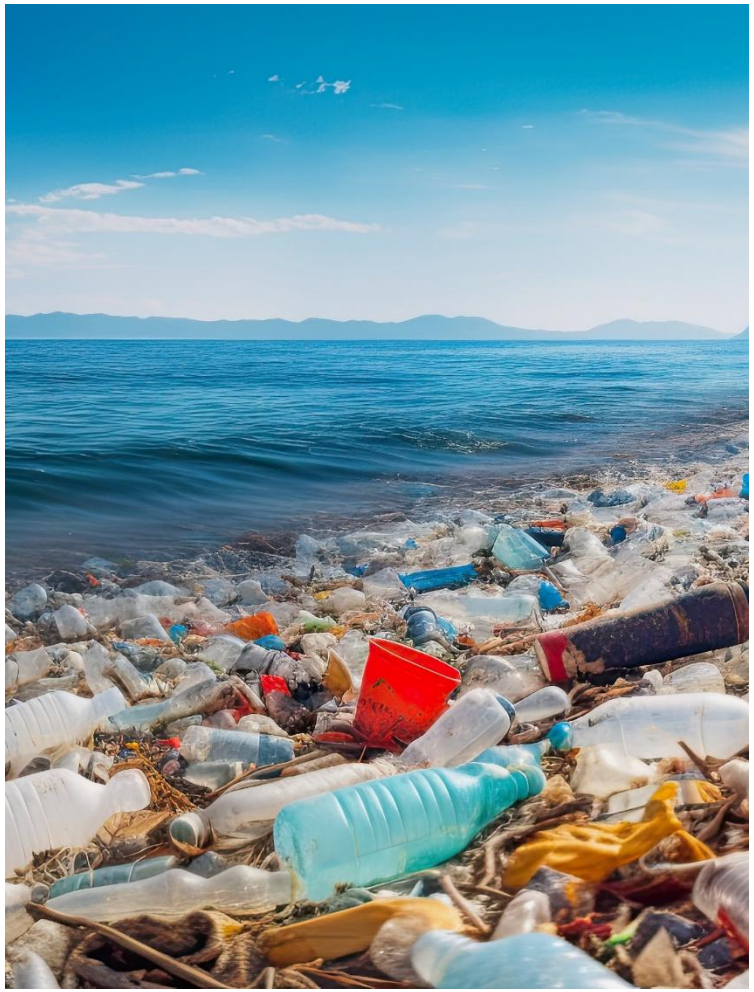
- **Function-Fit**
- **Contextual Relevance**
- **Complementarity**
- **Inclusivity**
- **Measurability and Transparency**
- **Policy Synchronization**
- **Resilience and Sustainability**

A **six-step Roadmap** translates those principles into a practical sequence of actions—from assembling the right institutions, to assessing initiative characteristics and readiness conditions, to stakeholder engagement, mechanism selection, and long-term monitoring and adaptive management. Inputs gathered along the Roadmap feed into the **Step 5 Mechanism Navigator Tool**, which generates a tailored shortlist of suitable financial mechanisms.

Knowledge Base of Good Practices and Case Studies—including worksheets, checklists, and process tools—that operationalize the Roadmap and support structured, repeatable analysis. These are complemented by **a cross-cutting Knowledge Base of case studies**, which illustrates how different financial mechanisms operate in practice and may be consulted at any stage to ground decision-making in real-world experience across ASEAN.

Together, these elements guide policymakers through a coherent and practical process. The steps help users diagnose the nature of the initiative, identify enabling and regulatory conditions that influence mechanism feasibility, validate assumptions with stakeholders, and ultimately derive a tailored shortlist of financing options using the Mechanism Navigator Tool. The approach supports informed, transparent decision-making and enables the Guidebook to be adapted across different scales, institutional capacities, and implementation environments.

By combining Guiding Principles, a practical Roadmap, applied tools, and illustrative case studies, the Guidebook serves as an integrated resource to support AMS in strengthening financing pathways for PWM and advancing long-term circular-economy objectives across the region.



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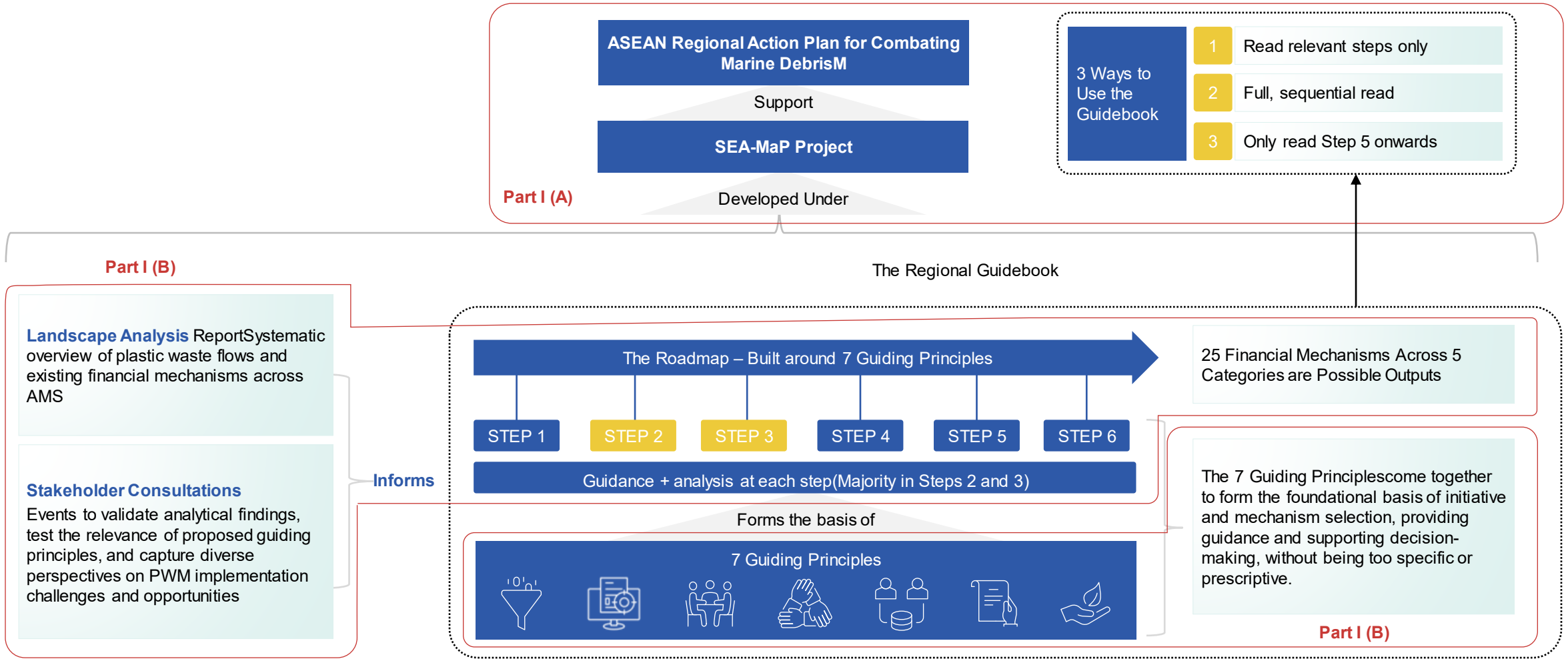
REGIONAL GUIDEBOOK



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PART I: INTRODUCTION

Figure 1: Overview of Guidebook Background, Usage and Methodological Approach



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PART I (A): GUIDEBOOK BACKGROUND AND STRUCTURE

A1 BACKGROUND

Plastic waste has emerged as a critical environmental, social, and economic challenge across the ASEAN region. Rapid urbanization, rising consumption, and downstream waste management capacity constraints have contributed to increasing volumes of plastic waste entering terrestrial and marine ecosystems. In response, AMS have strengthened policy frameworks, introduced new regulatory measures, and expanded regional cooperation to support more effective PWM systems.

To build on this momentum, the ASEAN Regional Action Plan for Combating Marine Debris, particularly Action 1[1], calls for the development of practical guidance to help countries mobilize investment for PWM initiatives. This is supported by the Southeast Asia Regional Program on Combating Marine Plastics (SEA-MaP) through the strengthening of the financial underpinnings needed to reduce plastic leakage, increase recycling rates and advance circular economy outcomes.

The Regional Guidebook on Financial Mechanisms for Investments in Plastic Waste Management (hereafter referred to as 'the Guidebook') was developed in alignment with the ASEAN Regional Action Plan to address the need for clear, structured support on financing options. Its primary purpose is to help AMS[2] identify how different financial mechanisms can be selected and applied to mobilize resources for PWM across the value chain. Rather than prescribing a single approach, the Guidebook outlines guiding principles, highlights good practices, and presents actionable pathways AMS can adapt to their national and local contexts.

At the national level, the Guidebook complements existing policy levers such as National Plastic Action Plans, solid waste management strategies and Extended Producer Responsibility (EPR) frameworks by providing a structured way to match financing approaches to policy objectives and implementation conditions.

The Guidebook is intended for policymakers responsible for finance, environment, and planning portfolios; Local Government Units (LGUs); and regional bodies engaged in policy coordination and program implementation. It is also relevant for development partners, financial institutions, private-sector actors, and civil society organizations involved in supporting or financing PWM initiatives.

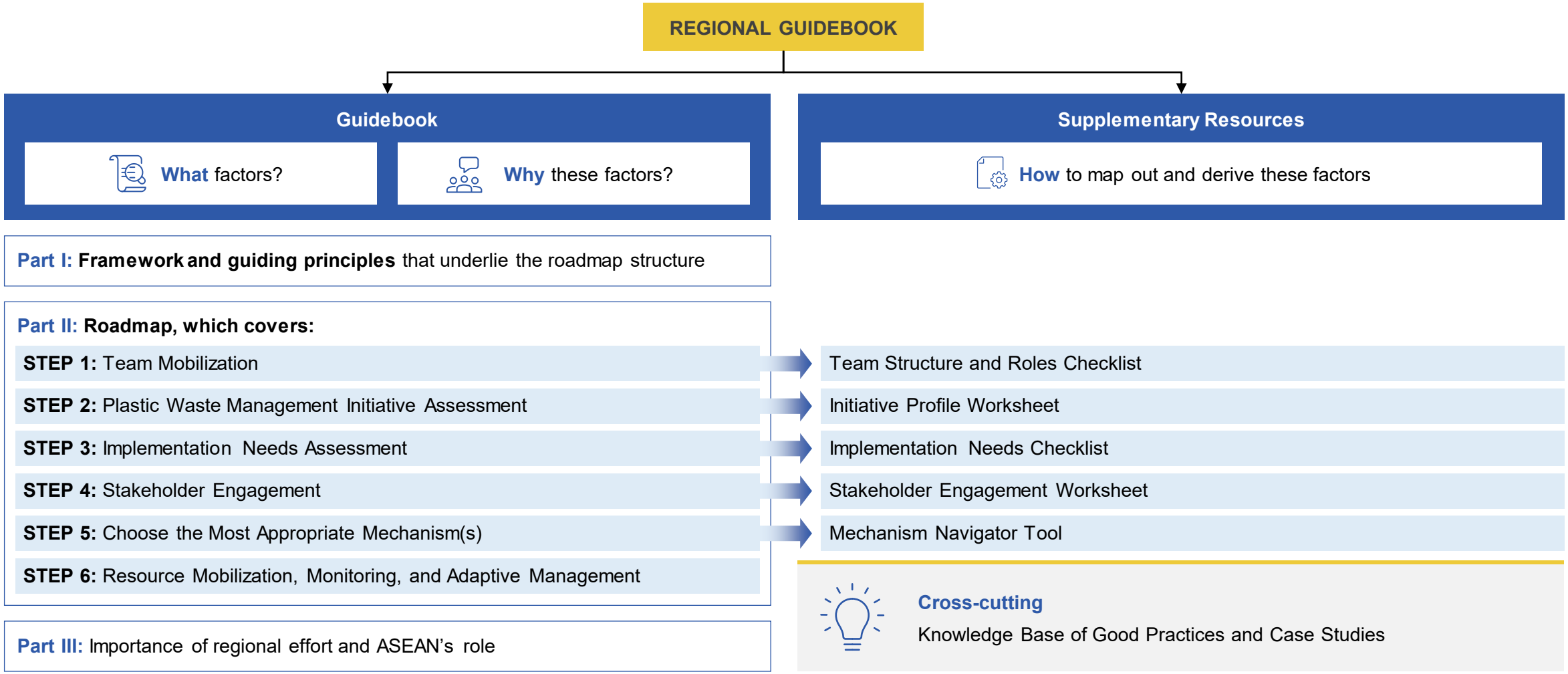
[1]Action 1: Regional Guidebook on financial mechanisms for investments in Plastic Waste Management; Action 2: Guiding Principles for phasing out select single-use plastics - ASEAN Regional Action Plan for COMBATING MARINE DEBRIS in the AMS (2021-2025)

[2]At the time of workstream preparation and scoping, the analytical scope was developed prior to the finalization of Timor-Leste's accession process to ASEAN. The Guidebook is nevertheless intended to remain broadly applicable across AMS, subject to country-specific adaptation based on national policy, institutional, and market contexts.



A2 OVERALL STRUCTURE OF THE GUIDEBOOK

Figure 2: Guidebook Structure Overview



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A2 OVERALL STRUCTURE OF THE GUIDEBOOK

The Guidebook is designed as a two-part package that supports policymakers in identifying, selecting, and implementing appropriate financial mechanisms for PWM (Figure 2).

The Regional Guidebook (this document) sets out the conceptual framework, principles, and a step-by-step Roadmap for decision-making. It explains the underlying logic, sequencing, and considerations that policymakers should apply when narrowing down a viable set of Financial Mechanism(s) aligned with their specific initiative characteristics and implementation context.

The Supplementary Resources provide supporting practical tools such as worksheets, checklists, case studies and navigational aids that operationalize the logic of the Regional Guidebook. These resources translate high-level guidance into real-world examples, structured questions and prompts, enabling users to apply the Roadmap to their own initiative and progressively refine their choice of financial mechanisms.

These are intended to be used iteratively: the Guidebook explains what to consider and why to consider, while the accompanying Supplementary Resources support how to do so in practice.

The Regional Guidebook is organized into three parts:

Part I

sets the foundation for the Guidebook. It explains the purpose and scope, describes the analytical approach, and introduces the cross-cutting principles for selecting and designing financial mechanisms that align with policy goals, capacity, and long-term sustainability.

Part II

presents the operational core of the Guidebook, guiding policymakers through a sequence of actions, from initial preparation through implementation and adaptation. Each step aligns with the Guiding Principles and builds the inputs needed for the Step 5 Mechanism Navigator Tool.

STEP 1	Team Mobilization
STEP 2	PWM Initiative Assessment
STEP 3	Implementation Needs Assessment
STEP 4	Stakeholder Engagement
STEP 5	Choose the Most Appropriate Mechanism(s)
STEP 6	Resource Mobilization, Monitoring, and Adaptive Management



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A2 OVERALL STRUCTURE OF THE GUIDEBOOK

Table 1: *Overview of Roadmap Steps*

STEP	MAIN ACTION	PRIMARY OUTCOME	SUPPLEMENTARY RESOURCES
STEP 1 Team Mobilization	Convene the right institutions and clarify who does what (policy, planning, research & data, finance, delivery/operations, monitoring & evaluation)	A functional, accountable team with defined roles and decision rights aligned to the funding task	Team Structure and Roles Checklist
STEP 2 PWM Initiative Assessment	Diagnose the initiative's risk, financial viability, scale, and funder type	A concise initiative profile that sets realistic funding boundaries	Initiative Profile Worksheet
STEP 3 Implementation Needs Assessment	Check external pre-requisites, enabling conditions, and safeguards	A readiness snapshot that shows what is important for specific funding options to be viable	Implementation Needs Checklist
STEP 4 Stakeholder Engagement	Engage key stakeholders to validate assessments derived from Step 2 and 3	Validated inputs for mechanism design and rollout	Stakeholder Engagement Worksheet
STEP 5 Choose the Most Appropriate Mechanism(s)	Synthesize Steps 1-4 and run the Step 5 Mechanism Navigator Tool to derive recommended Financial Mechanism(s)	A shortlist of feasible mechanisms tailored to the initiative	Mechanism Navigator Tool
STEP 6 Resource Mobilization, Monitoring & Adaptive Management	Close and document the financing package, set up Monitoring, Reporting and Verification (MRV), and define how you will adapt as conditions change	Signed funding arrangements, clear KPIs/MRV, and a plan for gradual reduction of concessional support	(No dedicated worksheet—use Step 6 guidance + Knowledge Base as needed)

Part III Positions the Guidebook within a broader regional context. It outlines how ASEAN can support Member States by strengthening knowledge exchange, promoting policy coherence, and complementing national efforts across the Roadmap.

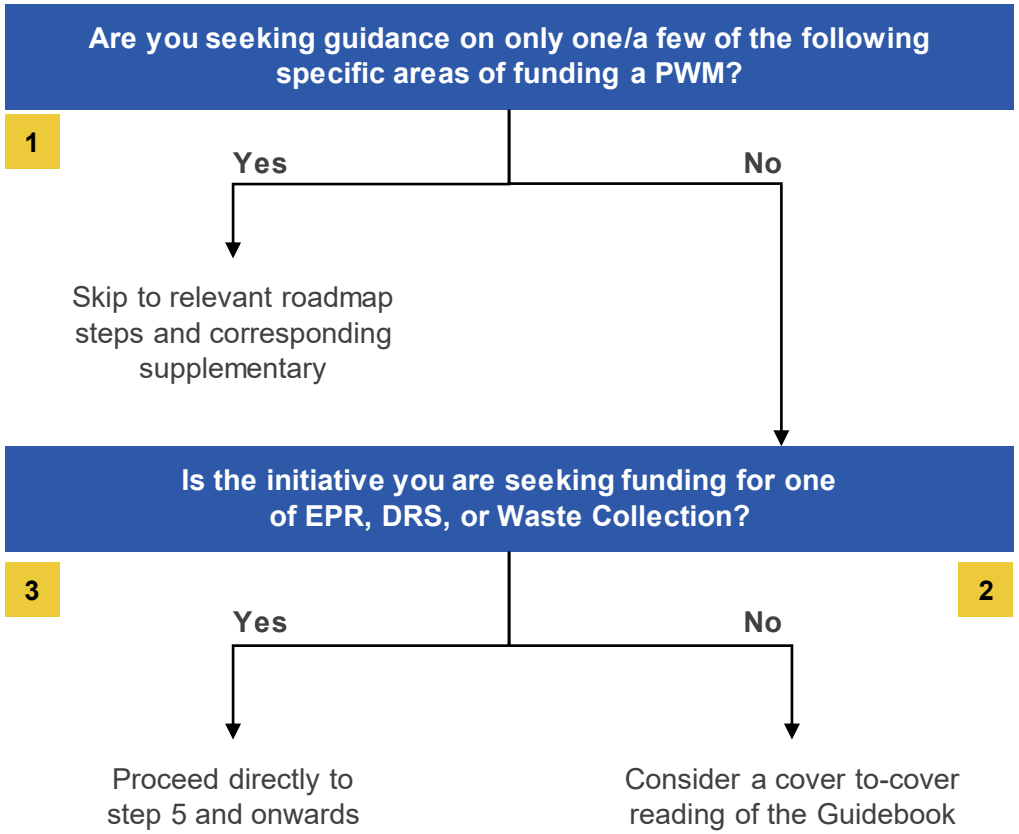
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A3 HOW TO USE THE GUIDEBOOK

The Guidebook is intended to be used as an integrated, step-by-step resource. Policymakers may consult it in full or draw upon specific parts depending on their needs and level of familiarity with PWM financing. Overall, there are 3 different pathways that policymakers can take when using the Guidebook: step specific use (Pathway 1); full, sequential use (Pathway 2); and Step 5 onwards use (Pathway 3).

Figure 3: *Different Pathways to Use the Guidebook*

WAYS TO USE THE GUIDEBOOK



SEEKING GUIDANCE FOR...	
Configuring a team for PWM funding	**STEP 1**
Understanding the influence of initiative characteristics on choice of financial mechanism(s)	**STEP 2**
Understanding the influence of external environment factors on choice of financial mechanism(s)	**STEP 3**
Stakeholder engagement to validate choice of financial mechanism(s)	**STEP 4**
Deriving a shortlist of financial mechanism(s)	**STEP 5**
Considerations related to the implementation and long-term performance of chosen financial mechanism(s)	**STEP 6**

3 Pathways to use guidebook

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A3 HOW TO USE THE GUIDEBOOK

THE 3 PATHWAYS IN WHICH POLICYMAKERS MAY USE THE GUIDEBOOK ARE DETAILED AS FOLLOWS

Pathway 1 STEP SPECIFIC USE

Policymakers who are already familiar with certain aspects of the process, may choose to skip directly to the relevant steps of the Roadmap and use only the corresponding supplementary resources. For example, if a Policymaker's PWM initiative is fully planned out, with a financial mechanism selected and they are only seeking guidance for stakeholder engagement, they may skip directly to Step 4 in the Roadmap, referring solely to it.

Pathway 2 FULL, SEQUENTIAL USE

Policymakers seeking a complete understanding of the decision-making approach may read the Regional Guidebook sequentially to understand the overall logic, principles, and decision-making framework. As they progress through **Part II (the Roadmap)**, they may complete the corresponding worksheets and checklists in the Supplementary Resources. These worksheets translate the concepts in the Regional Guidebook into structured inputs required for the **Step 5 Mechanism Navigator Tool**. When ready, they may activate the tool, enter their inputs, and receive a set of recommended Financial Mechanism(s) that are suited to their specific PWM context.

Step 5 Mechanism Navigator Tool

The Step 5 Mechanism Navigator Tool is a web-based decision support tool that takes structured inputs from the Steps 2 and 3 worksheets and generates a shortlist of financial mechanisms suited to a specific PWM initiative.

The tool opens with a short set of screener questions that allow policymakers to fast-track to a recommendation if they are working on one of three specific initiative types—EPR, DRS, or waste collection—or if they have a specific funding objective in mind, such as raising upfront capital, ensuring achievement of outcomes, or risk mitigation. Policymakers who answer "No" to the screener questions will proceed to the main input section.

The main input section presents a series of dropdown fields corresponding directly to the outputs of the Step 2 and Step 3 worksheets: initiative type, funder type, initiative scale, initiative risk, initiative financial viability, and external environment readiness across dimensions including institutional capacity, operational capacity, legal and regulatory readiness, market foundations, physical infrastructure, data and digital infrastructure, and safeguards. Policymakers who have not yet determined a particular input can select "I don't know". The tool will narrow the set of possible mechanisms based on what is known and leave open the dimensions that are not yet determined.

The possible mechanism(s) outputted by the tool come from 5 different categories of financial mechanisms: Financing Instruments, Fiscal and Economic Policy Instruments, Output-Oriented Instruments, Risk Mitigation Instruments, and Cross-cutting Instruments (see Figure 5). For each possible financial mechanism identified, a description of the mechanism is provided along with an example of its implementation in an AMS.

Using "I Don't Know" Responses
The Mechanism Navigator Tool is designed to operate even where some information is unavailable, and users may therefore select "I don't know" where they are unable to assess a particular input dimension. However, selecting "I don't know" for key inputs limits the tool's ability to distinguish between context-specific financing options, resulting in recommendations that are broader, less tailored, and potentially less useful for decision-making. Policymakers are therefore strongly encouraged to undertake further information gathering where feasible.



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A3 HOW TO USE THE GUIDEBOOK

Pathway 3 STEP 5 ONWARDS USE:

Policymakers who are seeking guidance on specific initiatives or outcomes, may choose to skip directly to Step 5 and beyond in the Roadmap. For instance:

If the focus is on one of the three specific initiatives that map directly to a designated financial mechanism, it is possible to proceed directly to Step 5 and onwards of the Roadmap:

EPR	DRS	Waste collection

In these cases, each of these mechanisms generate revenue streams that are ring-fenced for their intended purpose and not fungible (i.e., not available for reallocation to general spending):

- **EPR:** Where EPR fees are levied, the best practice is to dedicate those funds to EPR-related waste management activities to ensure transparency, infrastructure investment, and system credibility. ASEAN analysis highlights that the absence of ring-fenced EPR funding is a key barrier to effective implementation[3] .
- **DRS:** Revenues are generally non-fungible because the main funding sources are structurally linked to operating and improving the scheme itself. High-performing DRS can be financed through a combination of unredeemed deposits, revenues from the sale of collected container materials, and per-container producer (EPR-type) fees, all of which are reinvested to cover system costs and improve system efficiency rather than being used for unrelated purposes[4]. In Singapore's DRS design, this linkage is made explicit: beverage producers pay per-container fees to a licensed, not-for-profit scheme operator specifically to finance the collection and recycling of empty beverage containers, making the funding fully dedicated to scheme operation[5].
- **Waste collection:** For statutory waste collection fees, these are typically established as dedicated charges tied to specific service delivery (collection/management) rather than general government revenue, and local regulatory systems anchor them to waste management functions in statute or regulatory frameworks (e.g., pay-as-you-throw or utility bill charges in municipal systems).

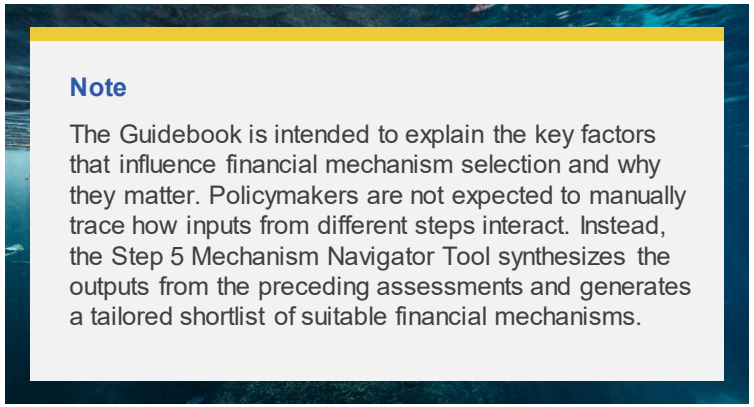
Because the revenue for these initiatives is dedicated and purpose-built, each maps directly to its corresponding financial mechanism.

Additionally, if the objective is to seek Financial Mechanism(s) for one of the following objectives, it is also possible to proceed directly to Step 5 of the Roadmap to obtain recommendations tailored for that purpose:

- **Upfront capital:** Mechanisms that provide capital for asset development or infrastructure investment
- **Achievement of specific outcomes:** Mechanisms that use results-based incentives or conditional payments.
- **Risk mitigation/sharing:** Mechanisms designed to protect or reassure private investors against project or revenue risk

In all other cases, Table 2 below (in B2) can be used to identify which initiative category the initiative under consideration falls within, in this Guidebook's framework. The remaining steps of the Roadmap can then be followed in sequence.

Overall, this Guidebook focuses on the key factors that influence a policymaker's choice of Financial Mechanism(s) selection for a PWM initiative. However, additional factors and explanatory pathways may also play an important role in practice. The analysis presented therefore reflects a structured and evidence-informed framing of the issue, rather than a complete representation of all possible considerations. Accordingly, the supplementary worksheets emphasize qualitative assessments and structured reflection and may require policymakers' informed judgment when deriving inputs for the Step 5 Mechanism Navigator Tool. Where decisions require a higher degree of precision, more detailed quantitative analysis should be undertaken separately by appropriately qualified professionals.



Note

The Guidebook is intended to explain the key factors that influence financial mechanism selection and why they matter. Policymakers are not expected to manually trace how inputs from different steps interact. Instead, the Step 5 Mechanism Navigator Tool synthesizes the outputs from the preceding assessments and generates a tailored shortlist of suitable financial mechanisms.

[3] From Waste to Wealth Advancing ASEAN's Circular Economy through EPR Alignment

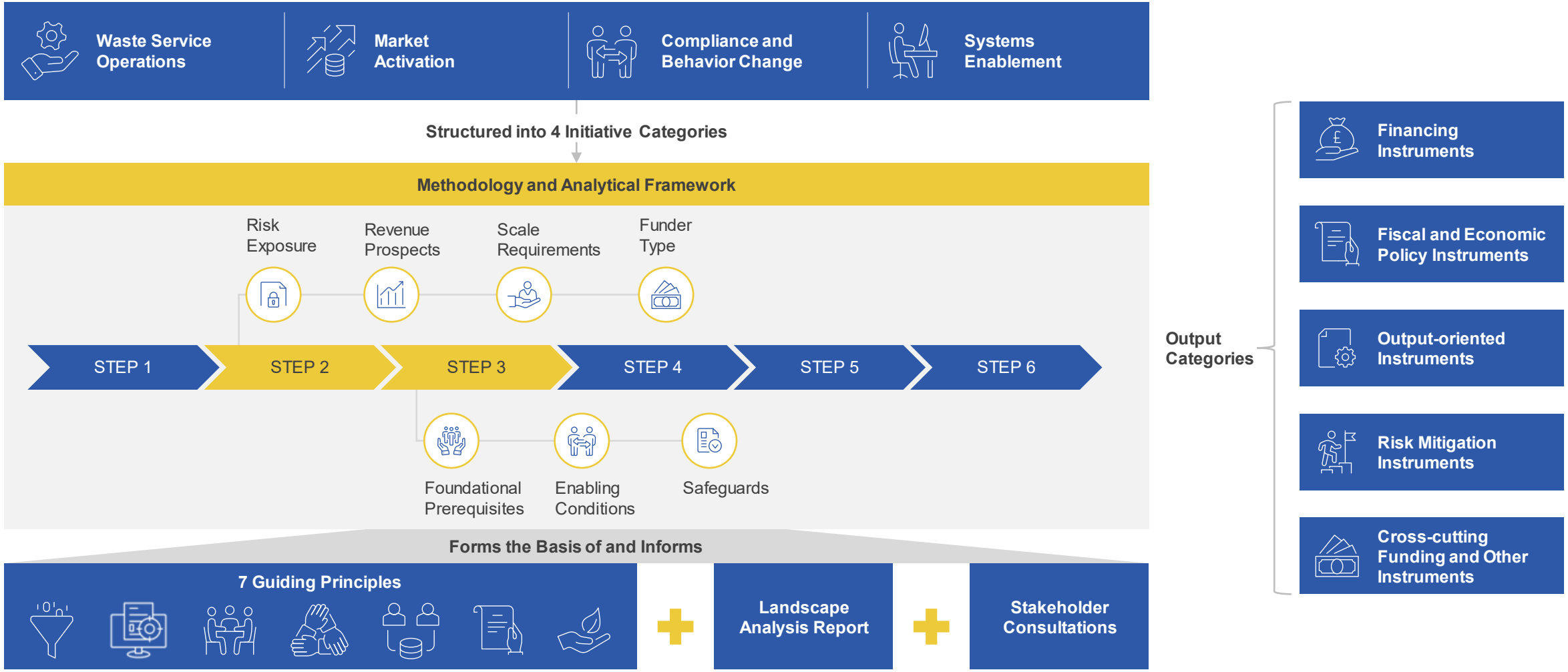
[4] Who pays for a deposit return system?

[5] Beverage Container Return Scheme

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PART I (B): METHODOLOGICAL APPROACH

Figure 4: *Overview of Methodological Approach*



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B1 BASIS AND ANALYTICAL FRAMEWORK

The Guidebook integrates analytical work, desk research and stakeholder engagement. This approach is designed to ensure that the guidance is grounded in regional realities, informed by existing practices and responsive to the needs of AMS.

A central input to the Guidebook is the **Landscape Analysis Report (LAR)**. The LAR provides a systematic overview of plastic waste flows and existing financial mechanisms across AMS. It includes stocktaking of financial mechanisms currently in use, assessment of their objectives and design features, analysis of enabling and constraining factors affecting implementation, and consideration of their environmental, economic and social impacts. Insights from this analysis form the empirical foundation for the Guiding Principles, typologies of financial mechanisms and illustrative examples presented in the Guidebook.

The financial mechanisms discussed in this Regional Guidebook and accompanying Supplementary Resources are outlined in Figure 5:



FINANCING INSTRUMENTS

Provides upfront capital for asset development

- Equity Investment
- Commercial Debt
- Grants/Subsidies
- Thematic Bonds (Green, Blue, Social and Sustainable Bonds)
- Mezzanine Finance
- Microfinance

FISCAL AND ECONOMIC POLICY INSTRUMENTS

Government-initiated schemes

- Extended Producer Responsibility (EPR)
- Levies, Taxes and Duties
- Deposit Refund Schemes (DRS)
- Waste Collection Fees (e.g., pay-as-you-throw fees, taxes)
- Debt-for-Nature swaps
- Policy and Regulations

OUTPUT-ORIENTED INSTRUMENTS

Interventions with results-based incentives

- Plastic Credits
- Outcome Bonds
- Sustainability-Linked Bonds
- Impact Financing
- Programs for Results (PforR)

RISK MITIGATION INSTRUMENTS

Schemes to protect investors from risks

- Financial Guarantees
- Financial Insurance Products

CROSS-CUTTING FUNDING AND OTHER INSTRUMENTS

Ways of structuring and channelling finances

- Blended financing
- Public-private-partnerships (PPPs)
- Dedicated environmental funds for waste management
- Crowdfunding
- Revolving Credit Facilities
- Joint Ventures

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B1 BASIS AND ANALYTICAL FRAMEWORK

In addition to the LAR, the development of the Guidebook has drawn on targeted desk review and analytical inputs. This includes a review of regional and national policy documents, development partner reports, academic literature, and relevant international experiences from comparable emerging markets and developing economy contexts. Where data gaps exist, proxy experiences from credible sources have been used on a best-efforts basis. These additional inputs help to situate the ASEAN experience within a broader global context and to highlight transferable lessons and emerging trends in funding PWM.

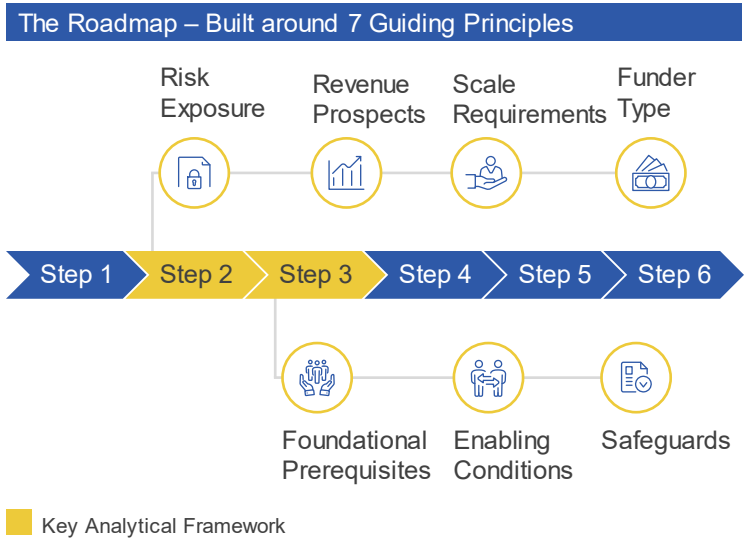


Stakeholder consultation is another core component of the methodology and has been embedded throughout the development process. Consultations have been conducted with a wide range of stakeholders, including representatives from ASEAN bodies, national and local governments, financial institutions, private sector actors, civil society organizations and experts with technical and contextual knowledge of PWM. These engagements have been used to validate analytical findings, test the relevance and practicality of proposed Guiding Principles, and capture diverse perspectives on implementation challenges and opportunities.

Key Analytical Framework within the Roadmap

As outlined in the introduction, Part II of the Guidebook presents a six-step Roadmap for selecting and implementing financial mechanisms for PWM. Steps 2 and 3 form the bulk of the analytical framework for mechanism selection in the Roadmap, as they supply the key inputs that feed directly into the Step 5 Mechanism Navigator Tool.

Figure 6: *Steps 2 and 3 Form the Key Analytical Framework of the Roadmap*



Specifically, determining appropriate financial mechanisms for complex development challenges such as PWM is widely treated in international finance practice as a context-dependent exercise, shaped jointly by the characteristics of the initiative and the conditions of the implementation environment.

Established frameworks for funding public-interest, real-economy investments with significant externalities (especially in the areas of environmental and blended finance) consistently emphasize the need to assess both dimensions in tandem when selecting feasible and effective financial mechanisms. PWM initiatives fall squarely within this category, typically involving capital-intensive infrastructure and service delivery, incomplete or uncertain revenue streams, and a reliance on public or blended sources of finance to mobilize private participation.

Within this integrated view, the **initiative's specific characteristics (Step 2)**—risk exposure, revenue prospects, scale requirements, and funder type—stand out as the key dimensions that consistently influence which categories of financial mechanisms are appropriate. Financial viability and risk are foundational because risk-return expectations are the primary criteria financiers use when evaluating whether to provide funding. Scale adds an additional, independent consideration: very small or very large initiative scales determine if certain financial structures are economically sound and justify additional complexity. Funder type similarly operates as a structural determinant, since different funders are institutionally constrained by funding mandates. These four dimensions capture the primary levers through which initiative characteristics influence the choice of financial mechanisms[6]. Other factors that may be commonly cited, such as technology maturity, policy support, and market development, either affect initiative suitability indirectly by shaping risk and financial viability or belong to the external environment rather than the initiative itself. As such, these four initiative-specific dimensions provide a sufficient set of criteria for an introductory-level assessment of which initiative-specific financial mechanisms are appropriate.

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B1 BASIS AND ANALYTICAL FRAMEWORK

AT THE SAME TIME, EXTERNAL ENVIRONMENTAL FACTORS (STEP 3) CLUSTER NATURALLY INTO THREE LAYERS

FOUNDATIONAL PREREQUISITES

Regulatory and legal conditions without which the initiative cannot be implemented

ENABLING CONDITIONS

A secondary layer that shapes initiative performance and, in turn, the range of feasible financial mechanisms

SAFEGUARDS

the final layer that defines the level of risk the system can safely absorb and determines the viability of outcome-based or risk-sharing funding approaches. This decomposition reflects international practice in infrastructure, environmental, and development finance that uses structured readiness assessments and enabling environment diagnostics to determine what financial mechanisms can be deployed and scaled[7].

The integrated approach thus constitutes a comprehensive introductory framework that aligns with international consensus on how initiative design interacts with the implementation environment to shape feasible and effective funding strategies.

[6]Scaling finance and investment for climate adaptation; Innovative Financial Instruments for the Mobilization of Private Sector Investment in Climate Change Mitigation and Adaptation in Developing Countries

[7]**Prerequisites (legal, regulatory, policy conditions):** International practice emphasizes assessing foundational policy frameworks and legal environments as necessary preconditions for investment mechanisms. Examples include the OECD Climate Adaptation Investment Framework and the UN Integrated National Financing Framework (INFF) Diagnostics, both of which explicitly guide countries to evaluate binding policy and institutional constraints that could prevent project implementation.

Enabling conditions (institutional capacity, operational readiness, markets): Structured readiness assessments and enabling environment diagnostics routinely consider institutional arrangements, operational readiness, coordination mechanisms, market infrastructure, and other factors that determine whether an initiative can function effectively. The OECD Climate Adaptation Investment Framework provides detailed guidance on these enabling factors, including governance structures, data systems, and market incentives.

Safeguards (risk capacity and protections): Environmental and social safeguards are treated as an additional layer that directly affects financial feasibility. Frameworks such as the International Finance Corporation (IFC) Performance Standards and the Equator Principles require investments to meet minimum environmental and social risk management standards.



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B2 INITIATIVE CATEGORIES

To support policymakers in navigating the wide range of PWM initiatives across ASEAN, we have classified the possible initiatives into four high-level categories that reflect their core characteristics, risk profiles, and typical returns. These categories are described in Table 2 below.

Table 2: *Initiative Categories*

1. WASTE SERVICE OPERATIONS	
Distinguishing Characteristics	Interventions that involve the development, improvement, or scaling of physical systems, infrastructure and operational services necessary to manage plastic waste across the value chain. These initiatives deliver tangible capacity in the stages of collection, sorting, treatment, recycling, recovery, or disposal.
Typical Risk Profile	Operational and demand-related risks arising from service delivery and resource management.
Typical Returns	Direct revenue linked to service provision, material recovery or recycling.
Examples	Construction or upgrading of MRFs, Expansion of municipal waste collection and segregation services, Development of plastic recycling or waste-to-energy facilities.
2. MARKET ACTIVATION	
Distinguishing Characteristics	These are commercial, financial or community-level activities that create value, revenue, or market incentives within the plastic waste ecosystem. They rely on business models, investment, market demand, and private or community actors to deliver plastic collection, recycling, processing, product innovation, or behavioral incentives, without directly providing services.
Typical Risk Profile	Exposure to market fluctuations, counterparty reliability, and price risks.
Typical Returns	Commercial returns from transactions, contracts, or value-added premiums, which may be indirect.
Examples	Plastic credit programmes that incentivize collection and recycling, Digital marketplaces connecting recyclers with buyers of recycled materials.

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3. COMPLIANCE & BEHAVIOR CHANGE	
Distinguishing Characteristics	These are government-led actions that use laws, regulations, standards, and economic instruments to shape behavior, assign obligations, and set system-wide rules for PWM and to reduce environmental impact. Outcomes are achieved through regulatory or social influence rather than operational output. **Upstream and prevention-oriented initiatives** This category can also cover upstream and prevention-oriented waste initiatives that aim to reduce plastic waste at source, including avoidance, reduced plastic use, reuse and refill models, material substitution, and behavior-change measures. Such initiatives are typically financed through public budgets, grants or subsidies, taxes and levies, or EPR[8]. While primarily focused on downstream waste-management interventions, the Mechanism Navigator Tool can support upstream initiatives where sufficient contextual inputs are provided. However, upstream financing pathways may require further tailored assessment as their financing considerations may differ from those of downstream projects.
Typical Risk Profile	Political risk and risk linked to policy shifts, enforcement effectiveness, and compliance levels.
Typical Returns	Non-commercial; benefits are systemic or societal rather than revenue-driven.
Examples	EPR schemes, DRS for beverage containers, Plastic bag levies or pay-as-you-throw waste charging systems.
4. SYSTEMS ENABLEMENT	
Distinguishing Characteristics	Measures that strengthen governance, planning, coordination, or information systems that specifically underpin the PWM sector.
Typical Risk Profile	Institutional, political, and implementation risks.
Typical Returns	Non-commercial; indirect benefits through improved system performance or efficiency; returns are not monetized.
Examples	National waste-tracking and reporting (MRV) platforms, Digital traceability systems for plastic waste flows, Capacity-building programmes for local governments and regulators.

[8] Financing Plastic Circularity in Asia and the Pacific: How to Overcome Market and Policy Challenges and Create Impact (ADB Brief 318)

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PART I (C): INTEGRATED PRINCIPLES FOR SELECTING FINANCIAL MECHANISMS

C1 PURPOSE AND STRUCTURE OF THE PRINCIPLES-BASED APPROACH

This Guidebook aims to provide Guiding Principles for the selection of financial mechanisms to mobilize investment into PWM. These principles were synthesized from analysis in the LAR to address common regional trends and patterns, as well as roadblocks and implementation gaps for funding PWM in ASEAN. Additionally, these principles were validated by AMS stakeholders for their relevance and importance to AMS contexts. The principles are not intended to be applied sequentially or in isolation. Instead, they operate as a multi-lens decision framework that helps policymakers narrow, adapt, and structure financial mechanisms based on their specific objectives and constraints.

Table 3 elaborates on each principle by explaining:

1	2	3
What the principle means in practice;	How the principle is already reflected in selected ASEAN experiences; and	How the principle could be more systematically applied going forward.

Key points from Table 3 have been summarized in Figure 7, to the right

C2 Elucidation of the Guiding Principles

Figure 7: *is no longer below the text, but to its right (Table 3)*

PRINCIPLE AND ITS DEFINITION	IMPLICATIONS FOR FINANCIAL MECHANISM SELECTION AND DESIGN
Function-Fit: Mechanisms perform well when applied to the purposes they are structurally designed for.	Mechanisms must be selected according to their intended functional role for initiative funding.
Contextual Relevance: The performance of financial mechanisms varies significantly depending on the contextual characteristics of each implementation setting.	Mechanisms must be adapted to the geographic, socioeconomic, political, and institutional realities of the implementation environment.
Complementarity: No single mechanism can meet all financing, behavior, operational, and risk-management needs.	Mechanisms should be combined so they reinforce each other across initiative phases.
Inclusivity: Financial mechanisms that do not account for vulnerable groups' constraints risk excluding key PWM actors in some AMS, compromising PWM system integrity.	Mechanisms must ensure maximized participation and benefit-sharing for stakeholders, especially vulnerable groups.
Measurability and Transparency: Mechanisms perform more effectively with clear performance metrics and transparent reporting, enabling stakeholders to assess key outcomes.	Mechanisms must be governed by clear KPIs, robust reporting, and verifiable data systems.
Policy Synchronization: Financial mechanisms deliver more consistent results when they are embedded within coherent policy and regulatory environments, rather than operating in isolation.	Mechanisms must align with existing policies, legal frameworks, and institutional roles to avoid conflict or inefficiency.
Resilience and Sustainability: Examples show that mechanisms are most effective when they support long-term system strengthening rather than short-term, one-off interventions.	Mechanisms should promote long-term system strengthening and be able to withstand market, policy, and operational shocks.

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C2 ELUCIDATION OF THE GUIDING PRINCIPLES

Table 3: *Guiding Principles*

1. FUNCTION-FIT	
Guiding Principle definition	Mechanisms must be selected according to their functional role within a specific policy or project context. This means aligning the financial mechanisms to its intended purpose, whether that is to mobilize capital, influence consumer behavior, incentivize innovation, or mitigate risk.
Rationale and evidence	Financial mechanisms perform best when aligned with their intended function—not when stretched across multiple or unrelated roles. • **Mobilizing capital:** Equity and debt can provide substantial upfront funding for capital-intensive assets, as demonstrated by recycling infrastructure projects in Thailand. • **Shaping behavior:** Fiscal and economic instruments (such as taxes and levies) are more effective in affecting producer and consumer choices rather than supplying investable capital. • **Linking incentives to results:** Outcome-based mechanisms work best when payments are tied to clear, measurable results. Mechanism selection should therefore begin with the financial function required—such as capital mobilization, behavior change or outcome-linked incentives—rather than treating different mechanisms as interchangeable.
Examples from AMS	Refer to **Annex A: Knowledge Base of Good Practices and Case Studies, Case Study A, PT Amandina Bumi Nusantara (ABN) bottle-to-bottle Polyethylene Terephthalate (PET) recycling facility—Indonesia.** The facility cost 556.2 billion IDR, and was financed by an equity investment, a mechanism highly suitable for the large capital injections typically needed for large-scale PWM infrastructures.
Applicability across AMS	Policymakers can apply the Function–Fit principle by aligning mechanisms with the nature of funding needed, system maturity, and value chain needs. For example, where the financial need is to shape incentives or influence consumption and production choices, AMS can prioritize fiscal and economic instruments, such as EPR fees or levies, which have been identified as effective in shifting behavior rather than supplying investable capital. By systematically matching mechanism functions with country-specific financial needs, based on contextual relevance, AMS can ensure that selected financial mechanisms deliver greater environmental, social, and economic impact across the region.

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2. CONTEXTUAL RELEVANCE

Guiding Principle definition	Financial mechanisms must be adapted to the geographic, socio-economic, political, and institutional characteristics of their target environment. A tool that is successful in a high-income urban area may not translate well to remote islands or low-income rural districts without modification.
Rationale and evidence	The effectiveness of financial mechanisms depends on how well they fit local geographic, socio-economic and institutional conditions. The same mechanism can produce markedly different outcomes depending on infrastructure maturity, economic conditions and enforcement capacity. PWM case studies across AMS illustrate this variation: • Urban and formal settings: - User fees, taxes and producer-level obligations (EPR schemes) are supported by strong regulatory capacities and established collection systems. • Rural or capacity-constrained settings: - Formal billing systems, traceability and structured enforcement may take longer to gain traction, as illustrated by Viet Nam's plastic bag levy experience. - Microfinance, grants and community-led initiatives may be more effective where infrastructure and enforcement capacity are limited. Financial mechanisms are therefore not universally transferable; success depends on alignment with local contexts. Policymakers should assess contextual conditions early in the design process, co-design mechanisms with local stakeholders, and introduce adaptive features to accommodate ground-level constraints and behavioral realities.
Examples from AMS	Refer to **Annex A: Knowledge Base of Good Practices and Case Studies, Case Study B, Grant-Funded MSME Transition to Sustainable Packaging and Waste Management Models, Cambodia** Grants do not require repayment and are highly suitable in contexts where revenue generation is uncertain or not applicable, such as in the context of Cambodia's Micro, Small and Medium Enterprises (MSMEs) transition to sustainable packaging. (**Note:** Grants can also support pilots or project preparation for PWM initiatives that may later generate revenue, before transitioning to other mechanisms for scale-up; see Principle 3: Complementarity)
Applicability across AMS	AMS can tailor mechanisms to the diverse institutional, socio-economic, and infrastructural conditions observed across the region: • In more developed urban areas: Expand user fees, taxes, EPR and DRS, supported by strong enforcement and data systems. • In less developed settings with a lack of enforcement infrastructure: Prioritize microfinance, grants, and community-based models that align with informal waste flows and limited administrative capacity. • Across different readiness levels: Conduct early-stage diagnostics with local stakeholders to paint a clear picture of contextual realities, followed by adopting phased implementation and adjusting mechanisms over time as institutional capacity and local environments evolve. This helps ensure financial mechanisms remain feasible, context-appropriate, and capable of delivering impact across ASEAN's varied environments.

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3. COMPLEMENTARITY

Guiding Principle definition	No single financial mechanism is likely to meet all objectives of a PWM initiative. Mechanisms should be selected and structured to complement one another - supporting different actors, project phases, and funding needs while avoiding duplication or counteractive effects.
Rationale and evidence	PWM initiatives require multiple financial functions across different stages of design, implementation and scaling. No single mechanism can address every funding, behavioral, operational and risk-management need. Case studies across AMS show that combining complementary mechanisms can strengthen impact across the value chain: • Supporting inclusion: Microfinance enables informal workers and community recyclers to participate, addressing livelihood and inclusion gaps. • Shaping behavior and sustaining operations: EPR, fees and legislative roadmaps influence producer and consumer behavior, generate stable revenue and help de-risk private investment. • Enabling capital investment: In the Soc Son Waste-to-Energy (WtE) facility in Hanoi, and other capital-intensive PWM initiatives in AMS, these mechanisms created conducive conditions for more risk-heavy mechanisms like loans and equity. This complementary approach can deliver stronger performance, more stable funding flows and greater implementation resilience than reliance on a single mechanism. Hence, policymakers can sequence mechanisms across initiative phases, match different tools to different stakeholders and reinforce long-term outcomes through targeted safeguards and incentives.
Examples from AMS	Refer to **Annex A: Knowledge Base of Good Practices and Case Studies, Case Study C, Indorama Ventures: Blue Loan to bolster PET recycling (Indonesia/Thailand)** The Blue Loan was complemented by a blended finance mechanism, consisting of a diversified loan with multiple funders, which helped to share the financial risk of the initiative and thus reduced the risk burden on any single funder.
Applicability across AMS	AMS can apply this principle by combining different mechanisms across project stages - for example, using grants or technical assistance to prepare projects, shifting to loans, Public-Private Partnerships (PPPs), or equity for construction, and integrating EPR, fees, or taxes to sustain long-term operations. As systems mature, AMS can introduce phased or modular financial structures that allow new instruments such as guarantees or performance-based tools to be added over time, ensuring mechanisms reinforce each other and remain feasible across varied contexts.

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4. INCLUSIVITY	
Guiding Principle definition	Mechanisms must be designed to ensure access, benefit, and participation by marginalized groups - including informal sector workers, women-led enterprises, low-income households and MSMEs.
Rationale and evidence	ASEAN's plastic waste value chain relies heavily on informal workers, women, MSMEs and low-income communities — many of whom face insecure working conditions and limited access to formal finance. Excluding these groups could weaken collection, sorting and recycling systems, compromising PWM system integrity. Targeted mechanisms can lower barriers to participation: • **Microfinance:** Expands access to finance for informal collectors and community recyclers, with credit safeguards to prevent over-indebtedness. • **Grants:** Low-barrier, flexible programmes in Cambodia, Lao PDR and Indonesia have supported community-based waste initiatives and MSMEs. • **EPR, taxes and levies:** Inclusive design is needed to avoid creating compliance burdens for MSMEs or overlooking informal workers. Ensuring access, benefit, and participation for marginalized groups is not only a social objective but a practical requirement for effective PWM, due to the significant role these groups play across ASEAN. Mechanisms designed with flexible terms, targeted support, and integrated safeguards are better positioned to enhance equity, strengthen local livelihoods, and improve community ownership across ASEAN.
Examples from AMS	Refer to Annex A: **Knowledge Base of Good Practices and Case Studies, Case Study D, Plastic Bank and Corporate Partners Community-Based Plastic Credit System—Philippines** Plastic Bank's community-based credit scheme substantially integrated informal sector actors, such as plastic collectors, into its initiative of collecting coastal plastic waste. This allowed it to achieve a wide initiative footprint, collecting 35 million tons of plastic in the Philippines.
Applicability across AMS	AMS can improve access for marginalized groups through inclusive financing and targeted support: Expand microfinance with flexible terms and credit safeguards for informal workers and small recyclers. • Broaden grants for MSMEs, community groups and other underserved actors. • Strengthen community-based waste models, such as waste banks, by pairing local grants with training and operational support to improve participation and safety for informal workers. • Make regulatory mechanisms inclusive by reviewing EPR, levies, and compliance processes to avoid disproportionate burdens on MSMEs and establish pathways for informal-sector integration. Pair financing with technical assistance or capacity-building to enable smaller actors to meet environmental, social and operational requirements. These approaches help ensure that mechanisms used across ASEAN remain accessible and responsive to the needs of marginalized groups, while strengthening the roles that these groups play in PWM.

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5. MEASURABILITY AND TRANSPARENCY

Guiding Principle definition	Financial mechanisms must be governed by clear and quantifiable performance metrics, accompanied by transparent reporting and verification systems to track environmental, social, and financial outcomes.
Rationale and evidence	Financial mechanisms in ASEAN have been shown to perform more effectively and enable stakeholders to assess environmental, social, and financial outcomes when they include: • Clear performance metrics • Transparent reporting • Verifiable data systems EPR reporting obligations, environmental compliance certificates and Mandatory Packaging Reporting schemes illustrate how these requirements can be embedded in PWM initiatives and create stronger credibility and clearer pathways for enforcement, funding, and performance improvement. Mechanisms that fund initiatives lacking structured reporting, such as informal waste-sector initiatives or voluntary producer responsibility schemes, face challenges in demonstrating results and, consequently, securing long-term investment. Embedding measurable indicators and transparent reporting into PWM initiatives can strengthen governance, build investor confidence and support lasting PWM outcomes across ASEAN.
Examples from AMS	Refer to **Annex A: Knowledge Base of Good Practices and Case Studies, Case Study E, Disposable Carrier Bag Charge—Singapore Supermarket** operators of a certain size are required to publish financial figures on their revenue from mandatory plastic bag levies, including how proceeds are used, supporting the growth of public trust and confidence in the bag levy.
Applicability across AMS	AMS can strengthen accountability by expanding monitoring and reporting practices already used across the region: • Project monitoring: Require progress reports, impact assessments and safeguard checks, drawing on ADB- and World Bank Group-led frameworks used in Cambodia and Indonesia's loan-financed projects. • Policy-level transparency: Strengthen producer reporting and data submission under EPR and mandatory packaging reporting schemes. • Expand independent audits and ESG monitoring – embedded in blue loans and IFC-aligned safeguards in multiple AMS. • Regional consistency: Scale these established practices through shared templates, harmonized reporting expectations and routine verification cycles to ensure financial mechanisms remain accountable, comparable and credible across the region.

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6. POLICY SYNCHRONIZATION

Guiding Principle definition	Selected financial mechanisms must be harmonized with existing national and local policies, legal frameworks, and institutional arrangements to avoid contradictions, inefficiencies, or enforcement gaps.
Rationale and evidence	Financial mechanisms deliver more consistent results when they are embedded within coherent policy and regulatory environments, rather than operating in isolation. Successful initiatives align financial mechanisms with existing waste, energy, fiscal, and environmental frameworks. • **Example:** Singapore's National Environment Agency (NEA) Green Bonds – explicitly structured under the Green Bond Framework and governed through a multi-tier approval process ensuring full consistency with national sustainability strategies and regulatory expectations. This symbiotic approach ensures that responsibilities, incentives, and compliance mechanisms reinforce one another instead of operating in a siloed or adversarial manner. Misalignment can weaken effectiveness – for example, levies without adequate enforcement and EPR schemes without binding legal frameworks. Therefore, harmonizing financial mechanisms with policy, legal and institutional frameworks is essential to avoid implementation gaps, reduce administrative friction and support a coordinated response to plastic waste challenges across AMS.
Examples from AMS	Refer to Annex A: **Knowledge Base of Good Practices and Case Studies, Case Study F, Pay-by-Volume, Volume-Based Waste Fee Pilot—Viet Nam** The volume-based waste fee pilot translated national legal requirements like waste separation laws into local operational practice, reducing implementation gaps between policy intent and service delivery.
Applicability across AMS	AMS can strengthen policy synchronization by extending practices already visible across the region such as: • Aligning financial mechanisms with national waste, energy, and environmental strategies. • Ensuring financial mechanisms are deployed only after relevant policies and regulations are in place. • Strengthening inter-agency coordination around financial mechanisms to support consistent implementation of EPR, levies and subsidies. • Harmonizing requirements across agencies and consolidating compliance processes can reduce administrative friction and create clearer pathways for private investment. • Linking financial tools to existing national roadmaps and sectoral plans, as seen in Malaysia's integration of EPR with its plastics sustainability roadmap.

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7. RESILIENCE AND SUSTAINABILITY

Guiding Principle definition	Financial mechanisms should promote long-term system strengthening rather than short-term fixes. Resilient design enables adaptation to market, environmental, and policy changes while embedding sustainable financing pathways.
Rationale and evidence	Financial mechanisms in ASEAN are most effective when they support long-term system strengthening rather than short-term, one-off interventions. Mechanisms which incorporate stable revenue flows, durable infrastructure investment, and safeguards against operational or financial shocks exhibit stronger performance over time. • In Indonesia, a PET recycling plant benefits from long-term output offtake agreements, creating predictable revenue streams that reinforce operational stability and system resilience. • Evaluation of financial mechanisms shows how they can falter when they lack resilience features: • Microfinance can expose low-income borrowers to heightened vulnerability without appropriate safeguards, showing the need for adaptive repayment structures and risk-mitigation measures to protect informal workers and maintain financial sustainability. Durable outcomes depend on mechanisms capable of evolving with changing economic, environmental, and regulatory conditions, while also being aligned with long-term policy objectives and focused on building institutional capacity.
Examples from AMS	Refer to **Annex A: Knowledge Base of Good Practices and Case Studies, Case Study G, Palembang WtE Plant—Indonesia** Dual revenue streams from tipping fees and electricity generation, as well as local currency-aligned financing, reduced exposure to market volatility and FX shocks and thus improved long-term financial sustainability.
Applicability across AMS	Long-term resilience can be further developed by existing PWM approaches in operation across AMS, such as: • Pairing infrastructure funding with stable revenue arrangements (user fees or long-term offtake contracts) to ensure predictable funding streams. • Incorporating safeguards and adaptive features into financial tools to protect low-income borrowers and vulnerable operators during economic shocks. • Embedding capacity-building initiatives to strengthen local capabilities, promote self-sufficiency, and support the sustainable delivery of infrastructure and services over the long term. • Cambodia's experience has illustrated that where infrastructure financing is heavily dependent on external support, strengthening local capacity and domestic financing mechanisms (such as user fees and public budget) becomes increasingly important to ensure the sustainability of infrastructure assets and continuity of service delivery over the long term. • Promoting system-level sustainability by aligning financial mechanisms with existing long-term national waste strategies, reinforcing investment predictability and enabling mechanisms to evolve and be switched out over time, as institutions and markets mature. Together, these measures can build financially sustainable, adaptable and resilient plastic waste systems across ASEAN.

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PART II

ROADMAP OF RECOMMENDATIONS FOR SELECTING AND IMPLEMENTING FINANCIAL MECHANISMS

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PART II (A): PURPOSE AND STRUCTURE OF THE ROADMAP

The Roadmap translates the principles-based approach into a practical, stepwise planning and implementation guide for selecting and designing financial mechanisms for PWM and circular economy policies at national and subnational levels across AMS.

All seven Guiding Principles are intended to be considered throughout the Roadmap, informing judgments, trade-offs, and design choices at each stage. The stepwise structure reflects how policy and program development typically unfold in practice, not a hierarchy or prioritization among the principles themselves.

However, certain principles may be more salient at particular stages of the Roadmap (Table 4), based on the type of questions being addressed (e.g. purpose-setting, feasibility, design, long-term viability). The stage-specific relevance of the principles should therefore be understood as an additional layer of guidance, rather than as limiting any principle to a specific step.



Table 4: *Illustration of Where Each Principle Is Most Salient Across Roadmap Steps*

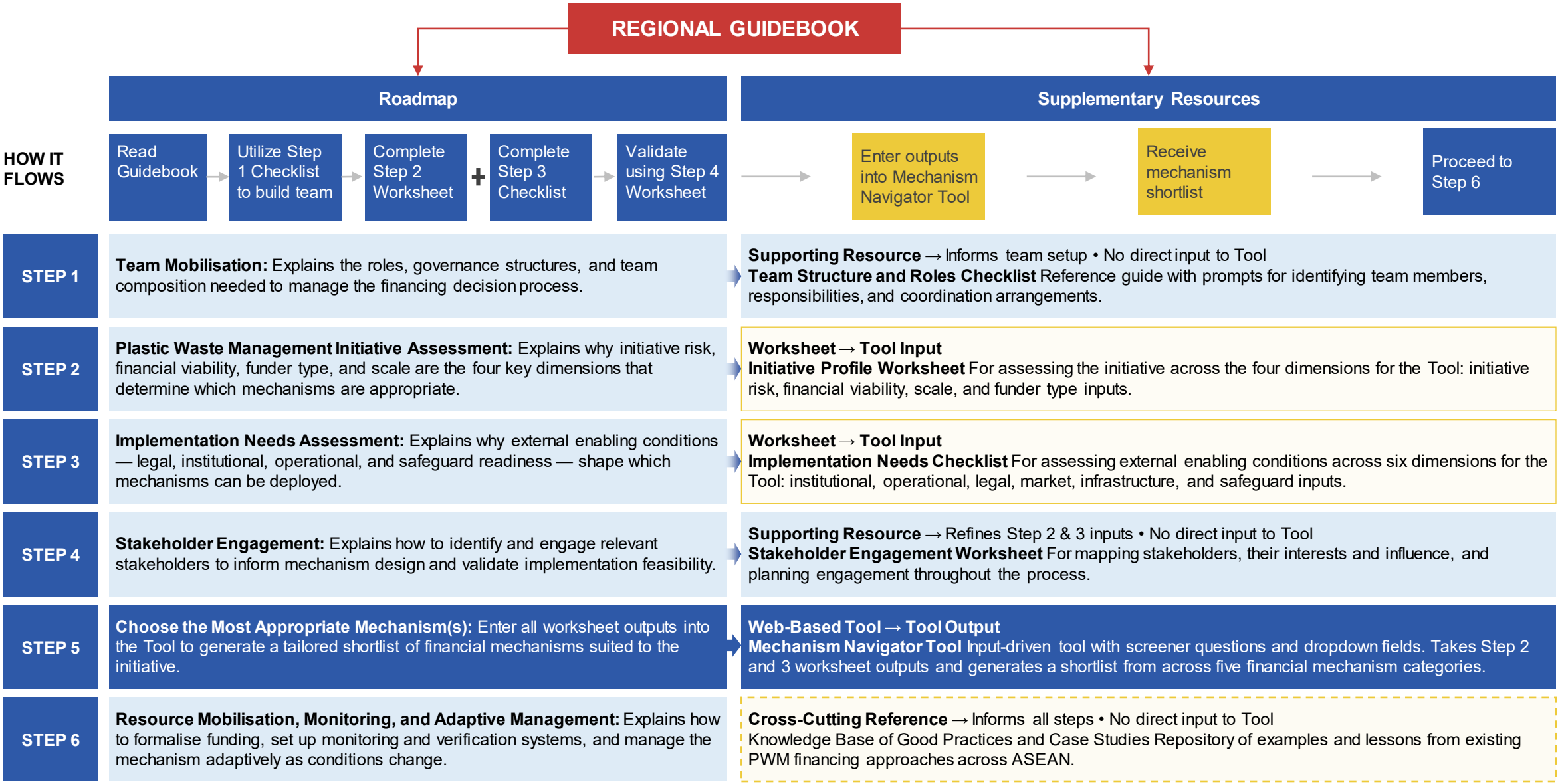
	Function-Fit	Contextual Relevance	Complementarity	Inclusivity	Measurability and Transparency	Policy Synchronization	Resilience and Sustainability
STEP 1					Relevant across all steps		
STEP 2							
STEP 3							
STEP 4							
STEP 5	All Guiding Principles come together in Step 5 to finalize the choice of financial mechanisms						
STEP 6							

To support practical application, the Roadmap is complemented by a set of recommendations in the form of supplementary implementation-oriented resources—such as checklists, worksheets, compendiums of mechanisms, and needs assessment tools—that correspond to the Roadmap steps (see Figure 8). This modular approach deliberately strikes a balance between providing structured guidance and preserving flexibility. While the Roadmap offers a common planning logic, the accompanying tools allow AMS to tailor decisions, sequencing, and depth of analysis to their specific institutional capacities, policy priorities, and market conditions. In this way, the Roadmap provides:

- A structured pathway from policy intent to implementation, and
- A principles-informed lens to ensure that financial mechanisms are functionally appropriate, context-sensitive, inclusive, and durable.

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Figure 8: Purpose of Each Roadmap Step and Accompanying Supplementary Resource

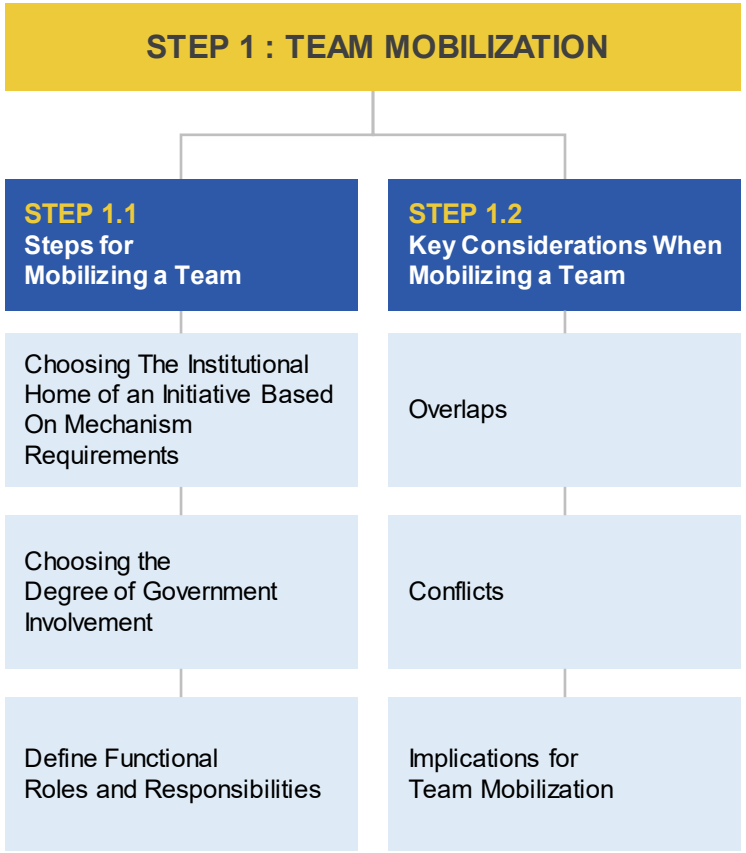


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PART II (B): THE ROADMAP

STEP 1 Team Mobilization

Figure 9: Step 1 Overview



Step 1 establishes the team configuration needed to make sound funding decisions for a plastic-waste initiative. As responsibilities for policy, enforcement, planning, budgeting, and monitoring are typically distributed across different institutions and levels of government, the first task is to bring together the actors who collectively hold these authorities.

STEP 1.1 Steps for mobilizing a team

Step 1 establishes the team configuration needed to make sound funding decisions for a plastic-waste initiative. As responsibilities for policy, enforcement, planning, budgeting, and monitoring are typically distributed across different institutions and levels of government, the first task is to bring together the actors who collectively hold these authorities.

Choosing the institutional home of an initiative based on mechanism requirements

The institutional 'home' is an agency/entity that holds the primary mandate for the management or governance of a PWM initiative. It should ideally be able to meet certain funding-critical requirements, depending on the type of financial mechanism that will be used to fund the initiative:

- Entities that manage initiatives funded by mechanisms such as EPR, DRS, waste collection fees, and taxes should be able to effectively levy fees and taxes.
- Entities managing initiatives funded by PPPs, financial guarantees or debt, should ideally have the administrative and financial processes to enter into these agreements and coordinate funding flows with other entities.
- Entities must ideally be able to align national rules with local fee collection, contracting, and/or fee administration when cashflow flows across different levels of government.

Choosing the degree of government involvement

AMS should assess the degree of government involvement required in the selection and implementation of Financial Mechanism(s). Mechanisms which rely on statutory obligations (e.g., EPR schemes, taxes, reporting requirements) or enforcement-based mechanisms, typically require strong government oversight to ensure compliance, accountability and regulatory coherence. Government leadership is also particularly important where mechanisms depend on formal integration of the informal sector, as market-driven approaches may not sufficiently incentivize inclusive participation without policy direction, safeguards, or institutional support. Conversely, where enforcement is minimal, market incentives already exist (e.g., high-value recyclables or commercially viable WtE) and the socioeconomic risks of informal sector exclusion are limited, more market-driven financial mechanisms may be feasible, provided appropriate regulatory clarity and monitoring remain in place.

Define functional roles and responsibilities

Clearly defining and assigning the roles, responsibilities and expertise needed for an initiative ensures smooth cross-functional collaboration, as well as effective and appropriate funding, while reducing the chances of different stakeholders operating in an overlapping or counterproductive manner.

Six core functions that could be assigned for PWM initiatives are covered in Table 5 below.

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Table 5: *Core Roles and their Responsibilities in a PWM Initiative*

1. POLICY FUNCTION	
What it Does	The policy function establishes the strategic, legal, and institutional foundation required for any financial structure to operate. This role ensures that the initiative's direction aligns with statutory mandates, sectoral policies, and regulatory frameworks, and that the legal prerequisites for funding, such as authority to levy fees, enter long term contracts, issue guarantees, or commit public resources, are sound.
Why it Matters	By defining regulatory clarity, responsibilities of obligated parties, and institutional accountability, this function directly affects the feasibility of fiscal and economic mechanisms, revenue generating measures, PPP style contractual models, and risk mitigation mechanisms. Where mandates are unclear or fragmented, mechanism bankability drops and private or blended capital becomes harder to mobilize.
2. PLANNING FUNCTION	
What it Does	The planning function develops the initiative's technical, operational, and financial architecture and ensures it is compatible with the demands of different funding approaches. This includes designing system configurations, infrastructure needs, operational models, and data systems in ways that can support cost-recovery frameworks, performance expectations, and monitoring obligations embedded in many financial mechanisms. Planning also identifies funding constraints, such as affordability limits, bottlenecks in procurement, or gaps in data, and proposes solutions that may involve phasing, bundling, or redesigning initiative components to match mechanism requirements.
Why it Matters	Effective planning ensures the initiative is structured in ways that keep funding options open rather than unintentionally closing them off. By designing initiatives that can support cost-recovery, performance expectations, and monitoring requirements, this function makes it possible for a wider range of mechanisms to operate as intended. Clear planning also identifies constraints and proposes practical adjustments so that funding approaches remain feasible, credible, and aligned with real-world conditions.
3. RESEARCH & DATA FUNCTION	
What it Does	The research and data function provides the information needed to plan, fund, and carry out the initiative effectively. It includes a data specialist who identifies what data is needed, collects it, checks its quality, and fills any important gaps before decisions are made. This function also builds and maintains the databases, systems, and reporting tools needed for planning, financing, implementation, and monitoring. This may include systems for registering producers and tracking their data.
Why it Matters	This function is crucial because data availability and reliability directly affect the credibility and implementation of PWM financing. Unreliable or incomplete data can undermine baselines, cost projections, financing applications, enforcement, and monitoring. Early and thorough data collection is important because it clarifies whether additional funding is needed to investigate and close major data gaps or build tailored data systems before implementation. Without this clarity at the outset, funding may be committed prematurely, and unresolved gaps identified later can disrupt project continuity. For EPR-linked mechanisms in particular, reliable producer registration and reporting data are often prerequisites, since without them, governments cannot accurately estimate liable producers, fee flows, compliance levels, or expected financing flows.

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4. FINANCING FUNCTION	
What it Does	The financing function is responsible for ensuring long-term financial sustainability and aligning the initiative with financial mechanisms that match its characteristics and constraints. This role manages budget preparation, cost modelling, and financial performance tracking; mobilizes and allocates public or private capital; and evaluates the financial implications of different mechanism types.
Why it Matters	By assessing affordability, coordinating funding sources, and managing financial flows transparently, it provides the predictability that mechanisms require. Strong financial management improves confidence among funders, reduces uncertainty, and expands the range of mechanisms that can be credibly deployed.

5. DELIVERY AND MANAGEMENT FUNCTION	
What it Does	The delivery and management function operationalizes the initiative and carries the responsibilities that many financial mechanisms depend on for credibility and repayment. This includes service delivery, facility operation, enforcement, reporting, and coordination with producers, users, or market participants.
Why it Matters	It delivers the activities, coordination, enforcement, and reporting that give funders confidence that assumptions will hold and that obligations can be met. When delivery and management are weak, outputs become inconsistent, information becomes unreliable, and many financial mechanisms become less bankable and feasible, as a result.

6. MONITORING AND EVALUATION FUNCTION[9]	
What it Does	This function provides the governance, verification credibility, and performance assurance needed for financial structures that rely on measurable outputs, verifiable outcomes, or risk adjusted performance. It establishes data protocols, oversees adherence to reporting standards, and conducts audits and compliance checks across operational, financial, environmental, and social dimensions.
Why it Matters	This function is essential for financial structures that require transparent and consistent reporting, or any other approach where fund disbursement or cost recovery depends on verified results. By analyzing performance trends and identifying gaps, the M&E function also enables adaptive management and helps ensure that financing arrangements remain aligned with real world conditions rather than assumptions.

Additionally, in countries with more decentralized governance structures, governments should consider if a multi-level governance structure is needed to enable effective implementation of the initiative—decentralized systems often face uneven institutional capacity and fragmented implementation, which can weaken service delivery and regulatory consistency, leading to a diminished number of available financial mechanism options for an initiative. Establishing governance frameworks at different levels can help address these gaps and support more coherent and scalable implementation of PWM initiatives and their associated financial mechanisms.

[9] Bridging the Gap in Solid Waste Management

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STEP 1.2

Key Considerations When Mobilizing a Team

ASEAN's governance landscape presents a unique set of institutional complexities that must be considered when mobilizing the initiative team. With responsibilities for PWM distributed across multiple ministries, agencies, and levels of government—often with overlapping mandates, uneven capacity, and fragmented authority—team formation requires careful design to ensure coordination, role clarity, and effective decision-making.

Overlaps

Overlaps in PWM funding commonly arise when multiple institutions across levels of government have duplicated or partially redundant mandates over funding-critical functions such as service delivery, infrastructure development, contracting, fee administration, and reporting[10]. When several bodies are empowered to fund or manage similar activities, it becomes unclear which entity should take the lead in committing resources, administer revenues, or enforce obligations, creating uncertainty for funding arrangements that depend on defined cashflow ownership and accountability. These structural or functional overlaps are reinforced in systems where both central and subnational entities retain roles in planning or implementation, making it essential that Step 1 teams include all institutions that control funding levers to avoid gaps, duplication, or unclear mandates.

Conflicts

Conflicts arise when multiple institutions hold competing or inconsistent legal mandates, policies, or political priorities over funding-critical functions, such as contracting, revenue collection, fee administration, or enforcement, without a clear hierarchy to resolve disputes[11]. When different ministries or levels of government can independently influence budgets, obligations, or performance requirements, legal or political friction may arise over who owns cashflows, who can commit resources, and who is ultimately accountable. In systems where subnational governments carry implementation roles but lack control over the revenues or approvals needed to support financial mechanisms, higher tiers may intervene, further blurring roles[12]. These conflicts undermine the clarity and predictability that financial mechanisms rely on, making it essential that Step 1 teams include all institutions with authority over financial mandates, compliance, or reporting to avoid contradictory decisions and fragmented accountability.

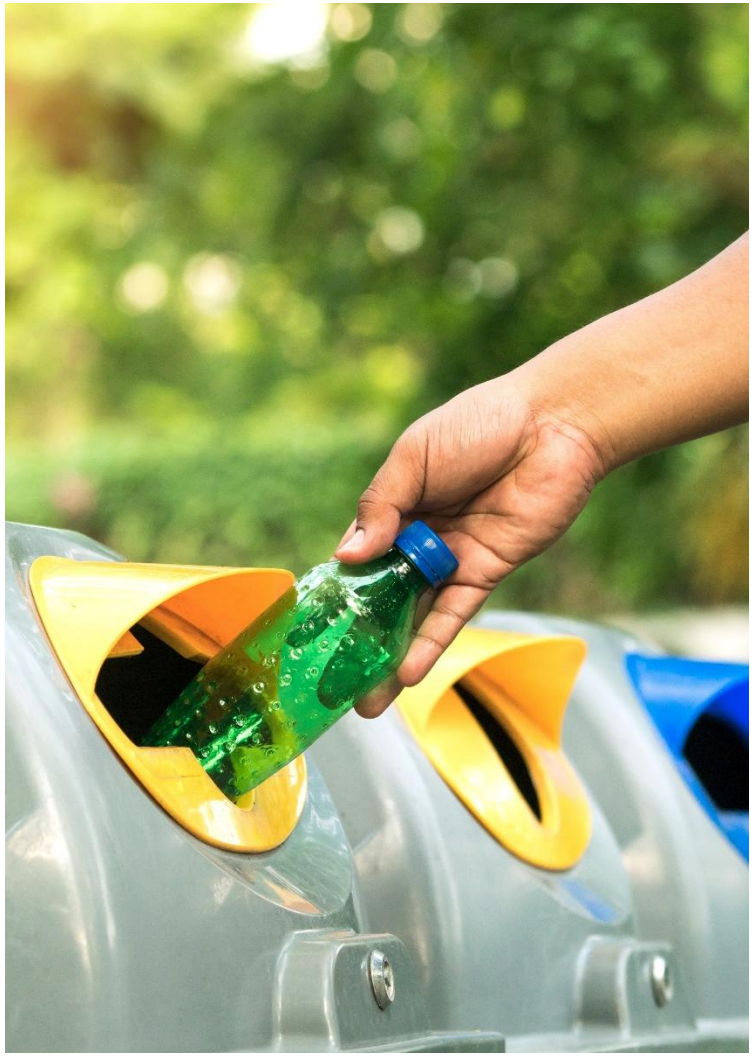
Implications for team mobilization

Teams which are designed to reflect the reality of shared and layered authority, include clear role definition within the team and meaningfully include of non-state actors, especially those involved in service delivery, investment, or funding, can help bridge gaps created by institutional overlaps and fiscal imbalances, while reducing the risk of funding decisions being disconnected from implementation realities.

[10] Multi-level governance and subnational finance in Asia and the Pacific

[11] Assessment Report On Public Service Delivery Systems In AMS

[12] Multi-level governance and subnational finance in Asia and the Pacific

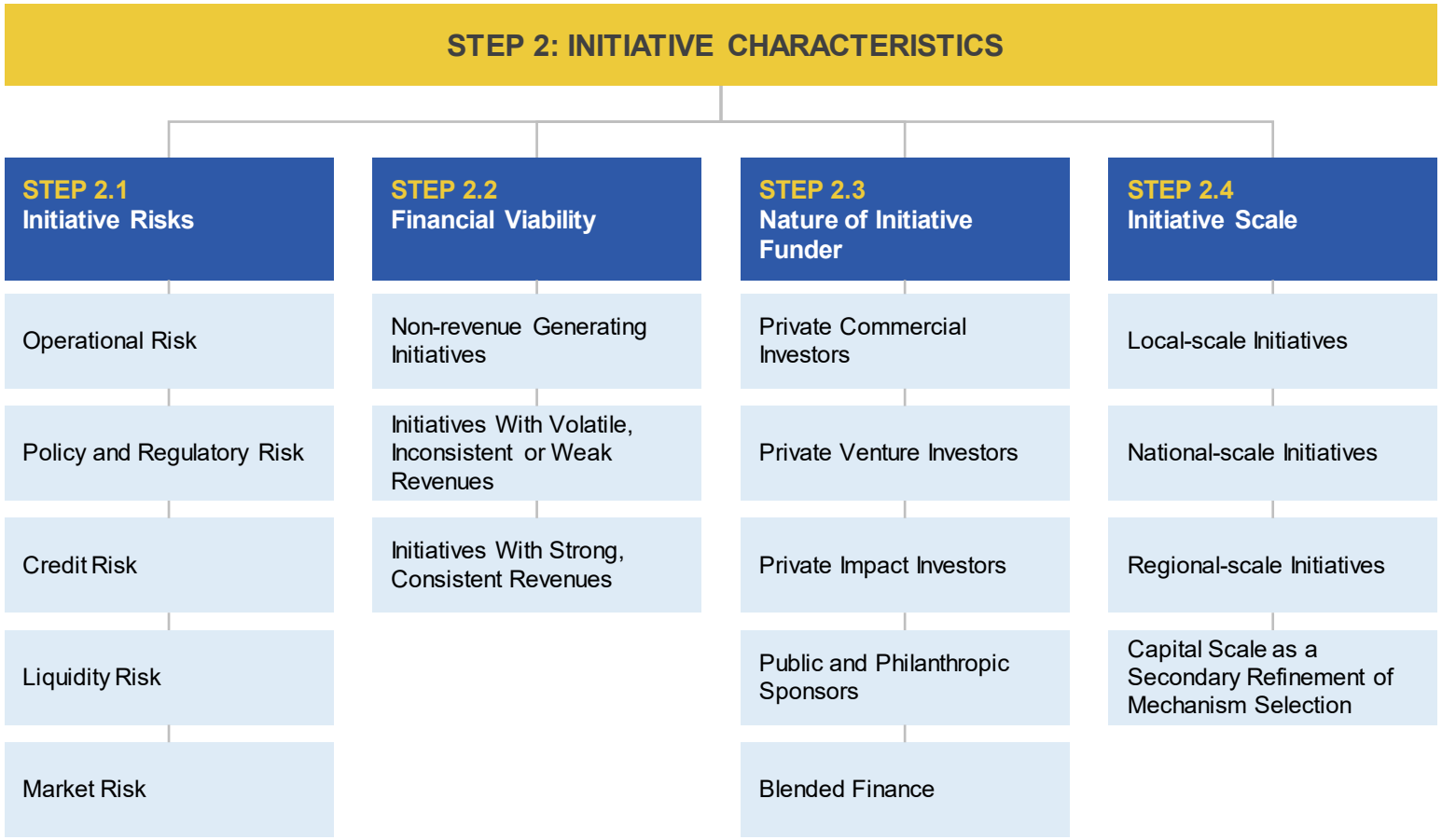


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STEP 2 Plastic Waste Management Initiative Assessment (Financial, Operational, and Risk Considerations)

Figure 10: Step 2 Overview



This step builds a structured understanding of the initiative's characteristics. It creates the foundation for selecting funding approaches that align with the initiative's operational requirements, funding needs, and risk profile.

The assessment considers four dimensions: initiative risks, financial viability, initiative scale, and the nature of the funder. These dimensions are interrelated but serve distinct analytical purposes. Initiative risks and financial viability form the foundation of the assessment, as they determine whether an initiative can credibly support repayment, returns, and different forms of risk exposure. Initiative scale and the nature of the funder are then considered in relation to this foundation.

In practice, some of these dimensions may be partially unknown. For example, the specific funder may not yet be identified. In such cases, the assessment does not require "solving" for the unknown dimension directly within the corresponding Supplementary Resource—**Annex C: Step 2 Worksheet**. Instead, the known characteristics—risk profile, financial viability, and scale—can serve as proxies to narrow down the set of suitable funders and financial mechanisms. This approach ensures that even with incomplete information, the initiative can be meaningfully evaluated and mapped to realistic funding options.

Step 2.1 Initiative risks

Assessing initiative risk is essential to determining whether a PWM initiative can be matched with financial mechanisms that have compatible risk tolerance. While risks can take many forms, five categories are particularly relevant for PWM initiatives because they directly affect delivery, cashflows, and the ability of funders to recover capital: operational risk, policy and regulatory risk, credit risk, liquidity risk, and market risk.

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1 **Policy and regulatory risk** is especially salient in the plastic waste sector because outcomes often depend on public mandates, enforcement capacity, and regulatory stability. Lack of capacity and changes in these factors can materially alter project economics or undermine compliance-based interventions.

3 **Liquidity risk** captures the possibility that an initiative may face timing mismatches between expenditures and inflows, even if it is viable in the long run. Plastic waste initiatives often require upfront capital investment, while revenues may accrue slowly or irregularly. Without adequate buffers, short-term liquidity constraints can jeopardize implementation or increase the likelihood of default.

2 **Credit risk** arises where initiatives depend on payments from counterparties, which include municipalities and producers. Even when revenue arrangements exist on paper, delayed payments, weak balance sheets, or unclear enforcement mechanisms can create uncertainty around whether revenues will be received in full and on time. This risk directly affects the ability to service debt or meet contractual obligations.

4 **Market risk** reflects exposure to fluctuations in market factors such as demand and market saturation that influence the financial viability of plastic waste initiatives. These dynamics can compress margins, reduce expected returns, or undermine long-term investment planning, making market risk an important consideration.

Taken together, these risk categories combine to determine an initiative's overall risk profile, as visualized in Table 6 to the right.

***Table 6:** Initiative Overall Risk Profile*

RISK LEVEL	KEY CONDITIONS	FINANCING IMPLICATIONS
Low Risk	• Stable operations • Predictable regulatory environment • Reliable counterparties • Predictable cashflows	Suitable for mechanisms requiring repayment certainty and stable performance, such as commercial debt or equity
Moderate Risk	• Partial mitigation measures in place • Exposure to one or more uncertainties/risk categories (operational, regulatory, credit, or liquidity) • Cashflows somewhat predictable	Suitable for mechanisms that absorb or share risk, such as blended finance
High Risk	• Multiple interacting uncertainties across risk categories • Weak or inconsistent cashflows • High likelihood of disruption	Suitable for funders who can accept higher risk for systemic impact, and for mechanisms such as grants or subsidies. Mechanisms relying on stable repayment are generally unsuitable

Step 2.2

Step 2.2: Financial viability

Financial viability is assessed to determine whether an initiative can reasonably meet the return expectations of different types of funders. The core principle is that financial mechanisms are only appropriate when their return requirements align with the financial viability of the initiative:

- Initiatives that do not generate revenues cannot recover capital through their operations. Because there is no mechanism to repay principal or provide a return, these initiatives are inherently incompatible with return-seeking finance. They must therefore rely on funding sources that prioritize public, social, or environmental outcomes over financial return.
- Where revenues do exist, financial viability depends on their strength and reliability. Revenues that are uncertain, volatile, or weak relative to operating costs create a mismatch with commercial finance, even if the initiative is conceptually revenue-generating. This is evident in recycling business models, which often operate on thin or negative margins because recyclers bear the costs of collection, transport, and processing, while waste producers may underpay or avoid fees. As a result, the disproportionate cost burden borne by recyclers and revenue uncertainty discourage private sector

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participation. In such cases, the initiative may still be financeable, but only through mechanisms that can absorb risk or accept lower returns. Concessional and blended finance play this role by bridging the gap between the initiative's

- cashflow profile and investor expectations. In the long run, fair pricing mechanisms then serve to increase the financial sustainability of initiatives, such as pay-as-you-throw systems, stronger policy frameworks including EPR and regulatory mandates, and a more balanced distribution of costs across stakeholders.
- Initiatives with strong, predictable, and enforceable revenues are able to support full capital recovery and, in some cases, generate returns. These characteristics align with the requirements of commercial debt or equity, which depend on reliable cashflows to justify investment. High financial viability therefore signals suitability for financial mechanisms that require market-based returns.
- Revenues of recycling initiatives are also influenced by broader market dynamics, particularly oil price movements, which affect the cost competitiveness of virgin plastics. Higher oil prices can improve the relative competitiveness of recycled plastics and support stronger demand and revenue stability. Hence, exposure to commodity price volatility can significantly affect the attractiveness of recycling revenues, with important implications for investability and long-term commercial sustainability.

In addition, a key factor affecting the financial viability of recycling initiatives is the type of plastic being processed. The table to the right summarizes how viability varies across different plastic types.

Table 7: *Assessment of Financial Viability of Different Types of Plastic*

	TYPE OF PLASTIC			
	Financial Viability: High → Low			
	PET	**Non-PET (i.e. HDPE, PP)**	**Flexibles[13]**	**Multilayer packaging[14]**
Market Maturity	**Most mature** and established recycling market	**Moderately mature;** HDPE is well established, while PP remains less developed	**Emerging and fragmented recycling market;** complex material compositions involving multiple polymers, inks, adhesives, and barrier layers make recycling more difficult	**Least mature;** fused layers of different materials make separation and recycling particularly difficult
Processing Infrastructure	**Most developed collection,** sorting and processing infrastructure	**Moderately developed infrastructure;** well established for HDPE, while processing capacity for PP is still improving	**Developing infrastructure;** collection and processing systems are expanding, but lightweight formats remain difficult to handle in conventional high-speed waste sorting equipment	**Least developed infrastructure;** separation and processing are technically difficult, and many recycling facilities are not equipped to handle laminated materials efficiently
Commercial Demand	**Strongest commercial demand,** especially for bottles and fibers	**Stable demand** for HDPE while less consistent demand for PP	**Limited and fragmented commercial demand;** recycling remains costly, and recycled films often have less economic value than virgin materials	**Weak and niche demand;** as it has low recyclable content, where only some materials can be recovered

[13] Plastic Waste: Beyond the bin: What it takes to recycle flexible plastics | WMW
[14] Multi-layer Packaging Recycling: Challenges and Solutions

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PET has more mature markets and clearer offtake, while non-PET plastics, flexibles, and multilayer packaging often lack processing infrastructure and commercial demand. As such, the composition of plastic waste streams should be carefully considered when assessing the financial viability of any recycling initiative, as these differences have a direct impact on both economic returns and implementation feasibility.

Step 2.3 Nature of Initiative Funder

The nature of the funder and their funding objectives is important, as different funders require different risk-return profiles and therefore favor different types of financial mechanisms[15]:

- Private commercial investors generally seek market-rate returns and prefer mechanisms that are backed by proven cashflows and lower risk, so they are best suited to financial structures that rely on clear revenue streams and strong repayment capacity.
- Private venture investors, in contrast, target early-stage or innovative initiatives with higher failure rates, accepting greater risk in exchange for potentially high returns, so they favor financial mechanisms that offer upside through equity-like returns or performance-linked payoffs.
- Private impact investors sit between these two, accepting moderate returns if the initiative delivers measurable environmental or social benefits, so they prefer mechanisms that combine outcome-based incentives with some financial return.
- Public and philanthropic sponsors prioritize impact over financial return and can therefore support mechanisms that absorb higher risk or deliver social benefits without requiring repayment.
- Blended finance combines public and private capital to reduce risk for commercial investors, so it is used where public or concessional funding is needed to make a financial structure attractive to private capital.

Beyond risk-return preferences, funders also differ in the types of risk they may be best suited to bear[16] . This reflects the principle of efficient risk allocation[17] , where risks are allocated to the parties best placed to manage or mitigate them. Applying this principle improves the bankability of an initiative by aligning risk exposure with the capabilities and incentives of participating stakeholders. For example:

- Operational risk is generally better borne by operators with technical expertise, which often includes private or specialist funders who can manage service delivery, technical performance, and supply chain issues.
- Policy and regulatory risk are typically better borne by a public sponsor with policy control, because government bodies can directly manage or stabilize the regulatory environment.
- Similarly, credit risk is typically more manageable for public sponsors that can enforce debt obligations or provide sovereign guarantees.
- Where credit and liquidity risks can be ring-fenced within debt through contract design, equity funders can focus on performance and upside rather than downside risk.

This risk-type logic may be used alongside risk-return preferences to filter financial mechanisms: a mechanism that concentrates operational risk will only be suitable if the funder can absorb or manage that risk, while mechanisms that allocate policy risk to government are only viable when government sponsorship is available.

[15] Redirecting Financial Flows to End Plastic Pollution

Step 2.4 Initiative Scale

Initiative scale acts as a first-order design constraint on financial mechanism selection. It determines which types of cashflows can be credibly generated, managed, and underwritten, and therefore which financial mechanisms are appropriate. Financial mechanisms should ideally be aligned to these structural realities rather than selected in abstraction. The following sections set out three broad considerations through which scale shapes the feasible cashflow characteristics of financial mechanisms.

Local-scale initiatives align with service-linked, variable cashflows

At the local level, revenues are typically generated through service provision or locally enforced regulatory obligations. These cashflows are operational and performance contingent. Local authorities are best positioned to administer these revenues because they control day-to-day service delivery, interact directly with users and operators, and possess the enforcement mechanisms required to ensure compliance.

As a result, local-scale initiatives are naturally matched to financial mechanisms that can tolerate variability and project-level risk. Matching these initiative characteristics with higher levels of government would weaken accountability and operational effectiveness [18].

National-scale initiatives can support financial mechanisms requiring fixed payment obligations

When an initiative is structured at the national level, it can draw on sovereign fiscal authority and consolidated public balance sheets. As a result, national-level initiatives can credibly deploy financial mechanisms that involve fixed and unconditional payment commitments. These mechanisms rely on payment obligations

being honored regardless of operational outcomes at the project or asset level, which is feasible where revenues are backed by general taxation rather than service-specific cashflows.

By contrast, initiatives confined to the municipal level are structurally limited in the cashflow structures they can support. Municipal tax bases are typically narrow, volatile, and subject to legal and institutional constraints, which restrict their ability to underwrite fixed, unconditional payment obligations over long horizons[19] .

Regional-scale initiatives necessitate pooled and coordinated financial mechanisms

When an initiative is defined at a regional or multi-country scale, no single sovereign has full fiscal authority or enforcement power over the entire system. Governance is shared, legal frameworks differ, and taxation authority remains largely national. These structural features of regional scale constrain the types of cashflows that can be generated and guaranteed.

As a result, regional-scale initiatives cannot rely on unitary, sovereign-backed revenue streams or project-specific performance cashflows. Instead, they are limited to cashflow structures that can function across jurisdictions through coordination, aggregation, and risk pooling.

This makes regional-scale initiatives compatible with cashflow structures that:

- Aggregate contributions or revenues from multiple national or sub-national systems
- Depend on harmonized rules, common eligibility criteria, and shared governance arrangements
- Support cross-border or multi-jurisdiction objectives that no single country can deliver alone

Given these constraints, the financial mechanisms that can operate at the regional scale are those designed to sit above national systems rather than replace them.

These include regional funds, blended finance platforms, and guarantee or risk-sharing facilities that mobilize capital by pooling risk and standardizing participation, while remaining dependent on national contributions and implementation.

Capital scale as a secondary refinement of mechanism selection

Once the initiative scale has constrained the viable cashflow structures, typical capital scale provides a second layer of refinement. Different initiative scales are associated with materially different investment sizes, which further narrows the set of appropriate funding approaches. Larger initiatives require more resources to implement, meaning they need funding approaches that can mobilize correspondingly larger amounts of capital. Smaller, project-level initiatives require less capital and can therefore be funded through approaches that typically raise smaller sums. This second layer of mapping ensures that the funding approach assigned to each scale is not only institutionally appropriate based on cashflows, but also realistically capable of meeting the size of the investment needed.

[16] Allocating Risks

[17] Sometimes referred to as the Principle of Symmetric Allocation

[18] What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050; Decentralization and Inter-Governmental Relations In The Housing Sector

[19] Bridging the Gap in Solid Waste Management



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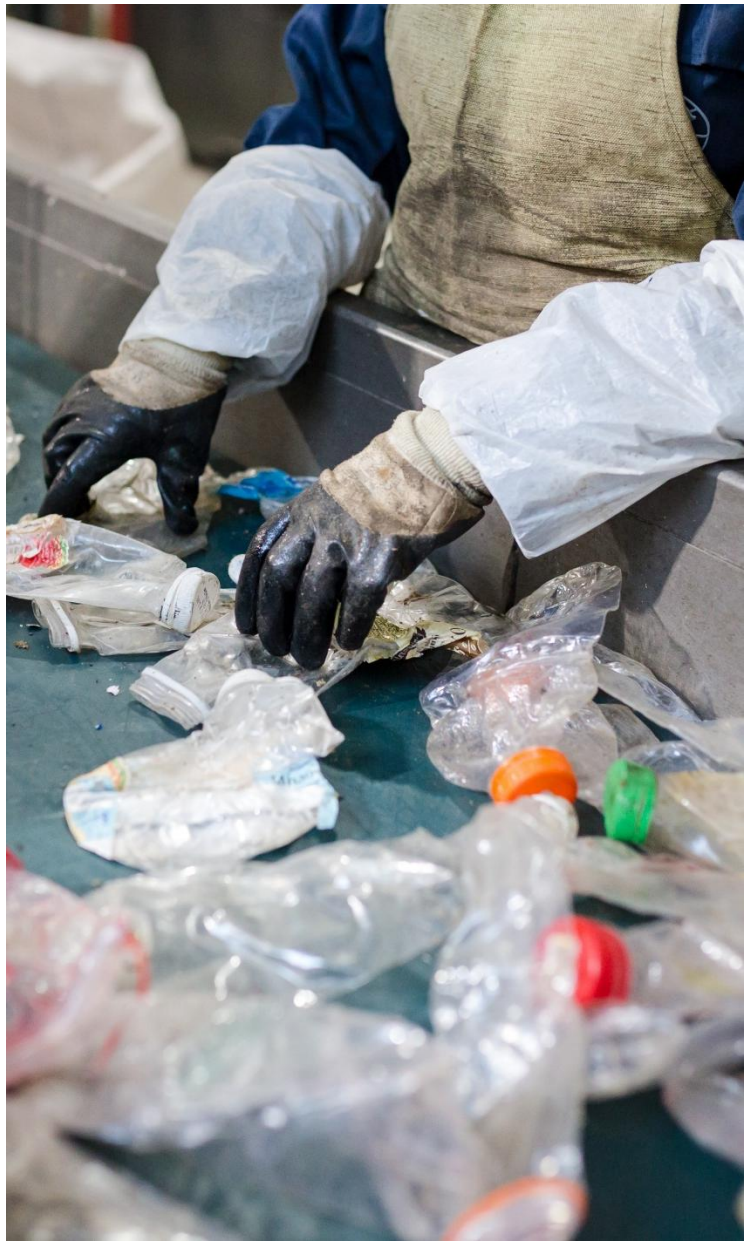


Table 8: *Initiative Scale*

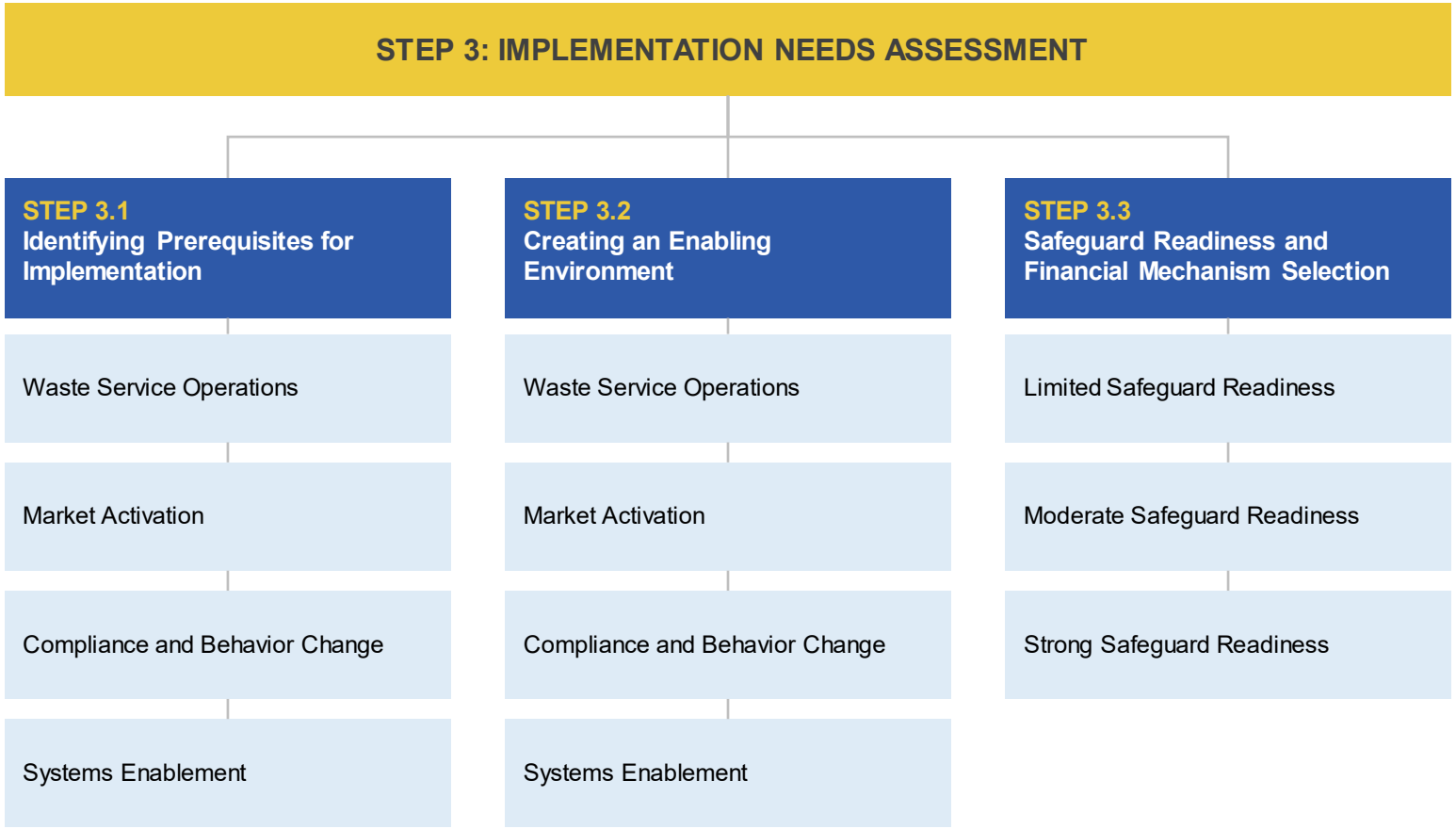
SCALE LEVEL	KEY CONDITIONS	FINANCING IMPLICATIONS
Local (Municipal/Sub-national)	• Revenues are service-linked and performance-contingent • Administered by local authorities who control day-to-day delivery and enforcement • Municipal tax bases are narrow and volatile, limiting the ability to underwrite fixed long-term payment obligations • Capital requirements are smaller and project-specific	Mechanisms must tolerate variability and project-level risk; mechanisms that typically raise smaller sums are viable. Suited to operationally-linked financial mechanisms such as waste collection fees and tariffs, or where partial cost-recovery is feasible.
National	• Draws on sovereign fiscal authority and consolidated public balance sheets • Can commit to fixed, unconditional payment obligations backed by general taxation • Holds legal authority to levy charges, ring-fence revenues, and enforce obligations system-wide • Larger capital requirements	Broader range of mechanisms is viable, including those requiring repayment certainty or large capital mobilization.
Regional (Multi-country)	• No single sovereign holds full fiscal or enforcement authority • Governance is shared across AMS, legal frameworks differ, and taxation remains national • Financial mechanisms must function across jurisdictions through coordination, aggregation, and risk pooling • Largest capital requirements necessitate aggregation across multiple national systems to mobilize sufficient funding	Mechanisms designed to sit above national systems are viable. Suited to regional funds aggregating multi-country contributions such as blended finance platforms, cross-border guarantee and risk-sharing facilities.

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STEP 3

IMPLEMENTATION NEEDS ASSESSMENT

Figure 11: Step 3 Overview



For any PWM initiative, policymakers can first assess the legal and regulatory prerequisites, external enabling conditions, and safeguards that shape the feasibility of different financial mechanisms. These factors determine whether a given funding approach can be deployed effectively and sustained over time as they define the operating and financing environment within which the initiative must function.

These external conditions are distinct from internal team design in Step 1, and should ideally be in place (or be arranged) to support both the launch and the long-term performance of the chosen financial mechanism. Regulatory prerequisites and enabling conditions in this step are analyzed across the 4 initiative categories: waste services operations (1), market activation (2), compliance and behavior change (3) and systems enablement (4).

Step 3.1 Identifying Pre-requisites for Implementation

This section examines the legal and regulatory requirements that typically determine whether specific financial mechanisms for PWM initiatives can be used. These conditions influence which financing options are viable before an initiative can proceed. Other factors that provide a foundational, but not critical, base for a successful initiative rollout with specific financial mechanisms are discussed in **Step 3.2** further down.

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Initiative Category 1: Waste Service Operations

- **Permitting and Approvals Pathway**
  These are project-specific approvals that must be in place prior to the construction or set up of infrastructure, or a waste service network. If permitting and approvals pathways are unclear, complicated, or time-consuming, it could increase the risk of a project not getting the approval to be set up, or running into development roadblocks, which could increase the development timeframe and consequently, the payback or returns period of the entire initiative. This could compromise revenue and returns strength, and rule out mechanisms with commercial, or returns-seeking funders.

RECOMMENDATION



Policymakers can assess if there is already a clearly defined and published approvals pathway for waste-service infrastructure and operations, covering at minimum: zoning or siting permission, construction permits, and environmental permits where required.

- **Operating Licenses and Certification Processes**
  If operating license and certification processes are unclear, fragmented, or administratively onerous, this can delay the commencement of operations even after infrastructure has been developed or constrain the ability of operators to scale or modify services over time. Poorly defined licensing and renewal requirements, or compliance standards can make compliance more difficult, increasing operational risk and the chance of a project falling into non-compliance, and prevent operations from commencing, thereby reducing throughput/output. This could affect the ability of the project to uphold longer-term offtake agreements, or enforce collection or processing fees, consequently affecting revenue predictability. This can extend the time required to reach stable operations, lengthening payback periods and reducing revenue and returns strength, turning away some commercial funding options, limiting initiatives to more concessional funding sources.

RECOMMENDATION



AMS should ideally ensure that operating entities can obtain operating licenses and any required certifications through requirements that are explicit, consistent, and administratively workable, so licenses or certifications do not become a bottleneck that prevents operational start-up or scaling.

- **Environmental and Operational Standards for Operators**
  Environmental and operational standards for service delivery and facility operation that are poorly defined, inconsistently enforced, or impractical to comply with, can introduce uncertainty into day-to-day operations and affect service reliability. Ambiguity around minimum operating standards, or acceptable practices can lead to uneven enforcement, unplanned compliance costs, or unexpected corrective disruptions, all of which increase operational disruptions, negatively affecting an initiative's risk allocation and absorption capacity. This threatens output/throughput consistency and weakens revenue stability and over time, which can reduce operating efficiency, diminish revenue and returns strength, and constrain the viability of repayment-linked, performance-based, or commercially funded mechanisms that depend on stable long-term operating conditions.

RECOMMENDATION



Ideally, AMS should ensure that environmental and operational standards for service delivery and facility operation are clearly set out in enforceable ways, with specified minimum standards, operating practices, environmental control requirements. The key is that standards are specific enough to audit and feasible enough to comply with, reducing ambiguity that otherwise causes inconsistent enforcement and undermines service reliability.

- **Environmental and Operational Standards for Operators**[20]
  Environmental and operational standards for service delivery and facility operation that are poorly defined, inconsistently enforced, or impractical to comply with, can introduce uncertainty into day-to-day operations and affect service reliability. Ambiguity around minimum operating standards, or acceptable practices can lead to uneven enforcement, unplanned compliance costs, or unexpected corrective disruptions, all of which increase operational disruptions, negatively affecting an initiative's risk allocation and absorption capacity. This threatens output/throughput consistency and weakens revenue stability and over time, which can reduce operating efficiency, diminish revenue and returns strength, and constrain the viability of repayment-linked, performance-based, or commercially funded mechanisms that depend on stable long-term operating conditions.

[20] Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries; Environmental, Health, and Safety Guidelines for Waste Management Facilities'

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Initiative Category 2: Market Activation

- **Foundational Market Regulations**
  Unclear or inconsistently applied foundational market regulations create uncertainty and increase risk in basic market transactions. If regulations do not define what can be legally traded or processed, the risk of rejected transactions, enforcement disputes, or sudden regulatory intervention tends to increase. This consequently undermines confidence in feedstock supply, pricing, and offtake agreement confidence, weakening market predictability and negatively affecting risk allocation and absorption capacity. Elevated risk profiled and operational uncertainty, may elevate disruptions and revenue generating activity among market players, which could reduce revenue and returns strength, diminishing investor appetite, and limiting the viability of commercially funded mechanisms that rely on transparent market activity.

RECOMMENDATION



Policymakers can establish a clear regulatory framework that defines what plastic material can be traded, what processing activities are permissible, and what standards apply, so buyers, sellers, and regulators share a common set of regulatory standards.

- **Compliance Monitoring and Dispute-Resolution Frameworks**
  Weak, opaque, or inconsistently applied compliance monitoring and dispute resolution frameworks increase uncertainty among market actors about how rules are enforced and how disputes are resolved. Should market actors be unable to seek legal recourse, transaction risk and parties' ability to manage contractual disputes is limited. This raises perceived counterparty risk, reducing revenue predictability and constraining risk allocation and absorption capacity. For more risk-averse investors, these conditions may stifle their confidence in the ability of businesses to operate with stability, reducing their willingness to invest. This reduces the feasibility of commercial financing mechanisms that depend on manageable commercial risk profiles.

RECOMMENDATION



Policymakers should ideally ensure the market framework is backed by transparent inspection procedures, predictable penalties, and clear data-submission requirements, so rules can be upheld consistently, and market distortions can be addressed. Strong business law and dispute resolution frameworks should preferably also be in place, which means that the regulatory environment allows for commercial disputes to be addressed through recognizable legal routes, reducing uncertainty and reinforcing investor confidence in private-sector PWM initiatives[21].

- **Licensing and Environmental Compliance for Market Actors**
  Weak licensing, and environmental compliance pathways for market actors mean that they are unclear, fragmented, or slow. If this is the case in a PWM market, market actors may not be able to enter markets, ensure continuity of operations, and scale with confidence and surety. Convoluted approval requirements or lengthy timelines can delay participation, deter formalization, especially for MSMEs, and lead to uneven enforcement or unexpected compliance costs for market actors. This negatively impacts risk allocation and absorption capacity, which could discourage market entry and narrow the pool of credible market participants, weakening operational stability, and compromising system PWM capacity. Less risk tolerant financial mechanisms, or mechanisms that rely on longer payback periods due to the scale of capital they provide, such as commercial debt, may become less feasible, as their inherent characteristics depend on consistent revenue and minimal disruptions.

RECOMMENDATION



AMS can put in place predictable licensing and registration pathways for market participants like aggregators, recyclers, processors, and logistics providers, including clear environmental compliance obligations. The intent is to ensure actors can formalize and scale legally – particularly important where new entrants (including MSMEs) are expected to participate.

Initiative category 3: compliance and behavior change

- **Defined Obligations, Scope, and Definitions**
  Regulations that clearly define who must comply, what actions are required, and how compliance coverage is determined, help to reduce legal ambiguity in PWM systems. When obligations are open to interpretation, participation becomes uneven and compliance levels cannot be reliably predicted. This weakens enforceability and undermines confidence in and compliance with behavioral linked revenues, directly constraining the use of fiscal mechanisms such as levies, EPR backed financing, or other mechanisms that depend on consistent participation or compliance. In such settings, mechanism selection shifts toward more concessional funding that does not rely on predictable compliance behavior.

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RECOMMENDATION

Policymakers should ideally ensure regulations define who must comply, what they must do, and the definitions that determine compliance coverage. The aim is to remove legal ambiguity that leads to uneven implementation, so obligations are not left to interpretation by stakeholders.

- **Compliance Assessment and Reporting Pathways**
  If compliance assessment and reporting pathways are unclear, overly complex, or misaligned with implementation capacity, uncertainty arises around whether compliance can be demonstrated in practice. Unclear evidence requirements or reporting processes also weaken the integrity of *MRV and performance tracking* and reduces confidence in reported results. This limits the feasibility of performance based or outcome linked mechanisms that depend on verified compliance, pushing mechanism selection toward less outcome dependent options.

RECOMMENDATION

Regulations can specify how compliance will be assessed, including what evidence or data is required, the submission channels, frequency, and what constitutes sufficient compliance. This is also where policymakers should ensure reporting requirements are proportionate to capacity, so the system does not collapse into non-reporting or symbolic compliance due to unrealistic administrative burdens.

- **Legal Authority for Enforcement**
  If legal authority for enforcement is weak or contested, enforcement actions become inconsistent and difficult to sustain. Reduced credibility of penalties and corrective actions weakens compliance, and *enforceability*. This undermines mechanisms that rely on enforceable obligations, such as compliance linked fees, EPR obligations, outcome-oriented instruments, and shifts feasible options toward funding approaches that are more tolerant of non-compliance risk, such as public or concessional financing.

RECOMMENDATION

Policymakers can ensure that the legal groundwork for behavior-change measures is legally valid and compatible with enforcement, so enforcement actions are defensible and consistently applied[22].

Initiative Category 4: Systems Enablement

- **Institutional Mandates for System Participation and Roles**
  Actor participation and defined roles within shared systems, are key parameters which, if not laid out in institutional mandates, may lead to uptake becoming uneven and gaps in system coverage. Participation gaps diminish the reliability of system-level data and performance assumptions, which weakens *MRV and performance tracking*. This can lead to mechanisms that depend on broad and complete participation and data submissions by various stakeholders, for the purposes of performance tracking, such as EPR or outcome-based financing structures being compromised or ruled out.

RECOMMENDATION

Before rolling out system-dependent components, policymakers may want to consider if existing regulatory mandates establish which actors are required to use shared systems, what each actor must do, and the processes required for coordination and system usage. The key prerequisite is that system use is anchored in regulatory mandates that make roles and participation explicit.

- **Data Governance and Oversight Frameworks**
  Weak or absent data governance frameworks can lead to data fragmentation, often making it unsuitable for verification or tracking. This undermines *MRV and performance tracking* credibility and constrains performance or outcome-linked funding that depends on standardized, auditable data. Weak data governance and oversight also fail to paint a complete and accurate picture of system-wide PWM waste flow, funding flow and compliance data. This negatively affects the risk allocation and absorption capacity of stakeholders like funders or development partners that rely on accurate system-level data to make sound operational or financial PWM decisions. This reduces the confidence that stakeholders and funders have in a PWM system, stifling their willingness to invest, and limiting the range of financial mechanisms available for an initiative[23].

[21] Improving Markets for Recycled Plastics Trends, Prospects and Policy Responses

[22] Sustainable waste management through behavioral science: Case studies around the world

[23] Bridging the Gap in Solid Waste Management

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RECOMMENDATION

AMS can ensure the regulatory frameworks include a data governance layer that defines standards and formats for data submission, rules for handling, access and sharing, retention and confidentiality requirements, as well as interoperability expectations across national and local systems. This ensures that data is usable for monitoring, reporting, and verification rather than being fragmented and inconsistent.

Step 3.2 Creating an Enabling Environment

An assessment of the broader systemic conditions, distinct from regulatory prerequisites, necessary for the initiative and associated financial mechanisms to succeed.

Across all 4 initiative categories, enabling conditions were grouped and analyzed in 6 unique classes, some of which are common to multiple initiative categories and as such, recur across the relevant categories with tailored descriptions to the categories. Recurring enabling condition classes include:

- **Institutional Capacity:** the capacity stemming from governance systems and processes;
- **Operational Capacity:** the day-to-day technical, logistical, and human-resource capabilities needed for reliable initiative implementation and service delivery; and
- **Data and Digital Systems:** the systems, tools, and protocols required to generate accurate, consistent, and verifiable data to support planning, monitoring, reporting, and compliance.

Enabling condition classes specific to a single initiative type include:

- **Physical Infrastructure and Equipment**
- **Market Foundations**
- **Policy Guidance.**

Each of the enabling condition classes are mapped to the 4 initiative categories as visualized in Table 9 below. Note that while the enabling condition classes are presented separately to support structured assessment and analysis, these conditions are highly interconnected in practice. For example, data and digital infrastructure depends on sufficient operational capacity to maintain systems and ensure data quality, while institutional capacity may influence the effectiveness of operational processes and the deployment of physical infrastructure. As such, policymakers are encouraged to interpret readiness levels not as isolated factors, but as components of an integrated enabling environment where weaknesses in one area may constrain performance in others.



Table 9: *Enabling Condition Class Categorization*

	WASTE SERVICE OPERATIONS (4)	MARKET ACTIVATION (4)	COMPLIANCE AND BEHAVIOR CHANGE (3)	SYSTEMS ENABLEMENT (2)
Institutional Capacity	■	■	■	■
Operational Capacity	■	■	■	■
Data and Digital Infrastructure	■	■		
Physical Infrastructure and Equipment	■			
Market Foundations		■	■	
Policy Guidance			■	■

Legend: Shaded/marked cells indicate that the enabling condition class is relevant to the corresponding initiative category and is assessed as part of the Step 3 analysis.

Initiative Category 1: Waste Service Operations

- **Institutional Capacity**
  Effective waste service operations rely on institutions that can manage day-to-day delivery with clear authority and institutional discipline[24]. Strong institutional capacity reduces financial and regulatory uncertainty, enabling financial mechanisms that require predictable compliance and performance. This unlocks mechanisms that work on outcome-based repayments or those with multiple funders working together. In contrast, when institutional responsibilities are fragmented, processes are underdeveloped, and thus overall institutional capacity is low, the risk profile of an initiative increases, affecting its risk allocation and absorption capacity. Under such conditions, funding must shift towards low-return or purely public mechanisms, as private financiers cannot rely on waste service operators to uphold payments, manage contracts, or enforce standards consistently.

RECOMMENDATION

AMS can ensure that the waste service authority has clearly defined responsibilities for collection, transport, supervision, and facility operations, supported by structured administrative processes.

- **Operational Capacity**
  When operators have reliable fleets, skilled staff, and strong maintenance routines, breakdowns fall, and day-to-day output becomes more stable. Higher and more predictable output, such as recyclables processed, leads to steadier revenue and improves revenue and returns strength. This makes repayment-linked or performance-linked mechanisms viable. When operational capacity is weak, outages and disruptions make revenue volatile and KPIs difficult to achieve. As uncertainty increases, funding must shift to more risk-tolerant mechanisms, such as grants or microfinance, which may not be able to furnish capital on the same scale as other mechanisms.



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RECOMMENDATION

Operational capacity for this initiative category refers to the day-to-day ability of operators to perform the technical, logistical and physical functions required for waste management.

- Supporting manpower needs: It can include sufficient trained technical staff, such as route planners, equipment operators, weighbridge clerks, and supervisors, as well as the requisite budgets to support them.
- Supporting logistics and operations: Operators should ideally also ensure routine maintenance, workshop access, and spare-parts availability are in place, as fleet and facility uptime hinges on functioning maintenance systems and are essential to prevent service collapse[25] .

- **Physical Infrastructure and Equipment**
  Physical infrastructure and equipment influence funding by affecting asset reliability. Functional, appropriately sized infrastructure enables facilities and systems to run at expected throughput, generating stable service output and revenue streams, positively affecting revenue and returns strength. These predictable operational patterns allow financiers to model cashflows and utilize mechanisms such as DRS, which rely on reliable physical PWM operations. When infrastructure is absent or unreliable, performance becomes too inconsistent to underpin output and, subsequently, repayment. In addition to financial viability, this also affects investor confidence, as they may not have sufficient confidence in the initiative's ability to render physical services, to sustain revenue. Consequently, this affects risk allocation and absorption capacity, thereby limiting the number of mechanisms available for an initiative, as less risk tolerant financial mechanisms become less feasible to employ.

RECOMMENDATION

AMS may consider:

- Checking that equipment and infrastructure are able to handle projected waste volumes[26].
- Checking for access to basic equipment to sustain reliable operations[27] .

In general, infrastructure should ideally be aligned with waste composition and flow, as accurate waste data and flow projections are essential to avoid under-designed or over-designed systems, which drive up costs or reduce service reliability.

- **Data and Digital Infrastructure**
  Data and digital systems shape funding through their impact on measurement integrity. When digital MRV produces accurate, verifiable data, for example on throughput, contamination, or fee collection, MRV and performance tracking improves and becomes more auditable. This unlocks mechanisms that rely on verified outcomes or traceability, such as outcome bonds or plastic credits.

RECOMMENDATION

Data and reporting systems can be standardized and consistently used due to the importance of data systems and knowledge management for monitoring service reliability, planning improvements, and supporting evidence-based budgeting[28]

INITIATIVE CATEGORY 2: MARKET ACTIVATION

- **Market Foundations**
  Market foundations affect funding by determining whether recyclers and processors can generate predictable revenue. When supply flows are stable, and when buyers offer reliable demand or offtake agreements, financial and operational stability is fostered, allowing market PWM players to operate with reduced volatility, increased confidence and more predictable margins, thereby positively influencing the risk allocation and absorption capacity of the initiative. This stability makes the funding environment more conducive to more risk averse private capital and funders, expanding the range of mechanisms an initiative can employ. When markets are thin or volatile, revenue becomes unstable, risk profiles increase and pushing funding toward more risk tolerant mechanisms like grants, subsidies, microfinance, and crowdfunding, which do not tend to offer the same scale of capital.

RECOMMENDATION

Focus can be placed on enabling conditions related to stable plastic supply flows, predictable demand, and the basic conditions private actors need to operate profitably and effectively.

- Ensuring stable supply: Policymakers should ensure the establishment of stable waste collection and aggregation channels (including clear interfaces with informal collectors) and define accepted material types and contamination thresholds at the point of aggregation .

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- Ensuring predictable demand: On the demand side, AMS can work to bolster investor confidence through anchor buyers and offtake arrangements, as well as improving market transparency by publishing reference information on plastic volumes and quality bands to reduce price volatility and information asymmetry .
- Ecosystem strengthening: Finally, policymakers can maintain baseline data on plastic waste generation, composition, and collection rates so market-driven initiatives are sized appropriately, and performance can be tracked over time .

- **Operational Capacity**
  The operational capacity of market actors influences the quantity and quality of throughput, as well as the reliability of services rendered. High operational discipline—consistent quality control, efficient logistics, and capable staffing—leads to predictable output and quality. Buyers' trust in the quality and stability of the supply of waste products for further processing increases, strengthening the viability of long-term contracts, thereby reinforcing confidence in revenue streams, and increasing revenue and returns strength. This increases investor confidence and enables a wider range of financial mechanisms, including more commercially funded and performance-linked options, such as commercial debt or thematic bonds.

[24]Beyond an age of waste

[25]Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries - Solid Waste Management and Climate Change

[26]Environmental, Health, and Safety Guidelines for Waste Management Facilities

RECOMMENDATION

Operational capacity can be improved from two dimensions:

- Supporting manpower needs: It is beneficial for AMS to confirm that private sector stakeholders have enough manpower to carry out daily tasks safely and efficiently.
- Supporting logistics and operations: AMS can create dependable handover and holding points for logistics providers and market actors, to reduce operational barriers to market entry, while minimizing the negative environmental and public safety impacts of unregulated waste collection or holding points[32] .

- **Institutional Capacity**
  Institutional capacity shapes trust in market transactions. When quality standards, testing protocols, and certification pathways are well-established and enforced, transaction risk drops and traceability improves. This positively affects risk allocation and absorption capacity, and supports mechanisms that rely on clear standards and reporting, such as plastic credits, EPR, and Programs for Results. Conversely, weak standards increase dispute risk and complicate verification, making commercial and performance-based mechanisms unworkable, limiting the number of mechanisms available for these initiatives.

[27]Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries; Municipal Solid Waste Management Guidelines: Technical Framework for Integrated Collection, Separation, Treatment, and Disposal Systems

[28]Solid waste management in the context of the waste hierarchy and circular economy frameworks: An international critical review

RECOMMENDATION

Institutional capacity refers to the ability of market actors to govern, coordinate, and manage systems and processes requisite for and beneficial to their business functions. Policymakers can support market actors in this regard by:

- Ensuring that testing and quality assurance services are easily accessible, which is crucial to reducing the commercial risk of market-driven PWM initiatives. This includes traceability mechanisms that follow material through collection, aggregation, processing, and sale, in order to increase commercial information availability and investor confidence .
- Providing clear guidance on standards, labels, and claims that align with local realities, so buyers, consumers and market-driven initiative investors can trust recycled content and plastic waste assertions.

- **Data and Digital Infrastructure**
  Digital systems in markets strengthen transparency by enabling registries, traceability, and digital MRV, allowing for more auditable commercial performance, and thus improving MRV and performance tracking. Without these systems, transaction volumes, prices, and material quality are not consistently recorded or traceable, making flows and performance unverifiable in practice, leading to reduced market transparency and hindered price discovery. This limited MRV and performance tracking leads to financiers being unable to verify performance, which affects their perception of an initiative's financial viability, and subsequently, their confidence. This restricts mechanism options to those that can accommodate more risk-averse investment preferences, such as grants or subsidies.

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RECOMMENDATION

AMS can support transaction infrastructure, such as digital platforms or registries, that allow buyers and sellers to match on plastic volume, specification, and delivery terms, helping overcome thin markets and high search costs, increasing commercial viability[34].

INITIATIVE CATEGORY 3: COMPLIANCE AND BEHAVIOR CHANGE

- **Policy Guidance**
  The strength of policy guidance affects financial mechanisms because it determines how clearly stakeholders understand their obligations and how predictably they respond to new requirements. When instructions, templates, submission pathways, and timelines are clear, uptake is stronger and compliance behavior follows a more consistent pattern, increasing enforceability and making results from fiscal and policy mechanisms, such as levies or collection fees more stable. In contrast, where guidance is less clear, compliance becomes unreliable, limiting feasible financial mechanisms to those that do not depend on consistent behavior and compliance, which may not be as effective as fiscal mechanisms at catalyzing behavior change.

RECOMMENDATION

Policy guidance refers to the instructions, information and support that help stakeholders understand their responsibilities and navigate the compliance, reporting, and behavioral requirements of a PWM initiative.

- AMS can pair compliance initiatives with clear instructions, aligned with actual PWM system capacity, which is essential for preventing system overloads, confusion and non-compliance[35] .
- Policymakers can ensure broad and early communication of a new initiative to inform stakeholders of new rules, expectations, and timelines, as behavior-change initiatives depend on widespread shifts in daily practice[36].

- **Operational Capacity**
  The operational capacity of an enforcement body determines how effectively it can enforce compliance and steer behavioral change, which significantly affects the efficacy of fiscal and economic financial mechanisms. Fiscal mechanisms meant to foster behavioral change, such as EPR, waste collection fees, and Deposit-Return Schemes rely fundamentally on predictable, widespread compliance to generate revenues, enforce obligations, and maintain system integrity. Where operational capacity is strong, enforceability improves, leading to increased compliance, and more stable funding flows, improving the feasibility of such fiscal mechanisms. Conversely, where weak operational capacity results in less comprehensive enforcement, compliance becomes uneven, funding flows become uncertain, and these mechanisms are diminished in effectiveness, narrowing viable mechanism options to those that do not depend on widespread compliance and behavior change.

[29] A unique moment in time: Scaling plastics circularity

[30] Improving Markets for Recycled Plastics Trends, Prospects and Policy Responses

RECOMMENDATION

Operational capacity for this initiative category refers to the preparedness of inspection bodies in terms of their staffing, resources, and procedures, which affect their ability to apply enforcement actions fairly and consistently. Global waste-management studies highlight that inspection bodies should ideally have adequate staffing and resources to conduct checks, gather evidence, and issue corrective actions; otherwise, enforcement becomes uneven and undermines legitimacy in the PWM initiative[37] .

- **Institutional Capacity**
  Institutional capacity strengthens funding by giving enforcement a strong legal and procedural backbone. When mandates are explicit, procedures are standardized, and coordination mechanisms are functional, inspections and penalties follow predictable steps. This makes behavioral obligations enforceable in practice, maximizing initiative uptake and strengthening compliance-based revenue due to better enforceability. This expands the range of available fiscal mechanisms for it, such as levies/taxes/duties or waste-collection fees, as they are more likely to be enforced or collected.

[31] Plastics Circularity: Plastic Waste Availability, Recycling Technologies, Policies, Impact on Virgin Resin Demand; Digital Transformation in Waste Management: Disruptive Innovation and Digital Governance for Zero-Waste Cities in the Global South as Keys to Future Sustainable Development

[32] Improving Markets for Recycled Plastics Trends, Prospects and Policy Responses; Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries

[33] epa.gov/sites/default/files/2020-10/documents/master_swmg_10-20-20_0.pdf

[34] Digital Platforms Enabling Circular Trade Flows

[35] Sustainable waste management through behavioral science: Case studies around the world

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RECOMMENDATION

Institutional capacity for this initiative category refers to the ability of public institutions to govern, coordinate, regulate, and oversee initiative enforcement and usher in behavioral change. AMS can prepare enforcement institutions with the procedures and coordination systems needed to enforce behavior change initiatives effectively and fairly:

- **Clear mandates:** Policymakers can ensure that the agencies responsible for inspections, compliance checks, and enforcement have explicit legal authority to act[28] .
- **Standardized enforcement procedures:** Institutions can have formal procedures for inspections, sampling, evidence collection, penalty issuance, corrective actions, and appeal processes.
- **Coordination capacity:** Behavior-change initiatives often involve multiple bodies –structured coordination mechanisms, information-sharing protocols, and escalation channels can help reduce fragmentation and conflicting decisions.

INITIATIVE CATEGORY 4: SYSTEMS ENABLEMENT

- **Institutional Capacity**
  The strength of governance arrangements and procedures directly influences system readiness and, therefore, the range of feasible financial mechanisms employable. Clear mandates and interoperable systems increase the likelihood that rules are implemented uniformly and that the data underlying decisions are reliable.

This reduces information asymmetry and financial risk, positively affecting an initiative's risk allocation and absorption capacity, thereby increasing investor confidence. This could serve to strengthen their investment appetite, allowing the use of more sophisticated, larger capital scale mechanisms, that require strong governance, and lower risk to operate, such as commercial debt or PPPs.

RECOMMENDATION

AMS can ensure that the public-sector institutions responsible for system oversight have the authority, structures, and processes needed to oversee and participate in shared systems and governance frameworks.

- System performance depends on coherent action across ministries, regulators, municipalities, and operators.
- Interoperability between national and local systems and governance bodies should also be reinforced so that PWM-related data can be integrated without manual manipulation .

- **Operational Capacity**
  The strength of operational capacity affects financial mechanisms because it determines how reliably shared reporting and MRV systems function in practice. When day-to-day system operations, such as data validation, troubleshooting, and cross-agency reporting, are carried out with consistency and technical competence, the information flowing through the system becomes more credible, timely, and verifiable. This significantly affects MRV and performance tracking, which directly influences funding, as many mechanisms, especially output-oriented instruments, depend on trustworthy system-level data to trigger payments, validate compliance, or demonstrate performance.

RECOMMENDATION

To make shared systems and processes work reliably in practice, policymakers operators should ideally have the staffing, routines, and training to run these systems and enforce processes day-to-day and respond to failures quickly, to minimize adverse effects on mechanism effectiveness and choice.

Supporting logistics and operations:

- It is advisable for policymakers to ensure that staffing, technical skills, and knowledge-management routines needed to participate in shared systems and processes, reliably are in place. This includes building and training teams capable of managing system operations, troubleshooting issues, validating data, and enforcing reporting requirements[40] .
- AMS can maintain digital systems that can consistently capture, store, verify, and exchange information across agencies and levels of government. This includes deploying or upgrading digital platforms for reporting, material tracking, MRV, and performance tracking[41] .

[36] The Science of Changing Behavior for Environmental Outcomes: A Literature Review (Topic 4)

[37] Bridging the Gap in Solid Waste Management

[38] Ibid.

[39] Bridging the Gap in Solid Waste Management

Table 10 below summarizes the 4 factors that are affected by the readiness levels of each enabling condition class. The 4 factors are: Revenue and Returns Strength; Risk Allocation and Absorption Capacity; Enforceability and; MRV and Performance Tracking. Each of them significantly influences financial mechanism selection.

Table 10: *Summary of Factors Affected by Readiness Levels of Each Enabling Condition Class*

FACTORS AFFECTED:	REVENUE AND RETURNS STRENGTH	RISK ALLOCATION AND ABSORPTION CAPACITY	ENFORCEABILITY	MRV AND PERFORMANCE TRACKING
Waste Service Operations				
Institutional Capacity		■		
Operational Capacity	■			
Physical Infrastructure and Readiness	■	■		
Data and Digital Infrastructure				■
Market Activation				
Market Foundations		■		
Operational Capacity	■			
Institutional Capacity		■		
Data and Digital Infrastructure				■
Compliance and Behavior Change				
Policy Guidance			■	
Operational Capacity			■	
Institutional Capacity			■	
Systems Enablement				
Institutional Capacity		■		
Operational Capacity				■

Legend: Shaded/marked cells indicate that the readiness level of the enabling condition class has a direct influence on the corresponding factor used in financial mechanism selection.

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Step 3.3

Safeguard Readiness and Financial Mechanism Selection

In the context of PWM initiatives, safeguards are formal processes designed to minimize unintended adverse impacts that an initiative's activities may have on people and the environment[42] . This includes screening for biodiversity loss, pollution externalities, community effects and similar impacts during planning and implementation, to prevent or reduce harm before it occurs.

Where safeguards are weak, such harm is more likely to occur and generate feedback effects that disrupt implementation or undermine outcomes. These feedback-driven risks differ from initiative-internal execution risks (which are discussed in Step 2), which arise from challenges intrinsic to the initiative's design rather than from its interaction with external actors or systems. Where safeguards are robust, these external risks are better anticipated and mitigated before they materialize.

AMS can assess safeguard readiness using the indicators in the Implementation Needs Checklist (Annex D). The readiness level helps determine which financial mechanisms are feasible and whether stronger safeguards are needed before deployment.

LIMITED SAFEGUARD READINESS

Environmental and social safeguards are absent, weak or inconsistently applied. This increases the risk of environmental harm, community opposition, regulatory intervention and cost escalation—all of which can disrupt implementation and weaken financial performance.

KEY CHARACTERISTICS

- Limited risk screening and impact assessment
- Inadequate mitigation and monitoring
- High and difficult-to-quantify external risks
- Greater likelihood of disruption and corrective costs

FINANCING IMPLICATIONS

- Prioritize upfront or contingency funding that can absorb shocks and support corrective action.
- Avoid mechanisms that depend heavily on predictable performance or verified outcomes.

MODERATE SAFEGUARD READINESS

Core safeguards—such as risk screening, impact assessment and mitigation planning—are in place but may not be comprehensive or consistently implemented. External risks are more manageable, although some uncertainty remains.

KEY CHARACTERISTICS

- Basic screening and mitigation processes in place
- Partial or inconsistent implementation
- Reduced but residual environmental and social risks
- External risks can be estimated with some confidence

FINANCING IMPLICATIONS

- A broader range of mechanisms becomes feasible.
- Risk-sharing mechanisms, such as blended finance or partial guarantees, may be considered where residual risks can be estimated and allocated.

STRONG SAFEGUARD READINESS

Safeguards are systematically applied throughout project design and implementation, reducing the likelihood of unmanaged environmental or social impacts. This creates more predictable conditions for financing and delivery.

KEY CHARACTERISTICS

- Comprehensive risk assessment and mitigation
- Consistent monitoring, reporting and corrective action
- Low and manageable external risks
- Predictable performance and verifiable outcomes

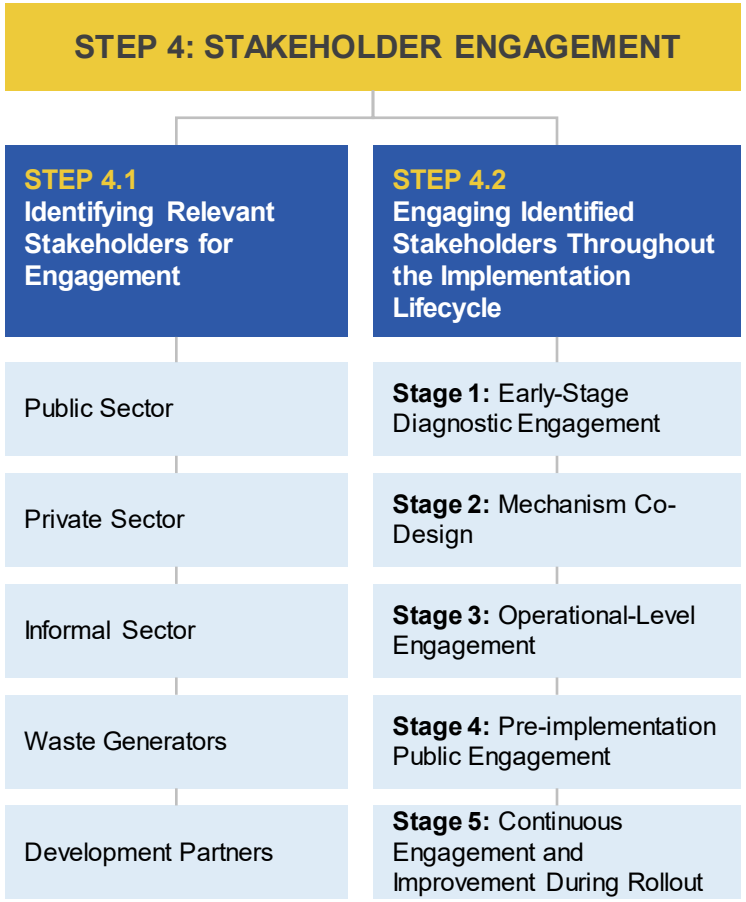
FINANCING IMPLICATIONS

- Performance- and outcome-linked mechanisms become more feasible.
- Private capital may be mobilized with fewer risk buffers.
- Funding can increasingly allocate risk and reward based on verified performance.

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STEP 4 **STAKEHOLDER ENGAGEMENT**

Figure 12: Step 4 Overview



Effective stakeholder engagement is crucial for ensuring that PWM initiatives are aligned with the realities faced by those who implement, regulate, finance, and are affected by them. This ensures the feasibility of the initiatives and secures stakeholder buy-in. Stakeholders include: the public sector, the private sector, the informal sector, waste generators, and development partners. This step provides a structured approach for validating findings from steps 2, 3 and 6, identifying key stakeholders, understanding their perspectives, and integrating their insights into mechanism design and implementation, ensuring that initiatives are technically sound and financially sustainable.

Step 4.1 Identifying Relevant Stakeholders for Engagement

While specific mechanisms are not selected in this step, different types of mechanisms have distinct sensitivities that must be validated early through stakeholder engagement. Mechanisms that provide upfront capital generally depend on actors who can confirm procurement authority, long-term contracting capacity, and the stability of cost and operational assumptions. Those that rely on economic or fiscal measures depend on stakeholders who can clarify how obligations are interpreted, how fee-collection processes work in practice, and whether enforcement pathways are credible and non-detrimental. Approaches that rely on verifiable results or traceable flows require early engagement with data owners, auditors, and institutions responsible for reporting. Mechanism options that involve risk-sharing or guarantees require input from entities responsible for fiscal oversight and public financial management.

Identifying stakeholders through these lenses ensures that engagement in Step 4 captures the institutional, operational, and informational realities that will matter during mechanism selection in Step 5, without predetermining which mechanisms will ultimately be appropriate.

STAKEHOLDER GROUP 1: PUBLIC SECTOR

The public sector consists of government bodies responsible for policymaking, regulation, enforcement, and oversight of PWM systems. Public sector stakeholders can include ministries of environment, finance or trade; local governments; municipalities; PWM-related regulators; and oversight or regulatory bodies.

Why they matter:

- They hold policy, regulatory, and enforcement authority necessary for mechanisms like EPR, reporting mandates, DRS, and collection;
- They ensure alignment across national and local levels, where PWM responsibilities are often fragmented; and
- They determine budget availability, public investment priorities, and risk-bearing roles.

Phased implementation roadmaps are particularly important for government stakeholders, as multi-year implementation programmes often require coordination across ministries, implementing agencies, and local governments with different mandates and capacities. A phased approach helps clarify roles, sequence actions and responsibilities, and align resources, while allowing institutions to address coordination challenges before implementation is expanded.

[40] Ibid.
[41] Beyond an age of waste

[42] PacWastePlus Programme: Gender & Social Inclusion (GESI) Guiding Document

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STAKEHOLDER GROUP 2: PRIVATE SECTOR

The private sector comprises profit-driven commercial entities involved in production, waste operations, recycling, logistics, and investment along the plastic value chain. Private sector stakeholders can include producers, manufacturers, importers, retailers, waste management contractors, logistics providers, recyclers, material buyers, investors, banks, and insurance providers.

Why they matter:

- They deliver significant operational functions in collection, sorting, recycling, and logistics;
- They bear the financial and compliance obligations under more market-driven initiatives (EPR fees, reporting, performance standards); and
- They are central to PWM market formation and investment mobilization.

STAKEHOLDER GROUP 3: INFORMAL SECTOR

The informal sector includes unregistered or semi-formal actors who participate in waste collection, sorting, aggregation, and recycling outside formal regulatory frameworks. Informal sector stakeholders can include waste pickers, junk shops, community waste banks, and MSMEs.

Why they matter:

- They perform a large share of collection, sorting, and recovery, often filling gaps left by formal systems;
- They provide low-cost, flexible labor that supports recycling and PWM markets; and
- They are often the most affected by new requirements and can be unintentionally excluded.

STAKEHOLDER GROUP 4: WASTE GENERATORS

Waste generators are individuals, households, businesses, and communities that produce plastic waste and are directly affected by, and responsible for complying with behavioral or reporting requirements. Waste generators include citizens, households and consumers and communities.

Why they matter:

They make up a large portion of plastic waste generators, and their compliance and broad participation in some regional or national PWM initiatives are central to their success.

STAKEHOLDER GROUP 5: DEVELOPMENT PARTNERS

Development partners include multilateral banks, environmental or philanthropic funders, and NGOs focused on environmental and socioeconomic causes.

Why they matter:

- They provide technical assistance, capacity building, safeguard support, and seed funding;
- They help establish robust MRV frameworks, which influence the initiative's credibility; and
- They often co-finance early pilots, helping to derisk larger investments.

Step 4.2 Engaging Identified Stakeholders Throughout the Implementation Lifecycle

Note: 'Considerations this stage targets' is expanded upon for each stage in the Supplementary Resource—**Annex E: Step 4 Worksheet**



Table 10: *Stakeholder Engagement Stages*

	STAGE 1: EARLY-STAGE DIAGNOSTIC ENGAGEMENT	STAGE 2: MECHANISM CO-DESIGN	STAGE 3: OPERATIONAL-LEVEL ENGAGEMENT	STAGE 4: PRE-IMPLEMENTATION PUBLIC ENGAGEMENT	STAGE 5: CONTINUOUS ENGAGEMENT AND IMPROVEMENT DURING ROLLOUT
Purpose:	Identify stakeholder constraints, concerns, incentives, and readiness before selecting mechanisms	Iterate on mechanism options and test their feasibility under real-world conditions. This stage should be used to validate inputs from Steps 2 and 3	Validate feasibility in real operating environments. This stage should be used to validate inputs from Step 3	Build awareness, trust, and readiness among citizens, businesses, and other stakeholders prior to final mechanism selection. This stage should be used to validate inputs from Step 3	Ensure adaptive management, accountability, and responsiveness of initiatives and mechanisms, while facilitating knowledge management. This stage should be used to validate inputs from Step 6, which comes later in the Guidebook, after mechanisms have been selected in Step 5
Potential Activities:	• Multilateral interviews with ministries, regulators, operators and producers • Technical sounding sessions to test specific assumptions • Feasibility workshops • Mapping of barriers related to cost, enforcement, digital readiness, and institutional capacity	• Multi-stakeholder design workshops • Scenario stress-testing (e.g., low enforcement, volatile prices, weak MRV) • Risk-allocation exercises (public vs private vs producer roles) • Mapping implementation bottlenecks and needed adjustments	• Field visits to PWM facilities (dumpsites, MRFs, transfer stations, recycling facilities) • Focus groups with waste pickers, market actors, MSMEs, and informal aggregators • Pilots or small-scale trials to test behavior operations, sorting, traceability, or fee compliance	• Public consultations • Community awareness campaigns • Producer/industry roundtables • Multi-channel communications and digital outreach	• Regular feedback loops • Performance dialogues • Knowledge sharing sessions • Grievance and dispute-resolution channels
Considerations this stage targets:	• Initiatives (or parts of them) that do not work under current conditions • Conditions that need to be changed before initiative implementation • Untenable burdens or risks that stakeholders face	• Bankability, revenue certainty, compliance realism • Inclusion risks and mitigation needs • Integration into regulatory frameworks • How identified factors above affect mechanism choices	• Hidden operational constraints and leakage points • Operational readiness and reporting burdens • Viability of reporting and MRV processes • Behavioral frictions and adoption barriers • Unconsidered safeguards needed • Ground-level enabling conditions assessment	• Clarity of instructions and expectations • User barriers to adoption (cost, convenience, understanding) • Public acceptance and perceived fairness • Ease and feasibility of compliance and participation	• Emerging risks and stakeholder frustration points • Compliance challenges in early rollout • Performance monitoring and management • Strengthening long-term governance with observed best practices and lessons learned • Opportunities to adjust design for long-term resilience

STEP 5

CHOOSE THE MOST APPROPRIATE MECHANISM(S)

The convergence of the Roadmap

Steps 1 through 4 have each contributed a distinct layer of analysis that, taken together, define the boundaries of what is suitable for a given PWM initiative. Step 1 established the team configuration and governance arrangements that will drive implementation. Step 2 produced a structured characterization of the initiative itself across four dimensions—risk profile, financial viability, scale, and funder type—that determine which categories of financial mechanism are structurally compatible with the initiative's operational and cashflow realities. Step 3 assessed the external environment, identifying which pre-requisites, enabling environment, and safeguard conditions are in place, and therefore which mechanisms can realistically be deployed and sustained.

Step 4 validated and refined these assessments through stakeholder engagement, surfacing the realities that bear directly on mechanism feasibility.

Step 5 is where these threads converge. The purpose of this step is to translate the accumulated analysis into a concrete, tailored shortlist of financial mechanisms.

How the mapping logic works

Figure 13 illustrates how the mapping logic underlying the Mechanism Navigator Tool operates. The tool processes inputs through a structured mapping model that applies a systematic set of branching conditions. This model is derived from a mapping matrix that links initiative-specific and external environment characteristics to compatible financial mechanisms, and consolidates all mechanisms reached across branches into a final shortlist. The model traverses up to ten levels of branching conditions across the 13 input dimensions (four from Step 2, eight from Step 3, and one being the Initiative Type), with legal and regulatory readiness serving as the primary entry-level condition. The most consequential split dimensions determine the following branches. These refer to the factors that most quickly determine which mechanisms remain in or fall out of the shortlist, such as safeguards, institutional capacity, market foundations, and initiative scale.

Several patterns in the mapping are worth noting for policymakers:



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Table 12: *Key Patterns and Policy Implications from the Mapping*

PATTERN 1: The breadth of mechanisms available is determined more by the combination of their inputs than by any single factor	
What the Mapping Shows	• Context-specific shortlist instead of a single “right” mechanism • Commonly recommended mechanisms across all input combinations: - Grants and subsidies - Dedicated environmental funds - Financial insurance products - Sustainability-linked bonds
Implication for Policymakers	• Commonly recommended mechanisms are compatible with a wide range of initiative types, risk levels, financial viability conditions, funder types, and scale, and impose relatively modest requirements on the external environment • Policymakers can expect these mechanisms to appear on most shortlists as a baseline • Other mechanisms enter or exit the shortlist depending on how initiative-specific and enabling environment conditions are assessed
PATTERN 2: Mechanisms that require the most developed enabling environment share a common structural logic	
What the Mapping Shows	• Most demanding mechanisms in the mapping: - DRS - EPR - Levies, taxes and duties - PPPs • These mechanisms require “Strong” levels across institutional capacity, operational capacity, and data and digital infrastructure, before they are viable • These mechanisms share a common dependence on the state's capacity to administer, monitor, and collect: - EPR and DRS require institutions capable of registering producers, setting and adjusting obligations, tracking - Levies and taxes require enforcement bodies and administrative systems capable of consistent collection at scale - PPPs require contracting capacity, regulatory oversight, and functional market frameworks to price and allocate risk credibly - These mechanisms cannot function without a well-developed institutional and regulatory apparatus • By contrast, grants and subsidies, and dedicated environmental funds operate as capital-transfer instruments that require less enforcement or market-making capacity and can be deployed even where governance systems are limited

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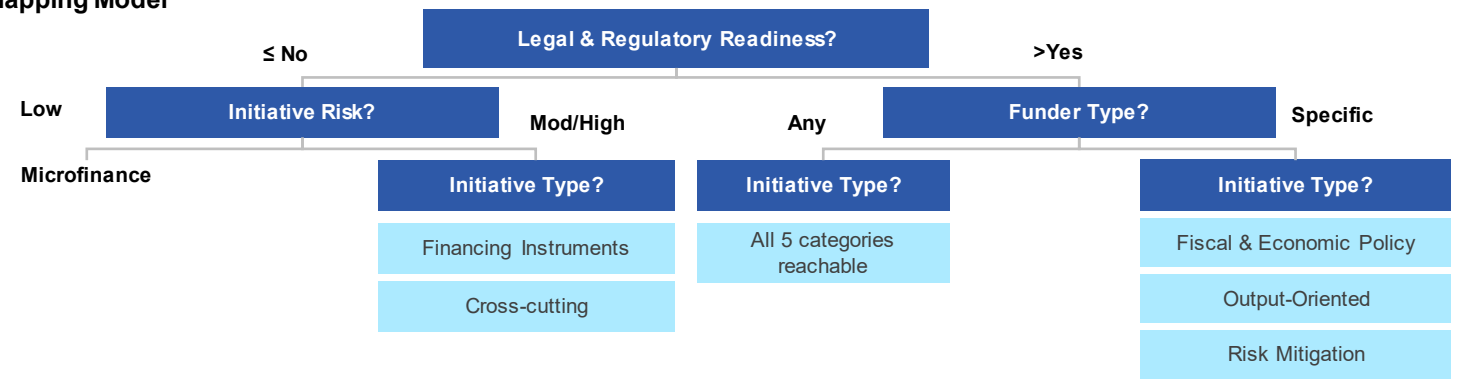
Implication for Policymakers	• Where enabling conditions are limited, the near-term viable set of mechanisms is likely to be weighed toward capital-transfer instruments • Higher-bar mechanisms (EPR, DRS, Levies and taxes, PPPs) become accessible through parallel investment in the institutional and regulatory infrastructure they depend on • Strengthening enabling conditions expands the range of feasible financing mechanisms over time • Policymakers should consider a sequencing approach: deploying lower-capacity mechanisms in the near term while building the institutional foundations required for more complex mechanisms in the medium term
PATTERN 3: Mechanisms with the widest tolerance for initiative risk and financial viability are predominantly impact- and public-sector-oriented instruments	
What the Mapping Shows	• Equity, financial insurance products, financial guarantees, blended finance, programs for results, grants and subsidies, and dedicated environmental funds accommodate any combination of initiative risk level and financial viability - This includes high-risk, low-viability initiatives that are structurally incompatible with repayable finance - These mechanisms are designed to absorb or socialize risk and do not depend on revenue generation to justify deployment • Impact financing and outcome bonds accommodate a narrower range of initiatives - These mechanisms are generally suitable for initiatives with at least moderate risk and the ability to generate moderate financial viability
Implication for Policymakers	• High-risk or early-stage initiatives with limited revenue prospects can anchor their mechanism selection in equity, financial insurance products, financial guarantees, blended finance, programs for results, grants/subsidies, and dedicated environmental funds • As initiatives mature, risks are reduced, revenues become established, and a track record is built, the range of viable mechanisms expands
PATTERN 4: Five dimensions narrow down financial mechanisms most, but for different reasons	
What the Mapping Shows	• Safeguards and legal and regulatory readiness are the most influential dimensions, each affecting 22 of the 24 mechanisms in the mapping • Safeguards represent a distinct assessment layer - Their absence in Step 3 does not simply reduce performance, but introduces external risks that destabilize the financing environment - As a result, nearly all mechanisms become inviable • Legal and regulatory readiness acts as a prerequisite condition - Without it, the contractual, enforcement, and revenue-collection foundations required by most mechanisms do not exist • Institutional capacity, market foundations, and initiative scale are the third most consequential dimensions, with 16 of the 24 mechanisms excluding a Basic level
Implication for Policymakers	• Weaknesses across these 3 dimensions are highlighted as a potential priority for policymakers, as targeted improvements can generate the broadest expansion in the available mechanism set • Addressing safeguards and legal and regulatory readiness offers the largest immediate expansion in financing options - Improvements in these areas can move up to 22 mechanisms from inaccessible to potentially viable • Strengthening institutional capacity, market foundations, and initiative scale should be a priority where these conditions remain weak - Raising these dimensions to at least a Moderate level can make a further 16 mechanisms accessible

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Figure 13: Step 5 Mapping Model

INPUTS → **MAPPING MODE** → **OUTPUT(S)**

Systematic Mapping Model



"I don't know" TraversalWhere a policymaker cannot determine an input, the model traverses both branches at that split, ensuring no mechanism is incorrectly excluded. The resulting shortlist will be broader but remains valid.

Broadest-Reach Mechanisms

Compatible with the widest range of initiative contexts

- Grants/Subsidies
- Dedicated Environmental Funds
- Financial Insurance
- Sustainability-Linked Bonds
- Impact Financing

Strongest Enabling Environment Required

- Deposit Refund Scheme — Highest bar
- Levies, Taxes, Duties — High bar
- PPPs — High bar
- Dedicated Environmental Funds — Low bar
- Crowdfunding — Lowest bar

Supports Widest Scope of Initiative Profiles

Based on risk level accommodated and financial viability

Financial insurance products, Financial guarantees, Blended finance, Programs for Results, Grants/Subsidies, Dedicated Environmental Funds

Accommodates Low-High risk, has Low-High financial viability

Impact financing, Outcome bonds

Accommodates Mod-High risk, has Mod-High financial viability

Most-Deterministic Input Dimensions

Refers to input factors that narrow down the suitable financial mechanisms most

Legal & regulatory readiness 22/24 mechanisms require Yes

Safeguards 22/24 mechanisms require Basic+

Institutional capacity, Market foundations, Initiative scale 16/24 mechanisms exclude Basic

MECHANISM SHORTLIST

24 mechanisms across 5 categories

FINANCING INSTRUMENTS

- Equity
- Commercial Debt
- Grants/Subsidies
- Thematic Bonds (Green, Blue, Social, Sustainable)
- Mezzanine Finance
- Microfinance

FISCAL & ECONOMIC POLICY

- Extended Producer Responsibility (EPR)
- Levies, Taxes and Duties
- Deposit Refund Scheme (DFS)
- Waste Collection Fees
- Debt-for-Nature Swaps

OUTPUT-ORIENTED

- Plastic Credits
- Outcome Bonds
- Sustainability-linked Bonds
- Impact Financing
- Programs for Results (PforR)

RISK MITIGATION

- Financial Guarantees
- Financial Insurance Products

CROSS-CUTTING

- Blended Financing
- Public-Private-Partnerships (PPPs)
- Dedicated environmental funds for waste management
- Crowdfunding
- Revolving Credit Facilities
- Joint Ventures

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Additional Considerations: Indicative Cost of Accessing Different Financial Mechanisms

While the Mechanism Navigator Tool identifies mechanisms that are compatible with a specific initiative, it is also important for policymakers to assess the relative cost of accessing each mechanism.

Table 13 below provides an indicative comparison of financing costs across the financial mechanisms covered in the Guidebook.

Table 13: *Indicative Cost of Financing Across Financial Mechanisms*



CATEGORY	FINANCIAL MECHANISM	FINANCING COST
Financing Instruments	Grants/Subsidies	Low
	Commercial Debt	Medium
	Thematic Bonds (Green, Blue, Social, Sustainability)	Medium
	Equity	High
	Mezzanine Finance	High
	Microfinance	High
Fiscal and Economic Policy Instruments	Extended Producer Responsibility (EPR)	Low
	Levies, Taxes and Duties	Low
	Waste Collection Fees	Low
	Debt-for-Nature Swaps	Low
	Deposit Refund Schemes (DRS)	Medium
Output-Oriented Instruments	Programs for Results (PforR)	Low
	Plastic Credits	Medium
	Sustainability-Linked Bonds	Medium
	Impact Financing	Medium
	Outcome Bonds	High
Risk Mitigation Instruments	Financial Guarantees	Low
	Financial Insurance Products	Medium
Cross-Cutting Funding and Other Instruments	Dedicated Environmental Funds	Low
	Blended Finance	Medium
	Public-Private Partnerships (PPPs)	Medium
	Crowdfunding	Medium
	Revolving Credit Facilities	Medium
	Joint Ventures	High

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Assessment basis:

Financing cost reflects the combined cost of:

01	Cost of capital (e.g. interest, investor returns, profit-sharing)
02	Transaction and structuring costs (e.g. due diligence, legal, issuance, procurement, negotiations)
03	Ongoing compliance costs (e.g. reporting, MRV, audits, verification)

Implications for Policymakers

Table 13 provides an additional lens for interpreting the recommendations generated by the Mechanism Navigator Tool. Importantly, the recommendations generated by the tool already reflect the assessments undertaken in Steps 2-4 and thus implicitly steer users towards mechanisms that are proportionate to the needs and readiness of the initiative and away from mechanisms that may be unnecessarily costly or complex to implement. This financing-cost assessment should therefore be interpreted as an additional consideration to refine mechanism selection based on the likely effort and resources required to mobilize funding. In general:

- **Lower-cost mechanisms** can often be deployed comparatively quickly and may be particularly useful where financing capacity is constrained.
- **Medium-cost mechanisms** can mobilize larger volumes of capital but usually require stronger institutional arrangements, clearer revenue streams, or more extensive monitoring and reporting systems.
- **Higher-cost mechanisms** are often most suitable where substantial capital is required, commercial opportunities exist, or investors are expected to absorb significant project risks.



SPOTLIGHT

Expanding the Pool of Available Funding

Stakeholder consultations across ASEAN highlighted that, notwithstanding growing interest in alternative financing mechanisms, a significant share of PWM expenditure continues to be financed through public budgets. As a result, even where appropriate financial mechanisms have been identified, implementation may remain constrained by limited fiscal space, competing development priorities, and insufficient private-sector participation.

This spotlight discussion thus focuses on how the overall supply of financing available to PWM can be expanded.

1. Expanding Public Funding for PWM

Positioning PWM Within Broader National Priorities

PWM initiatives are often assessed primarily through an environmental lens. However, government budgets are typically allocated against broader economic, social, and development objectives.

In many AMS contexts, the availability of public funding may increase where links between PWM investments and wider national priorities are clearly demonstrated. Depending on the country's context, these priorities may include:

- Economic diversification
- Job creation and MSME growth
- Tourism competitiveness
- Public health and sanitation improvements
- Climate and conservation (e.g. marine and biodiversity) commitments
- Resource efficiency and circular economy development

The strongest alignment opportunities will often depend on prevailing national development priorities. For example, countries pursuing industrial growth may place greater emphasis on domestic recycling industries and secondary-material markets, while tourism-dependent economies may focus more heavily on coastal cleanliness and marine litter reduction. As national priorities evolve, so too may the potential funding channels available to PWM initiatives.

Broadening Institutional Ownership

In many AMS, environmental agencies do not directly control the largest public investment budgets. Funding decisions may instead be influenced by central planning agencies, ministries of finance, local governments, state-owned enterprises, infrastructure agencies, or sectoral ministries. As a result, PWM initiatives developed primarily within environmental institutions may face difficulties accessing funding channels controlled elsewhere in government.

Broader institutional ownership can therefore affect funding availability in several ways:

- Increasing the number of institutions able to champion or sponsor an initiative during budget negotiations
- Allowing PWM investments to be considered within multiple public investment programmes rather than a single sector budget (increases access to more funding windows and taps into a bigger funding pool)
- Strengthening confidence among budget authorities that implementation responsibilities and funding requirements are shared and clearly understood

In practice, institutional ownership is often strongest where relevant funding and implementation agencies are involved early in project development, budget planning, and project appraisal processes.

Integrating PWM into Existing Public Investment Programmes

In some cases, additional funding can be mobilized not through the creation of entirely new programmes, but through integration of PWM objectives into existing investment frameworks.

2. Mobilizing Greater Private Capital

While public funding is likely to remain an important source of support for many PWM activities, the scale of investment required across PWM systems often exceeds what public budgets alone can reasonably provide. Private-sector participation may therefore play an important complementary role in expanding the overall financing pool available to PWM.

Using Public Resources to Catalyze Private Investment

Public funding does not necessarily need to finance entire projects directly in order to play a significant role in capital mobilization. In practice, public resources are frequently used to address specific barriers that prevent private participation, including:

- Project preparation and feasibility studies
- Early-stage technical assistance
- Risk mitigation/sharing: First-loss capital arrangements, financial guarantees
- Viability-gap funding

Monitoring Emerging Financing Opportunities

The financing landscape for PWM continues to evolve.

Emerging opportunities may arise through:

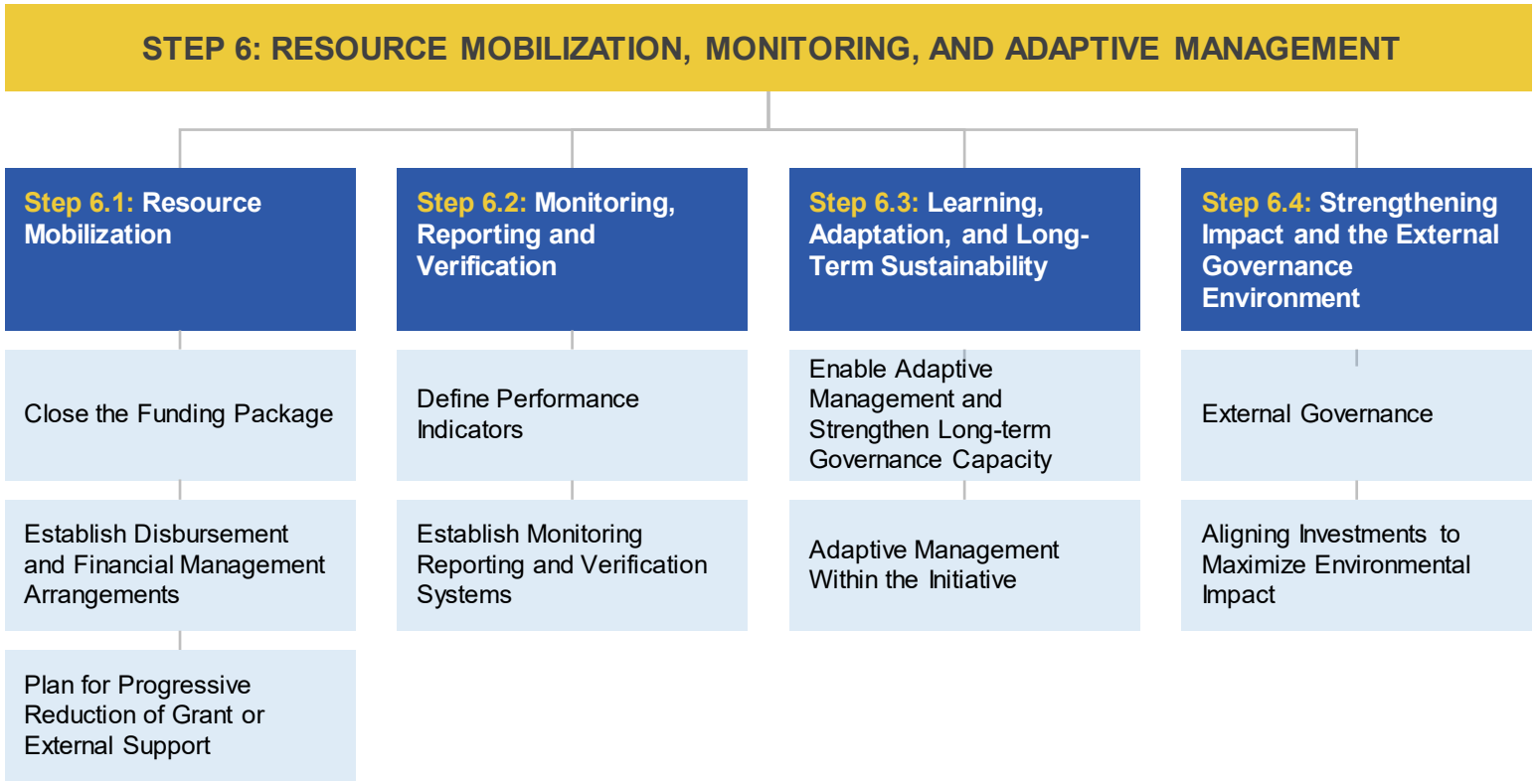
- Developments under the Global Plastics Treaty;
- Expansion of EPR systems and producer-responsibility obligations;
- Growth of green, blue, and sustainability-linked finance markets;
- Evolving priorities among development partners and international financial institutions.

Mechanisms that are not currently feasible may become increasingly accessible as policy frameworks mature, markets develop, and new funding windows emerge.

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STEP 6 RESOURCE MOBILIZATION, MONITORING, AND ADAPTIVE MANAGEMENT

Figure 14: Step 6 Overview



This step ensures that the selected financial mechanism moves from design into practice in a way that is accountable and durable. It translates funding choices into real funding flows, sets up systems to track whether objectives are being met, and creates the ability to adapt the mechanism as conditions change. Without this step, even well-designed funding approaches risk underperformance.

Step 6.1 Resource Mobilization

Close the Funding Package

Before implementation can begin, the financial mechanism must be converted into a closed and reliable funding package. Uncertainty over funding amounts and conditions can delay implementation and undermine confidence among implementing agencies and investors. Securing the financing package signals that commitments are firm and that risks are understood and allocated.

In practice, this requires confirming which public, private, and blended sources will participate and on what terms. This requires making explicit how capital costs, operating costs, and future liabilities are shared among all funding stakeholders. Revenue flows must be clearly mapped, including how they are collected, managed, and reinvested (if applicable). Clear allocation of financial responsibilities is essential to avoid disputes and ensure continuity of service delivery, especially as waste management initiatives often involve multiple actors.

Close coordination among relevant ministries and agencies is also essential. Institutions responsible for the environment, finance, economic planning, and sectoral development should be engaged, as their mandates influence funding availability, budget cycles and priorities, resource allocation, and approval processes. Early coordination among these institutions can help align implementation needs and establish a common basis for formalizing funding commitments.

Funding commitments must then be formalized through approvals and agreements, including any conditions related to performance or reporting. Beyond formalizing funding commitments, policymakers should further establish clear approvals and

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agreement processes that protect the intended use of funds. This ensures the total funding envelope is well-aligned with the planned scope of activities rather than diverted for out-of-scope purposes. This includes defining, at the outset, the specific purposes for which revenues from sources such as the EPR and DRS may be allocated.

Plan for progressive reduction of grant or external support

Where grants or concessional funding are used, it is important to ensure they do not create long-term dependence. This is necessary to protect financial sustainability and to allow the mechanism to scale beyond pilot phases.

This involves identifying how the initiative can gradually rely more on predictable revenues or market-based finance as systems mature and risks decline. The transition should be planned rather than assumed, with clear expectations set from the outset. Practical steps can include defining a timeline for reducing grant shares, introducing or increasing user fees or service charges, improving revenue collection efficiency, or refinancing concessional funding with commercial sources once performance is proven.

Step 6.2 Monitoring, Reporting, and Verification

Define performance indicators

To manage what is being implemented, performance must be measurable. This requires defining a limited set of indicators that reflect the initiative's objectives and risks. Indicators should cover financial performance, environmental outcomes, and relevant social impacts, among others, and should be linked clearly to the purpose of the financial mechanism.

Establish monitoring, reporting, and verification systems

The next sub-step is then to put in place structured processes for data collection and reporting on performance indicators and clarifying who is responsible at each stage. Where trust or capacity is limited, independent verification can play a key role in strengthening confidence among funders and stakeholders.

RECOMMENDATION

Data collection can be progressively scaled in scope and detail according to the availability of data, technical capacity, and resources:

- **Level 1: Rapid baseline assessment** – using secondary sources such as waste-generation data, population statistics, and other commonly available datasets.
  - This provides an initial understanding of waste flows and potential leakage hotspots and is suitable for countries or local governments with limited primary data, technical capacity, or resources.
- **Level 2: Targeted field sampling** – focusing on priority locations to generate site-specific data without requiring full national coverage.
  - This helps validate initial estimates and address critical data gaps and is suitable for countries or local governments that have basic datasets but require more reliable evidence for priority areas or initiatives.
- **Level 3: Comprehensive assessment and monitoring** – including material flow analysis and systematic monitoring across relevant locations and waste streams.
  - This supports detailed planning, performance tracking, and informed decision-making and is suitable for countries or local governments with more advanced data systems, technical expertise, and resources.

This tiered approach provides a practical pathway for countries and local governments to progressively strengthen their baselines and monitoring systems as their data availability, technical capacity, and resources improve over time.

Step 6.3 Learning, Adaptation, and Long-Term Sustainability

Enable adaptive management and strengthen long-term governance capacity

Financing mechanisms operate in ever-changing conditions. Static designs can quickly become misaligned with reality, leading to financial stress or poor outcomes. This sub-step ensures the financial mechanism remains effective over time by enabling internal adaptation while maintaining a supportive external governance environment.

This consideration is important for mechanisms such as EPR and DRS, where step-by-step and affordability-sensitive implementation allows policymakers to monitor behavioral and cost impacts progressively and adjust the mechanism as needed to prevent unintended consequences, such as consumer price spikes, illegal dumping, or open burning.

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Adaptive management within the initiative

To enable adaptive management of the initiative, four key considerations can be integrated into initiative implementation:

- **Establishment of structured review points:** Regular, pre-defined review moments create space to reflect on performance without waiting for problems to escalate. These reviews should be timed to coincide with operational or financial decision points, such as tariff adjustments, budget cycles, or refinancing windows, so that findings can directly inform action.
- **Interpret performance trends, not just individual results:** Monitoring systems should be designed to reveal patterns over time. These include:
  - Persistent revenue shortfalls
  - Rising operating costs
  - Changes in waste composition or volumes

This allows decision-makers to distinguish between temporary fluctuations and structural issues that require intervention.

- **Establish authority to adjust financial, operational, and environmental parameters flexibly:** Adaptive management only works if there are agreed mechanisms for change. This means clearly defining in advance what can be adjusted, who is allowed to make changes, and under what conditions. In practice, this includes the ability to:
  - Revise repayment schedules when cash flows diverge from projections
  - Adjust tariffs or fees when costs or demand change
  - Reallocate subsidies to better-performing activities
  - Modify service arrangements such as collection coverage, service frequency, or contractual obligations
- **Establish feedback loops:** Lessons learned should be documented and fed back into future phases, expansions, or replication efforts.

Step 6.4 Strengthening Impact and the External Governance Environment

External Governance

While adaptive management focuses on internal adjustments, long-term success also depends on strong and capable institutions around the initiative. This dimension ensures that the broader governance environment continues to support implementation rather than constrain it.

This requires building the technical, financial, and administrative capacity of the institutions responsible for oversight and delivery. Similar to the step on shifting away from temporary, external funding support, ownership of the financial mechanism should progressively shift from external advisors or project teams to local authorities and institutions with long-term mandates and accountability.

This may take the form of capacity-building of relevant stakeholders through training, gradual transfer of and formalization of authority, and embedding the financial mechanism within the routine and broader budget plans and regulatory frameworks.

Aligning Investments to Maximize Environmental Impact

Investments in PWM are, at their core, investments in marine ecosystem health. Plastic that is not collected, processed, or structurally prevented from entering waterways accumulates in coastal and ocean environments, where it may degrade into microplastics, entangle marine life, smother coral reefs, and contaminate the food chains that both ecosystems and human communities depend on. This framing matters for how policymakers design and evaluate financial mechanisms. A PWM investment that is assessed purely on waste diversion metrics will be structured differently from one that is also held accountable for biodiversity outcomes. The latter may prioritize interventions in ecologically sensitive catchments, sequence financing to address the highest-risk leakage points first and build monitoring frameworks that track ecosystem indicators alongside tonnage collected.

Additionally, financial mechanisms should ideally align with existing biodiversity conservation frameworks and action plans. A PWM investment that can demonstrate measurable positive impact to a specific biodiversity conservation or marine ecosystem area in a structured way, may be eligible for a wider range of funding sources and types such as biodiversity credits, earmarked government conservation funding, or conservation-linked concessional finance, that waste-framed investments may not be able to tap into. This wider range of funding sources could amplify the scale and impact of a PWM initiative, underscoring the importance of alignment with biodiversity conservation frameworks.

Table 14, drawing from IFC's Biodiversity Finance Metrics for Impact Reporting, sets out suggested impact reporting metrics for waste and plastic management activities. These activities are based on IFC's expanded guidance on indicative investments and project components that may be eligible for biodiversity finance, which builds on the broader green project categories and impact reporting expectations under the International Capital Market Association's Green Bond Principles, and Green Loan Principles[43].

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Table 14: *Suggested Metrics for Eligible Biodiversity Finance Activities*

S/N	BIODIVERSITY FINANCE ELIGIBLE ACTIVITIES	GREEN BOND / GREEN LOAN PRINCIPLES' ENVIRONMENTAL OBJECTIVES	METRIC SUGGESTED
1	Manufacturing, trade finance, or retail of compostable and biodegradable products, including plant-based plastics and packaging solutions that displace traditional products that impact marine, freshwater, and terrestrial biodiversity.	• Biodiversity • Pollution Prevention and Control	Reduction or removal of harmful substances (persistent, carcinogenic, mutagenic, reprotoxic) used (in % in comparison to the original design and/or in t/y)
			Compostable and/or biodegradable products manufactured/traded/ retailed (in t/y and % of total; increase in %)
2	Manufacturing, trade finance, or retail of low-carbon and biodegradable materials (for example, Lyocell) as an alternative to cotton and fossil-based fibers.	• Biodiversity • Pollution Prevention and Control • Natural Resource Conservation	Low-carbon and/or biodegradable fibers manufactured/traded/ retailed (in t/y and % of total; increase in %)
			Avoided and/or sequestered GHG emissions (tCO_2e/y)
3	Urban drainage systems that prevent plastic, solid waste, and pollutants runoff into freshwater and marine habitats.	• Biodiversity • Pollution Prevention and Control • Natural Resource Conservation	Avoided plastic and/or solid waste runoff to freshwater and marine habitats (in t/y; increase in %)
4	Flood mitigation measures that prevent plastic, solid waste, or pollutants runoff.	• Biodiversity • Pollution Prevention and Control	Avoided plastic and/or solid waste runoff to freshwater and marine habitats (in t/y; increase in %)
5	Reduction of plastic use in product design and manufacture, and use of recycled plastics for residual material needs.	• Biodiversity • Pollution Prevention and Control	Increase in the share of circular materials used as a % of the total material use of the project (in %)
			Avoided amount of plastic used (in t/y and % of total; increase in %)
			Plastic waste that is prevented, minimized, repurposed, reused, or recycled (in t/y and % of total waste; increase in %)
			Avoided and/or sequestered GHG emissions (tCO_2e/y)
6	Support for research and innovative technology aimed at recycling single-use plastic as part of larger-scale plastic recycling efforts.	• Biodiversity • Pollution Prevention and Control	Investment in research and innovative technology related to recycling plastics (in $; increase in %)
			Technologies related to recycling plastics developed and demonstrated (in number; increase in %)
			Avoided and/or sequestered GHG emissions (tCO_2e/y)

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7	Plastic recycling activities and facilities.	• Biodiversity • Pollution Prevention and Control	Processing capacity of the plastic recycling facility (in t/y; increase in %)
			Plastic waste that is prevented, minimized, repurposed, reused, or recycled (in t/y and % of total waste; increase in %)
			Products produced from recycled plastic (in number of different products and in t/y of each type)
			Avoided and/or sequestered GHG emissions (tCO_2e/y)
8	Reuse or sustainable repurposing of plastics.	• Biodiversity • Pollution Prevention and Control	Plastic waste that is prevented, minimized, repurposed, reused, or recycled (in t/y and % of total waste; increase in %)
			Increase in plastic materials reused or repurposed (as absolute amount and % of the total material of the project)
			Avoided and/or sequestered GHG emissions (tCO_2e/y)

By tracking these metrics and demonstrating their link to recognized environmental objectives, PWM initiatives can be better positioned to access green financing. This strengthens the investment case by showing that such projects contribute not only to waste-management outcomes, but also to broader biodiversity, pollution prevention, and natural resource conservation goals.

[43] Biodiversity Finance Metrics for Impact Reporting: Supplement to IFC Biodiversity Finance Reference Guide



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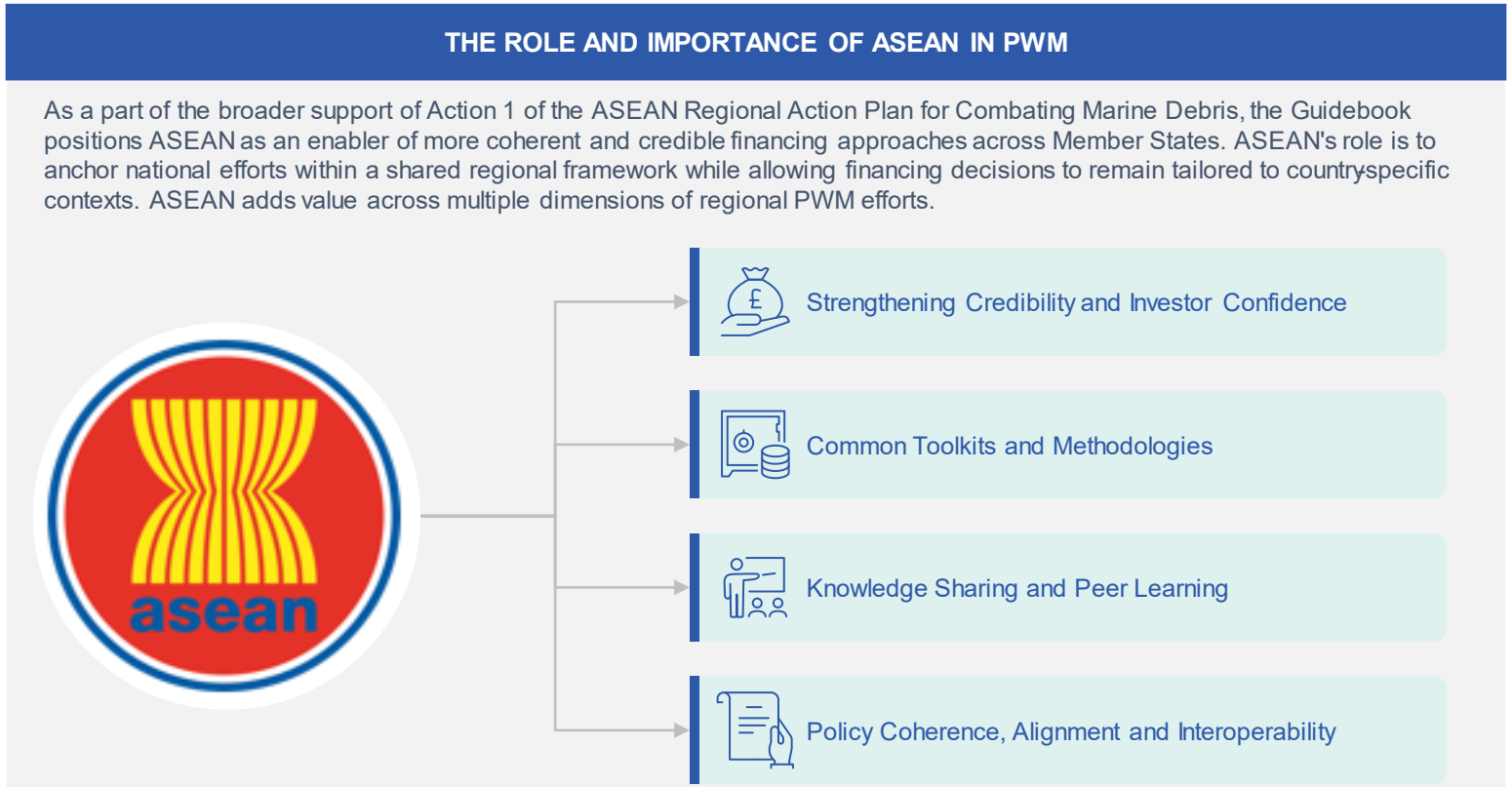
Part III

PROPOSED ROLE OF ASEAN IN FINANCIAL MECHANISMS FOR REGIONAL PLASTIC WASTE MANAGEMENT

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PART III (A): RATIONALE FOR A REGIONAL ROLE

Figure 15: *The Role of ASEAN in PWM*



Although most PWM financial mechanisms are designed and implemented at national and subnational levels, ASEAN still has a critical enabling and coordinating role to play. The diversity among AMS in institutional capacity, fiscal resources, and waste-management system maturity results in varied operating contexts and opportunities for regional collaboration.

Some countries have established regulatory frameworks and financial structures, while others are still building the foundational infrastructure and policies needed for effective PWM.

ASEAN's value lies not in prescribing uniform solutions, but in creating the conditions that enable Member States to learn from one another, share good practices, and adopt funding approaches more efficiently.

Key areas where ASEAN adds value include:

- **Facilitating knowledge sharing and peer learning**: By acting as a platform for dialogue, ASEAN can provide a platform for countries to exchange experiences on choosing and designing financial mechanisms, reducing duplication of effort and accelerating learning.
- **Reducing transaction costs through regional public goods**: Developing common tools and methodologies at the regional level—such as funding assessment frameworks—can lower costs for individual countries and improve efficiency.
- **Supporting policy coherence and interoperability**: ASEAN can encourage alignment of policies, standards, and reporting frameworks, enabling financial mechanisms to operate more smoothly across borders and improving comparability of results.
- **Strengthening credibility, scalability, and sustainability of national initiatives**: Regional coordination can enhance investor confidence and help pilot projects scale beyond a single country by attracting additional funding.

A regional approach allows AMS to progress more quickly from small-scale pilot initiatives to larger, more sustainable programs, acknowledging differences and diversity at the national level. By coordinating efforts and providing guidance, ASEAN can help countries overcome common gaps and mobilize resources more effectively to achieve shared environmental and societal goals.

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PART III (B): POSITIONING ASEAN'S ROLE ALONG THE ROADMAP AND PRINCIPLES

ASEAN strengthens national decision-making by addressing gaps that arise from the diversity of AMS in institutional capacity, fiscal resources, and waste management maturity. These variations create gaps that individual countries may benefit from support in addressing, including limited access to comparative data, fragmented stakeholder networks, high transaction costs, and inconsistent regulatory approaches. This also includes strengthening coordination across AMS in areas such as phased implementation, cross-border knowledge exchange, and financing of enabling conditions, particularly where challenges such as transboundary plastic flows arise. Across the Roadmap, ASEAN's contribution also spans the four strategic functions discussed above in **Part III (A): Rationale for a Regional Role**

- **Step 1: Team Mobilization**
  ASEAN can connect national PWM focal points with counterparts in AMS that have implemented similar initiatives, enabling peer exchange on team composition and coordination approaches. This could take the form of structured secondments or short-term attachment programs, where officials working on new PWM funding initiatives spend time with agencies in AMS that have relevant experience. In parallel, a regional roster of technical experts—maintained by the ASEAN Secretariat and drawn from environment, finance, and waste-management institutions across AMS—would provide national teams with a practical first point of contact when assembling or strengthening initiative teams.
- **Step 2: Diagnosing Initiative-Specific Characteristics**
  ASEAN can maintain and periodically update shared analytical tools, including this Regional Guidebook and the accompanying Annex A: Knowledge Base of Good Practices and Case Studies that AMS may draw on when assessing funding options.

To keep these resources current and actionable, ASEAN could establish a light periodical review process through which AMS contribute updates on financial mechanisms they have piloted. A shared online repository, accessible to all AMS environment and finance ministries, would serve as the primary access point for these tools alongside case studies and financial models that countries can adapt. This shared knowledge base can also support the identification of opportunities for cross-border infrastructure development and regional aggregation of projects where economies of scale are required.

- **Step 3: Diagnosing External Environment Characteristics**
  Through existing ASEAN environment and finance working groups, ASEAN can facilitate space for AMS to exchange information on their regulatory and investment environments, including coordination on enforcement approaches and the monitoring of cross-border plastic flows. One practical approach is a biennial regional diagnostic exercise in which AMS self-report on key enabling conditions such as EPR frameworks or green finance taxonomies—as well as broader system readiness including enforcement capacity, tailored data building approaches, and institutional capabilities—using a shared template. The resulting comparative overview would help countries understand how different approaches have supported funding outcomes across the region, without implying any expectation to align.

For transboundary plastic pollution, ASEAN can also support AMS in clarifying indicative responsibility splits across the plastic value chain. Upstream or source jurisdictions may focus on prevention, source reduction, waste collection, leakage control, and enforcement against illegal disposal or trade. Transit jurisdictions may support monitoring, data sharing, customs coordination, and safe handling of cross-border material flows.

Downstream or receiving jurisdictions may focus on interception, clean-up, local recovery, and documentation of leakage impacts. ASEAN's role would not be to assign legal liability, but to provide a neutral platform for shared diagnostics, agreed data protocols, coordinated enforcement referrals, and cost-sharing discussions where pollution pathways affect more than one AMS.

- **Step 4: Stakeholder Engagement**
  ASEAN can dedicate structured agenda space within existing sectoral meetings—such as those convened under the ASEAN Working Group on Coastal and Marine Environment (AWGCME)—for AMS focal points to exchange experiences on engaging investors, civil society, and technical partners. This could be formalized as an annual peer exchange session, with a rotating AMS host, where two or three countries present stakeholder engagement approaches, they have tested and invite structured feedback from peers. For investor engagement specifically, ASEAN could co-organize a regional investor briefing held alongside existing ASEAN finance-track meetings, to introduce AMS PWM funding initiatives to institutional investors and development finance institutions active in the region
- **Step 5: Supporting the Choice of Financial Mechanism(s)**
  ASEAN can deepen regional knowledge exchange on financial mechanisms through two practical channels:
  - A standing community of practice, bringing together AMS policymakers, financiers, and technical experts to share implementation experience. Each session would be structured around a specific financial mechanism or implementation challenge, with one or two AMS presenting live cases and the group working through design and adaptation questions together. Between sessions,

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- a dedicated online forum would allow members to post questions and share resources asynchronously; and
- Targeted design workshops for countries at earlier stages of PWM funding development. These would bring together national teams with regional peers and, where relevant, external technical advisors, to work through financial mechanism selection and implementation blueprint design in a structured but non-prescriptive format. These give the tools and guidance in this Guidebook a sustained institutional home, enabling AMS to learn from one another's application of financial mechanisms over time.

- **Step 6: Resource Mobilization and Adaptive Management**
ASEAN can serve as an intermediary between AMS and multilateral funding institutions, development banks, and climate funds by facilitating structured introductions to help navigate available financial mechanisms. This could be operationalized through an annual PWM funding dialogue where AMS presents pipeline initiatives and funding institutions outline relevant facilities and eligibility criteria. To support adaptive management, ASEAN could develop a set of harmonized monitoring indicators for PWM funding initiatives, which may be designed collaboratively with AMS through a dedicated working session. Countries may adopt them to strengthen reporting and improve comparability of outcomes across the region, making the collective regional portfolio more legible to international investors and donors. ASEAN can further support AMS by guiding a phased progression from early-stage diagnostics and pilot implementation to longer-term scale-up and regional system integration, while also facilitating access to financing for enabling conditions such as policy development, capacity building, and project preparation. For transboundary initiatives, this may include helping AMS distinguish financing needs for source prevention, cross-border monitoring, interception and clean-up, and downstream recovery, so that regional funding proposals can reflect the different roles and cost burdens of affected jurisdictions.

For transboundary PWM, AMS may refer to the Basel Convention Plastic Waste Amendments, which provide a legally binding framework to improve transparency and control over the global trade of plastic waste. The amendments clarify the treatment of plastic waste across Annexes II, VIII and IX, covering plastic waste requiring special consideration, hazardous plastic waste, and non-hazardous plastic waste[44] . This supports environmentally sound management (ESM) of plastic waste and can guide AMS in strengthening regulatory, enforcement and technical capacity for transboundary movements.

Where further capacity is needed, AMS can seek technical assistance from the Basel Convention Secretariat to strengthen their capacity for ESM of plastic waste through pilot projects or training relevant parties to enforce regulations[45] . As transboundary PWM cannot be effectively managed by any one country alone, it is important that AMS continue to work together through regional cooperation to share knowledge, build capacity and improve coordination.

Through these roles, ASEAN acts as a **connector, amplifier, and steward**, ensuring national initiatives are informed by regional experience and positioned for long-term impact, particularly in addressing shared challenges such as transboundary plastic pollution that require aligned infrastructure, enforcement, financing approaches, and clearly understood roles across source, transit, and receiving jurisdictions.

[44] Plastic waste and the Basel Convention
[45] Technical assistance



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PART III (C): COUNTRY-LEVEL NEXT STEPS

EXISTING COUNTRY-LEVEL ROADMAP(S) OR PLANS

The following country-level summaries identify relevant national roadmap(s), plans, or policy frameworks that provide the baseline for applying the Guidebook. They highlight each AMS' stated goals and planned activities, where available, so that subsequent readiness-based pathways can be interpreted in line with existing national priorities.

SINGAPORE

- Singapore's main baseline is the Zero Waste Masterplan[46] , launched in 2019, which identifies packaging waste, including plastics, as one of Singapore's three priority waste streams alongside food waste and e-waste.
- Singapore aims to achieve a 70% overall recycling rate by 2030, and reduce waste-to-landfill per capita per day by 30% by 2030.
- Key packaging and plastics actions include Mandatory Packaging Reporting, where covered companies submit packaging data and annual 3R plans, and the Beverage Container Return Scheme, commencing 1 April 2026, which applies a 10-cent deposit to eligible plastic and metal beverage containers from 150 ml to 3 L, covers more than one billion containers annually, and aims to recover over 16,000 tons of material each year

46. Zero Waste Masterplan
47. Green Plan 2030

BRUNEI DARUSSALAM

- Brunei Darussalam does not have a standalone plastic-specific roadmap. Plastic management sits within broader waste and climate frameworks, including Wawasan Brunei 2035, the Brunei Darussalam National Climate Change Policy (BNCCP), whose Strategy 7 covers waste management, and the Ministry of Development's sustainability agenda delivered through the Department of Environment, Parks and Recreation (JASTRe).
- Government priorities center on waste minimization through the 3R principles (reduce, reuse, recycle), waste-to-energy options, and public education, with national targets of a 15% recycling rate by 2027 and 30% by 2035, and a goal to cut per-capita waste generation to 1 kg per person per day by 2035.
- Plastic-specific actions include the No Plastic Bag Everyday Initiative, introduced because single-use plastic was a government concern and plastic made up around 16% of landfill waste composition. It expanded from the earlier No Plastic Bag Weekend (begun 2011) to everyday implementation in 2018, targeting zero plastic carrier bags in participating stores by 1 January 2019, alongside the Ministry of Development's 2018 Plastic Bottle Free policy.

MALAYSIA

- Malaysia's key plastic-specific plan is the Malaysia Plastics Sustainability Roadmap[48] 2021–2030, published in 2021 by the Ministry of Environment & Water. The roadmap focuses on plastic circularity across the value chain and covers four major resin types, PP, PET, HDPE, and LDPE/LLDPE.
- The roadmap aims to increase plastic circularity, address plastic pollution while supporting economic development, environmental protection and societal wellbeing, and harmonize actions across the plastic value chain. Its national targets include phasing out problematic single-use plastics, recycling 25% of post-consumer plastic packaging by 2025, achieving 100% recyclability of plastic packaging by 2030, reaching 15% average recycled content by 2030, and achieving a 76% average collected-for-recycling rate by 2030.
- Key actions include applying three innovation strategies, phase-out, reuse and material circulation, strengthening national capacity for reprocessing and recycled-product manufacturing, establishing uniform standards and regulations, expanding producer responsibility across the plastic value chain, providing regulatory guidance for recycled resin in food-contact packaging, and communicating circularity and sustainability to the public, NGOs and civil society.

THAILAND

- Thailand's key plastic-specific baseline is the Roadmap on Plastic Waste Management[49] 2018–2030, operationalized through the more recent Plastic Waste Management Action Plan Phase 2 (2023–2027). The Phase 2 Action Plan identifies five target plastic types, plastic bottles, bottle caps, single-layer plastic film packaging, plastic bags with handles, and plastic cups/glasses.
- The Phase 2 Action Plan sets four concrete goals for 2027, reduce target plastics going to landfill by 100%, add target plastics into the recycling system by 100%, reduce the chance of plastic waste entering the ocean by 50%, and establish ten tools for managing plastic waste.

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- Key activities under Thailand's plastic-waste agenda include reducing and phasing out single-use plastic products, promoting environmentally friendly alternatives, reducing plastic bags and foam food containers through campaigns with retailers, fresh markets, municipalities and private-sector partners, improving waste sorting and recycling, and supporting recycling businesses and secondary raw material use through investment incentives.

INDONESIA

- Indonesia's key plastic-specific baseline is the Indonesia NPAP Multistakeholder Action Plan / National Action Roadmap[50] . A newer broader baseline is the National Roadmap & Action Plan Circular Economy Indonesia 2025–2045[51] , which can be referenced as wider circular economy context.
- Indonesia's plastic action agenda targets a 70% reduction in marine plastic leakage by 2025 and movement toward near-zero plastic pollution by 2040. Under the system-change scenario, the action plan estimates that Indonesia could prevent 16 million tons of plastic leakage, reduce 20 million tons of GHG emissions per year, and create more than 150,000 jobs.
- Key actions include reducing or substituting avoidable plastic use by more than 1 million tons per year, redesigning plastic products and packaging for reuse or recycling, doubling plastic waste collection to more than 80% by 2025, doubling recycling capacity by 2025, expanding controlled disposal facilities for non-recyclable plastic waste, and mobilizing around USD 18 billion in capital investment plus around USD 1 billion per year in additional operational financing by 2040.

[46] Zero Waste Masterplan
[47] Green Plan 2030

VIET NAM

- Viet Nam's key plastic-specific plan is the National Action Plan for Management of Marine Plastic Litter by 2030[52] . A newer Plastic Action Financing Roadmap to 2030[53] was launched by NPAP Viet Nam in December 2025 to support financing for plastic pollution mitigation and circular plastics solutions.
- By 2030, the national action plan targets a 75% reduction in marine plastic litter, 100% collection of abandoned, lost or discarded fishing gear, an end to fishing gear disposal at sea, 100% of coastal tourism areas stopping single-use plastics and non-biodegradable plastic bags, and periodic monitoring across 11 major drainage basins and 12 island districts.
- Key actions include education and behavior change on plastics, collection and treatment of coastal and ocean-based plastic waste, controlling plastic litter at source, waste classification at source, international cooperation, scientific research, technology transfer, and financing support for infrastructure, governance, private-sector participation, and investable project pipelines.

PHILIPPINES

- The Philippines' main published plastic-specific roadmap is the Roadmap for the Management of Plastic Waste and Reduction of Non-Recyclable Single-use Plastics[54] in the Philippines published in 2024. A newer National Plastic Action Roadmap is also being developed through NPAP Philippines, with public consultation held in October 2025 and refinement continuing into 2026.

The 2024 roadmap sets a pathway toward zero plastic waste pollution by 2040, with staged outcomes to close plastic leakage pathways by 2028 and enable plastic recycling by 2034.

- Key actions include reducing non-recyclable single-use plastics, increasing plastic recovery, setting up a national recycling and solid-waste database, adopting cost-recovery mechanisms, strengthening LGU capacity, establishing MRFs/recycling facilities, and implementing EPR recovery targets from 20% in 2023 to 80% by 2028.

CAMBODIA

- Cambodia's key plastic-specific plan is the Plastic Action Roadmap in Cambodia: Journey Towards a Circular Plastic Economy[55] , launched in January 2026. It sets a 2022 baseline of 546,000 tons of plastic waste generated, equivalent to 33 kg per person per year, and identifies collection gaps, with urban collection at around 70% but a lower national average due to rural access and infrastructure constraints.
- By 2040, the roadmap's system-change scenario aims to reduce plastic pollution by 74%, reduce associated GHG emissions by 40%, achieve estimated government cost savings of 37%, create around 26,000 jobs, and increase plastic circularity to 52%.
- The roadmap focuses on reducing single-use plastic consumption, improving waste collection and recycling, capturing value from recyclable and biodegradable materials, supporting informal workers, and integrating gender equity and social inclusion considerations into plastic-waste solutions.

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LAO PDR

- Lao PDR's key plastic-specific plan is the National Plastics Action Plan for Lao PDR 2024–2030[56], endorsed in August 2024.
- The plan aims to reduce plastic use and promote sustainable plastic management through three outcomes, improved waste-management systems, a clean environment, and a low-carbon society based on circular economy principles.
- The plan sets out four work areas, creating or amending legislation, rules, policies and guidelines for PWM, including encouraging businesses and producers to be more responsible for waste, raising awareness among communities and businesses to reduce, reuse, recycle and segregate plastic waste, reducing single-use plastics by improving collection, segregation and transportation systems, increasing recycling rates and promoting alternative materials, and establishing a monitoring system to follow up, monitor and assess NPAP implementation.

MYANMAR

- Myanmar's key plastic-specific plan is the National Plastic Management Action Plan 2026–2035[57], issued by the Ministry of Natural Resources and Environmental Conservation, and supported by the broader National Waste Management Strategy and Master Plan 2018–2030[58].
- The plastic action plan aims to protect human health and the environment from plastic pollution, including marine plastic pollution, through a full life-cycle approach. Its vision is to "end plastic pollution by creating a resource-efficient economy grounded in circular practices." The plan prioritizes three objectives, reducing plastic waste entering the system, developing source-segregated waste collection to minimize leakage, and promoting circular materials and systems.
- Concrete actions include establishing three working groups on restricting single-use plastics, implementing EPR, and managing imports of virgin plastics and plastic products. The plan also targets legislation to restrict single-use plastics, limits on virgin plastic and plastic scrap imports, multi-stakeholder plastic recovery, waste separation and recycling, application of 3R and circular production practices in manufacturing, and replacement of single-use plastics with reusable, refillable, or biodegradable alternatives.

AMS-SPECIFIC IMPLEMENTATION REQUIREMENTS

While the Guidebook provides a common analytical framework, implementation pathways will vary across AMS given their diverse external environments and country specific factors. The indicative next steps outlined below are intended to complement and build on existing national plans, targets, and activities, reflecting commonly observed post Guidebook priorities. They should not be interpreted as exhaustive or prescriptive, nor as a substitute for country level strategies. Rather, AMS are encouraged to adapt these suggested actions as appropriate to their evolving contexts, using the Guidebook to enhance financing readiness, implementation sequencing, MRV, and scale up, without implying completeness or replacing ongoing national efforts.

- **High Readiness, Public-Led or Market-Mature AMS (Singapore, Brunei Darussalam, Malaysia, Thailand)**
  Key characteristics:
  - Strong or moderate institutional and operational capacity
  - Established legal and policy frameworks
  - More formalized waste-management systems and safeguards relative to lower-readiness contexts, though gaps may remain in recycling performance, plastics recovery, or leakage prevention depending on the AMS.
  - Either mature private-sector participation or centralized public-sector delivery with strong infrastructure

  Indicative next steps:
  - Refining mechanism design to improve cost efficiency, performance incentives, or financial sustainability
  - Aligning or optimizing existing and planned mechanisms with advanced or hybrid financing approaches, including performance-linked or results-based instruments where supported by existing policy direction and data systems
  - For more centralized systems, assessing how mechanisms can evolve over time to support greater system flexibility or selective market participation, where appropriate

[48] Malaysia Plastics Sustainability Roadmap
[49] Roadmap on Plastic Waste Management
[50] NPAP Multistakeholder Action Plan / National Action Roadmap
[51] National Roadmap & Action Plan Circular Economy Indonesia 2025–2045
[52] National Action Plan for Management of Marine Plastic Litter by 2030
[53] Plastic Action Financing Roadmap to 2030
[54] Roadmap for the Management of Plastic Waste and Reduction of Non-Recyclable Single-use Plastics

- **AMS with Strong Policy Frameworks and Emerging Delivery Capacity (Indonesia, Viet Nam, Philippines)**
  Key characteristics:
  - Strong or moderate national policies, roadmaps and regulatory frameworks with regulatory prerequisites generally in place
  - Active market and private-sector presence
  - Moderate reliance on informal sector actors, depending on location
  - Uneven governance, operational performance across regions or actors
  - Gaps in data quality, enforcement consistency, and system coordination

  Indicative next steps:
  - Strengthening delivery systems underpinning chosen mechanisms (enforcement, MRV, inter-agency coordination)
  - Piloting or phasing mechanisms already identified to manage implementation and political risk
  - Translating national-level frameworks into consistent and enforceable sub-national practice
  - Supporting resource mobilization for smaller, dispersed LGUs or subnational implementation needs already identified in national roadmaps or financing plans
  - Further stimulation of private PWM markets where these remain implementation priorities under national roadmaps or financing plans

- **AMS on a Capacity-Building Pathway (Cambodia, Lao PDR, Myanmar)**
  Key characteristics:
  - Basic institutional and operational capacity
  - Limited physical infrastructure and data systems
  - Heavy dependence on the informal sector
  - Safeguard gaps and weak private-sector participation

  Typical next steps:
  - Prioritizing simpler, capacity-matched mechanisms in early phases
  - Conducting capacity-building activities tied to national roadmap implementation, including data, MRV, enforcement, policy implementation, and local delivery capacity
  - Using country baselines, affordability constraints and vulnerability considerations to prioritize grants, subsidies, technical assistance, and concessional support for lower-capacity or higher-need implementation contexts.
  - Strengthening informal-sector inclusion, worker safeguards, and social safeguards where these are relevant to national plans and implementation contexts./

[55] Plastic Action Roadmap in Cambodia: Journey Towards a Circular Plastic Economy
[56] National Plastics Action Plan for Lao PDR 2024–2030
[57] National Plastic Management Action Plan 2026–2035
[58] National Waste Management Strategy & Master Plan 2018–2030





LIST OF ANNEXES

S/N	SUPPLEMENTARY RESOURCES
A)	Knowledge Base of Good Practices and Case Studies
B)	Step 1 Worksheet
C)	Step 2 Worksheet
D)	Step 3 Worksheet
E)	Step 4 Worksheet
F)	Landscape Analysis Report

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ANNEX A: KNOWLEDGE BASE OF GOOD PRACTICES AND CASE STUDIES

PART I INTRODUCTION

The knowledge base serves as a practical entry point for policymakers, providing guidance on financial mechanisms for PWM by linking the Guiding Principles for financial mechanism selection to real world applications and case studies.

PART II CASE STUDY COMPENDIUM

The knowledge base serves as a practical entry point for policymakers, providing guidance on financial mechanisms for PWM by linking the Guiding Principles for financial mechanism selection to real world applications and case studies.

The case studies were selected to reflect a wide range of financial mechanisms used across ASEAN—from equity Joint Ventures (JVs) and credit schemes to pricing instruments, sustainability-linked loans, and PPP models—each demonstrating a varied function within the plastic and waste-management value chain. Together, they illustrate how different mechanisms perform under varied policy, market, and socio-economic conditions, providing policymakers with practical, real-world examples that align with the design principles outlined in the Guidebook.

Note: All the case studies in the knowledge base were selected for effectively demonstrating the real-world operationalization of the Guiding Principles. The inclusion of any of the case studies in this knowledge base is not meant to promote the initiative discussed as a broadly sustainable and effective PWM solution.



Table 1: *Summary of Case Studies and Principles*

CASE STUDY		PRINCIPLE	LINK TO PRINCIPLE
A	PT Amandina Bumi Nusantara (ABN) bottle-to-bottle Polyethylene Terephthalate (PET) recycling facility	Case Study A (Function-Fit)	The facility cost 556.2 billion IDR, and was financed by an equity investment, a mechanism highly suitable for the large capital injections typically needed for large-scale PWM infrastructure
B	Grant-Funded MSME Transition to Sustainable Packaging and Waste Management Models	Case Study B (Contextual Relevance)	Grants do not require repayment and are highly suitable in contexts where revenue generation is uncertain or not applicable, making it ideal for MSMEs
C	Indorama Ventures: Blue Loan to bolster PET recycling	Case Study C (Complementarity)	The Blue Loan was complemented by a blended finance mechanism, consisting of a diversified loan with multiple funders. This combination of mechanisms provided the benefit of spreading the financial risk of the initiative and thus reducing the risk burden on any single funder
D	Plastic Bank and Corporate Partners Community Based Plastic Credit System	Case Study D (Inclusivity)	Plastic Bank's community-based credit scheme substantially integrated informal sector actors, into its initiative of collecting coastal plastic waste, through strong incentives. This allowed it to achieve a positive socioeconomic impact and a wide collector footprint, collecting 35 million tons of plastic in the Philippines
E	Disposable Carrier Bag Charge	Case Study E (Measurability and Transparency)	Supermarket operators of a certain size are required to publish financial figures on their revenue from mandatory plastic bag levies, including how proceeds are used. This supports the growth of public trust and confidence in the bag levy
F	Pay-by-Volume, Volume-Based Waste Fee Pilot	Case Study F (Policy Synchronization)	The volume-based waste fee pilot being synchronized with national legal requirements like waste separation laws reduced implementation gaps between policy intent and service delivery, and created a proof-of-concept pilot of the law's impact and effects, potentially helping to reduce adoption friction
G	Palembang WtE Plant	Case Study G (Resilience and Sustainability)	Dual revenue streams from tipping fees and electricity generation, as well as local currency-aligned financing, reduced exposure to market volatility and FX shocks and thus improved long-term financial sustainability of the project, despite the large upfront CAPEX of the project

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CASE STUDY A (FUNCTION-FIT)

a. **PT Amandina Bumi Nusantara (ABN) bottle-to-bottle Polyethylene Terephthalate (PET) recycling facility – Bekasi, West Java, Indonesia**.
A facility jointly established by Coca-Cola Europacific Partners (CCEP) Indonesia and Dynapack Asia[59].

b. **Financial Mechanism(s)** – Joint Venture (JV) (equity investment) between CCEP Indonesia and Dynapack Asia, enabling long-term co-ownership of the capital-intensive recycling plant. The investment totals 556.2 billion Indonesian Rupiah (IDR) and is designed to supply 25,000 tons of food-grade recycled (r)PET per year[60].

c. **Value Chain Stage** – The project targets the downstream portion of the value chain, with the plant maintaining collection interfaces (via Mahija Foundation's sourcing networks), sorting and pre-processing, PET flake production and decontamination, pelletization and direct Recycled Polyethylene Terephthalate (rPET) supply to producers like Coca-Cola, Fanta and Sprite[61].

d. **Context and Enabling Environment**

Regulatory context shaping feasibility

Indonesia's recycling landscape is influenced by the Ministry of Environment and Forestry (MoEF) Regulation No. 75/2019, which introduced a legally mandated waste reduction roadmap for producers. While initial implementation emphasized voluntary compliance, multiple policy analyses highlight Indonesia's rapid transition toward mandatory EPR enforcement between 2024–2025.The regulation legally obliges producers to collect, take back, and recycle packaging waste, and sets a 30% waste reduction target by 2029[62] .

Public communication by MoEF in 2023 and 2025 positions producers and waste banks as critical partners in new collection systems, explicitly promoting closed loop plastic recovery for packaging. This regulatory direction creates a structural pull factor for investments like ABN, ensuring future demand for recycled content and strengthening price stability for rPET[63].

Market context: waste flows and feedstock reliability

Indonesia generates 6.8 million tons of plastic waste annually, much of which is managed by informal collectors, with over 90% of PET bottles collected by informal waste pickers[64] . The need for a socially responsible and stable supply chain was therefore a key strategic driver behind establishing the Mahija Parahita Nusantara Foundation, which integrates feedstock sourcing with social care, financial support, and ethical traceability.

Approvals and certifications enabling market viability

ABN's model relies on the ability to produce food contact safe rPET that meets both domestic and international quality standards:

- ABN is the first Indonesian recycler to receive SNI 8424:2017 certification, allowing bottle to bottle use.
- It has additional approvals from BPOM (Drug and Food Control Agency), Halal, and FSSC 22000 food safety schemes[65].

These certifications make ABN one of the very few plants in Indonesia capable of supplying true food grade rPET, a prerequisite for its commercial success.

e. **Objectives**

Financial and impact goals

- Reduce dependence on unrecycled PET and its associated price volatility.
- Secure local, high quality rPET feedstock to meet Coca-Cola's packaging commitments.
- Localize supply chains to reduce foreign exchange exposure, import dependence, and transport emissions.
- Enable the nationwide shift toward food grade recycled PET, supporting the roll out of Coca Cola's first 100% rPET bottles in Indonesia.
- Strengthen Indonesia's circular economy by establishing a scalable, replicable bottle to bottle model.
- Formalize and uplift informal sector collectors through the Mahija foundation model.

f. **Impact on PWM**

System level outcomes

25,000 tons/year of domestic rPET manufacturing capacity, displacing virgin PET production and imports.

Direct impact on beverage packaging circularity

ABN provides the rPET for the first 100% rPET Coca Cola, Fanta, and Sprite bottles in Indonesia (excluding caps/labels), launched in 2023[66] .

Material recovery and processing

ABN processes 3,000 tons of PET bottles per month turning them into food grade pellets for different beverage requirements.

Social impact

The Mahija foundation provides collectors, supplying the plant with stable purchase agreements, income support, protective equipment, education support (e.g., scholarships, schooling for waste picker children) and safe working conditions[67].

This integration of social and supply-chain functions reduces supply volatility, improves feedstock quality, and delivers measurable social impact.

g. Implementation Considerations

Key Design Choices

JV structure: Equity partnership ensured risk-sharing on a large-scale industrial asset and guaranteed long-term feedstock offtake.

Operational and Financial Sustainability

- Maintenance and service are provided domestically by PT Starlinger SEA, reducing downtime and improving asset resilience.
- Certifications (SNI, BPOM, Halal, FSSC 22000) act as a quality signaler, potentially enhancing stable long-term demand from food and beverage manufacturers.

  The JV reduces financing risk by securing guaranteed offtake (50% of the facility's output to be bought by Coca-Cola) through CCEP's recycled-content targets (at least 35% recycled plastic use by 2035)[68].

h. Stakeholders

- CCEP Indonesia: Co-investor and anchor offtake buyer; deploys 100% rPET units.
- Dynapack Asia: Co-investor with manufacturing and packaging expertise.
- PT Amandina Bumi Nusantara: Owns and operates the facility; responsible for production, quality control, and certification.
- Mahija Parahita Nusantara Foundation: Non-profit responsible for feedstock mobilization, informal-sector empowerment, and social impact.
- PT Starlinger SEA: Technology integrator, maintenance provider, and performance ensuring partner.
- MoEF: EPR policy, waste-reduction roadmap.
- BPOM, Halal bodies, and FSSC auditors: compliance for food-grade recycled materials.

i. Relevance & Applicability for Other AMS

Lessons Learned

- Integrating a social foundation into a recycling JV significantly enhances feedstock reliability and reduces contamination rates, while strengthening informal sector inclusion.
- Aligning commissioning timelines with EPR enforcement phases multiplies impact and ensures utilization[69].
- Ensuring food-contact-grade certification early could accelerate market access and financial sustainability.

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with Large Informal Waste Sectors

Across ASEAN, informal waste pickers collect a significant portion of recyclables (often 70–90% of PET), creating foundational but fragile supply systems. ABN responds to this reality by establishing the Mahija Parahita Nusantara Foundation, which provides stable feedstock supply, offers fair pricing and purchase agreements and delivers worker support (PPE, income assistance, schooling, social care).

Why this matters for AMS:

Countries such as Philippines, Viet Nam, Cambodia and Thailand have large informal waste ecosystems that may be vulnerable to price volatility and contamination issues. A foundation-based model like Mahija can be directly adapted to improve ethical supply chains, reduce contamination, increase traceability and ensure inclusivity in line with the Guidebook principles. It also bridges the gap between formal investment and informal livelihoods, preventing displacement and improving socioeconomic equity.

Replicability of the Joint Venture (JV) Financing Model Across AMS

The JV equity model solves multiple structural challenges:

- High upfront capital expenditure (CAPEX) for large recycling plants.
- Need for stable offtake.
- Risk of feedstock shortage.
- Need for long-term, market-driven operation.

ABN's JV between a major Fast-Moving Consumer Goods (FMCG) brand and a packaging supplier is a repeatable model for AMS through practical replication pathways:

- Pairing a brand (offtake buyer), a recycler (technical operator) and a packaging supplier (converter).
- Embedding offtake agreements to derisk financing.

This mirrors the success factors observed in the ABN rPET facility.

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j. Principles Demonstrated

Function–Fit

Equity/JV financing is aligned with infrastructure-heavy recycling projects that require long-term asset and operational commitments, sustained technical performance and secure demand for output.

Inclusivity

ABN's feedstock model demonstrates a social inclusion approach where informal collectors gain: stable incomes, safer working conditions, structured participation and social-care services.p

Resilience and Sustainability

The ABN PET plant demonstrates resilience by securing long-term offtake through its JV with CCEP, ensuring stable, long-term revenues. It also strengthens operational resilience by stabilizing feedstock flows from the informal sector, through the Mahija Foundation, reducing supply disruptions.

[59] CCEP Indonesia Launched the Recycled PET Plant Amandina Bumi Nusantara and Mahija Parahita Nusantara Foundation

[60] Ibid.

[61] PT Amandina Bumi Nusantara: Recycled PET for Coca-Cola's first 100 % rPET Bottles in Indonesia

[62] Advancing the Implementation of the Regulation No. 75/2019 of the Ministry for Environment & Forestry Regarding the Roadmap on Waste Reduction by Producers in Indonesia

[63] Implementation Progress of MoEF P75 2019 Waste Reduction Roadmap by Producers

[64] Extended Producer Responsibility and Plastic Management in Indonesia

[65] PT Amandina Bumi Nusantara Supplies Coca-Cola's First 100% rPET Bottles in Indonesia

[66] Ibid.

[67] How CCEP is leading voluntary action on plastic packaging waste collection and recycling in Indonesia

[68] Ibid.; Coca-Cola: Sustainability

[69] Indonesia moves to enforce mandatory EPR for plastic packaging

CASE STUDY B (CONTEXTUAL RELEVANCE)

a. Grant-Funded MSME Transition to Sustainable Packaging and Waste Management Models, Cambodia

PlasticSmart Cambodia, implemented under the EU SWITCH-Asia Program, supports MSMEs, such as vendors, shopkeepers, waste-management firms, and informal collectors, to shift to environmentally and economically sustainable packaging and waste-management business models. It tackles plastic pollution and greenhouse-gas emissions by piloting sustainable packaging solutions and strengthening circular waste-management systems[70].

b. Financial Mechanism(s) – The initiative is financed through EU SWITCH-Asia grants, which fund:

- Development and piloting sustainable packaging business models for MSMEs.
- Capacity-building for food vendors and waste-management actors.
- Provision of eco-friendly packaging alternatives and improved waste-processing equipment[71].

These grants operate as non-repayable capital support that lowers upfront transition costs for MSMEs and waste-sector actors, enabling adoption of greener practices without imposing financial risk upon them.

c. Value Chain Stage – Targets upstream (consumption and packaging choices) and downstream (collection, recycling, waste-processing business models) stages through:

- Promotion of sustainable food-packaging alternatives.
- Support for waste-management companies and informal collectors in adopting improved recycling and processing models.

d. Context & Enabling Environment

Policy and Regulatory Context

Cambodia continues to navigate plastic-pollution challenges linked to rapid urbanization, evolving waste-management systems, and a currently low plastic-recycling rate (2.4%). National initiatives—such as the Circular Strategy on Environment (2023–2028)—underscore the country's commitment to advancing circularity. As implementation progresses and enabling conditions continue to strengthen, low-CAPEX, grant-supported transition instruments may offer a practical and context-appropriate way to support these policy goals.

Socio-Economic Conditions

PlasticSmart Cambodia operates in communities around garment factories, areas with high daily plastic consumption, partially attributed to food-packaging waste. MSMEs, informal waste collectors, and low-income workers can face hurdles accessing capital and technology, making grants a key enabler for transitioning to sustainable packaging models[72].

e. Objectives

Financial Goals

Enable MSMEs to adopt and scale profitable, sustainable packaging models using grant-funded pilots and equipment.

Impact Goals

- Support waste-management companies and informal collectors in adopting improved recycling business models.
- Reduce plastic pollution and GHG emissions through systemwide behavior and business-model shifts[73] .

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f. Impact on PWM

Environmental Impact

- Reduced plastic leakage from food-packaging consumption around factory clusters, one of Cambodia's primary waste streams.
- Improved waste-sorting and recycling capacity through modernized equipment and business-model improvements.

Socio-Economic Impact

- MSMEs adopt more profitable, lower-impact packaging solutions through grant-funded capacity building.
- Informal waste collectors benefit from structured engagement, stronger business practices, modernized equipment, and improved waste-recycling pathways[74].

g. Implementation Considerations

Key Design Choices

- Grant-funded business model to lower adoption barriers: PlasticSmart Cambodia deliberately uses non-repayable grants to overcome the financial barriers faced by MSMEs and informal collectors, who may lack access to the requisite capital, credit, or technology for other financing mechanisms. The grants help MSMEs experiment with greener practices without incurring upfront financial risk. This approach is essential in Cambodia, where small vendors may find it difficult to independently fund transitions to greener operations.
- Targeted geographic clustering around garment factory communities: The initiative focuses on food vendors, street stalls, waste depots, and informal collectors located around garment factories, where plastic packaging waste is highly concentrated due to daily food consumption by large worker populations. Concentrating the pilots within these factory-adjacent clusters allows the program to:
  - Reduce implementation complexity by working within high-density consumption areas.
  - Achieve visible reductions in high-volume waste streams, particularly single-use food packaging.
- Integrated training and technical capacity building for MSMEs: PlasticSmart Cambodia emphasizes hands-on capacity building, equipping MSMEs with the skills to adopt sustainable packaging practices and to evaluate their economic feasibility through cost-benefit analysis. Shopkeepers and street vendors receive direct technical support to understand the performance, cost implications, and usability of new packaging alternatives. This approach recognizes that, beyond cost, technical unfamiliarity is a barrier to MSME adoption in Cambodia's informal food sectors[75].

h. Stakeholders

- CARE Cambodia, Youth Council of Cambodia, Independent Democracy of Informal Economy Association: oversee program implementation and management.
- Food vendors, shopkeepers, and street vendors: primary adopters, responsible for initiative uptake and packaging transition.
- Waste-management companies and informal collectors: responsible for improving sustainable waste sorting and recycling business models.
- EU SWITCH-Asia Program: grant funder

i. Relevance and Applicability for Other AMS

Lessons Learned

- Grant-funded pilots are effective for catalyzing transition in contexts where MSMEs cannot absorb upfront costs for sustainability transitions.
- Combining financial support with capacity building is essential, especially in informal-actor-heavy waste systems, with limited access to capital.

Targeting specific geographic clusters (e.g., factory zones) can yield quicker uptake and clearer demonstration effects.

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with Low Recycling Capacity and High Informal-Sector Dependence

Common constraints for improving PWM include low recycling rates, reliance on informal collectors, and limited capital access for MSMEs. Grant-funded business-model transitions offer a pragmatic starting point for early-stage circular-economy development by helping these actors adopt sustainable packaging, improve waste-sorting and recycling capabilities, and pilot models that would otherwise be financially out of reach.

Applicability in Countries with a Need for Greater Financial Access for MSMEs and Informal Actors

MSMEs and informal collectors can face barriers to securing commercial loans or affording upfront CAPEX for equipment, packaging changes, or process upgrades. PlasticSmart Cambodia provides a pathway for countries where capital may not be easily accessible to MSMEs, and public budgets do not subsidize transition at scale. This is relevant for AMS where structural capital constraints can prevent MSMEs from participating in circular-economy reforms.

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Why this matters for AMS:

PlasticSmart Cambodia shows that meaningful system improvements do not require heavy infrastructure, mandating policies, or large public CAPEX. Instead, AMS can support:

- Behavioral and business-model change at the upstream level.
- Incremental improvements in local sorting, processing, and packaging systems.
- Inclusive participation of MSMEs and informal workers in national circular-economy pathways.

Replicability of the Financial Structure Across ASEAN

The value of this case lies in demonstrating a scalable, grant-funded transition model suitable for diverse ASEAN contexts where smaller, informal actors dominate the PWM landscape. PlasticSmart Cambodia's approach is replicable across AMS through the following practical replication pathways:

- Deploy targeted grants to reduce adoption barriers for MSMEs and informal actors when transitioning to sustainable packaging or improved recycling practices.
- Pair grants with structured capacity-building, including training on cost-benefit analysis, packaging alternatives, and safe and efficient waste-handling methods.
- Concentrate pilots in high-waste areas (market areas, tourism zones, factory clusters) where concentrated consumption and waste generation enable clear demonstration effects.
- Use existing community networks, such as local NGOs and informal-worker associations, to strengthen adoption and reduce implementation friction.

j. Principles Demonstrated

Contextual Relevance

Cambodia's early-stage and growing recycling systems, high informal-sector participation, and rapidly growing plastic-packaging demand make grant-funded MSME transformation an appropriate choice compared to repayment-dependent mechanisms like loans.

Inclusivity

Directly strengthens MSMEs, vendors, and informal workers—groups often excluded from formal financing.

Resilience & Sustainability

Fosters sustainable business models, and awareness building that reduce long-term dependence on subsidies while improving environmental outcomes and livelihoods.

[70] PlasticSmart Cambodia › GRANTS PROGRAMME | SWITCH-Asia; PlasticSmart Cambodia - CARE Cambodia

[71] Ibid.

[72] Ibid.

[73] Ibid.

[74] Ibid.

[75] Ibid.

[76] Indorama Ventures secures $200 million loan from IFC to drive sustainability program | Indorama Ventures

[77] Unlocking-the-Plastics-Circular-Economy_Case-Studies-on-Investment_Dec_2022.pdf

[78] Indorama Ventures Regional Blue Loan Project: Report and Recommendation of the President

CASE STUDY C (COMPLEMENTARITY)

a. Indorama Ventures: Blue Loan to bolster PET recycling (Indonesia/Thailand)

Indorama Ventures (IVL), headquartered in Thailand, is one of the world's largest PET resin producers. In 2024, the company secured a 7-year Blue Loan from the IFC, a sustainability-linked debt instrument explicitly tied to marine-plastic reduction and circularity outcomes[76]. The loan enabled IVL to expand PET recycling capacity across Indonesia and Thailand, through upgrades to existing plants and the construction of a new plant in Karawang, Indonesia[77].

b. Financing Mechanisms

The expansion was financed through a complementary mix of financial instruments, each fulfilling distinct roles in enabling the feasibility and durability of large-scale recycling instruments.

- The project is financed through a $200 million US Dollar (USD) Blue Loan, a sustainability-linked debt instrument issued to IVL to scale PET recycling infrastructure in emerging markets.
- In addition to the Blue Loan, the initiative leverages blended-finance support in the form of parallel loans Blue Loans from 2020, from IFC, ADB and Deutsche Investitions- und Entwicklungsgesellschaft to help share the investment risk, while long-term corporate offtake commitments from global FMCG companies strengthen demand certainty for food-grade rPET[78].

This combination of mechanisms ensures stable capital access, risk-sharing across actors, and predictable long-term revenue for capital-intensive recycling facilities.

c. Value Chain Stage

The initiative targets the downstream sections of the plastic value chain. With expanded facilities, IVL deepened its involvement in:

- Sorting and pre-processing of collected PET.
- Mechanical recycling and contamination control.
- Production of food-grade rPET pellets.
- Reintegration of rPET into high-volume manufacturing for FMCG and packaging companies.

d. Context & Enabling Environment

Policy and Regulatory Context

IVL's expansion coincided with accelerating regulatory reforms across Asia and emerging markets, where governments have increasingly adopted mandatory EPR systems, plastic-reduction roadmaps, and recycled-content targets. By setting mandated recycled-content and packaging-related targets, these policies encourage companies to increase rPET usage in their products, thereby increasing demand for rPET. The presence of measurable compliance requirements further lends itself to performance-linked financing structures, such as the Blue Loan, which can be tied to achievement of these policy-driven metrics[79].

Across ASEAN, EPR is rapidly becoming a central waste-management policy instrument, countries like Indonesia, Vietnam, Thailand, and the Philippines have introduced or strengthened regulatory frameworks requiring producers to recover and recycle plastic packaging. These obligations translate directly into predictable demand for rPET, improving the commercial foundations of IVL's investment[80].

Meanwhile, the Blue Loan itself is aligned with global policy momentum around marine plastic reduction, reflecting commitments made through multilateral governance mechanisms and global partnerships calling for increased private-sector investment in circularity. The loan thus benefits from the convergence of national and global regulatory incentives.

Market context: waste flows and feedstock reliability

Across Asia, PET consumption has grown rapidly while recycling capacity faces challenges. Many AMS face:

- High post-consumer PET availability but low recovery.
- Volatile feedstock quality due to informal sector dependance.
- Challenges with appropriate sorting infrastructure and contamination levels.
- Funding challenges for operational and infrastructure upgrades.

IVL's loan-financed facility expansions directly respond to these market failures. By scaling processing capacity and improving material quality management, IVL helps stabilize supply, reduce contamination, and create a consistent pipeline rPET for international brands committed to circularity. The Blue Loan's Key Performance Indicator (KPI)-linked model ensures that the throughput increases occur alongside measurable reductions in environmental leakage[81].

e. Objectives

Financial and Impact Goals

The expansion was designed to:

- Increase global and regional supply of food-grade rPET, particularly in markets with rising consumption.
- Support circular manufacturing by reducing reliance on virgin PET.
- Reduce marine-plastic leakage through measurable operational performance.
- Improve long term resilience of PET value chains.
- Help producers meet EPR and recycled-content obligations without relying on volatile global markets.

IVL's KPIs under the Blue Loan link debt performance to actual increases in recycled output, tying financial outcomes directly to environmental outcomes[82].

f. Impact on PWM

IVL's facilities process a significant volume of PET waste into recycled pellet output that meets stringent food-grade specifications. The loan-supported capacity expansion supports higher throughput of collected PET, enabling more material to be reintroduced into production loops, achieving two main circularity effects:

- **Increase in regional rPET use**
  The Blue Loan-financed expansion increases regional production of food-grade rPET, allowing brands to replace virgin PET at scale across ASEAN. Expanded capacity across emerging markets helps build regional circular-economy infrastructure and improves the resilience of global rPET supply chains[83].
- **Direct impact on beverage packaging circularity**
  Since a portion of rPET output is used by beverage companies due to offtake agreements, the increase in regional rPET production capacity initiative supports major beverage companies in meeting binding and voluntary recycled-content commitments by providing a consistent, high-quality supply of food-grade rPET. This directly increases the circularity of PET bottles across participating markets.

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g. Implementation Considerations

Key Design Choices

The Blue Loan structure aligns financing with verifiable impact KPIs, ensuring measurable progress in recycling output and leakage reduction. Complementing the debt mechanism with blended-finance support reduces perceived investment risk, while corporate offtake agreements mitigate revenue volatility and ensure long term operational stability.

Operational and Financial Sustainability

The initiative's financial sustainability is strengthened through:

- KPI-linked transparency and reporting, improving investor confidence.
- Policy-driven demand for rPET through EPR and recycled content mandates.
- Guaranteed offtake from FMCG companies.
- Investment in high-quality sorting and contamination control infrastructure to ensure plant utilization.

Together these factors secure stable long-term operations and minimize underutilization risks.

h. Stakeholders

- Indorama Ventures: project sponsor and operator of recycling facilities.
- Blue Loan Lenders: provided sustainability-linked debt financing.
- Development Finance Institutions: supplied blended-finance support and de-risking.
- Government Agencies: responsible for EPR and recycled-content policy frameworks.
- Global FMCG Companies: anchor buyers of food-grade rPET under long-term agreements.

i. Relevance & Applicability for other AMS

Lessons Learned

The IVL case illustrates the importance of using multiple financial and policy instruments together. The Blue Loan alone cannot secure long-term viability; instead, its effectiveness depends on the complementarity of EPR mandates, blended finance risk sharing, and corporate offtake commitments. Integrating these mechanisms produces stronger performance outcomes, reduces exposure to PET price volatility, and reinforces systemwide circularity.

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with High PET demand and limited recycling capacity

Many AMS face rising PET consumption, challenges with recycling infrastructure, and increasing policy commitments to circularity. IVL's model demonstrates how sustainability-linked financing coupled with policy obligations and corporate procurement can strengthen domestic recycling ecosystems. It also offers a pathway for AMS to improve rPET availability, reduce reliance on virgin imports, and meet national or voluntary recycled-content targets[84].

Replicability of the Blue Loan Model Across AMS

The Blue Loan structure addresses several constraints common across AMS

- High CAPEX requirements for food-grade recycling plants.
- Inconsistent feedstock flows and contamination
- Weak demand signals for rPET in the absence of regulation.
- Reliance on informal collection systems.
- Limited commercial lender appetite due to perceived risk.

The Model can be replicated in ASEAN by:

- Pairing sustainability-linked loans with EPR frameworks.
- Supporting blended finance participation to spread risk of initial investments wider.
- Working with PET buyers to establish long-term procurement offtake agreements.
- Aligning facility commissioning with regulatory implementation timelines.

j. Principles Demonstrated

Complementarity

The initiative combines debt finance (Blue Loan), blended-finance risk-sharing, policy mandates, and corporate demand to deliver outcomes that no single mechanism could achieve independently.

Measurability and Transparency

Blue Loan KPIs ensure rigorous reporting and verifiable environmental outcomes.

Resilience and Sustainability

Policy-anchored demand and long-term offtake agreements help stabilize operations in markets.

[79] ASEAN advances harmonized packaging EPR as mandatory systems and circular investment scale
[80] ASEAN Advances Mandatory Packaging EPR Frameworks for Circular Growth
[81] World Bank Document
[82] Indorama Ventures Regional Blue Loan Project: Report and Recommendation of the President
[83] Financial-Mechanism-Options-101-Factsheet.pdf
[84] Regional Plastics Outlook for Southeast and East Asia (EN)

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CASE STUDY D (INCLUSIVITY)

a. Plastic Bank and Corporate Partners Community Based Plastic Credit System – Philippines

A scheme to recover coastal plastic waste, run by Plastic Bank and sponsored by multiple corporate funders. It involves coastal communities and informal sector actors for waste collection[85].

b. Financial Mechanism(s) – Plastic collection credit scheme organized by Plastic Bank and funded by corporate buyers of credits such as SC Johnson, Coca-Cola Philippines and Watsons. Upon quantity verification at drop-off centers, Plastic Bank pays collectors between 10-15 Pesos per kilogram of plastic recovered. While there is no data on the total value of plastic credits Plastic Bank has sold, the scheme has facilitated the collection of 8.1 billion plastic bottles in the Philippines[86].

c. Value Chain Stage – The project targets the downstream portion of the value chain, with the scheme maintaining 260 collection points across the Philippines and collecting plastic waste from over 22,000 collectors. The waste is then sold to certified recycling partners for processing and reintegrated into products and packaging of partner firms[87].

d. Context & Enabling Environment

Policy and Regulatory Context

The Philippines faces hurdles with leakage rates due to the nature of its waste systems, archipelagic geography, and consumption levels of low-value plastics. In response, the government enacted the EPR Act of 2022 (RA 11898[88]), establishing mandatory plastic recovery targets (80% by 2028) and enabling producers to meet these obligations through accredited recovery, buy-back, or collection partners. The law created a strong enabling environment for plastic credit models like Plastic Bank, which offer ready-made, verifiable recovery infrastructure aligned with regulatory requirements[89].

Socio-Economic Conditions

A significant share of waste is collected by informal recyclers facing low incomes, and suboptimal working conditions, and inadequate access to financial services. Plastic Bank's model directly responds to this by providing a stable, transparent buy-back system (strengthened by corporate offtake agreements) to its collectors. Additionally, it uses a portion of its revenue from plastic credit sales, subscriptions and plastic (offtake) sales to pay collectors above market rate in the form of tokens, which can be redeemed for benefits such as insurance and grocery vouchers to maximize socioeconomic impact. In turn, the vast network of collectors helps Plastic Bank achieve stable feedstock supply and improves financial viability[90].

e. Objectives

Financial and impact goals

- Create predictable revenue for collection branches and waste pickers through corporate offtake procurement, fixed periodic contributions from business subscriptions, and plastic recovery credit financing.
- Support producers' needs to meet regulatory compliance (EPR obligations) using auditable, traceable recovery outcomes.
- Reduce ocean-bound plastic by concentrating collection within 30 miles of coastlines and waterways – zones with the highest leakage risk[91] .
- Improve the resilience and socio-economic security of informal collectors through fair payment structures, social benefits, and financial inclusion tools such as interest-free loans[92] .
- Expand circularity by reintegrating recovered plastic into consumer packaging through corporate partners.

f. Impact on PWM

Environmental Impact

Plastic Bank has facilitated the collection of over 35 million tons of plastic waste in the Philippines, including more than 8.1 billion plastic bottles, preventing runoff and damage to costal and marine ecosystems[93] .

Socioeconomic Impact

Over 22,000 active collection members participate in the Philippines receiving not only higher (20-35% increases), more consistent incomes, but also access to benefits like microfinance and grocery vouchers that help stabilize livelihoods in low-income coastal communities[94] .

Material recovery and processing

While the amount of plastic sold to recyclers for processing into new products is unclear, offtake agreements with firms like SC Johnson, indicate that the scheme has recovered and processed a large amount of plastic waste.

g. Implementation Considerations

Key Design Choices

Plastic credit structure: Works well with dispersed and decentralized waste collection infrastructure, allowing for effective waste collection.

Operational and Financial Sustainability

- The credit model makes the initiative viable to be funded by corporate offtake and credit purchases due to CSR or plastic recovery obligations.
- The dispersed nature of collection centers (over 260) makes waste aggregation and recovery in an archipelagic nation like the Philippines.

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- Offtake agreements for recycled plastic collected could create long-term revenue certainty.
- Paying collectors by weight, together with providing above market-rate token bonuses on eligible materials (which can be redeemed to pay for food, education and other essentials) helps collectors earn a fair wage, which could potentially build more long-term and consistent participation[95] .

h. Stakeholders

- Plastic Bank: Designs and operates the collection ecosystem; manages MRV systems, digital payments, and benefit distribution.
- Corporate Partners: Provide financial commitments through procurement of Social Plastic® and recovery credits and offtake agreements, which integrate recovered content into product lines.
- Collectors and Branch Operators: Serve as the backbone of the recovery system, performing collection, segregation, and pre-sorting, receiving financial and social benefits.
- Government Agencies (DENR/NSWMC): Regulate EPR programs and ensure alignment with policy like RA 11898.

i. Relevance & Applicability for Other AMS

Lessons Learned

- Stable, predictable revenue streams are essential — corporate-funded recovery credits and above market-rate bonuses above market-rate, fair wages, and incentivized collection, helping sustain thousands of active collectors and large-scale recovery volumes.
- Anchor corporate offtake accelerates scaling — SC Johnson's long-term commitments contributed to Plastic Bank's ability to collect 40 million kilograms of ocean-bound marine plastic[96].

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with Large Informal Waste Sectors

Across ASEAN, informal waste pickers recover a substantial share of all recyclable material, forming the backbone of national recycling systems despite operating under imperfect conditions. In the Philippines, Plastic Bank works within this reality by establishing community-based collection ecosystems that provide stable buy-back prices, digital payments, and guaranteed offtake, while offering social benefits such as grocery vouchers, insurance, and zero-interest loans to improve livelihood security. These incentives provide collectors with higher and fairer incomes, while helping maintain a consistent, high-quality feedstock supply.

Why this matters for AMS:

Multiple AMS have large, informal, supply-driven waste ecosystems that may be subject to inconsistent supply, and contamination. A model like Plastic Bank's, anchored in community-level collection, digital traceability, fair compensation, and social protection, can be directly adapted by AMS to improve ethical supply chains, stabilize upstream material flows, strengthen traceability for EPR systems, and ensure that informal workers benefit from formalized financing structures. This approach reduces displacement risks, enhances inclusion, and improves socioeconomic equity.

Replicability of the Plastic Credit Financing Model Across AMS

Plastic Bank's recovery-based financing model addresses multiple systemic challenges common across ASEAN:

- Low incomes among informal collectors
- Weak traceability in community-level collection and aggregation
- Fragmented links between informal supply and formal recycling value chains
- Decentralized collection and processing infrastructure

Plastic Bank's approach, funded through corporate purchase of output and results-based recovery credits, creates a viable, low-CAPEX pathway for AMS seeking to strengthen midstream systems without relying on large infrastructure investment.

It is a repeatable model for AMS through practical replication pathways:

- Pairing obligated producers with community-based collection operators, enabling corporations to meet EPR obligations while improving the livelihoods of informal workers.
- Leveraging digital MRV systems to verify collection volumes, reduce leakage and fraud, and strengthen auditability for EPR and regulatory reporting.
- Embedding long-term corporate offtake agreements to derisk financing and ensure sustained demand for recovered plastic.
- Aligning recovery contracts with national EPR frameworks, enabling producers to count verified recovery toward mandated recovery targets under laws such as the Philippine EPR Act (RA 11898).
- Enabling social-impact co-benefits (insurance, groceries, interest-free loans), which increase retention and help stabilize supply in informal-sector-dominated contexts.

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This mirrors the success factors observed in Plastic Bank's Philippines ecosystem, where corporate anchor demand, digital traceability, and consistent community engagement have together enabled the collection of over 8 billion plastic bottles, while improving livelihoods in high-leakage coastal communities.

j. Principles Demonstrated

Inclusivity
The model directly integrates informal workers, stabilizing incomes and expanding access to social protection measures.

Measurability and Transparency
Blockchain-verified transactions provide corporates and regulators with high-integrity data suitable for environmental reporting and ESG disclosure.

Contextual Relevance
Highly fit for archipelagic and informal-sector-driven economies across ASEAN, where decentralized collection is essential.

[85] Social fintech firm Plastic Bank believes solving plastic pollution, poverty go hand in hand

[86] Ibid.; Plastic Bank Stops 2 Billion Plastic Bottles from Entering the Ocean, Partnership with SC Johnson Accounts for Half of the Total

[87] Achieve EPR Compliance with Plastic Bank's Proven Solutions; Global Waste Management: Making an Impact with Plastic Bank; What do you do with the plastic after it's collected? - Plastic Bank

[88] Republic Act No. 11898

[89] DAO-2023-02

[90] Plastic Bank eyeing to expand operations in PHL - BusinessWorld Online; SC Johnson, Plastic Bank Partner to Fight Ocean Plastic and Poverty

[91] Plastic Bank: Stopping ocean plastic while improving the lives of collector communities

[92] ERC approves collection of P31B from Meralco customers

[93] Reusing plastic 'a win for everyone'

[94] A Canadian Company Says It's Fighting Pollution in the Philippines. Is It Cashing In Instead?

[95] Individuals - Plastic Bank

[96] Plastic Bank Stops 2 Billion Plastic Bottles from Entering the Ocean, Partnership with SC Johnson Accounts for Half of the Total

CASE STUDY E (MEASURABILITY AND TRANSPARENCY)

a. Disposable Carrier Bag Charge –Singapore
Supermarket operators in Singapore with an annual turnover above 100 million Singapore Dollars (SGD) are required to charge at least 0.05 SGD per disposable carrier bag provided at checkout[97].

b. Financial Mechanism(s) – Levy of 0.05 SGD on disposable carrier bags, imposed through regulation and collected by large supermarket operators from customers at checkout. The proceeds from the levy are retained by supermarket operators, who are encouraged to channel funds to environmental or social causes[98].

c. Value Chain Stage – The levy targets the upstream stage – consumer behavior at point of sale, where decisions about plastic bag use are made. It specifically addresses single-use plastic bags, which are low-value, hard to recycle, and a major contributor to landfill pressure[99].

d. Context & Enabling Environment

Plastic-Use environment

- Prior to the charge, Singaporeans were estimated to use roughly 820 million disposable carrier bags per year, equivalent to roughly 146 bags per person annually, mostly plastic bags taken from supermarkets[100].
- Packaging waste is a priority waste stream, and plastic carrier bags contribute to waste sent to Semakau Landfill, Singapore's only landfill, due to Singapore's low plastic recycling rate of 4%[101] in 2025.

e. Objectives

Financial and impact goals

- Reduce consumption of disposable plastic bags by introducing a visible, unavoidable price signal.
- Raise operators' revenue through levy collection, which is encouraged to be donated to environmental causes at operators' discretion.
- Reduce the amount of plastic waste sent for incineration and to the landfill.

f. Impact on PWM

Behavioral Change

- Over 90% of customers brought their own reusable bags after the charge was introduced, up from 61% before the charge[102].
- The average number of disposable bags needed per supermarket visit fell from three to one[103].

Reduction in plastic bag usage
Supermarket operators reported a 50-80% reduction in the number of disposable carrier bags issued after implementation[104].

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Financial and Social Impact

NTUC FairPrice, the largest retailer, raised over 3.1 million SGD in plastic bag fees in 2024, contributing to environmental and social causes to alleviate hunger and poverty, strengthen sustainable development, promote sustainable consumption, and propagate electric-vehicle fleets[105].

g. Implementation Considerations

Key Design Choices

Levy mechanism: The direct charge to waste generators (consumers), along with the visibility of the charge at the point of transaction was essential. The levy is applied per bag, per visit, making the cost salient and driving behavioral change.

- **Operational and Social Considerations**
  A key implementation decision was to limit initial coverage to large supermarket operators with annual turnover above 100 million SGD. These operators already operate under digital point-of-sale systems and extensive internal compliance protocols, making the marginal cost of introducing a per-bag charge low. This significantly reduced administrative complexity during rollout and allowed regulators to focus on behavioral outcomes rather than enforcement logistics.
- To moderate the cost-impact on low-income households, the minimum amount to be charged was set at 0.05 SGD per bag, based on public consultations and engagement[106].
- Operational flexibility was another critical consideration. Retailers were not prescribed a single collection method; instead, they were allowed to adopt honor systems at self-checkout counters, barcode scanning, or controlled dispensing. This flexibility reduced friction for retailers, minimized queue delays, and avoided costly system overhauls, while still delivering consistent outcomes in bag reduction.
- Encouraging supermarket operators to channel and disclose levy revenues towards environmental and social causes, maximized the environmental impact of the levy, beyond plastic waste reduction[107].

h. Stakeholders

- National Environment Agency (NEA): policy design, regulation, and monitoring.
- Large supermarket operators (FairPrice, Cold Storage, Sheng Siong): levy collection, consumer interface, and voluntary reporting on proceeds.
- Consumers: primary agents of behavioral change.
- Environmental and social beneficiaries: recipients of some levy proceeds.

i. Relevance & Applicability for Other AMS

Lessons Learned

- First, price signals do not need to be large to be effective, provided they are well-designed. Despite being only five cents per bag, the charge resulted in a 50–80% reduction in disposable carrier bag use across major supermarket chains within the first year, demonstrating high price elasticity for this type of plastic consumption.
- Second, selective rollout (only large supermarket chains) and operational flexibility (non-standardized levy collection methods) allowed for smooth uptake with a reduced enforcement burden on the government.

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with Growing Plastic Generating Retail Industries

Across ASEAN, a substantial share of single-use plastic leakage originates upstream at the point of sale, particularly from retail-distributed carrier bags that are low-value, difficult to collect, and rarely recycled. As retail expands across the region, supermarkets and large grocery chains account for an increasing proportion of plastic bag distribution, even in countries where downstream waste management systems are still expanding[108].

Singapore's mandatory disposable carrier bag charge directly targets this upstream leakage point by applying a uniform, visible levy at checkout, shifting consumer behavior before plastic waste enters the waste system. Within one year of implementation, large supermarket operators reported a 50–80% reduction in disposable carrier bags issued, while a national survey found that over 90% of customers routinely brought reusable bags, compared to 61% prior to the charge.

Why this matters for AMS:

AMS experiencing rapid growth in single-use plastic heavy grocery retail at established supermarkets and stores, alongside persistent challenges related to plastic bag litter, landfill pressure, and marine leakage. A checkout-level levy provides an immediately deployable instrument to reduce plastic generation at source, easing downstream collection burdens and complementing investments in waste services, recycling infrastructure, and informal-sector integration. Singapore's experience shows that even a low-value charge can deliver outsized impact when applied consistently and visibly within a clear regulatory framework[109].

Replicability of Plastic Bag Levy Mechanisms Across AMS

The plastic bag levy model addresses several structural challenges common across ASEAN waste systems:

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- High volumes of low-value, single-use plastic bags with limited recycling potential.
- Weak incentives for consumers to reduce plastic use at the point of consumption.
- High public-sector costs associated with collecting and disposing of lightweight plastic waste.
- Limited effectiveness of voluntary behavior-change campaigns when used in isolation.

These challenges are particularly acute in urban retail environments where plastic bags are distributed free of charge or at negligible cost.

Singapore's approach is replicable across AMS through practical replication pathways:

- Targeting large and formal retail chains first, where licensing, digital point-of-sale systems, and compliance capacity already exist, reducing enforcement complexity and administrative cost. This approach may be well-suited to countries where plastic bag levy regulations already exist, but face enforcement challenges, as implementation is generally more feasible in modern retail settings than in traditional markets. A phased rollout beginning with larger retailers can create a practical foundation for extending the levy to other retail formats over time.
- Applying a simple per-bag charge that is salient to consumers but administratively light for retailers, ensuring high compliance and rapid behavior change.
- Extensively engaging affected stakeholders to gauge the potential impact of the levy, and setting prices partially or wholly based on that, to minimize the impact on vulnerable groups.
- Encouraging transparent use of proceeds for environmental or social causes, reinforcing legitimacy and trust without creating rigid earmarking requirements

This mirrors the success factors observed in Singapore, where the levy functions complementarily, not as a standalone solution, but as an upstream demand-reduction instrument that reinforces broader PWM strategies, including Mandatory Packaging Reporting and emerging EPR measures[110].

Where implementation of plastic bag levy is limited, countries may also consider promoting biodegradable or compostable bag alternatives as a complementary or transitional measure.

j. Principles Demonstrated

Measurability and Transparency

The government's encouragement of supermarket operators to disclose how proceeds from the levy were utilized maintains public trust and strengthens the measure's credibility.

Contextual Relevance

Singapore's highly dense and formalized retail and supermarket sector makes it easy for the government to impose plastic bag levies in a way where much of the enforcement burden falls on supermarket operators and still observe high rates of enforcement and compliance.

[97] Disposable Carrier Bag Charge
[98] Ibid.
[99] Singapore's five-cent bag charge: Will it make a difference?
[100] Ibid.; Commentary: Four months on, what has Singapore's disposable carrier bag charge really done to ease the waste problem?
[101] NEA Singapore: Waste and Recycling Statistics 2015-2025
[102] Over 90% of customers bring own bags after mandatory 5-cent charge for plastic bags: NEA survey
[103] Ibid.
[104] Plastic bag use at supermarkets has dropped by up to 80% since mandatory charge
[105] Disposable Carrier Bag Charge Report 2024
[106] Public Consultation on Disposable Carrier Bag Charge at Supermarkets | REACH (Reaching Everyone for Active Citizenry @ Home)
[107] Disposable Carrier Bag Charge
[108] Regional Plastics Outlook for Southeast and East Asia
[109] The state of grocery in Southeast Asia
[110] NEA to consider broader forms of packaging waste under extended producer responsibility scheme

CASE STUDY F (POLICY SYNCHRONIZATION)

a. Pay-by-Volume, Volume-Based Waste Fee Pilot – Viet Nam
A volume-based waste collection fee pilot scheme that requires the use of standardized, authorized trash bags for household waste in the Cam Nam Ward of Hoi An City, Viet Nam[111].

b. Financial Mechanism(s) – The core financial mechanism deployed in this case is a waste collection fee, where households ultimately pay for waste collection based on the volume of solid, non-recyclable waste they generate (after sorting), rather than a flat monthly fee. Operationally, this is implemented using authorized trash bags of standardized sizes, which households must use for non-recyclable waste. The purchase of these bags functions as a proxy for payment per unit of waste generated. The bags come in various sizes with different prices based on the volume of waste they hold. Prices cover the cost of bag production as well as collection, transport and treatment of the associated volume of waste they hold. They range from 2,300 Vietnamese Dong (VND) for a 5-liter bag to 15,000 VND for a 40-liter bag. During the pilot, households received 30,000 VND worth of bags per month for free and had to pay more for any additional bags[112].

c. Value Chain Stage – The project targets the downstream portion of the value chain, with the scheme aiming to encourage increased waste separation and recycling at the source. By increasing the cost of residual, non-recyclable waste, while keeping recyclable streams free, the scheme encourages households to separate recyclable waste and divert them away from the residual waste stream and reduce the amount of non-recyclable waste they generate[113].

d. Context & Enabling Environment

Policy and Regulatory Context

- The pilot was explicitly designed to support implementation of Viet Nam's Law No. 72/2020/QH14 on Environmental Protection, which introduced mandatory requirements for waste separation at the source and waste fee calculation based on weight or volume, with a national implementation timeline leading up to the end of 2024. However, at the time of the pilot, many local governments lacked practical models for translating these national mandates into workable municipal systems. Furthermore, provincial implementation capacity varies considerably across key enabling areas, including source segregation systems, authorized bag or weighing mechanisms, monitoring and enforcement, public awareness, and collection infrastructure, thereby limiting effective policy enforcement. The Cam Nam pilot therefore served as a policy translation mechanism, bridging the gap between national legal obligations and on-the-ground implementation[114].
- At the national-level, 70-90% of the cost of solid waste management incurred by (often state-owned) waste management operators is offset by government subsidies, meaning that households and businesses pay a small minority of the overall cost. In most cities, collection fee structures are flat (25,000-30,000 VND/month per household), which is not only too low to cover waste management costs, but also fails to incentivize reduced waste generation as well as increased waste separation at the source. A volume-based fee structure would allow waste management operators and the government to better cover costs, by reducing contamination in recyclable waste, increasing fee revenue, and reducing the volume of non-recyclable waste that needs to be processed[115].

Institutional Arrangements

The pilot was enabled through a layered governance arrangement:

- Quang Nam Provincial People's Committee approved the pilot in principle.
- Hoi An City People's Committee issued a formal local plan authorizing implementation in Cam Nam Ward.
- Hoi An Public Works Company managed day-to-day waste collection and routing adjustments.
- International Union for Conservation of Nature (IUCN) Viet Nam, PRO Viet Nam, and the local NGO, Building Up Sustainability provided technical design, community engagement, monitoring, and documentation support[116].

This multi-actor arrangement ensured both political legitimacy and operational feasibility, through role and accountability allocation.

Socio-Economic Conditions

- Hoi An's economy is heavily dependent on tourism. Visible waste mismanagement poses direct economic and reputational risks, which create strong incentives for local authorities to trial reforms that improve cleanliness and reduce plastic leakage.
- Cam Nam Ward was deliberately selected because it is geographically contained, has relatively high baseline participation in waste separation, and possesses adequate collection infrastructure – conditions that reduced implementation risk for a first-of-its-kind pilot[117].

e. Objectives

Financial and impact goals

- Move municipal waste services toward stronger cost recovery, reducing reliance on generalized subsidies and flat fees that neither reflect service costs nor incentivize waste reduction.
- Increase waste segregation at the source, particularly for recyclable plastics.
- Improve collection of clean, recyclable materials like plastics, reducing contamination and thereby, recycling costs.

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- Reduce the amount of non-recyclable waste generated by households.
- Reduce unmanaged plastic waste and litter in public spaces and waterways.

f. Impact on PWM

Environmental Impact

During Phase 1 of the pilot, clear behavioral shifts were recorded among participating households:

- The proportion of households separating waste increased from 46% in 2022 to 66% in 2023[118].
- The volume of recyclable waste collected from participating households increased by 24.79% compared to 2022, indicating improved capture of recyclable plastics and containers[119].

These changes occurred despite the pilot being voluntary in its initial phase, underscoring the strength of price-based incentives when paired with communication and monitoring.

g. Implementation Considerations

Key Design Choices

Volume-based waste collection fee model: Effective at influencing large scale behavioral change (increased recycling and separation due to costs of not doing so).

Operational and Financial Sustainability

- Authorized trash bags (5-40 liters) provided a simple, visible pricing mechanism that was easy for households to understand and for operators to administer, while covering waste management costs.
- Phased implementation allowed authorities to first measure waste volumes and household responses before expanding coverage.
- Community monitoring groups played a critical role in encouraging compliance in the absence of immediate penalties for improper separation or disposal[120].
- Due to the collection fees being volume-based, inadequate enforcement could result in improper disposal of excess waste and environmental pollution, due to unwillingness to purchase extra bags[121].

h. Stakeholders

- Hoi An City People's Committee: policy leadership and local authorization.
- Quang Nam PPC: provincial oversight and approval.
- Hoi An Public Works Company: operational collection and logistics.
- IUCN Viet Nam: technical design, monitoring, and documentation.
- PRO Viet Nam: coordination platform and support for system pilots
- Building Up Sustainability (local NGO): community engagement and implementation support.
- Households and community monitors: behavioral change and compliance[122].

i. Relevance and Applicability for Other AMS

Lessons Learned

- Political commitment at city level is indispensable – it would not be possible to launch the pilot without support from LGUs like the Hoi An CPC[123].
- Behavioral change mechanisms work well when paired with visible infrastructure (city-authorized bags) and compliance mechanisms in place, such as community monitoring groups and cameras at waste deposit points. Obligations could have been more binding, due to the overall household waste separation rate only topping out at 66% due to a lack of consequences.
- Volume-based fee mechanisms should be introduced gradually, with strong communication and transparent data sharing, to maintain public trust.

Across ASEAN, urban waste management systems are widely characterized by low, but increasing household cost recovery, and heavy reliance on public subsidies, as waste volumes continue to rise. Many ASEAN countries recover only fraction of the full operating costs of municipal solid waste services, potentially constraining service quality and long-term investment capacity. Flat-rate household fees, where they exist, may be disconnected from actual waste generation, providing little incentive for waste reduction or source separation[124].

In this regional context, volume-based waste fee mechanisms, such as the Viet Nam pilot, address a structural ASEAN-wide challenge by shifting incentives to waste generators, making households financially accountable for the volume of residual waste they generate, while keeping separated recyclables free or low-cost to dispose of. Economic and policy analyses across Asia show that pricing residual waste at the point of generation is an effective way to improve source separation, reduce contamination, and relieve pressure on downstream waste recovery systems[125].

Replicability of Volume-Based Waste Fee Mechanisms Across ASEAN

The volume-based fee mechanism addresses several structural challenges common across ASEAN waste systems:

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- Under-recovery of waste management costs due to flat household fees.
- Weak incentives for households to reduce waste or segregate plastics[126].
- High contamination of recyclables affecting informal and formal recovery.
- Fiscal pressure on municipalities to sustain operations.
- Over-reliance on downstream informal sorting rather than upstream behavior change.

The Viet Nam volume-based fee pilot demonstrates a repeatable, low-CAPEX model for AMS through practical replication pathways:

- Introducing standardized, volume-based pricing instruments (authorized bags or containers) to link household behavior with system costs of waste disposal.
- Phasing implementation at neighborhood or ward level before scaling further. This helps account for differences in local capacity and implementation readiness, while allowing successful models to be adapted and scaled gradually over time.
- Pairing volume-based pricing mechanisms with accessible recycling options so households have viable alternatives to residual disposal.
- Aligning pricing reforms with national waste, plastic, and EPR policies to reinforce circular-economy objectives.
- Designing safeguards (communication, gradual rollout) to maintain social acceptability and protect low-income households. In countries where resource capacity differs across local jurisdictions, transitional government subsidies or grants can be warranted during implementation to support low-income households and facilitate a smoother transition. Grants can also support smaller producers where recycling margins are thin, avoiding disproportionate compliance burdens.

This mirrors the success factors observed in the Viet Nam pilot, where simple pricing signals, strong communication, and phased implementation together delivered behavioral change, improved plastic segregation, and stronger foundations for financially sustainable waste systems.

j. Principles Demonstrated

Policy Synchronization
The pilot translated national legal requirements like waste separation (Law No. 72/2020/QH14 on Environmental Protection) into local operational practice, reducing implementation gaps between policy intent and service delivery.

Resilience and Sustainability
By strengthening cost recovery and aligning incentives across households and operators, the mechanism supports long-term waste management system resilience, while also highlighting design risks that must be managed.

[111] Piloting volume-based waste fees in Hoi An, Viet Nam
[112] Ibid.
[113] Ibid.
[114] Ibid.
[115] Ibid.
[116] Ibid.; PRO Vietnam and IUCN Conclude Strategic Partnership Program with Promising Outcomes in Hoi An
[117] Piloting volume-based waste fees in Hoi An, Viet Nam
[118] Ibid.
[119] Ibid.
[120] Ibid.
[121] Ibid.
[122] Ibid.
[123] Ibid.

CASE STUDY G (RESILIENCE AND SUSTAINABILITY)

a. Palembang WtE Plant – Indonesia
A city-scale waste-to-energy facility developed in Palembang, Indonesia, initiated by Zheneng Jinjiang Environment Holding Company Limited (Chinese WtE operator) via a long-term PPP concession to treat municipal waste and generate electricity for the grid[127].

b. Financial Mechanism(s) – The Palembang WtE project utilizes multiple financial mechanisms to cover its 300 million USD cost:

- Debt: A 100 million USD, 8-year non-recourse loan arranged by a syndicate led by DBS Bank and Bank Negara Indonesia (BNI), in a dual-currency structure (USD + IDR) to match the project's revenue profile and reduce Foreign Exchange (FX) mismatch.
- Equity: The remaining funding (roughly 200 million USD) was provided as equity by the sponsor, Zheneng Jinjiang Environment Holding Company, via a local subsidiary (PT Indo Green Power)[128].

c. Value Chain Stage – Targets the midstream to downstream segments of the waste value chain:

- Residual waste treatment: processes mixed municipal solid waste that would otherwise go to landfill.
- Downstream disposal diversion and energy recovery: converts waste into electricity while reducing landfill dependence.

d. Context & Enabling Environment Ibid.

[124] Municipal Solid Waste Cost Calculation: Technical Guidelines For Low- and Middle-Income Countries
[125] Solid Waste Management in Developing Asia: Prioritizing Waste Separation
[126] Ibid.

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Policy and Regulatory Context

Indonesia designated 12 priority cities for accelerated WtE development (including Palembang) and introduced preferential feed-in tariffs and guaranteed tipping fees to attract private investment. The Palembang plant addressed a problem – despite policy ambition, only a small number of WtE plants were operational prior to 2024, indicating a delivery gap and the need for bankable structures[129].

Market context: Waste flows and feedstock reliability

Indonesia generates around 65 million tons of waste annually, with only about a portion formally treated, with most cities reliant on landfills. This creates a strong demand pull for landfill-diversion infrastructure such as WtE plants[130].

e. Objectives

Impact goals

Reduce landfill dependence by diverting large volumes of city waste into controlled treatment.

Improve environmental conditions by reducing uncontrolled landfill impacts and associated methane emissions.

f. Impact on PWM

System-level outcomes

- Treats 1,000 tons/day of municipal waste, including plastic waste – expected to process nearly 300,000 tons annually, reducing Palembang's reliance on landfill disposal[131].
- The project is designed to cut landfill use and reduce methane emissions from landfill decomposition by diverting waste to controlled treatment.

Material recovery and power generation

The plant converts residual municipal waste into electricity (an estimated 20 Mega Watts of continuous power) while managing waste in a controlled facility, rather than open dumping or landfill expansion.

g. Implementation Considerations

Key Design Choices

Equity and Debt to fund construction: equity and debt are effective mechanisms for raising large amounts of funding for high-CAPEX projects, making them ideal for the Palembang plant.

Dual-currency debt structure: out of the 100 million USD of debt issued for the project, roughly 15% of it was issued in IDR (243 billion IDR – equivalent to approximately 15.3 million USD)[132]. This feature aligns a portion of the debt-service with local currency income, as waste-treatment fees received from the Palembang municipal government are paid in IDR. This reduces the project's exposure to FX risk.

Financial and Operational Considerations

- Guaranteed feedstock and tipping fees: the plant maintains a steady revenue stream through guaranteed municipal waste feedstock, for which they receive a maximum of 500,000 IDR/ton (33 USD/ton), from the Palembang municipal government. This stable revenue stream improves the financial viability and risk profile of the initiative[133].
- Long-term Power Purchase Agreement (PPA): Indonesia's state power company, Perusahaan Listrik Negara (PLN), signed a long-term PPA to purchase all electricity generated by the plant at a feed-in tariff of 0.1335 USD/kWh, one of the highest renewable tariffs in Indonesia, strengthening bankability and reducing risk by locking in power revenue[134].
- The plant incinerates waste to generate electricity, substantially reducing waste volumes (by up to 90%[135]) by converting it to ash and diverting it away from landfills, which are heavily employed for waste management in Indonesia.

h. Stakeholders

- Palembang Municipal Government: guarantees waste supply and pays regulated waste-treatment (tipping) fees.
- PLN: offtake power purchaser via long-term PPA purchasing all electricity generated at the plant.
- Zheneng Jinjiang Environment and PT Indo Green Power: financial sponsor, equity investor, and operator.

DBS Bank and BNI: lenders providing non-recourse dual-currency project debt.

i. Relevance & Applicability for Other AMS

Lessons Learned

- Bankability hinges on revenue certainty: combining a regulated tipping fee with a long-term PPA creates predictable cashflows suitable for project finance.
- Risk mitigation can unlock capital in contexts where municipal payment risk and regulatory uncertainty deter lenders.
- Currency matching matters: dual-currency debt aligned with dual-currency revenues reduces FX risk, improving financial durability.
- Incineration substantially reduces waste volume, making waste easier to manage.

Building on these lessons learned, the following assessment considers their applicability to relevant segments of AMS.

Applicability in Countries with Rising Waste Volumes, and Landfill Reliance

Multiple AMS are experiencing the same structural conditions that Palembang faces: rapidly rising municipal solid waste volumes, heavy reliance on landfills, and limited capacity to treat residual waste safely at scale[136]. Palembang's WtE plant is designed to treat 1,000 tons/day of municipal waste (nearly 300,000 tons/year) and reduce dependence on landfill disposal, which is directly relevant for AMS cities where landfill expansion is financially, environmentally and spatially constrained.

Applicability in Countries with Low Appetites for Large Publicly Funded CAPEX

In some AMS, it may be financially, operationally or politically challenging to mobilize the large amount of upfront capital needed for WtE plants through public sources. The Palembang WtE plant added significant capacity to Palembang's waste management systems, and electrical grid, without any upfront government CAPEX – instead, the government supported the initiative by helping cover the OPEX requisite to recover the initial investment, through guaranteed feedstock, tipping fees, and preferential rate tariffs for a PPA offtake.

Why this matters for AMS:

The Palembang plant serves as a showcase for how governments can create effective enabling conditions for private capital mobilization, removing the need for large publicly provided CAPEX, all while easing pressure on landfills and creating a stable source of power for the grid.

Replicability of the Financial Structure Across ASEAN

The value of this case for AMS lies not in promoting WtE plants everywhere, but in demonstrating a financing architecture and set of enabling conditions that can be adapted to diverse large-scale waste treatment needs.

Palembang's approach is replicable across AMS through practical replication pathways:

- Establish a regulated tipping fee framework tied to service delivery and indexed where appropriate, to stabilize revenues and increase investor confidence.
- Secure a long-term PPA or offtake agreement with the national utility (or another credible offtaker) for electricity or output generated (e.g., if the facility is a recycling plant).
- Use a PPP or Build-Own-Operate structure for initiative delivery and operations to avoid a high public CAPEX burden.

For AMS, the Palembang model is most useful when framed as a residual waste management solution, not as a substitute for upstream reduction or recycling. It fits best when:

- Waste volumes overwhelm landfill capacity.
- Recycling/segregation systems are improving, but not yet sufficient to handle residual waste streams.
- Governments need controlled disposal diversion outcomes.

i. Principles Demonstrated

Resilience and Sustainability

Dual revenue streams from tipping fees and electricity generation, as well as local currency-aligned financing reduce exposure to market volatility and FX shocks, thereby improving long-term financial sustainability.

Function–Fit

A blended debt and equity structure backed with public OPEX support is suited to CAPEX-heavy municipal infrastructure requiring long asset lives, stable demand, and contracted revenue.

Complementarity

The initiative depends on complementary instruments: Debt + Equity + Waste Collection (Tipping) Fees, where no single mechanism would be sufficient alone.

[127] Case 7. Palembang waste-to-energy plant – China's Official Energy Finance in Emerging and Developing Economies – Analysis - IEA
[128] Ibid.
[129] Ibid.
[130] Ibid.
[131] Ibid.
[132] Ibid.
[133] Ibid.
[134] Ibid.
[135] Waste-to-Energy_Final-1.pdf
[136] SON Report_18 June

PART III SYNTHESIS OF KEY LESSONS ACROSS CASE STUDIES

PART III (A) FUNCTION-FIT

Design Insights

- Capital-intensive interventions need long-term capital structures rather than short-term or transactional funding.
- Interventions centered on behavioral change (household sorting, consumer choices) benefit from price-signal instruments, not heavy infrastructure financing.
- Early-stage or thin-margin actors (e.g., MSMEs, informal operators) benefit most from non-repayable or highly concessional support, such as grants or subsidies, which allow piloting or transition without imposing financial risk.

Potential Adaptations

- For CAPEX-heavy midstream facilities, AMS could prioritize mechanisms that offer shared risk and long maturity (equity partnerships, concessional loans, blended capital), rather than short-term grants.
- For OPEX-heavy recovery operations, governments can support mechanisms that generate predictable recurring income (service fees, off-take purchases, stable incentive payments).
- For incentive-driven upstream change, AMS could apply lightweight, high-frequency mechanisms (volume-based charges, rebates, deposits).

PART III (B) CONTEXTUAL RELEVANCE

Design Insights

- Solutions must reflect local waste profiles, cultural norms, economic conditions, and governance structures.
- Sensitivity to geography (mountains, islands, dense cities) prevents operational inefficiencies.

Potential Adaptations

- AMS can develop location-specific waste-management blueprints (e.g., urban, suburban, rural, coastal, island).
- Encourage local piloting and experimentation before national scaling.
- Leverage existing local systems and institutions, such as community groups, or informal-sector networks to reduce frictions and maximize participation.

PART III (C) COMPLEMENTARITY

Design Insights

- CAPEX heavy initiatives can be risk-shared through complementary mechanisms.
- Initiatives tend to have greater impact with multiple mechanisms working in unison.

Potential Adaptations

- AMS can spread the risk for large CAPEX-heavy initiatives among more funders, using complementary financial mechanisms, such as a large loan with blended finance.

PART III (D) INCLUSIVITY

Design Insights

- Initiatives perform better when local communities and informal workers are structurally included, not treated as peripheral actors.
- Strengthening social protections (safety, fair pricing) improves consistency, quality, and reliability of collected material.
- Inclusive systems help build local ownership, which enhances long-term project durability.

Potential Adaptations

- AMS can formalize pathways for informal collectors to participate in national systems, (collector registration, accreditation, access to basic protections).
- Integrating communities into planning phases ensures solutions reflect local realities, increasing adoption.
- Build capacity programs that improve skills and safety to make waste work a viable, respected occupation.
- Facilitate community-level leadership roles to embed long-term commitment and reduce turnover.

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Part III (E) MEASURABILITY AND TRANSPARENCY

Design Insights

- Transparent reporting builds trust among communities, government, and private actors.
- Consistent data helps policymakers refine interventions rather than rely on assumptions.

Potential Adaptations

- AMS can adopt simple, harmonized metrics for tracking waste flows, recovery, and leakage.
- Introduce regular public reporting for PWM initiatives at local and national levels to enhance transparency.

PART III (F) POLICY SYNCHRONIZATION

Design Insights

- Policies work best when national guidance and local implementation reinforce each other.
- Coordinated timelines reduce confusion and improve compliance.
- Inter-agency coordination accelerates implementation and avoids contradictory mandates.
- When local governments have clarity on roles and responsibilities, execution is smoother.

Potential Adaptations

- Provide transitional periods and phased milestones to allow adjustment and capacity building.
- Ensure consistent messaging across ministries so private actors and citizens face coherent expectations.
- Develop standardized templates (model regulations, reporting formats) that local authorities can adapt.

PART III (G) RESILIENCE AND SUSTAINABILITY

Design Insights

- Systems become resilient when they absorb market, operational, or policy shocks without collapsing.
- Stable long-term relationships across the value chain (collectors, transporters, processors, buyers) prevent disruption.
- Local capacity building (technical, managerial, and operational) reduces dependency on external expertise.
- Diversifying end-markets (e.g. through varied offtake agreements) helps buffer against fluctuations in material value or demand for recyclers and private sector operators.

Potential Adaptations

- AMS can strengthen long-term offtake relationships, such as JV-anchored procurement or corporate recovery commitments, to stabilize revenues and reduce exposure to market volatility.
- AMS can support guaranteed feedstock or waste-supply arrangements (including from informal sector actors) to protect facilities from supply disruptions and ensure operational continuity.
- AMS can deploy guaranteed pricing structures, such as tipping fees, buy-back rates, or plastic-credit payments to buffer operators from commodity-price shocks and incentivize sustained participation, helping feedstock sustainability.



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ANNEX B: STEP 1 WORKSHEET

STEP 1

TEAM MOBILIZATION – TEAM STRUCTURE AND ROLES PLANNING

Purpose of this worksheet

To help policymakers determine the most appropriate institutional setup, team structure, and role assignments for a PWM initiative. This worksheet supports structured decision-making on leadership arrangements, coordination models, and accountability.

How to use this checklist:

- **Section 1:** Fill in the initiative context
- **Section 2:** Identify institutions and actors required for the initiative
- **Section 3:** Select a team model and governance structure
- **Section 4:** Assign responsibilities, reporting lines and identify expertise needed
- **Section 5:** Define deconflicting and decision-making processes

SECTION 1 – INITIATIVE IDENTIFICATION

Initiative Overview

ITEM	DESCRIPTION
Initiative name	
Implementation lead	*(e.g. municipality, ministry, SOE, private operator, NGO)*
Stage of development *(Select one option only)*	Concept, Pilot, Scaling, Fully operational
Expected lifetime	*(years)*

SECTION 2 – IDENTIFY REQUIRED INSTITUTIONS AND ACTORS

Fill in the fields with all actors and stakeholders relevant to the initiative.

Section 2.1 – Core governmental actors

Lead ministry/agency:

Supporting ministries (Environment, Finance, Planning, Trade):

Regulatory bodies (environmental regulator, industry regulator):

Local governments/municipal departments:

Public utility agencies/waste authorities:

State owned enterprises (where relevant):

Section 2.2 – Non governmental and implementation actors

Private service providers (collection, transport, processing, sorting):

Recyclers & aggregators:

Producer/industry associations:

PRO/Stewardship organization (if applicable):

Informal sector cooperatives / waste picker groups:

Community organizations / CSOs:

Financing partners (banks, DFIs, guarantee providers):

Auditors / technical verification bodies:

Research institutions / universities:

Section 2.3 – Representation & inclusion check (Select all that apply)

- All actors with legal/mandated roles included
- Actors with financing/operational influence included
- Informal groups meaningfully included
- MSMEs included
- Decentralized agencies represented
- Private actors tied to key value chain functions represented

SECTION 3 – CHOOSING THE TEAM MODEL

Section 3.1 – Required level of government involvement (Select one option only)

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High

A high involvement level is one where the government must play a hands on, direct role because the system depends on legal authority, enforcement, or mandatory compliance. This means the state is primarily responsible for roles such as: initiative planning, operations, imposing obligations, supervising fees or penalties, and ensuring adherence to regulations across agencies or jurisdictions. This level is common where statutory power, system integrity, or public accountability cannot be delegated.

Medium

A medium involvement level requires government to provide coordination, alignment, and oversight, but not continuous enforcement or direct operational control. The state ensures policies, data systems, and institutional processes are harmonized across ministries or levels of government, and often sets standards, templates, or MRV frameworks. Government remains actively involved in guiding the initiative, but day to day running can sit with other bodies, with taskforces convened when broader alignment is needed.

Low

A low involvement level works largely through market-based factors such as market incentives and industry capabilities, or voluntary participation. The government then only acts as a light supervisor. The state sets basic guardrails or high level rules but does not need to coordinate agencies, enforce compliance, or manage operational systems. Private actors or community led groups are the primary drivers, and the government's role is limited to maintaining basic oversight and high-level guidance to ensure transparency, environmental safeguards, or alignment with broader PWM roadmaps.

Rationale for selected assessment:

SECTION 4 – RESPONSIBILITIES, REPORTING LINES AND EXPERTISE NEEDS

Section 4.1 – Core roles
Fill in the fields below the roles relevant to the initiative

Policy Lead

Sets policy direction, aligns the initiative with national strategies, manages regulatory processes.
Assigned entity/position:
Key Responsibilities:
Reports to:
Coordinates with:

Planning & Technical Design Lead

Designs system architecture, waste flow projections, technical parameters, siting, system modelling.
Assigned entity/position:
Key Responsibilities:
Reports to:
Coordinates with:

Financing Lead

Manages budgeting, resource mobilization, financial modelling, allocation of public funds, or structuring of blended/PPP financing.
Assigned entity/position:
Key Responsibilities:
Reports to:
Coordinates with:

Delivery and Management Lead

Oversees service delivery, links to operators, ensures performance standards, manages implementation risks.
Assigned entity/position:
Key Responsibilities:
Reports to:
Coordinates with:

MRV & Data Lead

Designs monitoring tools, data templates, verification systems, reporting protocols, and quality control mechanisms, while monitoring and reporting on initiative performance.
Assigned entity/position:
Key Responsibilities:
Reports to:
Coordinates with:

Section 4.2 – Skills assessment

Identify where the team needs external support or capacity development *(Select all that apply):*

- Technical system design
- Financial analysis/PPP structuring
- MRV & digital systems
- Safeguards and inclusion
- Communications & behavior change
- Enforcement systems
- Legal & contracting

SECTION 5 – DECONFLICTING ARRANGEMENTS AND DECISION RULES

Section 5.1 – Overlap Considerations

- Which institutions have parallel roles in PWM?
- Where do financing responsibilities duplicate across tiers?
- What oversight gaps would arise if some agencies are excluded?

Section 5.1 – Overlap Considerations

- Which institutions have parallel roles in PWM?
- Where do financing responsibilities duplicate across tiers?
- What oversight gaps would arise if some agencies are excluded?

Section 5.2 – Conflict considerations

- Where do institutional priorities clash (e.g., environment vs. trade)?
- Which agencies compete for budgets or authority?
- What decision mechanisms will resolve disputes?

Section 5.3 – Decision rules and authorizations

- Strategic decisions made by:
- Operational decisions delegated to:
- Decisions requiring inter-agency concurrence made by:
- Fast-track/emergency decision process:

Section 5.4 – Escalation pathway

- First point of escalation:
- Second escalation level:
- Final decision authority:



ANNEX C: STEP 2 WORKSHEET

STEP 1 INITIATIVE PROFILE WORKSHEET

Purpose of this worksheet

This worksheet helps policymakers systematically profile a PWM initiative across four dimensions:

- Nature of the initiative funder
- Initiative scale
- Initiative risks
- Financial viability

The completed worksheet should result in a **clear initiative profile** that can later be matched to appropriate funders and financing mechanisms

SECTION 1 – INITIATIVE IDENTIFICATION

Initiative Overview

ITEM	DESCRIPTION
Initiative name	
Implementation lead	*(e.g. municipality, ministry, SOE, private operator, NGO)*
Stage of development *(Select one option only)*	Concept, Pilot, Scaling, Fully operational
Expected lifetime	*(years)*

Reference Initiative Category

This selection is used only to contextualize the questions below (Select all that apply)

- Waste Service Operations
- Markets Activation
- Compliance and Behavior Change
- Systems Enablement

SECTION 2 – INITIATIVE RISKS

How to Use This Section

- The tables below contain guiding questions only. They are intended to help policymakers think through sources of uncertainty that are most relevant to PWM initiatives, not to mechanically generate risk scores
- For each risk type:
  - Review the guiding questions relevant to your initiative category
  - Assess likelihood and impact of the risk
  - Use judgment to assign an overall Low / Medium / High risk level. The higher the likelihood and/or impact, the higher the risk

Section 2.1 – Operational Risk

Definition: Risk that the initiative is unable to translate planned inputs and resources into the intended outputs and services, at the expected cost and level of performance. This may be due to operational complexity, lack of sufficient implementation capability, and reliability gaps.



GUIDING QUESTIONS

GUIDING QUESTIONS

	WASTE SERVICE OPERATIONS	MARKETS ACTIVATION	COMPLIANCE & BEHAVIOR CHANGE	SYSTEMS ENABLEMENT
Operational complexity	How complex and continuous is service delivery (collection, sorting, treatment)?	How complex are aggregation, quality control, and logistics?	How operationally demanding is monitoring and enforcement?	How complex is the rollout of new systems or processes?
Capability	Is there an experienced operator at the required scale?	Are value-chain actors operationally coordinated?	Do implementing bodies have frontline capacity?	Do institutions have sufficient technical and human capacity?
Reliability	How exposed is delivery to cost overruns or service interruptions?	Could operational failures disrupt market participation?	Could enforcement gaps undermine effectiveness?	Are timelines and outputs vulnerable to not consistently being met?

Operational risk assessment (judgment-based)

Dimension	Low	Medium	High
Likelihood	Proven delivery model	Some uncertainty	Unproven or complex
Impact	Minor disruption	Material performance loss	Major failure or cost escalation

Overall operational risk (Select one option only): ○ Low ○ Medium ○ High, Rationale for selected assessment:

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Section 2.2 – Policy and Regulatory Risk

Definition: Policy and regulatory risk is the risk that changes in laws, regulations, enforcement practices, or political commitment alter the conditions under which the initiative operates, reducing its effectiveness or viability. This may be affected by the initiative's dependence on policies, the overall stability of the political and regulatory environment, and the impact that policy and regulation changes have on it.

GUIDING QUESTIONS

	WASTE SERVICE OPERATIONS	MARKETS ACTIVATION	COMPLIANCE & BEHAVIOR CHANGE	SYSTEMS ENABLEMENT
Policy dependence	Does the initiative rely on continued service mandates or public payments?	Does market viability depend on standards, incentives, or trade rules?	Does success depend on active regulation and enforcement?	Do reforms depend on sustained policy ownership?
Stability	How stable is political and fiscal support?	How predictable are relevant market rules?	How stable is political commitment to enforcement?	How vulnerable are mandates to political change?
Consequences of change	Would policy shifts disrupt service or revenues?	Would regulatory change affect demand or supply?	Would rollback weaken compliance incentives?	Would reform reversal undermine system functioning?

Policy and regulatory risk assessment

Dimension	Low	Medium	High
Likelihood	Stable, entrenched policy	Some uncertainty	Frequent or likely change
Impact	Limited effect	Material disruption	Initiative viability undermined

Overall operational risk (Select one option only): ○ Low ○ Medium ○ High, Rationale for selected assessment:

Section 2.3 – Credit Risk

Definition: Risk that the initiative's expected cash inflows are insufficient or unpredictable to reliably meet its contractual or financial obligations. This may depend on both the enforceability of payment collection and the payers' ability to pay (payer strength).

GUIDING QUESTIONS

	WASTE SERVICE OPERATIONS	MARKETS ACTIVATION	COMPLIANCE & BEHAVIOR CHANGE	SYSTEMS ENABLEMENT
Enforceability	Are payments legally enforceable?	Are contracts enforceable and counterparties reliable?	Is revenue collection legally and politically feasible?	Are funding commitments formalized or discretionary?
Payer strength	Are payers creditworthy?	Is demand diversified across buyers?	Are revenues dependent on compliance levels?	Are budgets multi-year and predictable?

Credit risk assessment

Dimension	Low	Medium	High
Likelihood	Predictable, enforceable revenues	Some uncertainty	Weak or volatile revenues
Impact	Minor financial stress	Cashflow pressure	Inability to meet obligations

Overall operational risk (Select one option only): ○ Low ○ Medium ○ High, Rationale for selected assessment:

Section 2.4 – Liquidity Risk

Definition: Risk that the initiative is unable to meet short-term payment or operating funding needs when they fall due, even if it is solvent over the longer term. This may be due to timing mismatch of the initiative's cost obligations against its ability to collect payments, and is also dependent on the buffers available.

GUIDING QUESTIONS

	WASTE SERVICE OPERATIONS	MARKETS ACTIVATION	COMPLIANCE & BEHAVIOR CHANGE	SYSTEMS ENABLEMENT
Timing mismatch	Are costs incurred before revenues are collected?	Are payments delayed along the value chain?	Are funds disbursed intermittently?	Are budget releases timely and predictable?
Buffers	Are reserve funds or working capital facilities available?	Is inventory financing required?	Are contingency funds available?	Are there safeguards against fiscal delays?

Liquidity risk assessment

Dimension	Low	Medium	High
Likelihood	Timing well matched	Some mismatch	Frequent cash gaps
Impact	Manageable delays	Operational strain	Service or payment failure

Overall operational risk (Select one option only): ○ Low ○ Medium ○ High, Rationale for selected assessment:

Section 2.5 – Market Risk

Definition: Risk that external market conditions, including prices, demand, or counterparty behavior, prevent the initiative from achieving expected financial or impact outcomes. Factors influencing this risk may be broadly classified into the degree of exposure to and the strength of external market shocks, as well as mitigation capacity.

GUIDING QUESTIONS

	WASTE SERVICE OPERATIONS	MARKETS ACTIVATION	COMPLIANCE & BEHAVIOR CHANGE	SYSTEMS ENABLEMENT
Exposure to external shocks	• Are service fees fixed or tied to volatile markets? • Are service users predictable and stable? • Could macroeconomic changes or commodity shocks affect operating costs?	• How sensitive are revenues to recycled plastic prices or commodity fluctuations? • Are buyers or aggregators of recycled plastics stable and diversified? • Could sudden market changes (policy, trade, competition) disrupt revenue streams?	Is there minimal reliance on market pricing e.g. the initiative is mostly funded through budgets?	Is there minimal reliance on market pricing e.g. the initiative is mostly funded through budgets?
Strength of external shocks	• How severe would a local or regional infrastructure failure be? • How significant would supply chain disruptions (fuel, labor, waste transport) be?	• How large could commodity price fluctuations or global trade disruptions be in the recycled plastics market? • How much could sudden shifts in buyer demand or international competition affect market stability?	Not applicable	Not applicable
Mitigation capacity	• Can operational adjustments absorb market volatility?	• Are hedging, price guarantees, aggregation mechanisms, or blended finance available?	Not applicable	Not applicable

Market risk assessment

Dimension	Low	Medium	High
Likelihood	Market conditions are stable; price or demand fluctuations are rare	Occasional fluctuations in prices or demand; some risk of revenue variation	Frequent or persistent price or demand volatility; market shocks common
Impact	Minor effect on revenues or cashflows; initiative can absorb changes without major adjustments	Moderate effect on revenues or cashflows; initiative experiences operational strain or minor financial stress	Major effect on revenues or cashflows; could cause financial shortfalls, delayed payments, or compromise initiative success

Overall operational risk (Select one option only): ○ Low ○ Medium ○ High, Rationale for selected assessment:

Section 2.6 – Overall Risk Assessment

Suggested mapping (overall risk rating should still be based on policymakers' qualitative judgement):

- **Low overall risk**
  - Most risks are low
  - No risk is both high likelihood *and* high impact
- **Moderate overall risk**
  - One risk is high but others are low/medium, or
  - Several risks are medium with manageable impacts
- **High overall risk**
  - One or more risks are high likelihood and high impact
  - Especially critical if **credit or operational risk** is high

Overall risk rating *(Select one option only)*

- Low
- Moderate
- High

Rationale for selected assessment:

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Assess the risk rating for each risk category and consolidate them to synthesize an overall risk rating. Input the overall risk rating for the initiative into the Step 5 mechanism selection interface, to filter out financial mechanisms which do not match the initiative's risk profile.

SECTION 3 – FINANCIAL VIABILITY

How to Use This Section

- These questions help policymakers assess whether the initiative can generate sufficient revenue to cover costs and repay capital. These questions do not automatically determine viability but provide a structured framework to do so
- General guidelines:
  - Use documented evidence (contracts, fees, market studies) to answer revenue questions
  - Consider both current revenue performance and projected cashflows over the initiative lifecycle
  - Keep the assessment transparent: note assumptions, ranges, and uncertainties

SECTION	GUIDING QUESTIONS
3.1: Revenue Generation	• Does the initiative generate any revenues? • What are the sources of revenue (user fees, contracts, regulatory payments, material sales, etc.)?
3.2: Revenue Strength & Stability	• Are revenues sufficient to cover operating costs? • Are revenues predictable over the initiative lifecycle? • Are revenue streams legally protected or enforceable? • Are revenues subject to seasonal, market, or policy fluctuations?
3.3: Capital Recovery & Return	• Can the initiative repay initial capital investments and subsequently generate a financial return for investors/funders? • What is the expected return profile (none, modest, market-rate)?

Overall financial viability *(Select one option only)*

- Low
- Moderate
- High

Rationale for selected assessment:

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Assess the financial viability of the initiative based on the guiding questions. Input the overall financial viability (Low/Moderate/High) for the initiative into the Step 5 mechanism selection interface, in order to filter out mechanisms which do not correspond to the financial viability of the initiative.

SECTION 4 – NATURE OF INITIATIVE FUNDER

How to Use This Section

- Identify if a funder exists, classify the funder type, and understand how this affects financing options
- If no funder exists, this Section can be skipped, and financing can be selected based on other initiative characteristics (scale, risks, and financial viability)
- For detailed explanation of the logic behind funder type and financial mechanism compatibility, please refer to **Part II, Step 2.3 above.**

Guiding Question:

Is there a funder for this initiative?

- If **Yes**, classify the funder using the categories below
- If **No**, move to other initiative characteristics to guide financing (see **Questions B–D** below)



Market risk assessment

QUESTION	RESPONSE OPTIONS	NOTES
A. Financial return expectations: Does the funder primarily seek high, moderate, or no financial return? (Select one option only)	• High (market-rate return) • Moderate (some return acceptable) • Low/none (primarily impact-driven)	Helps distinguish commercial, venture, impact, and public/philanthropic funders
B. Risk tolerance: Is the funder willing to take high risk (including early-stage or experimental projects) or do they prefer low-risk, proven projects? (Select one option only)	• High risk/early-stage • Moderate risk • Low risk/proven projects	High-risk appetite points toward venture or blended finance; low-risk points to commercial investors
C. Revenue dependence: Does the funder require strong, predictable revenue streams, or can they support initiatives with uncertain or no revenue? (Select one option only)	• Requires predictable revenue • Can tolerate moderate revenue uncertainty • Can tolerate little or no revenue	Commercial investors usually require predictable revenue; philanthropic/public funders can tolerate no revenue
D. Impact priority: How important is measurable social or environmental impact relative to financial return? (Select one option only)	• Low (financial return primary) • Moderate (some impact expected alongside financial return) • High (impact primary, financial return secondary)	Helps distinguish commercial vs impact vs public/philanthropic funders
E. Funding structure: Is funding provided solely by one type of investor, or is it a combination of public/concessional and private capital? (Select one option only)	• Single-source capital • Blended (public/concessional + private)	Blended finance is explicitly characterized by this combination

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Use the guiding questions (A-E) to determine the sort of funder the initiative would be best suited for, based on the risk, financial and impact characteristics of the initiative. Input the types of funders that would be most suited for the initiative into the 'Funder type' field in the Step 5 mapping interface, in order to filter out mechanisms are not typically funded by the funder type(s) deemed most suitable for the identified initiative.

SECTION 5 – INITIATIVE SCALE

How to Use This Section

- Identify if an intended scale for the initiative is already clear and planned
- If there is no intended scale planned, this Section can be skipped, and financing can be selected based on other initiative characteristics (funder, risks, and financial viability)

For detailed explanation of the logic behind initiative scale and financial mechanism compatibility, please refer to Part II, Step 2.4 above.

Scale Classification:

CHARACTERISTIC	LOCAL	NATIONAL	REGIONAL (MULTIPLE NATIONS)
Governance & Policy Authority	Managed and enforced by local authorities within a single jurisdiction	Set and enforced by the central government across the country	Policy is coordinated at a regional level; enforcement is shared by participating nations
Funding & Financial Responsibility	Financed primarily through local resources; funding scope is limited	Funded through national budgets or mechanisms; resources are pooled at the country level	Requires cross-country or regional funding arrangements; resources are coordinated across multiple governments
Operational Scope & Delivery	Activities occur within a single locality and are directly connected to the population served	Activities are coordinated nationally; standards and infrastructure support uniform delivery across all regions	Operations span multiple countries and require coordinated delivery, shared infrastructure, or harmonized standards
Implementation & Coordination	Limited to the local territory; coordination beyond the locality is minimal	Designed to cover the entire country; coordination is managed at a national level	Cross-border coordination is required; collaboration between countries is essential

Edge Cases

Some initiatives may straddle the boundaries between local, national, and regional. When this occurs, the guiding principle is to map the initiative to the smallest scale that can feasibly support its financial, operational, and governance requirements, while avoiding underestimating funding or coordination needs.

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Illustrative examples:

EDGE CASE	GUIDANCE
Initiative covers multiple municipalities but not the entire country	Consider whether local resources can fund and manage it reliably. If the required funding or operational coordination exceeds the capacity of individual localities, treat it as national-scale for the purpose of selecting financial mechanisms
National initiative with decentralized implementation	Even if implementation is delegated to local governments, classify as national-scale if funding, regulatory authority, or risk allocation depends on central government coordination
Initiative involves a few countries or cross-border operations	If regional coordination is necessary but most delivery is managed by national governments, consider the scale based on funding responsibility and governance authority. Use regional-scale mechanisms only if pooled financing or harmonized standards are critical to viability
Hybrid initiatives	Some initiatives combine elements of local, national, and regional delivery (e.g., national policy enabling local projects that feed into a regional system). In these cases, assess which scale dictates the binding constraints and map the initiative to that scale for financing purposes

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Input the initiative's overall scale, based on the dimensions in the scale classification table, into the Step 5 mapping interface, under the 'Initiative scale' field. The mechanism will filter out mechanisms not suitable to the intended scale of the initiative.

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ANNEX D: STEP 3 WORKSHEET

STEP 3 **IMPLEMENTATION NEEDS CHECKLIST**

The Implementation Needs Checklist acts as a guide for policymakers to assess the state of regulatory prerequisites, enabling conditions and safeguards readiness (covered in Step 3 of the Guidebook) in their AMS. The aim is to give policymakers an unambiguous set of readiness levels that can be used to select appropriate financial mechanisms in Step 5 of the Guidebook.

SECTION 1 – Initiative Overview

ITEM	DESCRIPTION
Initiative name	
Implementation lead	*(e.g. municipality, ministry, SOE, private operator, NGO)*
Stage of development *(Select one option only)*	Concept, Pilot, Scaling, Fully operational
Expected lifetime	*(years)*

Reference Initiative Category

This selection is used to contextualize the exercises below in parts I-III of the worksheet. You may utilize the descriptions of the 4 initiative categories in **Part I (B2)** of the Guidebook. (Select all that apply)

- Waste Service Operations
- Markets Activation
- Compliance and Behavior Change
- Systems Enablement

SECTION 2 – PREREQUISITES SCREENING

Purpose of This Section

Section 2 helps policymakers ensure that the minimum regulatory prerequisites for a PWM initiative are completely in place prior to rollout, due to their cruciality to initiative success. At the end of this part, policymakers should have a strong understanding of whether their AMS meets the minimum prerequisites and be able to confidently select "Yes" or "No" in the Step 5 tool based on the initiative type.

How to use this Section:

- Identify the category of the initiative and go through all the relevant prerequisites
- Determine and mark whether the AMS meets the minimum prerequisites for each sub-category
- Consolidate results for the entire initiative category – AMS should meet the prerequisites for all sub-categories to select "Yes" when mapping mechanisms

Note: Marking "Yes" means the prerequisite is fully met today, in formal and enforceable form. Marking "No" means there is at least 1 missing or unclear element, even if an AMS plans to implement it soon.



Section 2.1 – Waste Service Operations

SUB-CATEGORY	PRE-REQUISITES	ARE ALL PREREQUISITES MET?
Permitting and Approvals Pathways	• A formally issued, clear, and complete approvals pathway exists covering zoning/siting, construction, environmental approvals, and any other mandatory authorizations • The responsible authority for each approval is clearly identified • Submission requirements and sequencing are explicit, and multi-agency approval processes are defined	Yes/No/NA
Operating Licenses and Certification Processes	• Operators can obtain licenses/certifications through an explicit, predictable, and enforceable licensing process • Eligibility criteria, renewal conditions, and compliance obligations are formally defined • Licensing bodies have defined mandates and authority	Yes/No/NA
Environmental and Operational Standards for Operators	• Environmental and operational standards (e.g., minimum operating practices, safe handling, storage requirements) are specifically stated in enforceable regulations • Standards are specific enough to support inspections and corrective actions	Yes/No/NA

Regulatory prerequisites for waste service operations initiatives are met if prerequisites for all 3 subcategories are met. Select whether prerequisites are met (Select one option only) ○ **Yes** ○ **No** ○ **NA**

Section 2.2 – Market Activation

SUB-CATEGORY	PRE-REQUISITES	ARE ALL PREREQUISITES MET?
Foundational Market Regulations	• Material categories, quality thresholds, contamination limits, and permissible processing activities are defined in regulation • Verification rules (e.g., for EPR or credit-linked claims) are formally set	Yes/No/NA
Licensing and Environmental Compliance for Market Actors	• Market actors (aggregators, recyclers, processors, logistics providers) have a predictable pathway for licensing/registration • Environmental compliance conditions and rules for suspension/revocation are legally defined	Yes/No/NA
Compliance Monitoring and Dispute-Resolution Frameworks	• Inspection protocols, penalties, data submission rules, and compliance monitoring responsibilities are formally established and defined • Legal avenues exist for handling commercial disputes and grievances	Yes/No/NA

Regulatory prerequisites for market activation initiatives are met if prerequisites for all 3 subcategories are met. Select whether prerequisites are met (Select one option only) ○ **Yes** ○ **No** ○ **NA**

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Section 2.3 – Compliance and Behavior Change

SUB-CATEGORY	PRE-REQUISITES	ARE ALL PREREQUISITES MET?
Defined Obligations, Scope, and Definitions	• Regulations define who must comply, what is required, and the applicable timelines/definitions for compliance • Obligations are specific (e.g., reporting, waste segregation for recycling)	Yes/No/NA
Compliance Assessment and Reporting Pathways	• Reporting formats, submission channels, evidence requirements, and frequency are formally defined • Requirements are proportionate to system capacity and legally feasible	Yes/No/NA
Legal Authority for Enforcement	• Enforcement bodies have explicit legal authority to assess, inspect, sanction, and escalate non-compliance	Yes/No/NA

Regulatory prerequisites for compliance and behavior change initiatives are met if prerequisites for all 3 subcategories are met. Select whether prerequisites are met (Select one option only): ○ **Yes** ○ **No** ○ **NA**

Section 2.4 – Systems Enablement

SUB-CATEGORY	PRE-REQUISITES	ARE ALL PREREQUISITES MET?
Institutional Mandates for System Participation and Roles	• Regulations specify which actors must participate in shared systems (e.g., national reporting systems, digital tracking, verification platforms) • Roles for submission, verification, and troubleshooting are legally defined across ministries, regulators, municipalities, and operators	Yes/No/NA
Data Governance Frameworks	• Data standards (formats, frequency, structure), access rules, confidentiality protections, retention periods, and interoperability requirements are all formally defined Requirements are proportionate to system capacity and legally feasible • Governance framework applies consistently across national and local systems	Yes/No/NA
Legal Authority for Data Management and Oversight	• Oversight bodies have explicit legal authority to require submissions, verify/ audit data, enforce reporting, and mandate inter-agency data sharing • Non-submission or false reporting is tied to legally enforceable consequences	Yes/No/NA

Regulatory prerequisites for systems enablement initiatives are met if prerequisites for all 3 subcategories are met. Select whether prerequisites are met (Select one option only): ○ **Yes** ○ **No** ○ **NA**

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How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Assess whether prerequisites for the intended initiative type are considered met or not. If so input 'Yes' or 'No', respectively into the mechanism mapping interface in Step 5 of the Guidebook.

SECTION 3 – ENABLING CONDITIONS READINESS LEVELS

Purpose of This Section
A guide to assess whether institutional, operational, market, and system-level conditions are sufficient to implement an initiative and its associated financial mechanisms. It consists of 2 sub-sections:

- **Section 3.1 – Enabling Conditions Readiness Check**
- **Section 3.2 – Scoring and Readiness Consolidation**

Completing Section 3 should give policymakers a sense of how ready an AMS is for a particular type of initiative, and prompt practical reflection on gaps and minor corrective action(s) needed to close them.

How to use this Section:

- Complete Enabling Conditions readiness checks for the chosen initiative category
- Record key gaps identified if enabling conditions come close to meeting a particular readiness level, but do not meet it entirely
- Consolidate readiness levels to prepare inputs for mechanism mapping

Section 3.1 – Enabling Conditions Readiness Checks

Each of the 4 initiative categories have multiple classes of enabling conditions needed for implementation

For each sub-category:

- Review the relevant descriptions for each readiness level
- Assess which readiness level best corresponds to existing enabling conditions in the AMS
- Use judgment to assign an overall Basic / Moderate / Strong readiness level. The higher the level, the more ready the AMS is for the implementation of the chosen type of initiative
- Record key gaps if existing enabling conditions almost correspond to a particular readiness level, but not entirely

Note: The prompt to identify and record key gap(s) is meant solely for users of this worksheet to reflect more closely on the state of readiness conditions in their AMS. It is ultimately up to users to decide how to address and move forward from any identified gap(s)

Initiative Category 1: Waste Service Operations (4 enabling condition classes)

Definition: Interventions that involve the development, improvement, or scaling of physical systems, infrastructure and operational services necessary to manage plastic waste across the value chain. These initiatives deliver tangible capacity in the stages of collection, sorting, treatment, recycling, recovery, or disposal.



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READINESS LEVEL	INSTITUTIONAL CAPACITY
Basic	Roles and responsibilities for collection, transport, supervision, and facility operations are unclear, overlapping, or inconsistently interpreted, resulting in fragmented service oversight and slow issue escalation. Operational financing is unpredictable, with frequent shortfalls for fuel, labor, tipping fees, routine repairs, and emergency maintenance—causing service interruptions regardless of available infrastructure. Procurement and contracting are ad hoc or weakly structured, with unclear technical specifications, limited performance clauses, and minimal contract enforcement or monitoring. Administrative systems (SOPs, reporting expectations, operator requirements) are informal or inconsistently applied, creating wide variability in day-to-day operations and weakening accountability.
Moderate	A lead authority is defined, and core responsibilities are generally understood, but coordination across municipalities, contractors, and facility operators remains uneven, leading to gaps in supervision and inconsistent operational decision-making. Budgeting and cash-flow processes exist but are not always timely or sufficient, causing occasional fuel shortages, delayed payments to contractors, or interruptions to facility operations and maintenance. SOPs for routing, safety, facility operations, and incident management are documented but compliance varies across sites or shifts; updates and audits are irregular. Procurement and contract management have basic performance requirements, but monitoring is reactive, and enforcement of underperformance is inconsistent.
Strong	Institutional mandates for collection, transport, supervision, and facility operations are clearly assigned, and consistently operationalized across all service areas and contracted operators. Reliable budgeting and cash-flow systems ensure uninterrupted funding for operations, planned maintenance, emergency repairs, and contract payments, reducing operational shocks. SOPs for routing, fleet checks, waste handling, safety, environmental controls, and incident reporting are standardized, audited, and routinely reinforced through supervision, feedback loops, and corrective actions. Procurement, contracting, and contract-management systems are structured, performance-based, and consistently enforced to support long-term service reliability and continuous operational improvement.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	INSTITUTIONAL CAPACITY
Key gap(s):	
Readiness Level	Operational Capacity
Basic	Staffing levels are inadequate, with major gaps in trained route planners, equipment operators, weighbridge clerks, supervisors, and maintenance personnel; training is limited or absent. Maintenance systems, including workshops, spare-parts inventory, preventive-maintenance schedules, and repair tracking are weak or nonexistent, resulting in high downtime for vehicles and facilities. Daily operational routines (dispatching, route completion checks, troubleshooting protocols) are informal or not documented, leaving operators to work reactively. Limited ability to respond to breakdowns or disruptions due to weak coordination, insufficient personnel, and lack of escalation procedures.
Moderate	Basic staffing and training for key operational roles exist in priority urban or high-volume areas, but significant gaps remain in supervision quality, workforce depth, and O&M discipline across other areas. Preventive maintenance frameworks are partially established – some workshops and spare-parts systems exist, but execution is inconsistent and downtime remains material. Standard operational routines exist but are unevenly adopted across contractors or municipalities. Troubleshooting and escalation pathways exist but rely heavily on individual managers rather than institutionalized processes.
Strong	Adequate, well-trained staff are in place across geographies and operators, covering all core functions (planning, driving, equipment operation, supervision, weighbridge management, safety oversight). Preventive maintenance systems, including scheduled servicing, functioning workshops, spare-parts inventories, and maintenance logs are robust and sustain high fleet/facility uptime. Operational routines are standardized, documented, and consistently implemented, enabling reliable dispatch, route coverage, load verification, safety compliance, and incident response. Structured troubleshooting and escalation processes rapidly address disruptions, with clear responsibilities, data-supported decision-making, and supervisory oversight.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	INSTITUTIONAL CAPACITY
Key gap(s):	
Readiness Level	Physical Infrastructure and Equipment
Basic	Core physical assets (bins, collection vehicles, transfer stations, disposal or treatment capacity) are severely undersized, non-functional, or absent in many service areas. Essential equipment like container systems, PPE, compactor/non-compactor trucks, weighing or load-estimation tools is lacking or inconsistently available. Infrastructure is poorly aligned with actual waste composition and volume, leading to overloaded transfer points, long queues, inefficient routing, and unsafe operating environments. Facility maintenance capacity is minimal, causing chronic downtime and service disruptions.
Moderate	Basic infrastructure exists and functions in priority areas, but capacity, coverage, and reliability vary significantly across municipalities or operators. Essential equipment is available in several locations, but inconsistent quality/availability continues to cause inefficiencies or service gaps. System sizing is based on limited or outdated data, leading to periodic mismatches between facility capacity and actual waste flows or composition. Some facility maintenance capacity exists, though execution is irregular or dependent on external support.
Strong	Infrastructure across collection, transfer, treatment, and disposal is well-distributed, functional, and appropriately sized based on up-to-date waste composition and volume projections. Operators have consistent access to essential equipment (container systems, compactor trucks, PPE, weighing tools), enabling safe, efficient, and reliable operations. Facility and equipment maintenance systems are formalized, planned, and well-resourced, reducing downtime and supporting continuity of operations. Infrastructure planning is data-driven, minimizing under- or over-design and ensuring the system can meet medium-term demand with resilience.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	INSTITUTIONAL CAPACITY
Key gap(s):	
Readiness Level	Data and Digital Infrastructure
Basic	Operational records, such as weighbridge logs, route completion, maintenance logs, complaint registers are inconsistent, incomplete, or not standardized across operators. Reporting is manual and site-specific, making system-level aggregation difficult or impossible. Independent verification or auditing of operator-submitted data is rare, reducing accountability and weakening budgeting accuracy. Digital systems, where they exist, are fragmented, outdated, or unreliable.
Moderate	Standard templates, reporting formats, and basic data-submission routines are established, but adoption varies across operators and geographical areas. Periodic checks or verifications occur, but coverage is incomplete and data reliability issues persist. Reporting systems exist but remain fragmented, requiring manual consolidation for planning or oversight. Some digitalization efforts exist but are not interoperable across agencies or operators.
Strong	Standardized digital and data-reporting systems are adopted across all operators and municipal authorities, enabling consistent and reliable data capture. Routine audits and verification protocols strengthen data integrity and accountability for both public and private operators. Data are systematically used for evidence-based planning, budget allocation, route optimization, asset planning, and performance improvement. Systems are interoperable across agencies and levels of government, reducing duplication and enabling real-time or near-real-time monitoring.
Select One:	○ Basic ○ Moderate ○ Strong
Key gap(s):	

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Initiative Category 2: Market Activation (4 enabling condition classes)

Definition: These are commercial, financial or community-level activities that create value, revenue, or market incentives within the plastic waste ecosystem. They rely on business models, investment, market demand, and private or community actors to deliver plastic collection, recycling, processing, product innovation, or behavioral incentives, without directly providing services.

READINESS LEVEL	MARKET ACTIVATION
Basic	Waste feedstock supply is highly unreliable due to weak collection and aggregation channels, unclear handover points, and undefined quality or contamination thresholds. Market demand is unstable, with few or no anchor buyers, highly volatile prices, and minimal transparency on volumes or quality bands. Market actors lack access to up-to-date baseline data on waste generation, composition, and collection rates, discouraging investment. Informal sector engagement is undefined, unstructured, or not aligned with buyers' material specifications.
Moderate	Basic collection and aggregation pathways exist but suffer from inconsistent material volumes, quality variations across seasons or geographies, and fragmented relationships with informal collectors. Some anchor buyers or short-term offtake agreements exist, typically for select polymers or quality grades. Basic data on prices, volumes, or composition are available but not comprehensive or frequently updated. Market coordination is emerging but limited; information asymmetry persists among aggregators, recyclers, and buyers.
Strong	Stable and predictable supply flows are supported by clear collection/aggregation channels, defined material specifications,quality thresholds, and reliable logistics interfaces with informal and formal actors. Structured, credible offtake agreements with anchor buyers, including minimum volumes, quality parameters, and delivery schedules enhance market confidence and investment appetite. Government-maintained baseline data on generation, composition, and collection rates support planning, sizing, investment decisions, and performance monitoring. Market transparency (reference pricing, quality bands, volume forecasts) reduces volatility and supports private-sector scaling.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	MARKET ACTIVATION
Key gap(s):	
Readiness Level	Digital and Data Infrastructure
Basic	Material flows are poorly recorded; traceability across collection, aggregation, processing, and sale is minimal or absent. Quality management systems (inspection, contamination monitoring, batch/lot identification) are weak or non-existent. Records are not audit-ready, increasing risks of double counting, unverifiable claims, and low buyer or investor confidence. No digital transaction platforms or registries exist to match buyers and sellers on material type, volume, or quality.
Moderate	Some actors maintain basic records and limited traceability practices, but data quality and coverage vary widely. Basic quality management practices (inspection, contamination checks, corrective actions) exist at select facilities but are not universally adopted. Reporting systems exist but are fragmented, making consolidation difficult for national oversight, market coordination, or MRV. Early-stage digital platforms may exist but lack interoperability or widespread uptake.
Strong	Traceability systems reliably follow materials through the entire value chain, with standardized documentation and chain-of-custody controls where needed. Quality-management systems, including contamination monitoring, batch/lot identification, inspection protocols, and corrective actions are consistently implemented to meet buyer specifications. Reporting systems use standardized, interoperable formats, enabling reliable aggregation, verification, and market/system oversight. Digital transaction platforms/registries effectively match buyers and sellers, reduce search costs, and strengthen market integrity.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	MARKET ACTIVATION
Key gap(s):	
Readiness Level	Operational Capacity
Basic	Private-sector actors (aggregators, MSMEs, recyclers) lack sufficient manpower, skills, or equipment to carry out daily operations safely and efficiently. Handover and holding points for logistics are informal or poorly equipped, causing quality degradation and high transport costs. Operational records are incomplete and not audit-ready, limiting traceability and weakening commercial credibility. Providers face operational bottlenecks (space, storage, handling equipment) that constrain throughput and participation.
Moderate	Staffing and basic training exist in priority areas, but MSMEs and informal aggregators continue to face capability and inclusion gaps. Some dependable holding points or transfer locations are available, though coverage and functionality remain uneven. Operational recordkeeping is improving, with partial audit readiness where required for transactions. Operational bottlenecks persist but are manageable, and targeted support programs may be emerging.
Strong	Market actors across the chain, including MSMEs, have adequately trained staff, safety protocols, and equipment to deliver predictable service. Well-distributed, dependable holding points and logistics interfaces enable efficient, low-loss movement of materials. Operational records are audit-ready, supporting credible claims, traceability, and access to premium markets or outcome-linked mechanisms. Operational support systems (logistics hubs, storage/baling infrastructure, inventory management) minimize bottlenecks and enable commercial scaling.
Select One:	○ Basic ○ Moderate ○ Strong

READINESS LEVEL	MARKET ACTIVATION
Key gap(s):	
Readiness Level	Institutional Capacity
Basic	Access to affordable testing and quality-assurance services is limited, preventing objective verification of material specifications. Standards, labels, and claims relating to recyclability, recycled content, and quality are unclear, outdated, or inconsistently applied. Traceability systems to follow materials through the chain are largely absent.
Moderate	Some QA/testing services exist but are costly, geographically limited, or not routinely used by MSMEs. Basic guidance on standards and claims is available, although enforcement and alignment with local system realities are uneven. Traceability practices exist in select facilities or priority corridors but have not been adopted system-wide.
Strong	Testing and QA services are accessible, affordable, and routinely used, enabling objective material verification and reducing commercial risk. Clear, credible, locally relevant standards/labels/claims are widely understood and trusted by market participants. Reliable, end-to-end traceability systems ensure transparent material tracking through collection, aggregation, processing, and sale.
Select One:	○ Basic ○ Moderate ○ Strong
Key gap(s):	

Initiative Category 3: Compliance and Behavior Change (3 enabling condition classes)

Definition: These are government-led actions that use laws, regulations, standards, and economic instruments to shape behavior, assign obligations, and set system-wide rules for PWM and to reduce environmental impact. Outcomes are achieved through regulatory or social influence rather than operational output.

READINESS LEVEL	POLICY GUIDANCE
Basic	Compliance obligations are unclear, fragmented, or not aligned with system capacity, leading to confusion and inconsistent interpretation. Reporting formats, submission channels, definitions, and timelines are missing or insufficiently detailed. Communication with affected stakeholders is limited or irregular, and support for vulnerable groups (informal workers, MSMEs, rural communities) is largely absent.
Moderate	Compliance obligations are unclear, fragmented, or not aligned with system capacity, leading to confusion and inconsistent interpretation. Reporting formats, submission channels, definitions, and timelines are missing or insufficiently detailed. Communication with affected stakeholders is limited or irregular, and support for vulnerable groups (informal workers, MSMEs, rural communities) is largely absent.
Strong	Clear, practical, and capacity-aligned guidelines support consistent understanding of obligations, timelines, definitions, and expected behaviors. Standardized, proportionate reporting systems, with clear formats, submission routes, and assessment criteria are accessible to all stakeholder types. Broad, early, multi-channel communication campaigns provide adequate preparatory runway for behavior-change adoption and ongoing compliance.
Select One:	○ Basic ○ Moderate ○ Strong
Key gap(s):	
Readiness Level	Operational Capacity
Basic	Enforcement agencies have insufficient staffing, budget, transport, or equipment to conduct routine inspections. Inspections are ad hoc and primarily complaint-driven. Record-keeping and case-tracking tools are minimal or absent; cross-agency coordination is weak.
Moderate	At least one agency has a clear enforcement mandate; inspection procedures exist but are applied inconsistently due to uneven capacity. Coordination channels exist (informal or formal) but are not reliably activated.
Strong	Enforcement bodies are adequately staffed and resourced, enabling predictable, routine inspections beyond complaint-driven checks. Functioning case-management and data-tracking systems support smooth escalation, accountability, and feedback loops to improve guidance.
Select One:	○ Basic ○ Moderate ○ Strong

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READINESS LEVEL	POLICY GUIDANCE
Key gap(s):	
Readiness Level	Institutional Capacity
Basic	Mandates and legal authority for inspections, sanctions, and enforcement roles are unclear or overlapping, leading to inconsistent application. Standardized enforcement procedures are lacking, resulting in discretionary or uneven enforcement. Coordination mechanisms across agencies are weak or nonexistent.
Moderate	Enforcement mandates and roles are defined but may overlap across agencies or levels of government; SOPs exist but adherence is uneven. Inter-agency arrangements (working groups, meetings, protocols) exist but are inconsistently operationalized. Escalation and appeals processes are established but slow or unclear.
Strong	Clear, formal legal authority defines which agencies inspect, issue notices, levy penalties, enforce corrective actions, and manage escalations. Standardized procedures govern inspections, evidence, penalties, corrective actions, and appeals across all jurisdictions. Structured inter-agency coordination, information-sharing, and escalation mechanisms ensure consistent enforcement and predictable regulatory implementation.
Select One:	○ Basic ○ Moderate ○ Strong
Key gap(s):	

Initiative Category 4: Systems Enablement (2 enabling condition classes)

Definition: Measures that strengthen governance, planning, coordination, or information systems that specifically underpin the PWM sector.

READINESS LEVEL	INSTITUTIONAL CAPACITY
Basic	Oversight institutions lack clarity on participation mandates in shared systems (tracking, reporting, verification). Coordination across ministries, municipalities, operators, and regulators is ad hoc, with unclear roles and no structured channels for escalation. Data-governance rules, including standards, formats, access, retention, confidentiality, and verification are undefined or not applied. Interoperability between national and local systems is minimal, leading to data fragmentation and gaps in system-level oversight.
Moderate	Coordination mechanisms such as committees or protocols exist but are not consistently enforced; interoperability is achieved through manual workarounds. Basic data-governance practices (standard templates, access rules, retention policies) exist but are unevenly applied. Responsibilities for data submission and verification are partially clarified but inconsistently met.
Strong	Mandates clearly define participation requirements, roles, data responsibilities, and escalation pathways, supported by routine coordination and troubleshooting mechanisms. Data-governance frameworks (standards, formats, verification methods, confidentiality rules) are formalized and consistently applied. Systems are interoperable across agencies and levels of government, enabling unified oversight, efficient aggregation, and evidence-based policymaking.
Select One:	○ Basic ○ Moderate ○ Strong

READINESS LEVEL	INSTITUTIONAL CAPACITY
Key gap(s):	
Readiness Level	Operational Capacity
Basic	Staff lack the training, routines, and tools needed to operate shared digital, coordination or reporting systems, leading toinconsistent data capture or storage. Digital platforms are absent, unreliable, outdated, or not widely adopted. Limited capacity for troubleshooting technical issues or validating incoming data. Coordination processes are weak or do not exist, and staff lack the training to enforce them
Moderate	Staffing and skills exist in some agencies to operate shared systems and processes; however, adoption, data completeness, andreliability vary significantly. Core digital tools for reporting or tracking are deployed but require manual intervention or experience intermittent downtime Verification and troubleshooting occur but are not systematic or consistently documented.
Strong	Trained, adequately staffed teams routinely manage processes, shared system operations, validate submissions, troubleshoot system issues, and enforce reporting requirements. Digital platforms for reporting, performance tracking, material flow monitoring, and MRV are secure, reliable, and widely adopted. Data capture and information exchange are consistent across agencies and levels of government, enabling system-level oversight, planning, and decision-making.
Select One:	○ Basic ○ Moderate ○ Strong
Key gap(s):	

Section 3.2 – Readiness Consolidation

Calculating the Readiness Level for Each Class

You may have noticed some repeated enabling condition classes under the different initiative types, such as Institutional Capacity, Operational Capacity and Data and Digital Infrastructure. Overall, there are 6 unique enabling condition classes, which will be used for mechanism selection.
Use this sub-section to consolidate all the readiness levels for each of the enabling condition classes under the desired initiative type. Only tick classes that apply to the intended type of PWM initiative:

Institutional Capacity *(Select one option only)*

- Basic
- Moderate
- Strong

Operational Capacity *(Select one option only)*

- Basic
- Moderate
- Strong

Policy Guidance *(Select one option only)*

- Basic
- Moderate
- Strong

Data and Digital Infrastructure *(Select one option only)*

○ Basic

○ Moderate

- Strong

Physical Infrastructure and Equipment *(Select one option only)*

- Basic
- Moderate
- Strong

Market Activation *(Select one option only)*

- Basic
- Moderate
- Strong

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Utilize the readiness levels obtained from the individual classes above when selecting financial mechanisms in Step 5 of the Guidebook

Example: If the intended PWM initiative falls under Compliance and Behavior Change, you would have obtained a readiness level for the 3 different classes under that initiative type:

Policy Guidance: Strong

Institutional Capacity: Moderate

Operational Capacity: Moderate

Input the readiness levels “Strong”, “Moderate” and “Moderate” for the respective classes into the mechanism selection interface in Step 5 of the Guidebook to obtain mechanism outputs

Section 4 – Safeguard Readiness Assessment

How to Use This Section

This section provides suggested safeguard types and assessment criteria to help policymakers determine the readiness of safeguards for different initiative categories, and to identify appropriate financing mechanisms accordingly. These questions are not exhaustive and are intended for rapid, practical decision-making. Users should apply judgement based on local context and policy priorities.

For each relevant initiative category, policymakers should:

- Review the suggested key safeguard types
- Assign a readiness rating (Weak / Moderate / Strong) based on the readiness rubric

Section 4.1 – Key Safeguard Types by Initiative Category

Initiative Category 1: Waste Service Operations

- Pollution control and waste handling standards
- Worker health and safety
- Community nuisance and local impacts (e.g., odor, traffic, noise)

These are the safeguards most likely to generate direct operational disruption if weak

Initiative Category 2: Market Activation

- Supply chain legality and traceability
- Environmental standards for material recovery (e.g., safe processing, emissions)
- Market integrity safeguards (preventing fraud, illegal waste trading

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These safeguards are central because market activation can fail if the supply chain is unsafe or illegitimate

Initiative Category 3: Compliance & Behavior Change

- Fairness and legitimacy of enforcement
- Public consultation and stakeholder legitimacy
- Grievance and redress mechanisms

This category depends on trust and legitimacy; weak safeguards cause backlash and non-compliance

Initiative Category 4: Systems Enablement

- Data quality and reliability
- Transparency and accountability in governance
- Inclusiveness in planning and decision-making

These are core because system strengthening fails if data is unreliable or governance is opaque

Section 4.2 – Consolidated readiness rubric

Basic Safeguards

- Safeguards are absent or not enforced in practice
- Monitoring and compliance information is unreliable or unavailable
- Stakeholders have no trusted way to raise concerns or seek redress

Moderate Safeguards

- Safeguards exist but are unevenly enforced or inconsistently applied
- Monitoring exists but is partial or delayed
- Stakeholders have recourse, but it is slow or not trusted

Strong Safeguards

- Safeguards are actively enforced and consistently applied
- Monitoring is regular and data is reliable
- Stakeholders have trusted, effective channels for participation and grievance resolution

Overall Safeguards Readiness Level *(Select one option only)*

- Basic
- Moderate
- Strong

How to use results from this section to select mechanisms in Step 5 of the Guidebook:

Input the overall safeguards readiness level (Basic, Moderate, Strong) achieved into the mechanism selection interface in Step 5 of the Guidebook



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ANNEX E: STEP 4 WORKSHEET

Step 4: Stakeholder Engagement Worksheet
The Stakeholder Engagement worksheet lays out key engagement considerations for policymakers to consider when designing, planning and implementing a PWM initiative.

How to use this worksheet:
Go through the engagement considerations stage by stage and identify whether the engagement considerations have been fulfilled. Mark each stage with a tick in the 'Met' column if all considerations have been met, before moving on to the next stage of an initiative.

Section 1 – Engagement Considerations
Note: The following lists of engagement considerations are non-exhaustive, and are not applicable to every type of initiative, due to circumstantial and stakeholder variations.

STAGE 1: EARLY-STAGE DIAGNOSTIC ENGAGEMENT	MET
Public Sector • Mandate and authority reality: Do they have the legal authority and administrative capacity to implement, enforce, collect fees, or require reporting? • Political feasibility and timing: Is there an appetite for reform from stakeholders and what is the public sector's willingness to tolerate exposure to backlash or political consequences from affected stakeholders? • Coordination constraints: Are there overlapping mandates, unclear divisions of responsibilities across agencies/levels of government, and likely coordination failure points? • Governance inclusion: Have all ministries, agencies, and regulators been captured? • Multi-level inputs: Are local governments at different levels included? **Private Sector** • Institutional bandwidth: Do they have the staffing, technical capability, procurement capacity, and day-to-day ability to oversee operators and compliance? • Engagement inclusion: Are private sector actors across the value chain included? **Informal Sector** • Livelihood impact and transition risk: Are there concerns of potential displacement, income loss, or role erosion from formalization, new standards, or enforcement? • Engagement inclusion: Are MSMEs and small recyclers identified? • Engagement inclusion: Are informal sector groups mapped at multiple points in the chain? • Engagement inclusion: Are women-led microenterprises included? **Development Partners** • Priority alignment: What specific initiative areas are they willing to support and do these priorities align with national needs? • Capacity-building support: Which institutions or areas do they believe need concentrated strengthening?	•

ANNEX E: STEP 4 WORKSHEET

STAGE 2: MECHANISM CO-DESIGN	MET
Public Sector • Budget and fiscal constraints: What can be funded, what must be cost-recovered, what can be earmarked, and how predictably funds can flow? • Regulatory fitment: Can existing regulatory frameworks accommodate the initiative?; What needs to change, if not? **Private Sector** • Commercial viability thresholds: What cost exposure is acceptable, and what revenue certainty is needed to participate in the market? • Administrative and reporting burden tolerance: What is feasible for MSMEs vs large corporates?; At what point does compliance become a deterrent? • Investment triggers: What specific enablers drive investment confidence (clear rules, bankable contracts, predictable enforcement, infrastructure reliability)? **Development Partners** • Risk appetite and structuring needs: What de-risking is required (guarantees, step-in rights, blended structures)? **Waste Generators** • Willingness-to-pay: Are fees/levies perceived as fair?; Is there acceptance of who bears costs? • Support needed: Is there a clear view of who cannot comply without assistance?	•

STAGE 3: OPERATIONAL-LEVEL ENGAGEMENT	MET
Private Sector Operational constraints for feasibility: • Feedstock quantity/quality variability Acceptable feedstock contamination levels • Logistics and processing costs • Facility downtime and labor availability **Informal Sector** • Safety and working conditions: Are there risks from handling, storage, sorting, and transport?; What minimum protections are needed? • Safeguards: Are there any unconsidered safeguards that are needed?	•

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- Inclusion barriers:
  - Lack of legal identity or registration
  - Limited access to finance
  - Limited ability to comply with reporting or quality requirements

Waste Generators

- Feasible participation conditions: What support makes participation in initiatives realistic?

STAGE 4: PRE-IMPLEMENTATION PUBLIC ENGAGEMENT	MET

Waste Generators

- Adoption frictions:
  - Convenience and time burden of compliance
  - Clarity of instructions
  - Physical access to services or deposit/return/collection areas
- Communication channels: Which channels work?; What messages resonate?; What misconceptions undermine compliance and participation?

STAGE 5: CONTINUOUS ENGAGEMENT DURING ROLLOUT	MET

Development Partners, Public and Private Sectors

Knowledge transfer mechanisms: What are the preferred approaches for transferring and embedding training, toolkits, and institutional memory within government or operators?

Common to all Stakeholders

- Feedback channels: What are the preferred stakeholder feedback methods and grievance addressing processes?
- Engagement tracking: Is input consolidated into engagement trackers?
- Feedback loops: Are decisions linked to stakeholder insights in a transparent way?
- Feedback loops: Are changes (or non-changes) communicated back to stakeholders?
- Governance strengthening: What observed best practices or lessons learned can be used to improve initiative and mechanism governance?

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ANNEX F: LANDSCAPE ANALYSIS REPORT



Click on the icon to assess the report.

