Study on MSME Participation in the Circular Economy

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Study on MSME Participation in the Circular Economy

The ASEAN Secretariat
Jakarta

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9RS	Refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle and recover
ACCMSME	ASEAN Coordinating Committee on Micro, Small and Medium Enterprises
ACESP	ASEAN Circular Economy Stakeholder Platform
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AMS	ASEAN Member State
ASEAN	Association of Southeast Asian Nations
ASEIC	ASEM SMEs Eco-Innovation Center
ASEM	Asia–Europe Meeting
BCG	Bio–circular–green
BIBD	Bank Islam Brunei Darussalam
CE	Circular economy
CSR	Corporate social responsibility
CTIF	Canadian Trade and Investment Facility for Development
DTI	Department of Trade and Industry (Philippines)
ERIA	Economic Research Institute for ASEAN and East Asia
ESG	Environmental, social and governance
ES ITM	The Environmental Services Industry Transformation Map (Singapore)
EU	European Union
GDP	Gross domestic product
GHG	Greenhouse gas
GRI	Global Reporting Initiative
HDPE	High-density polyethylene
Lao PDR	Lao People's Democratic Republic
LDPE	Low-density polyethylene
LLDPE	Linear low-density polyethylene
MONREC	Ministry of Natural Resources and Environmental Conservation (Myanmar)
MSMEs	Micro, small and medium enterprises
NCSD	National Council for Sustainable Development (Cambodia)
NRES	Ministry of Natural Resources and Environmental Sustainability (Malaysia)
NXPO	Office of National Higher Education Science Research and Innovation Policy Council (Thailand)
OECD	Organisation for Economic Co-operation and Development
OSMEP	Office of Small and Medium Enterprises Promotion (Thailand)
PET	Polyethylene terephthalate
PP	Polypropylene
SCP	Sustainable consumption and production
SMEs	Small and medium enterprises
SWOT	Strengths–weaknesses–opportunities–threats
UNDP	United Nations Development Programme

Acknowledgement

The Study on MSME Participation in the Circular Economy identifies barriers, challenges, and existing circular economy business models among MSMEs in ASEAN. It explores the key obstacles to CE adoption, the enabling environment, and business model patterns to create a framework for optimal adoption by MSMEs. The study also examines sectoral and stakeholder synergies across ASEAN Member States and offers insights into transforming consumption and production patterns as actionable references for policymakers and business leaders.

Developed through quantitative and qualitative methods, the study is supported by contributions from UKM Indonesia, Fati Ramadhanti, and ASEAN Access Network Partners. Key support from the ASEAN Secretariat's Enterprise & Stakeholders Engagement Division, the ASEAN Coordinating Committee on MSMEs (ACCMSME), and various SMEs engaged in CE business models enhanced its findings.

Prepared by Adhitya Yusuf with input from GIZ ASEAN SME II project and the ASEAN Secretariat, the study benefits from reviews by ACCMSME and contributions from ASEAN Secretariat colleagues as Ea Hai Khov, Izniza Afzan Mustafa Albakri, and Vania Karimah.

The ASEAN Circular Economy Stakeholder Platform (ACESP) and the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI) provided initial input on the idea for the study and the formulation of the SME questionnaires. Additional input was provided by United Nations Industrial Development Organization (UNIDO), EU4Environment, and Organisation for Economic Co-operation and Development (OECD), and several government agencies across ASEAN.

This work and report were made possible with the support of the German Federal Ministry for Economic Cooperation and Development (BMZ), implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH through the ASEAN SME II project led by Sita Zimpel and supported by Yacinta Esti, Fitra Aidiella, and teams in Cambodia, Lao PDR, Myanmar, Thailand, and Viet Nam.

This study aims to advance understanding of circular economy adoption among MSMEs in ASEAN and inspire progress in this crucial area.

EXECUTIVE SUMMARY

The ASEAN Member States (AMS) acknowledge the importance of the circular economy (CE) as a key component of their sustainability agendas and economic development plans, aligning with the ASEAN Framework for Circular Economy for the ASEAN Economic Community (AEC). However, the adoption of CE practices varies widely among ASEAN countries; some AMS have established comprehensive strategies and clear targets, while others are still in the early stages of integrating CE principles into their development agendas.

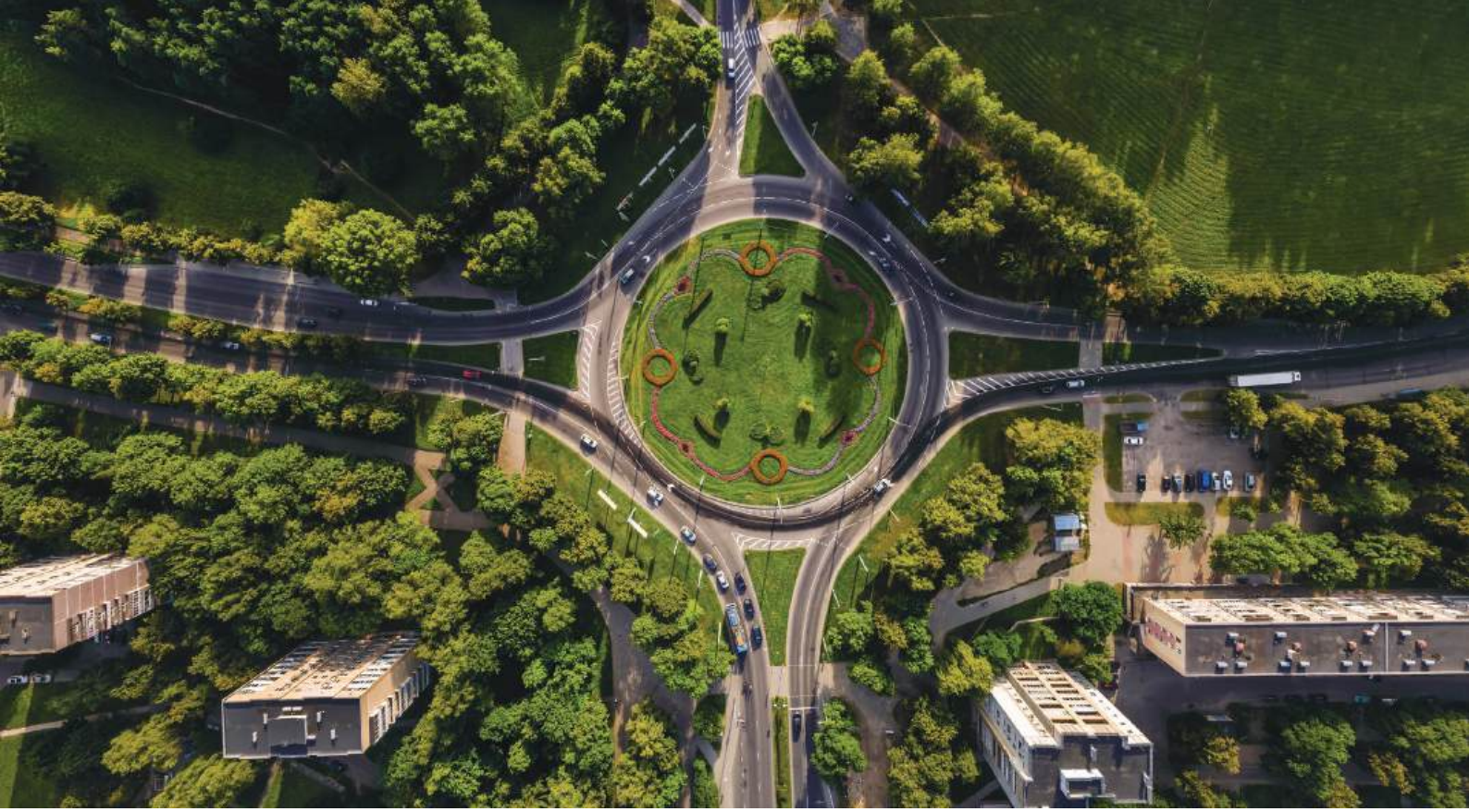
AMS generally incorporate waste management, digitalisation, energy efficiency, resource efficiency and environmental, social and governance (ESG) factors into their CE strategies. Despite these initiatives, there is a clear need for more focused policies to support micro, small and medium enterprises (MSMEs) adopting CE practices across the region. While MSMEs have benefited from government-led capacity-building efforts, particularly in raising awareness, they require more technical support, including mentorship, consultancy, training on transition plans, legal assistance and certification of products and services to accelerate their transition to CE models.

The Study reveals that only 57% of ASEAN MSMEs are familiar with the CE concept. The sectors most knowledgeable about the CE include food and beverages, craft and creative industry, consultation services, agriculture, trade and retail, and fashion and textiles. Common CE practices among ASEAN MSMEs are digitalisation (62%), material optimisation (59%) and energy efficiency (59%).

MSMEs encounter significant barriers in adopting CE practices, mainly due to a lack of technical assistance and inadequate training. The support available often focuses on basic concepts rather than offering in-depth, practical knowledge, which is particularly detrimental for resource-constrained MSMEs. In the survey, 28% of respondents identified consumer behaviour as another significant challenge. Consumer behaviour issues include a preference for disposable and single-use products, price sensitivity, and a lack of awareness about the benefits of green and recycled products.

The transition to CE practices presents significant challenges for MSMEs, including high upfront costs and the complexity of sustainable supply chains. Limited financial resources and regulatory barriers, such as restricted access to land and funding, further impede their participation. To overcome these obstacles, targeted government interventions, such as subsidies, low-interest loans and improvements in technology and infrastructure, are essential. Focused strategies, such as specialised training, financial support and awareness campaigns, can enhance MSME engagement in the CE. The findings of the study validated Policy Recommendations on Enhancing ASEAN MSMEs' Participation in Circular Economy produced during the Regional Policy Dialogue on Circular Economy hosted by the Ministry of Cooperatives and SMEs Indonesia, the Federal Ministry for Economic Cooperation and Development (BMZ) through GIZ ASEAN SME II project, and the ASEAN Secretariat. The policy recommendations paper is an ASEAN document endorsed by the ACCMSME during the 16th ACCMSME meeting in 2023. Similar to the findings of the study, the Policy Recommendations emphasise the need for collaboration in advocacy, capacity building and digital platforms, alongside access to sustainable finance and markets (e.g. eco-labelling, green procurement). While ASEAN governments recognise the importance of sustainability plans with CE principles and provide incentives for CE transitions, weaknesses such as varied understanding of CE principles and lack of specific MSME-targeted policies exist. However, opportunities do exist, including global demand for green products and support from platforms such as ASEAN Access and the ASEAN Circular Economy Stakeholder Platform (ACESP). Threats, such as the absence of established CE regulations and rising production costs for MSMEs, persist.

Finally, the study formulated recommendations for collective action in ASEAN, focusing on capacity building, raising awareness on the impact of the CE on ASEAN trade, access to finance and sustainable finance, incentives, collaboration through matchmaking and regulatory sandboxes. Moreover, regional synergy and collaboration are essential in capacity building to standardise the definition of green or CE MSMEs and establish criteria that enable self-assessment for compliance. In addition, thematic guidelines for regional experts on CE business models, sustainability reporting, practical guidelines on carbon accounting and sustainable finance, and CE certification are relevant for developing training modules implemented at the national level. Advocacy through sharing experiences and peer-to-peer learning is available, for instance, in the form of bite-size social media promotion and activities under corporate social responsibility (CSR). It is essential to communicate CE regulations to MSMEs consistently, ensuring they stay well informed about future challenges and opportunities for CE adoption along the value chain.



I. BACKGROUND AND OBJECTIVES

1.1 Background and objectives

Due to its development path and business attitude for expansion, Southeast Asia is facing significant environmental challenges. Despite the expected economic growth outcomes, environmental degradation, such as pollution, waste generation, resource scarcity, biodiversity loss and the harmful impact of climate change, threatens the sustainability and economic stability of ASEAN.

The pressing environmental sustainability challenges led to the implementation of the circularity concept as a promising solution. The circular economy offers a transformative approach from linear to closed-loop activities, aiming to reach sustainable consumption and production and reduce waste.

In addition, the concept of a circular economy is also closely related to the scarcity of resources, such as water, mineral and metal resources. By 2050, the region will need approximately 336–385 cubic kilometres of water annually, reflecting a 19–36% increase in water demand compared to 2010. This increase is anticipated to be driven by factors such as population growth, industrialisation, urbanisation, energy demands and competition for regional water resources.[1]

On the other hand, the region plays a vital role in supplying non-renewable natural resources, such as minerals. This includes tin, nickel and copper to meet demand in transitioning to and adopting green technologies. Countries such as Cambodia, Indonesia, Lao People's Democratic Republic (Lao PDR), Myanmar and the Philippines are investing in the commercialisation of minerals, leading to significant negative environmental impacts. Indonesia's nickel-based industries are being developed to supply the electric vehicle industry. As another example, the externalities of cement production, with Indonesia and Viet Nam among the top 15 global producers, also contribute to environmental degradation and greenhouse gas (GHG) emissions.

In reducing the extraction of virgin materials such as metals from mining activities and promoting secondary material flowing through an internal closed loop, it is important to define the mining industry's role in the CE. Furthermore, the CE concept is a critical solution, advocating for a systemic transition towards resource utilisation, including product redesign, waste reduction, materials reuse and product life extension. This approach provides solutions to address the environmental challenges and provides a pathway for Southeast Asian economies to become more resilient, competitive and sustainable.

[1] ASEAN Secretariat (2023). *Sixth ASEAN State of the Environment Report*, ASEAN Secretariat, Jakarta.

ASEAN recognises the CE as a powerful tool for promoting sustainable development. The concept is mostly consistent with practices to protect the environment and has been discussed in relation to selected economic sectors, such as sustainable consumption and production. The Implementation Plan for the Framework for Circular Economy for the ASEAN Economic Community (2023–2030) further sets the landscape for circular transition by mapping cross-cutting initiatives targeting adoption by ASEAN MSMEs. Under the ASEAN Framework for Circular Economy for the ASEAN Economic Community (AEC), promoting initiatives to adopt the CE model must be supported by advocacy and outreach activities, such as thematic technical capacity-building and education programmes. It emphasises a crucial need for concerted efforts and collective action to raise the awareness of ASEAN entrepreneurs on the importance of the CE and upskill them for the adoption of circularity or a closed-loop business model despite challenges in accessing the niche CE market.

To encourage the adoption of the CE, ASEAN should take holistic approaches to address supply chain challenges, foster a conducive ecosystem and create incentives for enablers. This includes harmonising standards, promoting trade openness, applying technology to CE value chains, ensuring efficient resource use and improving access to CE financing. The transition to the CE will be gradual, requiring policy frameworks and sector prioritisation to increase transparency and collaboration among all stakeholders across ASEAN, as mentioned in the ASEAN Framework for Circular Economy and its Implementation Plan (2023–2030) focusing on agriculture, energy and transport under five strategic priorities:

1. Standards Harmonisation and Mutual Recognition: Ensuring that circular products and services adhere to regional standards
2. Trade Facilitation: Promoting openness and ease of trade in circular goods and services
3. Innovation and Technology: Enhancing the role of digitalisation and emerging technologies in CE practices
4. Sustainable Finance and Investments: Encouraging financial solutions that support sustainable business models
5. Resource Efficiency: Advocating for the efficient use of energy and other natural resources

The transition towards the CE is unavoidable as both public and private sectors increasingly recognise the impact of climate change on development and economic growth. ASEAN is committed to adopting more CE practices to support a sustainable future by transforming its community's production and consumption patterns to achieve a low-carbon economy. Incentives from the government will encourage businesses to redesign their business models more circularly. In addition, infrastructure is crucial to improve material efficiency through reuse and recycling at waste facilities. Similarly, digitalisation, such as big data management and artificial intelligence, will play a role in helping optimise resource use and waste management and enable material traceability through digital platforms and apps.

The ASEAN Framework for Circular Economy and decarbonisation are interrelated strategies for fostering sustainable development and reducing carbon emissions across the region. The CE Framework emphasises minimising waste, maximising resource efficiency and extending the lifecycle of products by recycling, reusing and refurbishing materials. The core aspects of the CE vary across different industrial ecosystems. For example, closed-loop food consumption models differ significantly from recycled plastics. The CE encompasses managing natural capital, including renewable and non-renewable resources, adopting clean energy and green business models and scaling up eco-innovations. This is supported by green infrastructure throughout the value chain.[2] This value chain creates decarbonisation by lowering the carbon footprint associated with production, transportation and waste management processes. Additionally, a CE promotes the adoption of low-carbon technologies, sustainable practices and renewable energy, all essential components of a decarbonised economy. As AMS implement CE principles, they also work towards reducing GHG emissions and achieving their climate commitments under international agreements, such as the Paris Agreement.

Furthermore, CE business models not only provide solutions to overcome environmental challenges but also opportunities for MSMEs, such as cutting operating costs through resource efficiency improvements, adopting low-emission energy alternatives and introducing new low-emission products and services, thereby enhancing their competitive edge in the market.[3]

The study assessed the existing perceptions of ASEAN MSMEs towards the CE and identified challenges to be addressed by AMS in supporting the CE transition in ASEAN MSMEs.

[2] Economic Research Institute for ASEAN and East Asia (ERIA) (2024). *Integrative Report on Implementation of the Circular Economy in ASEAN.*
[3] Canadian Trade and Investment Facility for Development (CTIF) (2022). *Strengthening ASEAN SMEs in Mitigating and Adapting to Climate Change: Guidelines for SMEs.*

1.2 Methodology

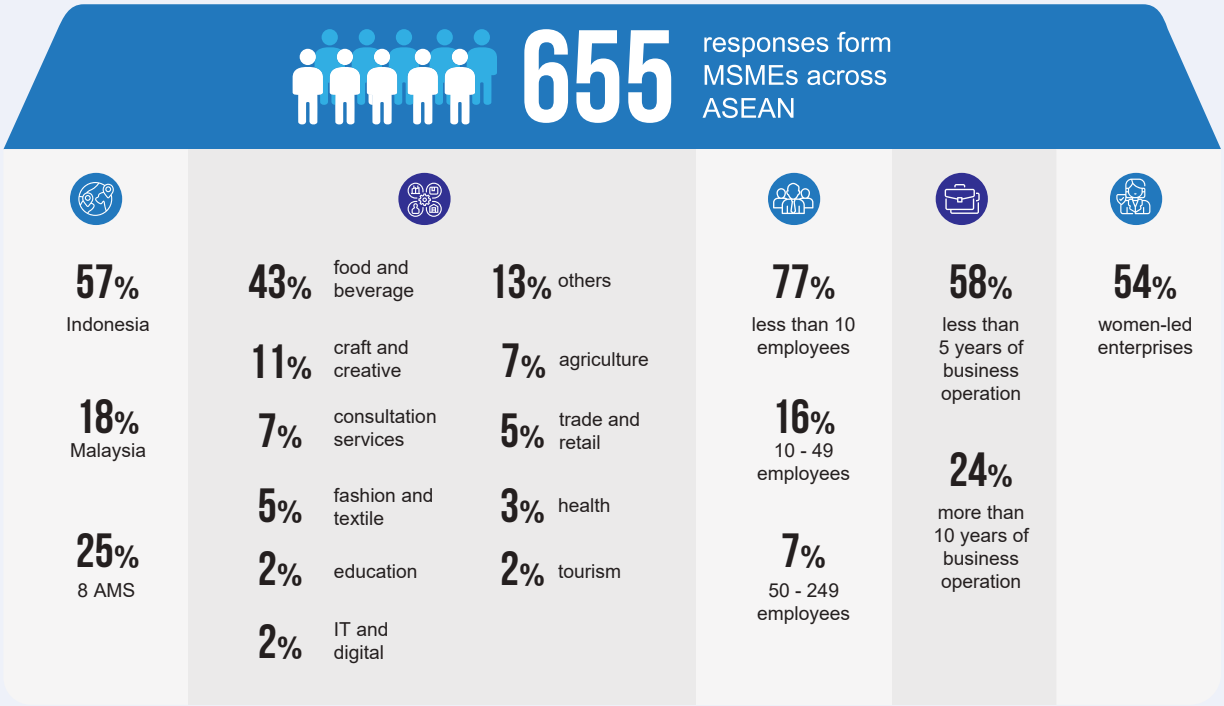
A combination of online surveys and in-depth interviews were conducted with both the public and private sectors (MSMEs), with and/or without knowledge of the CE, to gain a comprehensive understanding of the current landscape and future potential for the CE transition within MSMEs.

Figure 1 Methodology of the study

Quantitative and Qualitative Analysis:

- Portray the potential implementation of circular economy policies and practices within MSMEs across ASEAN.
- Identify challenges to formulate policy recommendations.

Online Survey



- Delivered in November and December 2023
- Understanding the perceptions of MSMEs towards CE practices based on characteristics of respondents, level of awareness of CE principles and perspective on challenges and future needs

In-depth verbal and written Interviews

Understanding the governance and steering mechanism of the CE at the national level

- Identification of policy actions and instruments for transition, adoption and replication of CE practices
- Interviews and questionnaires with 21 stakeholders from MSMEs and government agencies responsible for MSMEs and CE policy development in 10 AMS, as recommended by the ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME)
- Thematic analysis was employed to cluster information

The criteria of MSMEs for analysis purposes are based on the definition from the Organisation for Economic Co-operation and Development (OECD) on the number of employees[4]. This definition helps to standardise the classification of businesses throughout the study, ensuring consistency in the data collection and analysis processes.

[4] Enterprises can be classified into different categories according to their size; for this purpose, different criteria may be used, but the most common is the number of people employed. https://www.oecd.org/en/data/indicators/enterprises-by-business-size.html

Table 1 Criteria for MSMEs for the purpose of the study

Type of Enterprise	Number of Employees
Micro enterprises	< 10
Small enterprises	10 - 49
Medium enterprises	50 - 249

1.3 MSME landscape in ASEAN

In Southeast Asia, there are about 676.6 million people (2023),[5] making the ASEAN region a promising market for MSMEs. ASEAN Small and Medium Enterprises (SMEs), constituting over 70 million enterprises in total, are crucial to the region's economic growth.[6] They contribute between 16% to 70% of each country's GDP and total employment of 85% at regional level.[7]

Table 2 Number of SMEs in the AMS

No	Country	Number of MSMEs
1	Brunei Darussalam	6,495 (2022)[8]
2	Cambodia	520,000 (2019)[9]
3	Indonesia	62 million (2022)[10]
4	Lao PDR	133,721 (2020)[11]
5	Malaysia	1,15 million (2022)[12]
6	Myanmar	75,116 (2019)[13]
7	The Philippines	1.10 million (2022)[14]
8	Singapore	309,700 (2023)[15]
9	Thailand	3.21 million (2022)[16]
10	Viet Nam	870,000 (2022)[17]

5 ASEAN Secretariat (2024). *ASEAN Statistical Highlights* 2024"
6 TDCX (2023). ASEAN SMEs: *Small Business, Big Opportunity for Digital Solution Providers.*
7 ASEAN Secretariat (2021). *ASEAN Strategic Action Plan for SME Development* 2016 – 2025: 2020 KPI Monitoring Report
8 Department of Statistics (Brunei Darussalam) (2023). *Report of Summary Findings – Annual Census of Enterprises 2023*, Ministry of Finance and Economy.
9 T. Sambath (2021). *Roles of SMEs in Cambodian Economic Development and Their Challenges.*
10 YCP Solidiance (2022). *The Growth of SMEs in Indonesia*. Accessed on 5 January 2024 at https://ycp.com/insights/article/indonesia-sme-growth-2022
11 ADB (2020). *Asia Small and Medium-Sized Enterprise Monitor 2020.*
12 Reuters (2023). 'Access all areas: European SMEs and Malaysia'. Accessed on 5 January 2024 at https://www.reuters.com/plus/access-all-areas-european-smes-and-malaysia
13 Asian Development Bank (ADB) (2020). *Asia Small and Medium-Sized Enterprise Monitor 2020.*
14 Department of Trade and Industry (Philippines). '2022 Philippine MSME Statistics'. Accessed on 5 January 2024 at https://www.dti.gov.ph/resources/msme-statistics/.
15 Department of Statistics (Singapore) (2023). Accessed on 1 September 2024 at https://tablebuilder.singstat.gov.sg/
16 *Bangkok Post* (2023). 'SME D Bank focuses on circular economy'. Accessed on 5 January 2024 at https://www.bangkokpost.com/business/2523851/sme-d-bank-focuses-on-circular-economy
17 General Statistics Office of Viet Nam (2022).

When it comes to competitiveness, MSMEs in ASEAN face difficulties in integrating into global value chains and meeting quality standards. Due to their small size, limited resources, managerial skills, and geographical boundaries, MSMEs face multiple challenges, including limited access to information for market access.[18] In case of ecolabelling to protect forested areas, for example, the MSMEs working on food production may experience difficulties in earning the certificate because the cost of production is high and their products are not designated to satisfy the demand of niche high end markets. Currently, only 20% or fewer MSMEs in ASEAN are involved in export import activities.[19] ASEAN MSMEs must concentrate on accessing regional markets and integrating into the regional value chain.

In light of growing global environmental concerns, the demand for eco-friendly products has surged across various markets, including the European Union (EU). The EU, for example, has introduced regulations, such as those addressing deforestation and the Carbon Border Adjustment Mechanism (CBAM), to promote sustainable trade practices. While these initiatives create export opportunities for ASEAN MSMEs, many still prioritise economic considerations, such as production costs and profitability, over environmental concerns like reducing greenhouse gas emissions. Thus, the network of actions along the value chain to promote synergy for economic, environmental and social incentives will encourage both producers and consumers in adopting circularity practices. It is also important that the combination of policy framework and technology provide room for partnerships and collaboration to tackle common obstacles, such as financial access, skills gaps and lack of technical knowledge for application and adoption.[20]

[18] ASEAN Secretariat (2018). *SME Policy Index: ASEAN 2018.*
[19] ASEAN Secretariat (2020). *ASEAN Strategic Action Plan for SME Development 2016–2025: 2020 KPI Monitoring Report – How SME policies are progressing to create resilient and globally competitive SMEs by 2025.*
[20] OECD (2021). *Facilitating the green transition for ASEAN SMEs: A toolkit for policymakers.*

2. CIRCULAR ECONOMY POLICY AND CAPACITY BUILDING IN ASEAN FOR MSMEs

2.1 Circular economy policies in ASEAN countries

The adoption of the Framework for Circular Economy for the ASEAN Economic Community shows ASEAN's commitment to its long-term vision of embracing CE practices and accelerating the shift away from the traditional linear economic model.

The study revealed that all AMS recognise the significance of the CE within their broader economic development and sustainability agenda. However, the degree of progress varies across ASEAN countries. While some AMS have made the CE a priority and integrated strategies into their national development plans, others have yet to explicitly incorporate CE principles into their agendas. Table 3 summarises CE-related policies across AMS.

Some AMS may not specifically use the term 'circular economy', but they recognise CE principles within a broader sustainability framework. Since the CE is considered a subset of broader sustainability principles aimed at achieving the same sustainability goals, these countries incorporate CE practices into their development agendas using alternative narratives. This approach ensures that CE principles are embedded into national policies and initiatives, even if they are not explicitly labelled as such.

Despite the growing recognition of the CE as a critical component of sustainable development in AMS, there are limited institutional mechanisms for CE implementation in ASEAN. Most AMS do not have a coordinating ministry on CE implementation. CE policy-related documents are initiated by specific ministries/agencies in each country, while implementation is across ministerial levels. This leads to unconcerted implementation. The absence of lead coordinating agencies may obstruct coordination and potential synergies among stakeholders and create confusion regarding government direction in CE implementation.

The ASEAN Framework for Circular Economy has been promoted as non-binding guidelines for AMS to start transitioning to more sustainable and inclusive economic growth.[21] The study identified 10 AMS that have established policy frameworks and measures to navigate the implementation of CE and green practices in their respective countries.

Table 3 Circular economy policies in AMS

No	Country	Circular economy policies
1.	Brunei Darussalam	• In Brunei Darussalam Economic Blueprint "Towards a Dynamic and Sustainable Economy" (2021), initiated by the Ministry of Finance and Economy, has briefly stated in one of its aspiration: "Sustainable Environment" on promoting green growth initiatives & sustainable blue economy which includes "Economic development based on clean technologies, renewable energy, and circular material flows to secure economic and social stability over time".[22]
2.	Cambodia	• **Circular Economy Strategy and Action Plan**,[23] aims to enable this country to shift to a circular system for the purpose of achieving a prosperous economy, a thriving and inclusive society, and a healthy environment. The document is initiated by the **Department of Green Economy (DGE) of the Secretariat General for Sustainable Development (GSSD), of the National Council for Sustainable Development (NCSD) (also Ministry of Environment)**. According

[21] ERIA (2024). *Integrative Report on Implementation of the Circular Economy in ASEAN.*
[22] ibid.
[23] NCSD, Swedish International Development Cooperation Agency (SIDA), UNDP (2021). *Circular Economy Strategy and Action Plan.*

		to the Strategy and Action Plan document, CE implementation in Cambodia primarily will focus on (1) increasing efficient resource use, energy, and waste management; (2) promoting sustainable consumption; and (3) promoting reuse and repair business model, particularly in the plastic, transport, energy, and waste sectors. • **Circular Strategy on Environment 2023-2028,**[24] led by the Minister of Environment of Cambodia. The strategy is designed to guide and prioritise environmental and natural resource interventions towards a carbon-neutral economy by 2050.
3	Indonesia	Indonesia has integrated circular economy policy within the **National Mid-Term Development Plan 2020-2024** and will strengthen it in the upcoming **National Long-Term (2025-2045) and Mid-Term Development Plan (2025-2029)**. The N**ational Circular Economy Roadmap and Action Plan** is under development with the leadership of The Ministry of Development Planning. The roadmap and action plan will follow the 9R principles (refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, and recover) and prioritise 5 (five) key sectors, namely, food and beverages, retail (focus on plastic packaging), textile, electronic, and construction.
4	Lao PDR	**Circular Economy Strategies for Lao PDR,**[25] initiated by the **Ministry of Energy and Mines**, uses a system approach and combines resource efficiency with low-carbon development. Focus areas for interventions are agriculture, energy, tourism and construction. Three key strategies have been prioritised: (1) positioning Lao PDR as a regional recycling and manufacturing hub; (2) piloting circular construction methods to support the tourism sector; and (3) developing algae farming to produce valuable bio-based materials and clean surface water. Based on the metabolic analysis and stakeholder engagement, Lao PDR aims to become net carbon neutral by 2040 through the adoption of the CE approach.
5	Malaysia	• **Malaysia Plastics Sustainability Roadmap 2021-2030,**[26] developed by the **Ministry of Natural Resources and Environmental Sustainability (NRES),** aims to achieve higher plastic circularity levels in Malaysia. The roadmap covers four types of resin most commonly produced and disposed of in Malaysia (i.e. PP, PET, HDPE and LDPE/LLDPE). Malaysia aims to achieve a national plastics recycling rate averaging 25% in 2025, and by 2030, it aims to reach 100% plastic packaging recyclability, 15% average recycled content and a 76% average collected-for-recycling rate. • **Malaysia MYHijau**[27] is the green label that promotes products and services with environmental aspects. The label is managed by Malaysian Green Technology Corporation or GreenTech Malaysia

[24] Kingdom of Cambodia. 2023. *Circular Strategy on Environment 2023-2028.*
[25] Institute of Renewable Energy Promotion, UNDP, Shifting Paradigms (2017). *Circular Economy Strategies for Lao PDR.*
[26] Ministry of Environment and Water (2021). *Malaysia Plastics Sustainability Roadmap 2021-2030.*
[27] https://www.myhijau.my/

		(MGTC), under the Ministry of Natural Resources and Environment Sustainability (NRES). • **Government Green Procurement Guidelines for Construction Works**[28] aim to achieve low-carbon building. The guidelines provide instructions for new construction under green government projects, from the inception and planning phases to close-out and occupancy. • CE is embedded in the **12th Malaysia Plan** (RMK-12) (2021-2025) • **National Sustainable Consumption and Production (SCP) Blueprint,** published by The Economic Planning Unit of Malaysia, provides the direction towards SCP actions in the country for 2016 - 2030. • **Circular Economy Blueprint for Solid Waste** sets out the vision that by 2050, Malaysia will achieve a cyclical economic transformation of solid waste management that maximises resource efficiency and minimises waste generation while promoting economic growth, social well-being and environmental sustainability.[29]
6	Myanmar	**National Waste Management Strategy and Master Plan 2018-2030**[30] has the overarching goal of a zero waste, circular and sustainable society. Developed by the **Ministry of Natural Resources and Environmental Conservation (MONREC)**, the Master Plan sets out the CE as one of the principles for developing and implementing integrated waste management. It entails a series of strategies and actions for proper waste collection, disposal and treatment for all solid waste (i.e. municipal, industrial, medical, plastic, hazardous and emerging waste) and liquid waste (wastewater from the domestic sector and industry).
7	The Philippines	• **Philippine Circular Economy Act of 2020 (House Bill No. 7609)**[30] will pave the way for the development of green markets by improving reuse, recycling and reducing plastic consumption, developing circular public procurement and promoting permaculture in urban and rural development. • **Extended Producer Responsibility Act 2022**. Under this Act, big companies must develop an effective waste management system for their products until the end stage, while MSMEs are encouraged to voluntarily participate and comply with the Act.[31] • **Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP)** includes the development and adoption of green technologies and CE solutions to improve resource use efficiency and transform waste/residuals into other usable products.

[28] Economic Planning Unit (EPU, Malaysia) (2020). *Government Green Procurement Guidelines for Construction Works.*
[29] https://anyflip.com/
[30] Environmental Conservation Department (ECD), MONREC (2018). *National Waste Management Strategy and Master Plan for Myanmar 2018–2030.*
[31] Philippine Circular Economy Act of 2020 (House Bill No. 7609).
[32] Ma. Flordeliza C. Leong (2023). *Circular Economy: Business Models and General Practices in the Philippines.* Presented in the Policy Dialogue under ASEAN Access on the occasion of Indonesia's ASEAN chairmanship 2023.

8	Singapore	• **Zero Waste Master Plan Singapore**[33] envisions the big idea of achieving zero waste in Singapore by moving away from a linear economy towards a circular economy. It maps out strategies using CE and resource management practices, with a focus on food waste, electronic waste and packaging waste. The government then set a target to reduce the amount of waste (per capita) to landfill by 30% by 2030. • **The Environmental Services Industry Transformation Map (ES ITM)** aims to revolutionise Singapore's key sectors, such as cleaning, waste management and pest management. Launched in 2023, the ES ITM 2025 is led by the **National Environment Agency (NEA)** together with industry leaders, trade associations and chambers, unions and educational and training institutions. It focuses on intensifying digitalisation, innovation and technology adoption to boost productivity and reduce reliance on manpower in areas including robotics and automation, resource recovery, material circularity and carbon capture from waste management.
9	Thailand	• **Bio-Circular-Green (BCG) Economy Model**[34] provides a set of cross-governmental policies and incentives as well as cross-cutting enablers and stakeholders for four sectors: plastics, food, construction and textile. • **Circular Economy Innovation Ecosystem Vision for 2030**[35] aims to improve resource efficiency, decrease emissions and increase the contribution of CE initiatives to GDP. • **The 13th Thailand National Plan (2023 - 2027)**
10	Viet Nam	**Environmental Protection Law (revised in 2020)** and **Scheme for Circular Economy Development (established in 2022)**[36] serve as the cornerstone for the development of CE models. Viet Nam's CE development scheme's key objectives are to reduce emissions by 15% by 2030 and achieve net zero by 2050, minimise solid waste generation, reduce energy consumption, increase renewable energy, promote the green transition and improve quality of life and resilience to climate change.

Further, the findings from in-depth interviews showed different CE interpretations of the policy and regulatory framework within public agencies in ASEAN. While some agencies demonstrated a comprehensive understanding of the CE, others emphasised specific aspects of circularity practices, such as waste management, resource efficiency, energy efficiency and digitalisation. Table 4 summarises the key CE dimensions stated in the national policy framework.

[33] Ministry of the Environment and Water Resources (Singapore) (2019). *Zero Waste Masterplan Singapore*. ISBN: 978-981-14-2915-6.
[34] S. Singtong (2023). *Thailand's State of the Circular Economy.* Presented in the Policy Dialogue under ASEAN Access on the occasion of Indonesia's ASEAN chairmanship 2023.
[35] Ibid.
[36] Nguyen V. Hue (2023). *Circular Economy in Vietnam: Policies and Implementation.* Presented in the Policy Dialogue under ASEAN Access on the occasion of Indonesia's ASEAN chairmanship 2023.

Table 4 Circular economy dimensions in ASEAN

Dimension	Country	Policy Highlights
 **Waste management**	Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Myanmar, Thailand, the Philippines and Viet Nam	Prioritise enhancing waste management systems to curtail landfill usage, improve recycling processes and promote material reutilisation. These efforts are geared towards mitigating environmental degradation and fostering sustainable resource consumption.
 **Energy efficiency**	Lao PDR, Brunei Darussalam, Myanmar, Thailand and Malaysia	A significant emphasis on energy efficiency as part of the energy transition movement. These countries underscore the importance of instituting energy efficiency measures and increasing reliance on renewable energy sources to reduce energy consumption, decreasing operational costs and improving industrial competitiveness.
 **Digitalisation**	Myanmar, Cambodia, and Viet Nam	Digitalisation to optimise operational efficiencies, reduce waste generation and enhance resource management through technological intervention. Digital tools and platforms stand to optimise resource tracking, thereby enabling the implementation of innovative bankable business models – a critical component for the effective adoption of CE practices.
 **Resource efficiency**	Indonesia and Lao PDR	Indonesia and Lao PDR are striving to promote resource efficiency to ensure the optimal management of natural and industrial resources. The primary objective of these endeavours is to maximise production output with minimal input, thereby contributing to sustainable growth. Practices centring on resource efficiency are pivotal in mitigating natural resource depletion, reducing pollution and fostering a long-term ecological equilibrium.
 **ESG**	Lao PDR, Malaysia and the Philippines	The integration of Environmental, Social, and Governance (ESG) practices is particularly notable in Malaysia, the Philippines, and Lao PDR, where the adoption of circular practices within businesses and industries is actively promoted. Additionally, in Lao PDR, circular economy principles have been integrated into the Sustainable Development Goals (SDGs) through the Sustainable Consumption and Production (SCP) Roadmap for 2022-2025.

2.2 Capacity building for MSMEs in ASEAN

Beyond policy development, AMS are proactively involved in nurturing the CE ecosystem through targeted capacity-building initiatives, designed to raise awareness and foster a deeper understanding of CE practices among diverse stakeholders, including MSMEs. These capacity-building endeavours involve disseminating knowledge via diverse formats, primarily focusing on the pragmatic application of CE principles within the business domain, as shown in Table 5.

Table 5 Circular economy capacity-building activities in ASEAN countries

Country	List of capacity development activities up to 2024
Brunei Darussalam	There are various initiatives to promote CE through human capacity development, such as the following: • Bank Islam Brunei Darussalam (BIBD) organised activities focusing on awareness campaigns on sustainability through the Sustainable Nation Campaign and Eco-Chat Series. The topics covered were climate crisis, sustainable development goals, plastic pollution and fast fashion. BIBD worked with various actors, such as the Brunei Climate Change Council and the Ministry of Culture, Youth and Sports. • The Embassy of Brunei Darussalam, in collaboration with the ASEAN-Japan Centre, as part of a bilateral promotional effort, organised Capacity Building for Brunei Darussalam: Advancing Circular Packaging Design and Labelling.[37]
Cambodia	The Ministry of Environment conducted regular training on waste management for industries.
Indonesia	Various organisations and institutions, including ministries, businesses, universities, think tanks, and non-governmental organisations (NGOs), promoted the CE through capacity building and advocacy events, such as: • The United Nations Development Programme (UNDP) organised a three-day training event for stakeholders on the CE concept (2022) and capacity building for circular start-ups (2024). • The Ministry of Cooperatives and SMEs, in collaboration with the Swiss Import Promotion Programme (SIPPO), delivered capacity building on the adoption of Global Reporting Initiative (GRI) standards by MSMEs.
Lao PDR	The Ministry of Industry and Trade and the Ministry of Natural Resources and Environment, in collaboration with ECONOX, promoted the programme Plastic Free Laos Label. It focused on increasing MSMEs' capacity to reduce plastic waste in the hospitality sector. This includes producing green products and services and managing waste.
Malaysia	Through Kenal ESG, the Ministry of Investment and Trade has provided ESG-themed training for more than 400 companies (including a three-month training course for MSMEs).
Myanmar	The ASEM SMEs Eco-Innovation Center (ASEIC), supported by the Ministry of Industry, ran an Eco-Innovation Capacity Building programme for MSMEs (2017–2019). The programme started by focusing on sharing knowledge and experiences from Korean enterprises to raise awareness of eco-innovation in Myanmar MSMEs.

[37] https://www.asean.or.jp/en/event-report/20240404/

The Philippines	• The Department of Trade and Industry (DTI) currently implements the Green Economic Development (GED) Programme, which aims to enhance MSME competitiveness by adopting climate-smart and environmentally friendly measures, including CE practices. • In collaboration with GRI, DTI trained MSMEs on GRI standards, with a target of 300 MSMEs publishing their sustainability reports. • Under the Green Economy Programme in the Philippines (GEPP), DTI provided technical capacity development in the waste management value chain for informal waste workers and MSMEs.
Singapore	The Enterprise Sustainability Programme (ESP) offers sustainability-related courses.
Thailand	• The Office of Small and Medium Enterprises Promotion (OSMEP) and the Office of National Higher Education Science Research and Innovation Policy Council (NXPO) organised BCG training for MSMEs. With a focus on increasing understanding of BCG for companies (including MSMEs), the programme has provided training for about 1,400 companies. • OSMEP trained 10,000 participants on the BCG topic. • NXPO delivered a Net Zero Campus Programme for 155 universities.
Viet Nam	The Ministry of Planning and Investment, in collaboration with the Danish Embassy, organised Circular Economy Capacity Building Training for Enterprises (2022).

Interviews with government institutions across AMS reveal a variety of approaches to capacity-building initiatives themed around the CE. Some governments, such as Indonesia, Thailand and Viet Nam, have explicitly focused on CE themes through workshops and training. These sessions are designed to enhance stakeholders' understanding of CE concepts. In other AMS, while capacity-building efforts do not explicitly discuss the CE, the content still contains CE principles to some extent. These topics relate to waste management, ESG application, eco-labelling systems and sustainability. Such initiatives demonstrate an effort by AMS to support the implementation of CE practices within the private sector.

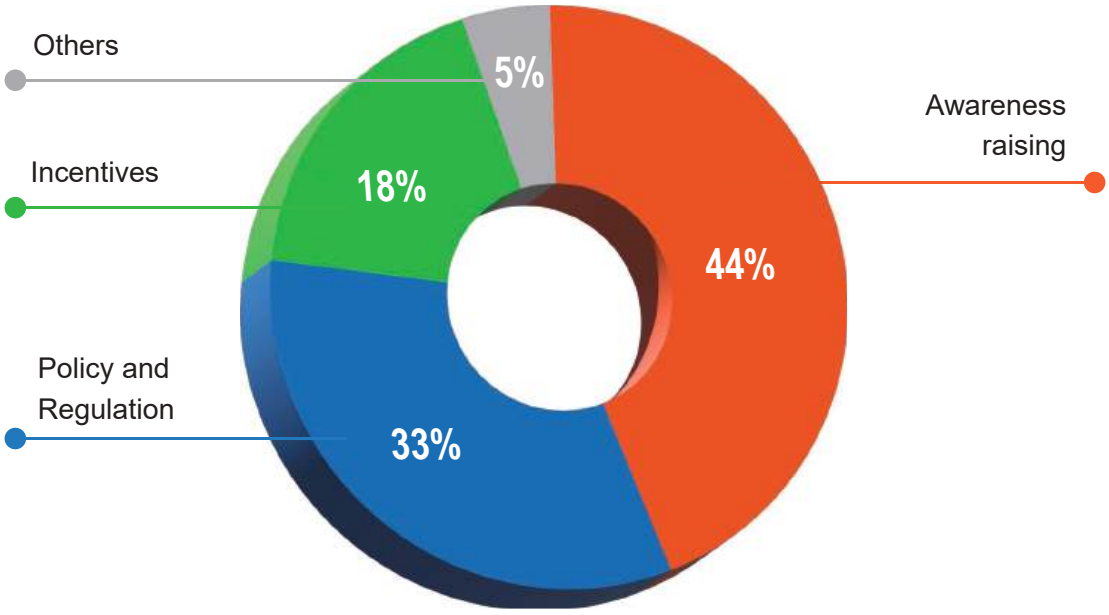
Most AMS conduct capacity-building through training or workshops. It has been observed that capacity-building programmes relating to the CE are often initiated or supported by external parties. International organisations and donor countries, such as the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, UNDP, the Dutch Embassy, the Danish Embassy and ASEIC, play a significant role in providing financial support and implementing these activities.

In the survey, 37% of MSMEs responded neutrally to government measures promoting the CE supports in policy and regulation such as enabling environment along the supply chain, incentives through subsidies, loan, or tax reduction, and technical assistance and capacity building, with 33% agreeing and 30% disagreeing. As the target of CE promotion, MSMEs often view awareness-raising activities, capacity-building initiatives and policy instruments provided by the government as not effectively addressing their immediate business needs. While MSMEs recognise the potential long-term benefits, capacity building sometimes fails to improve technical and practical skills that could have an impact on business growth in the short term.

ASEAN MSMEs perceive capacity-building activities as the most recognised government-led initiatives promoting the CE. The survey revealed that 44% of MSMEs recognised awareness-raising activities as the primary form of government support that they have received, followed by policy and regulation (33%) and economic incentives (18%). The economic incentives based on the in-depth interviews include tax benefits

Figure 2 MSMEs' perception of government measures to promote the circular economy

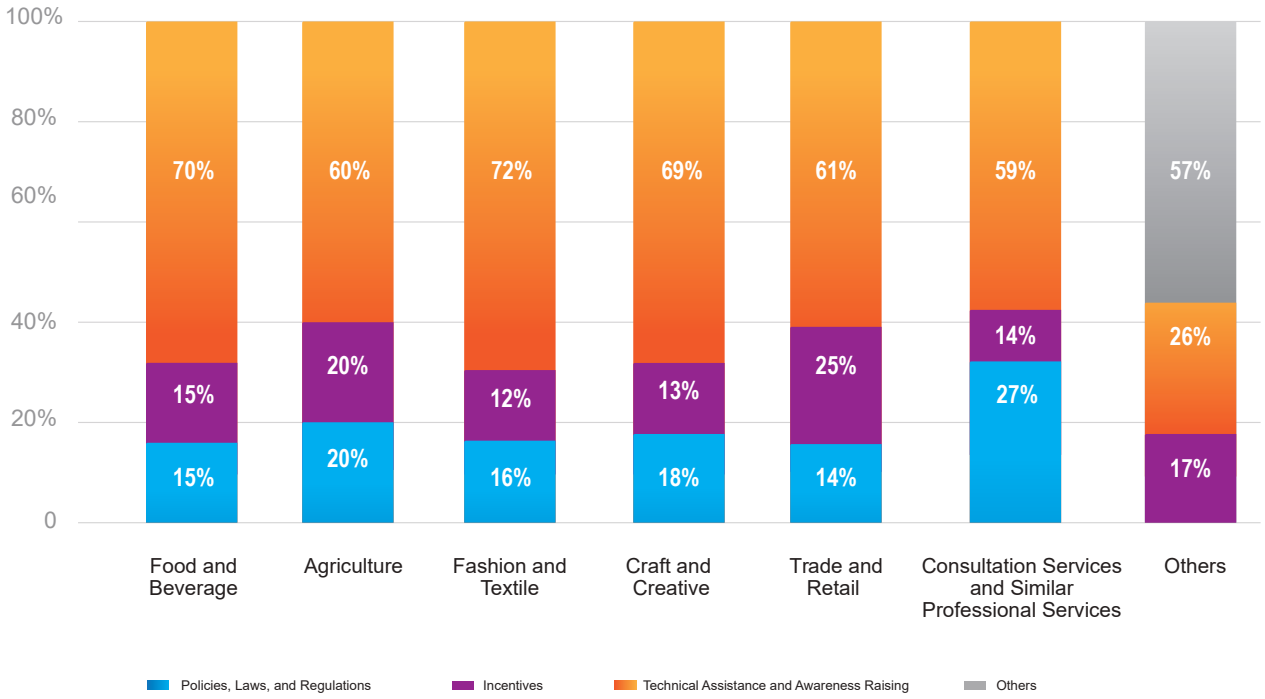
What kind of measures has your government put in place to promote the circular economy?



(export and import duty exemption), subsidies, grants, low-interest loans and soft financing, and tax deductions for CE businesses. It is highlighted by eight AMS that technical assistance and awareness raising are the most popular initiatives for promoting the CE at the national level. It is also a consistent finding in each country that MSMEs selected 'Others' to express their lack of knowledge of government efforts to promote the CE.

Prioritising capacity building through targeted awareness-raising initiatives is essential for promoting CE practices among MSMEs by sector. MSMEs confirmed CE capacity development, prominently for textile and food and beverages, was made available. These initiatives are vital for equipping MSMEs with the knowledge to transition to sustainable business models. Further, government-led awareness campaigns should focus on providing general information about the CE concept and technical assistance to speed up the transition.

Figure 3 Circular economy promotion and measures by sector



3. CURRENT STATE OF MSMES IN TERMS OF THE CIRCULAR ECONOMY

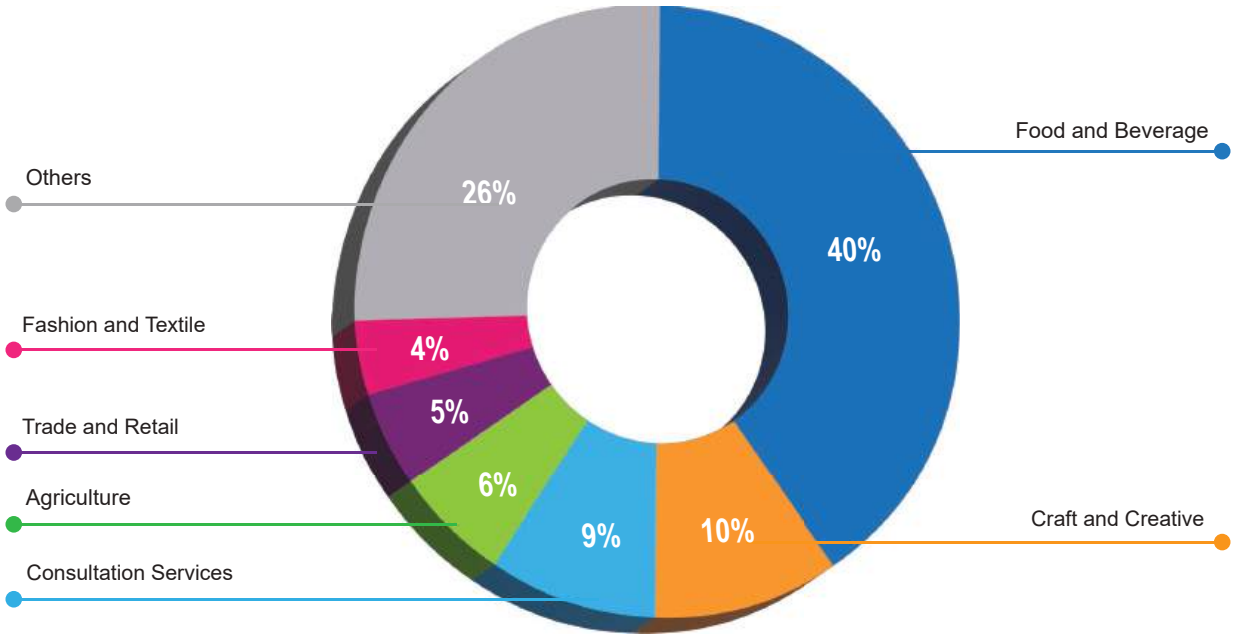
3.1 Level of awareness of the circular economy among MSMEs

The CE concept has emerged as one strategy to tackle sustainability challenges associated with decarbonisation and traditional linear business models. CE principles emphasise how to reduce regenerate, and redistribute materials across the value chain (production, distribution, consumption and recovery). While the CE offers substantial benefits for environmental sustainability and resource efficiency, the degree of transition and adoption among MSMEs across ASEAN can vary significantly.

The survey findings documented that 57% of MSMEs were familiar with CE concepts, and 43% had a limited understanding of the CE. Indonesia and Malaysia had the largest proportion of survey participants responding that they were unfamiliar with the CE concept (44% and 51%). In addition, the majority of the respondents (55%) could correctly answer three questions about the CE: 1) the CE is designed to minimise waste, 2) the CE aims to prolong the lifespan of materials or products and 3) the CE creates a system where materials or products are used again instead of only once and involves environmentally friendly practices for recycling, reusing and reducing materials or products.

Among the MSMEs participating in the survey, the sectors demonstrating the greatest familiarity with CE principles were food and beverages (40%), followed by craft/creative (10%), consultancy services (9%), agriculture (6%), trade/retail (5%) and fashion/textile (4%).

Figure 4 MSMEs that are familiar with the circular economy by sector



In accordance with the ASEAN Implementation Plan for the Framework for Circular Economy for the ASEAN Economic Community (2023–2030) with sector-specific actions on agriculture, energy and transportation and referring to sectors highlighted in ACESP,[38] public and private sectors (including financial institutions and business intermediaries) may consider sectoral preferences in promoting CE business models at the national level.

For comprehensive details about the survey methodology and findings, please refer to Annex 2.

[38] https://ce.acsdsd.org/knowledge-hub/

3.2 Understanding MSMEs' perceptions of circular economy practices

MSMEs' perceptions of CE practices were gathered through interviews with circular enterprises and government agencies regulating MSMEs. Below are some insights on how MSMEs perceive CE practices.

1. The circular economy is not critical for business operations

Most SMEs feel that climate change and CE issues are less crucial and not a priority – #012governmentofficial.

Based on the study findings CE practices can be classified into three categories: practices for smarter product use and manufacture, extending the lifespan of products and the useful application of materials. Shifting from business-as-usual towards CE practices requires some effort and adaptation that will disrupt business activities. These efforts are not perceived as urgent for many MSMEs and are hence overshadowed by more immediate business survival needs. For these enterprises, day-to-day operations and the challenge of remaining financially viable in competitive markets have been the priority over long-term CE sustainability strategies. This perception is further echoed by one of the MSME leaders who suggested a focus on building the business sustainably rather than defining their core products through the lens of sustainability because, in the end, the business needs cash flow to survive in the industry. The implication is that while the importance of sustainability is recognised, its integration must not compromise the primary business objectives of profitability and market competitiveness.

Many MSMEs feel that circular products are not widely accepted in the market, which makes them hesitant to adopt sustainable practices. This challenge is worsened by the ASEAN consumer base, which is highly price-sensitive due to limited awareness of sustainability issues. When making purchasing decisions, consumers often prioritise cost over environmental impact. As a result, the market for circular products is still considered niche. Greater consumer education and awareness are needed to broaden the market acceptance of such products. Further, the challenge opens opportunities for MSMEs for premium prices through identification of clearer market segmentation, targeting consumers who appreciate sustainable products.

2. Clarifying the concept of a circular economy

Many small businesses in ASEAN find the CE concept confusing due to its interchangeability with other environmental initiatives that governments promote. Various terms and support programmes related to environmental sustainability can be unclear and overwhelming for these businesses. They struggle to understand what the CE entails and how it differs from other environmental directives. This lack of clarity can lead to hesitancy in adopting CE practices, as businesses are unsure of the implications for their operations and the potential benefits of such practices.

3.3 Current circular economy practices by ASEAN MSMEs

In the various stages of transitioning to the CE, this study has also recognised two distinct types of MSMEs that show potential for embracing it. This recognition is based on their underlying values and initial motivations for engaging in business activities.[39]

***Green Performers**: Green Performers are typical MSMEs that were originally established without an intentional focus on environmental sustainability. These businesses are primarily driven by economic considerations and motivated by the opportunity to generate profits. While they are effective within their respective markets, their business models do not inherently prioritise sustainability as a core objective. Transitioning these MSMEs to CE practices requires a fundamental shift in mindset, encouraging them to view sustainability not as an optional addition but as a potential driver of innovation and long-term business viability.*

***Green Innovators**: Green Innovators include MSMEs that have wholeheartedly embraced CE principles as a core part of their business philosophy. These companies are driven by the desire to generate positive impacts on society, encompassing environmental, social and economic benefits. Their focus extends beyond mere profitability, aiming to utilise business as a force for meaningful change. Typically, these MSMEs have adopted circular business models right from the start to demonstrate their unwavering commitment to sustainability. Their operations are meticulously crafted to minimise waste and optimise resource efficiency. Moreover, these enterprises actively pursue acknowledgment and a sterling reputation, acting as potent incentives to uphold*

[39] United Nations Environment Programme (UNEP) (2017). *Mobilizing Sustainable Finance for Small and Medium Sized Enterprises.*

exemplary standards of sustainable practices and innovation in sustainability. Case studies of such Green Innovators can be found in Annex 1.

In the context of opportunities for MSMEs, the global market ecosystem supporting the transition to a CE is expanding, for example, through eco-labelling. Despite being a non-trade barrier, eco-labelling is used worldwide to promote green and sustainability practices. At the ASEAN level, eco-labelling is adopted nationally (e.g. MyHIJAU, Singapore Green Labelling Scheme, and Thai Green Label Scheme).

As one of the targeted export markets for ASEAN countries, EU Member States have aligned their trade policies with environmental considerations, permitting access exclusively to materials and products meeting specified ecological standards. Stringent regulations such as the EU Deforestation Regulation and the impending implementation of the Carbon Border Adjustment Mechanism underscore this commitment. Conversely, ASEAN MSMEs possess export potential, as evidenced by the approximately $1.7 billion in annual revenue generated by Viet Nam's handicraft product exports.[40] With the regional market primed for a green transition, MSMEs can showcase their circular products in the export market.

> *VNF with 10–15% of global sales showcased the shrimp and lobster supply chain to consumers and investors. VNF highlighted their cost competitiveness, adherence to international quality standards and certified eco-friendly products like B-Corp and Ecolabel. VNF managed to reduce freshwater usage by 60–80% and decrease wastewater contamination.*

Additionally, there has been a noticeable shift in the investment landscape in recent years, with financial institutions and investors increasingly moving away from conventional, business-as-usual investments towards ventures that positively impact society and the environment. This paradigm shift signifies a broader trend towards responsible investing, where the potential social and environmental impacts of investments and their financial returns are given equal consideration.

This evolving landscape of investment trends has amplified the significance of sustainability reporting among companies seeking investment. Many investors now meticulously scrutinise companies' sustainability reports to evaluate their dedication to environmental impact and social responsibility before making investment decisions. Such reports provide comprehensive insights into a company's sustainability practices, encompassing resource utilisation, waste management and social impact. These are pivotal benchmarks for long-term viability and compliance to global sustainability standards.

The growing institutionalisation of sustainability reporting means these practices are becoming more standardised and expected within the business community. This trend offers a strategic advantage for MSMEs that adopt CE principles. By integrating CE practices into their operations, MSMEs naturally align with the critical aspects of sustainability reporting. This alignment boosts their appeal for green investments and positions them firmly in a competitive market that increasingly values sustainable practices.

[40] ASEAN–China Free Trade Business Portal (2017). Accessed on 1 February 2024 at https://www.asean-cn.org/index.php?m=content&c=index&a=-show&catid=194&id=684.

3.4 9R Practices on ASEAN MSMEs

Even though developed countries first put the CE concept into practice, it offers promising potential for implementation in ASEAN countries. While the term may seem recent, the underlying principles of the CE are well known to Southeast Asian communities. For instance, communities in ASEAN have historically embraced practices aimed at minimising wastefulness. Traditional culture has long embodied CE principles, such as using banana leaves for food packaging and reusing containers to provide catering services. Consequently, the potential of the CE to revolutionise ASEAN economies is significant, especially by escalating standard circular practices to make them more impactful.

In understanding how circular practices have been applied by MSMEs in ASEAN, a framework called the 9Rs is used. [41] This comprehensive framework is valuable for assessing the extent and variety of CE practices within businesses. It encompasses nine strategies that aim to maximise resource efficiency and minimise waste, which are refuse, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle and recover. These strategies are aligned with the previous three categorisations that are used, which are 'smarter product use and manufacture', 'extending the lifespan of products and their parts', and 'useful application of materials'. The list of 9R principles with potential business applications for MSMEs can be seen in Table 6.

Table 6 9R Framework for the circular economy and potential application in MSMEs [42]

Smarter product use and manufacture	R0 Refuse	Avoid creating/selling products that can generate waste.
	R1 Rethink	Make product/services use more intensive (e.g. sharing through leasing)
	R2 Reduce	Minimise the amount of materials and resources used in business processes
Extend lifespan of product and its parts	R3 Reuse	Reuse products and components in the business to prolong lifetime
	R4 Repair	Fix damaged products to extend their usability rather than discarding them
	R5 Refurbish	Update or renovate older products to bring them to a like-new condition
	R6 Remanufacture	Rebuild a product to the specifications of the original manufactured product
	R7 Repurpose	Use materials or products in new ways for purposes other than what they were originally intended
Useful application of materials	R8 Recycle	Process waste materials into new materials for production
	R9 Recover	Process waste materials to generate energy

[41] J. Potting, M. P. Hekkert, E. Worrell and A. Hanemaaijer (2017). *Circular economy: Measuring innovation in the product chain*, PBL Netherlands Environmental Assessment Agency (PBL publication no. 2544).

[42] Colin Reit, Daan Schraven and Dominika Teigiserova (2023). 'Does PSS help to increase circularity? A framework for the circular design process and case study of five pilots in the Dutch infrastructure sector', R*esources, Conservation & Recycling*, Vol. 199.

Table 7 provides a detailed breakdown on how MSMEs embraced the practices of the 9R Framework.

Table 7 The profile of 9R practices in ASEAN MSMEs

9R Framework	Application of 9R in MSMEs
Smarter product use and manufacture	**Digitalisation (62%)** **Optimisation of materials (59%)** **Energy efficiency (59%)** Reduce packaging materials (49%) Use biodegradable materials (46%) Design long-lasting products (44%) Use recyclable materials (41%) Design for repairability (37%) Use recycled materials (35%) Eco-label (23%)
Extend lifespan of product and its parts	**Provide repair (37%)** Sell second-hand products (20%)
Useful application of materials	**Collect waste from other manufacture for recycling/Waste-to-Energy process (26%)** Collect used-product for recycling (24%)

The survey reveals that ASEAN MSMEs' engagement in CE principles is mostly on smarter product use and manufacturing activities. This includes initiatives such as digitalisation by applying e-transaction tools, optimising material use by reducing food and other wastes and improving energy efficiency by using low-energy-consuming products and installing solar panels.

With regard to extending the lifespan of products and their parts, approximately 37% of MSMEs provide repair services, and 20% sell second-hand products as part of their business model. Meanwhile, regarding practices related to the useful application of materials, 26% of MSMEs collect materials from other manufacturing or production processes for recycling, and about 24% collect used products to be recycled by other services.

The survey indicates that ASEAN MSMEs are making significant progress in digitalisation, material optimisation and energy efficiency. These aspects are seen as practical and manageable elements of circularity that can be readily integrated into business operations due to their direct relation to cost and operational efficiency. For example, using digital transactions helps businesses keep better records, track their stock and trace their products. In addition, managing their supply more accurately can reduce waste and costs related to raw materials. Similarly, choosing products that use less energy can save businesses a lot of money in the long run.

> *We are running the intersection of e-commerce, fintech and recycling tech for access to high-value and long-life products affordable for general consumers while preventing waste and contributing to the reduction of emissions – #015SME.*

The findings indicate strong potential for expanding CE practices among MSMEs, promoting more efficient use and production of goods. This could become a primary focus for government efforts, aiming for immediate, impactful wins in advancing CE practices across ASEAN MSMEs.

3.5 MSMEs' transition to a circular economy

The technical assistance MSMEs need varies based on the type of MSME and what stage they are at in transitioning towards a CE. This study identifies three stages of transition that MSMEs typically go through as they adopt CE practices.

Table 8 Stages in the circular economy transition for MSMEs

Stage	Description
Early stage	Have an early awareness of the CE concept
Beginner stage	Have an increased awareness and willingness to transition towards CE practices
Intermediate stage	Have implemented CE practices but require (medium/long-term) business plan/strategy for the sustainability of the business

Figure 5 Mapping of MSME needs for technical assistance

	EARLY STAGE	BEGINNER STAGE	INTERMEDIATE STAGE
GREEN INNOVATORS MSME	N/A	• Mentorship, consultancy, and advisory, matchmaking program • Training on standard and certification • Financial assistance: grants, debt/equity-financing	• Legal, R&D, and impact measurement assistance • Networking program • Financial assistance: grants, debt/equity-financing
GREEN CONVENTIONAL MSME	Training of CE-related issues	• Technical guidance on what to do (sector-specific) • Training on standard and certification • Financial assistance: grants, debt/equity-financing	• Certification • Financial assistance: grants, debt/equity-financing

(Source: survey and in-depth interviews)

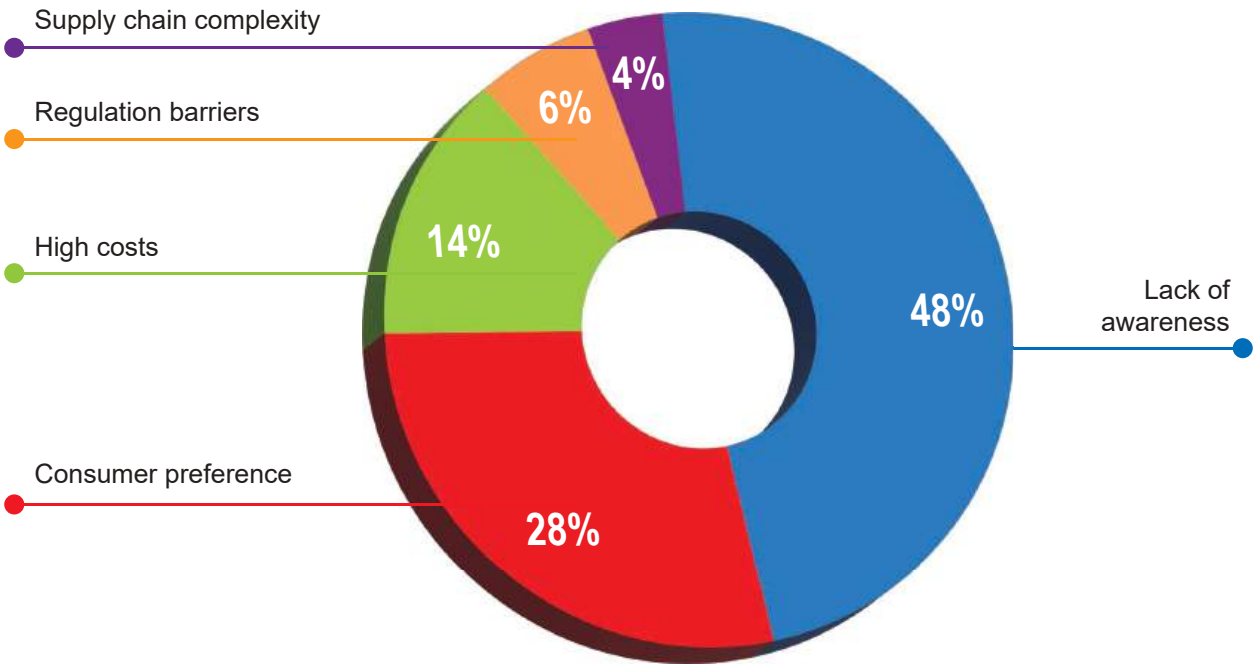
4. CHALLENGES AND KNOWLEDGE GAPS IN ADOPTING CIRCULAR ECONOMY PRACTICES FOR MSMEs

4.1 Challenges for MSMEs in transitioning to and adopting circular economy practices

As the backbone of ASEAN's economy, MSMEs play crucial roles in contributing to employment and economic growth. However, with the shift from traditional linear business models to a more sustainable and circular economy, MSMEs experience difficulties adapting to the changes. This chapter documents the challenges beyond the lack of access to capital and financing options.

Based on the survey findings, five significant constraints are identified by MSMEs.

Figure 6 MSMEs' main challenges in implementing the circular economy



1. Lack of awareness

ASEAN has committed to raising general awareness about the CE, but the training provided is lacking in depth. Most capacity-building efforts have focused on basic knowledge of CE principles, with insufficient emphasis on detailed technical assistance and practical implementation strategies. This lack of technical focus is particularly significant for MSMEs with limited resources to explore and implement CE concepts independently.

> *We need technical advice and technical know-how. Currently, the government offers capacity building in broad terms and general practices relating to CE concepts. But to grow, we need specific programmes tailored to specific CE industries – #016SME.*

More specialised and hands-on training is critical to enhance the effectiveness of CE adoption among MSMEs. By providing in-depth technical knowledge and practical guidance, such training can bridge the gap between theoretical understanding and practical application, allowing MSMEs to adopt CE practices more effectively and innovatively. The need for targeted assistance was underscored by 48% of survey respondents who identified the lack of support as a significant barrier, potentially leading to resistance to change towards the CE. Focusing on technical training in areas such as waste reduction, recycling and resource efficiency will help MSMEs adopt sustainable practices, redesign products for durability and recyclability and integrate circularity into their business models.

2. Low consumer preference towards circular products

In the survey, 28% of respondents identified consumer behaviour as another significant challenge. Consumer behaviour issues include a preference for disposable and single-use products, price sensitivity and a lack of awareness about the benefits of green and recycled products. Addressing this challenge requires strategic marketing and comprehensive consumer education campaigns to foster a more receptive market for CE-based products.

The study indicates that consumers' perceptions of green products present significant challenges for adopting the CE because green products are more expensive. Environmental impacts do not primarily drive current consumer values in the region, favouring a broader cultural and economic dimension within the local community.

For example, The tingi culture in the Philippines involves selling goods in small, affordable quantities rather than in bulk. Common in local markets and sari-sari stores and among street vendors, this practice caters to consumers who may not have the purchasing power to buy products in more significant amounts. While tingi provides accessibility and convenience, it also generates more waste due to the packaging of small portions. Currently, refill systems in sari-sari stores are increasingly popular.

The interviews revealed that younger generations and highly educated consumers show a strong preference for green products. Therefore, market segmentation strategies are crucial for brands targeting the premium market of sustainability-focused consumers. Other challenges are the limited number of incentives for consumers provided by sellers, such as discounted promos, cash-back offers, loyalty points and rewards programmes. Although some MSME products have gained interest from the export market, the domestic market can significantly accelerate MSMEs' transition to the CE when incentives are applied to consumers.

3. High cost of transition

In the survey, 14% of respondents identified the cost of transitioning to CE practices as a significant barrier for MSMEs. Transitioning and greening business operations always come with high technology and upfront

expenditure costs. MSMEs often face disadvantages due to the lack of economies of scale and limited fiscal resources for innovation. Without the ability to implement green practices, they risk falling behind as supply and value chains grow increasingly stringent in response to rising climate change concerns.

Financial support mechanisms, such as subsidies, tax reliefs and access to low-interest loans and soft financing, could facilitate the adoption of CE practices among MSMEs.

4. Regulation barriers

While progress has been made in developing CE policies within the ASEAN region it is essential to address the specific needs of MSMEs to enhance their engagement in sustainable practices. General policies provide a strong foundation benefiting environmental conservation but do not yet necessarily support MSMEs in transitioning to circular businesses. Regulation barriers that hinder the participation of MSMEs in CE practices are access to land, access to or goods movement of virgin and secondary materials (e.g. involving tax and standard compliance for cross-border movement of secondary goods or waste) and access to financial options (e.g. unbanked, collateral needed).

In addition to the five types of challenges experienced by MSMEs, governments refer to technology, access to finance and sustainable finance, and market-related constraints as significant obstacles in promoting the CE. Inadequate infrastructure and facilities, including data (e.g. wastewater production vs. treatment capacity), delay decision-making on adopting CE practices. CE business models are still far from satisfying the interests of investors and banking sectors. Moreover, lowering the cost of transition is a must.

Government support for innovation and technology programmes and access to soft loans, grants, venture capital and investment are considered instruments that can speed up the transition.

5. Supply chain complexity

MSMEs often perceive the systemic CE approach, which emphasises environmental values throughout the value chain, as a potential hindrance to their business processes. This approach requires consideration of factors such as traceability and the use of local or recycled materials, which can significantly complicate operations. MSMEs aim to source materials and produce products as efficiently as possible, but the additional requirements to ensure sustainability can add complexity to their operations.

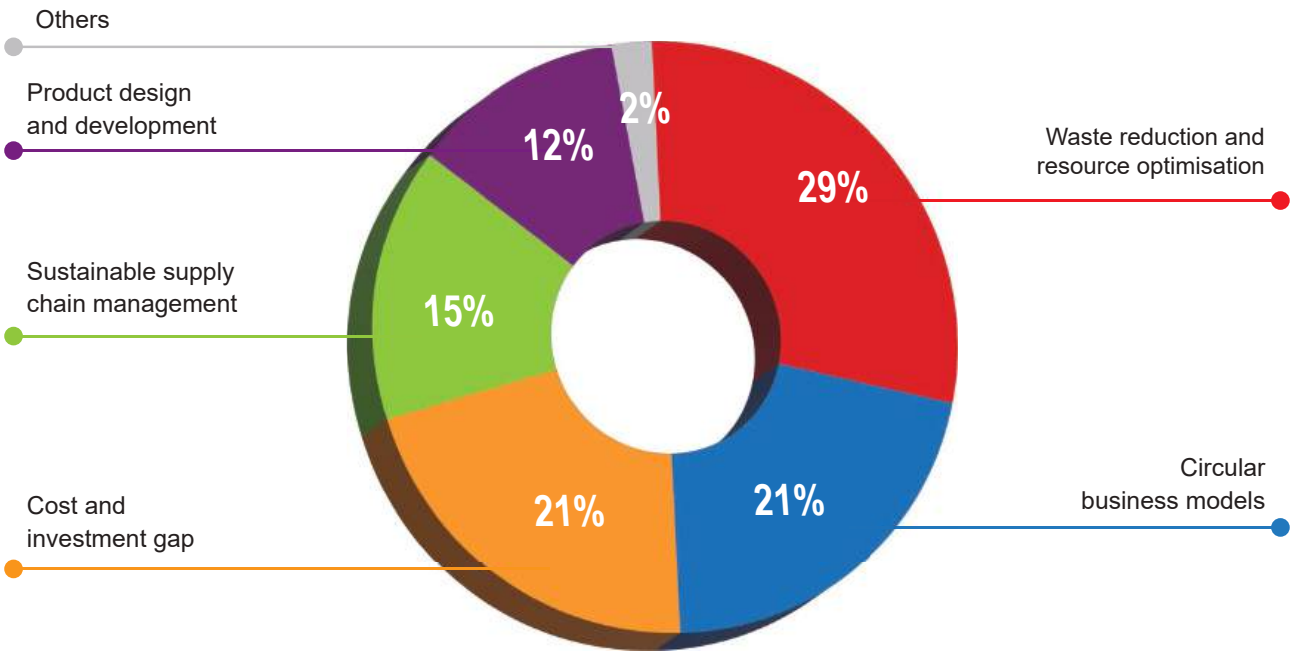
MSMEs frequently face challenges with data management, which leads to difficulties in adopting CE principles. Many MSMEs can only handle conventional transaction data and may lack the infrastructure or expertise to manage the comprehensive data sets required by CE practices. This includes data related to the sustainability attributes of materials used (e.g. reusable and recyclable practices), the lifecycle impacts of products and detailed supply chain information. Without the capability to effectively manage this type of data, it becomes challenging for MSMEs to maintain accurate records that are crucial for validating their sustainability practices and making evidence-based decisions that align with CE principles.

Further, enabling mechanisms for the CE transition by MSMEs include promoting innovation, technology and digitalisation. Advanced technologies, such as the internet and artificial intelligence, can help optimise resource use, track materials throughout their lifecycle and enable efficient waste management. Digital platforms can also facilitate collaboration, supply chain transparency and data-driven decision-making for MSMEs engaged in CE practices. Likewise, infrastructure improvements, such as recycling facilities, waste-to-energy plants and sustainable logistics networks, are essential for supporting circularity.

4.2 MSME knowledge gaps for transitioning to and adopting circular economy practices

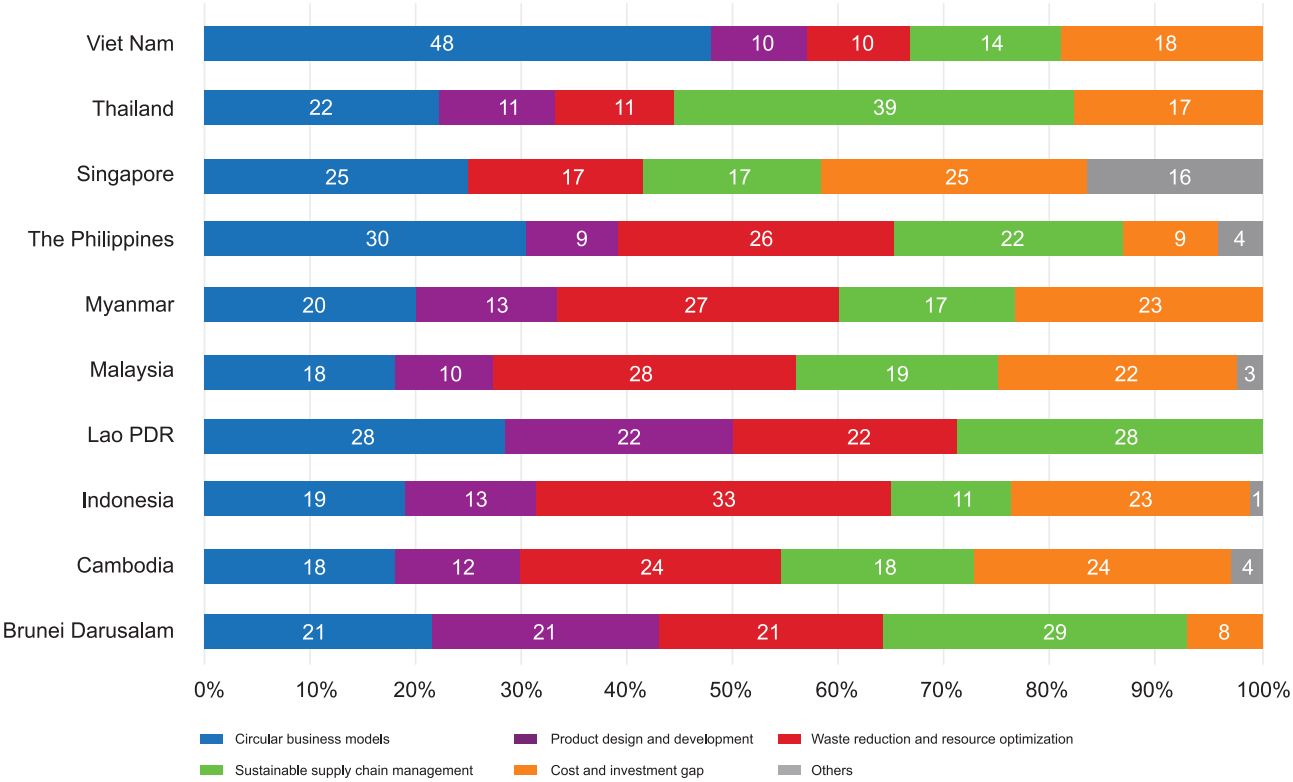
MSMEs require specific knowledge beyond a basic understanding of the CE concept. There is a significant gap in CE technical knowledge, which MSMEs often struggle to address independently. The areas in which MSMEs express an immediate need for advanced knowledge are waste reduction and resource optimisation (29%), addressing cost and investment gaps (21%), developing circular business models (21%) and sustainable supply chain management (15%).

Figure 7 Main knowledge gaps for circular economy adoption in MSMEs



Furthermore, the study shows that geographical constraints cluster knowledge gaps. For example, the demand for knowledge in circular business models is exceptionally high in Viet Nam, Singapore, the Philippines and Lao PDR. Sustainable supply chain management is a priority in Thailand, Brunei Darussalam and Lao PDR. The need to bridge cost and investment gaps is most urgent in Singapore and Cambodia, while focusing on waste reduction and resource optimisation is prominent in Myanmar, Malaysia, Indonesia and Cambodia. This detailed profiling of knowledge gaps underscores the importance of targeted government interventions to facilitate CE adoption across various AMS.

Figure 8 MSMEs' perception of knowledge gaps for circular economy adoption by ASEAN country



5. PATHWAYS TO A CIRCULAR ECONOMY IN ASEAN: RECOMMENDATIONS FOR POLICY-MAKERS

5.1 SWOT analysis for circular economy implementation in ASEAN MSMEs

The strengths–weaknesses–opportunities–threats (SWOT) analysis is conducted based on existing practices, policies and perceptions of CE practitioners in ASEAN and the global context. It served as the foundation to formulate policy recommendations.

Strengths

- CE practices are deeply embedded in community values across ASEAN, where people avoid wasteful practices due to tradition or religious beliefs. In practice, communities are used to repairing goods, inheriting items across generations and using natural ingredients daily. These habits reflect a societal foundation and highlight the potential for expanding these practices to influence broader market demand, significantly enhancing CE initiatives.
- ASEAN countries collectively recognise the importance of sustainability plans that include CE principles. These government commitments provide a robust platform for coordinated regional efforts and support for CE practices in MSMEs and other stakeholders.
- Governments provide several incentives to promote CE transitions and adoption at the national level, for instance, through green government procurement schemes.

Weaknesses

- The significant challenge in the region is the varied level of understanding of CE principles among government agencies and MSMEs. Some have shown a specific knowledge of CE principles and implementation, while others still see the CE as interchangeable with sustainability.
- Each AMS prioritises different aspects of the CE, such as waste management and ESG criteria. This disparity in focus can hinder the synergy needed for comprehensive CE implementation.
- MSMEs' highest priority in doing business is survival.
- The differing stages of CE transition among government bodies and MSMEs and the diversity of businesses and sectors make it challenging to standardise and implement effective regional CE strategies.
- MSMEs engage in diverse types of businesses and sectors.
- There is no specific MSME-targeted policy for the CE transition.

Opportunities

- There are substantial opportunities for global market demand for green and circular products, which are increasingly in demand. This trend presents a chance for MSMEs that utilise eco-friendly and traceable materials to expand their market reach, especially MSMEs that are supplying to the export market. Governments have the opportunity to support MSMEs throughout the value chain to meet international standards.
- Large corporations are increasingly mandated to adhere to sustainability and ESG reporting standards, which can positively impact smaller suppliers, such as MSMEs, by encouraging them to adopt similar practices.
- ASEAN has launched platforms such as ASEAN Access and ACESP to aid the transition to a CE. These platforms can support MSMEs by providing capacity-building opportunities, facilitating knowledge sharing, promoting CE materials and improving business processes through matchmaking activities.
- The creation of a centre of excellence for the green transition by the end of 2024 aims to offer coordinated and structured capacity-building to help MSMEs transform their businesses for a low-carbon CE.
- Companies that engage in recycling activities, such as collecting plastic packaging, waste and bottles, contribute to the country's transition to a CE while also generating employment opportunities. Initiatives such as PET Value facilities and waste banks exemplify public and community-driven efforts to create income through a circular approach.
- The Community Empowerment initiative assists MSMEs in transitioning to circularity by boosting their productivity and competitiveness through the adoption of sustainable practices. The available programmes highlight key sectors such as food processing, furniture, gifts, decor, handicrafts, agriculture and marine and aquaculture industries.

Threats

- The absence of established regulations and standards for the CE across the region could result in greenwashing, where companies make misleading claims about their environmental practices.
- Adopting circular practices could raise production costs for MSMEs, resulting in higher product prices and reduced competitiveness.
- Relying on funding and support from international organisations or donors for CE initiatives can be risky, as decreasing support may compromise these programmes' sustainability and long-term viability.
- Domestic demand for CE products remains low, primarily due to low consumer awareness of sustainability issues. Moreover, consumers in ASEAN are highly price-sensitive, often prioritising cost over the environmental benefits of products. This combination of factors contributes to the region's limited market penetration of circular products.
- There is low consumer preference for circular products.

The study, enriched with the SWOT analysis, validates the "Policy Recommendations on Enhancing ASEAN MSMEs' Participation in Circular Economy", endorsed by the ACCMSME in October 2023.

The policy recommendations outline eight key measures to accelerate MSMEs' adoption of the circular economy in ASEAN:

1 

Enhance awareness and capacity building:
Carry out targeted campaigns and programmes to increase MSMEs' understanding of CE practices, with the establishment of shared facilities to provide essential resources.

2 

Leverage ASEAN Access MATCH and LEARN:
Utilise these platforms to connect MSMEs with investors, buyers and mentors, facilitating knowledge sharing and support for transitioning to circular business models.

3 

Design and promote eco-labelling incentives:
Develop eco-labelling standards and incentives to enhance MSMEs' market competitiveness and encourage environmentally friendly practices.

4 

Create synergy with ASEAN mechanisms:
Utilise existing frameworks, such as ASEAN Circular Economy Stakeholder Platform (ACESP), to foster collaboration and knowledge exchange among MSMEs.

5 

Facilitate sustainable finance and investment:
Provide debt-free financing options, such as venture capital and grants, to support MSMEs in adopting sustainable practices.

6 

Promote market access:
a. Green procurement: Encourage government procurement of green products to create demand and support MSMEs.
b. Supply chain enhancement: Collaborate with larger corporations to integrate MSMEs into circular supply chains and expand market opportunities.

7 

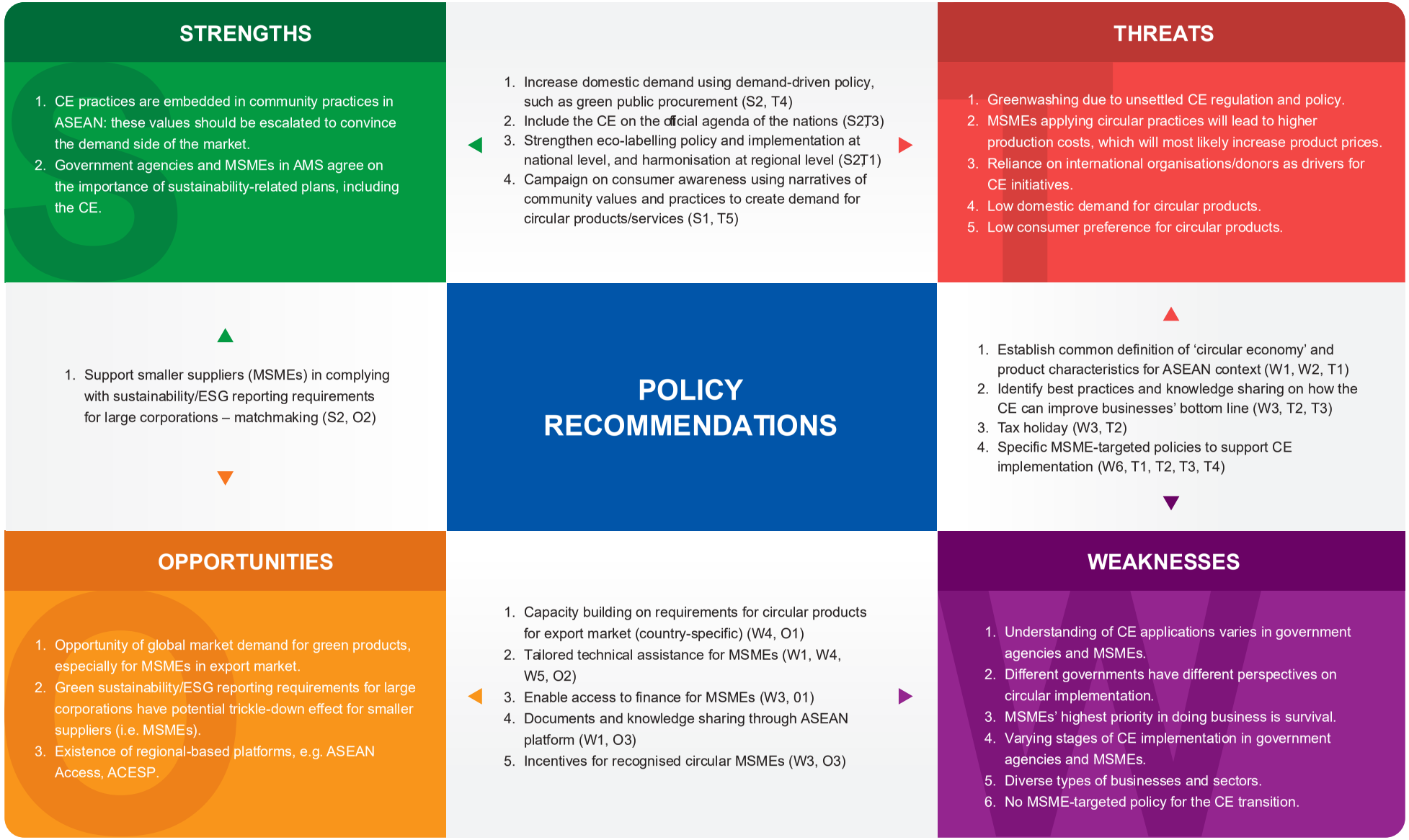
Improve multi-stakeholder collaboration:
Foster dialogues among MSMEs, private sector entities, governments and other stakeholders to develop innovative solutions and facilitate cross-border trade.

8 

Empower local communities:
Support MSMEs in adopting CE practices that align with local needs and resources, enhancing community engagement and sustainability.

The formulation of policy recommendations based on the SWOT analysis is illustrated below.

Figure 9 SWOT analysis and policy recommendations forcircular economy implementation by ASEAN MSMEs



5.2 Recommendations for policy-makers

The endorsed Work Programme to support the implementation of the Framework for Circular Economy for the ASEAN Economic Community reshapes this study's recommendations into the dimensions 'capacity building' and 'raising awareness'. Further, the study highlights finance, incentives, regulations and collaboration as areas for consideration when designing interventions and instruments for MSMEs transitioning to the CE.

1. Capacity building

There is a growing emphasis on promoting sustainability to MSMEs, with a stronger focus on climate change mitigation and adaptation along the value chains. ASEAN MSMEs are being increasingly integrated into broader environmental strategies, and significant efforts have been made to raise awareness about the importance of adopting green practices. However, greening MSMEs need a harmonised definition across AMS and collective thematic capacity building at the regional level as guidance for initiatives developed and implemented at the national level.

The definition of green MSMEs, particularly MSMEs transitioning to the CE, varies across AMS. Green is understood to be related to decarbonisation, deforestation and reduce–reuse–recycling business models. However, ASEAN-wide guidelines for green MSMEs are necessary, with clear targets, measurements and self-assessment criteria. Such guidelines will enable MSMEs to evaluate their environmental contributions throughout the value chain. Moreover, regional collaboration in developing capacity-building themes that integrate existing tools and business models will support policy-makers in advancing the CE transition for MSMEs.

a. Create synergy at the regional level on the development of guidelines and training experts

- Establish a platform (centre of excellence) to facilitate collaboration and knowledge exchange among policy-makers, CE experts and the private sector.
- Collaborate to develop training guidelines on the thematic areas of CE business models, sustainability reporting, practical guidelines on carbon accounting and sustainable finance and a guideline on CE certification, particularly for voluntary assessments. It is important that capacity building at the regional level provides an umbrella for defining activities in upskilling and reskilling talents at the national level to ensure the transition of MSMEs to CE business models and their participation in wider markets.

b. Technical guidance/assistance at the national level

There are three characteristics of the proposed technical assistance that can be attractive to MSMEs, which are:

- Technical assistance should be tailored based on MSME sector industries and their sizes; the strategy for micro-scale businesses will not be applicable or relevant to medium-sized companies.
- The focus of technical assistance needs to be on directly improving their bottom line. Given that MSMEs prioritise business survival, immediate and concrete impacts on business processes would significantly motivate MSMEs.
- Assistance for MSMEs in gaining more export markets. As global demand for circular products is increasing, AMS governments can seize these opportunities to assist MSMEs that produce export products and identify the respective technical assistance that they need. Domestic industries may then leverage these practices to implement circular principles.
- Hands-on training to achieve specific standards, such as eco-labels and sustainability reporting. MSMEs that achieve such maturity in terms of the CE can emerge as industry leaders through focused marketing and communication strategies, such as sustainability reporting.[43]
- Provide practical training to MSMEs that lack CE practices and have limited access to technology and finance; for example, provide a guideline on wastewater management for laundry services to prevent wastewater discharge into rivers.

2. Raising awareness on the impact of the circular economy on ASEAN trade

a. Knowledge sharing and best practices

MSMEs need a thorough understanding of the CE transition, focusing on adopting circular business models, lean management practices and innovative approaches to enhance sustainability and improve competitiveness.

[43] F. Gennari (2023). 'The transition towards a circular economy: A framework for SMEs', *Journal of Management and Governance*, Vol. 27. https://doi.org/10.1007/s10997-022-09653-6

To achieve holistic CE implementation among MSMEs, it is essential to conduct knowledge sharing on the CE concept. Some AMS (i.e. Indonesia, Thailand and Viet Nam) have conducted specific training and workshops for CE stakeholders, including MSMEs. As an initial part of adoption, socialisation and knowledge sharing are needed to build an understanding of CE concepts and practices. It is also important to highlight that the CE is not only about waste management, but requires a more holistic approach, including design for circularity and extending the lifespan of products. Therefore, a thorough understanding of the CE concept can prevent the adoption of practices only focusing on one aspect of the CE (e.g. waste management) and ensure more holistic measures.

Despite their familiarity with the term 'circular economy', MSMEs still lack an understanding of the benefits of CE business practices. MSMES must recognise that adopting these practices can yield significant advantages beyond environmental impact, including internal benefits such as cost savings, enhanced resource and material security and customer retention. Being aware of these benefits can simplify the transition process for MSMEs. [44]

To encourage this shift, sharing the experiences and success stories of fellow businesses can motivate other MSMEs to start their journey in the CE. Businesses recognise CSR as a key tool for advancing circularity through environmental protection and social inclusion. They collaborate with universities on research and development to create affordable recycling facilities for local communities. Additionally, companies use bite-size social media content to spread awareness about circularity, including the importance of reducing single-use plastics.

On the other hand, it is crucial to communicate CE regulations and policy frameworks to MSMEs regularly. Providing updates through social media, TV, radio and newspapers will help MSMEs stay informed about upcoming challenges and opportunities related to transitioning to a CE and how to access CE markets.

Best practices should be shared with specific sectors to ensure relevance and immediate applicability. This targeted approach helps MSMEs see practical benefits and effectively integrate CE practices. Insights at the micro level (strategies, resources, management and innovation) can guide MSMEs in developing actionable plans for adopting CE concepts.[45]

On another level, conducting regular CE forums can be a way of measuring progress and discussing it among MSMEs and other stakeholders. The World Circular Economy Forum has been conducted annually since 2017 and can be replicated at the national or regional level. Some initiatives have been undertaken in this regard, such as the Indonesia Circular Economy Forum (ICEF) since 2017 and the ASEAN Circular Economy Forum held in 2023.

[44] V. Rizos, A. Behrens, T. Kafyeke, M. Hirschnitz-Garbers and A. Ioannou (2015). *The Circular Economy: Barriers and Opportunities for SMEs*.
[45] T. Ahmadov et al. (2023). 'SMEs on the way to a circular economy: insights from a multi-perspective review', *Management Review Quarterly.* https://doi.org/10.1007/s11301-023-00380-2

b. Improving access to knowledge of the circular economy (ASEAN platform)

Establishing common facilities that give MSMEs access to essential resources and infrastructure is crucial for efficiently adopting CE practices. These needs can be channelled by optimising dedicated platforms owned by ASEAN, such as ASEAN Access and ACESP. ASEAN Access offers current information on market trends, training, knowledge sharing and virtual business-to-business opportunities across various sectors. Adding local language options helps MSMEs access this information independently.

ACESP provides information and updates on the CE, including knowledge products, events and regional progress. In the future, this platform can be developed as a hub for CE development in ASEAN. With a large database of best practices and policy guidelines, ACESP can help investors identify viable CE initiatives and assist CE stakeholders, including MSMEs.

c. Raising consumer awareness

Consumers play a crucial role in shaping demand for circular products and services. Raising awareness through education on sustainable consumption, environmental impact and the benefits of circular goods can shift consumer preferences.[46] The demand consumers generate for circular products and services incentivises MSMEs to invest in CE practices.[47] Policy measures and tools such as eco-labels can further enhance consumer understanding, while MSMEs can offer discounts, cash back or loyalty rewards to boost brand preference.

3. Enabling access to finance and sustainable finance

Securing adequate financial resources is key for MSMEs seeking to develop an innovative product within a CE. Finance has frequently been identified as a hurdle in implementing circular practices. The substantial upfront costs of 'green' investments emerged as a significant barrier. Access to finance and suitable funding avenues could be essential for MSMEs seeking to improve their sustainability performance and/or introduce innovations.

When it comes to financing, MSMEs face difficulties in obtaining the collateral or guarantees required by banks, which often consider MSME financing as a risky business. In the current context, investments in innovative business models that tackle linear production and long-term development challenges should be encouraged and supported within a cultural framework. Additionally, concerns about the viability of CE business models persist, as not all MSMEs are considered bankable. As a result, investors remain hesitant to invest in small CE business models.

There should be a focus on establishing appropriate performance metrics to evaluate such investments' economic and socio-environmental impacts. Awareness of available financing sources and innovative methods for training and upgrading workers' skills are also crucial aspects of establishing circular organisational capabilities.[48] Furthermore, it is essential to offer MSMEs a variety of finance instruments, including grants, low-interest loans and tax incentives for businesses willing to exceed regulatory requirements and invest in more sustainable technologies.

Sustainable finance instruments that integrate economic growth, environmental protection and social inclusion dimensions (impact investment fund, green microfinance, sustainability-linked loans) can provide MSMEs with additional capital access.

4. Incentives

Government incentives can be both fiscal and non-fiscal. Fiscal incentives, such as subsidies and tax holidays, demonstrate government support for CE practices and encourage MSMEs to invest in CE strategies. For instance, the Cambodian Government offers tax exemptions and deductions to MSMEs involved in waste recycling for costs related to technical training or technology procurement.[49]

For non-fiscal incentives, governments can create market demand for circular products from MSMEs through the facilitation of green public procurement. At the regional level, Malaysia MyHIJAU is an example of how

[46] A. Burkinshaw (2023). 'Practical tips on the circular economy for SMEs in 2023', *Sustainability News*.
[47] T. Ahmadov et al. (2023). 'SMEs on the way to a circular economy: insights from a multi-perspective review', *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00380-2
[48] F. Gennari (2023). 'The transition towards a circular Economy: A framework for SMEs', *Journal of Management and Governance*, Vol. 27. https://doi.org/10.1007/s10997-022-09653-6
[49] https://cambodia.acclime.com/guides/tax-incentives/

a country can synchronise various green standards into one label.[50] Encouraging larger companies to apply pressure on their supply chains can also support the development of domestic demand for circular products.[51]

Government recognition, such as the Asia–Pacific Economic Cooperation (APEC) Bio–Circular–Green Award for MSMEs,[52] could increase the motivation and interest of businesses in adopting CE practices.

5. Facilitating collaboration through matchmaking

Active engagement and collaboration programmes, such as matchmaking, can help MSMEs form alliances with industry associations and business networks, fostering joint initiatives and accessing valuable resources for embracing circular practices.[53] MSMEs aspiring to enter global value chains often face challenges such as understanding production processes in other parts of the world and navigating complex legal frameworks. MSMEs can benefit from peer-to-peer collaboration to understand internationalisation challenges. A dedicated platform showcasing successful MSME internationalisation stories, such as ASEAN Access, can facilitate peer exchange and partnerships.[54]

In addition, to achieve sustainable sourcing of materials and create easily recyclable or reusable products, MSMEs should collaborate closely with suppliers and integrate circular practices into their business relationships. Understanding supply chain procedures at the national level and beyond borders can help MSMEs establish circularity throughout the value chain.

6. Regulatory sandbox

The government can accelerate MSMEs' transition to the CE by providing a regulatory sandbox and support for frameworks, financing, technology and mindset shifts. Policy-makers need to understand the challenges MSMEs face and take strategic decisions to provide adequate support and guidance. The Thai Government has applied this type of regulation with the Saraburi Sandbox programme.[55] Embracing the interconnectedness of factors across different levels can facilitate the development of a supportive regulatory environment, motivating MSMEs to adopt circular practices. Advocacy and awareness initiatives will promote CE principles among MSMEs and wider communities.[56]

Other initiatives could involve streamlining regulatory requirements for MSMEs, offering incentives for environmental management systems and developing tailored compliance strategies for specific sectors.[57]

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50 https://www.myhijau.my/myhijau/
51 OECD (2021). *Facilitating the green transition for ASEAN SMEs: A toolkit for policymakers.*
52 https://www.apec.org/apec-bio-circular-green-award-2024
53 T. Ahmadov et al. (2023). 'SMEs on the way to a circular economy: insights from a multi-perspective review', *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00380-2
54 V. Rizos, A. Behrens, T. Kafyeke, M. Hirschnitz-Garbers and A. Ioannou (2015). *The Circular Economy: Barriers and Opportunities for SMEs.*
55 https://www.nxpo.or.th/th/en/23031/
56 T. Ahmadov et al. (2023). 'SMEs on the way to a circular economy: insights from a multi-perspective review', *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00380-2
57 OECD (2021). *Facilitating the green transition for ASEAN SMEs: A toolkit for policymakers.*

ANNEX


100%
RECYCLE
FABRIC

ANNEX 1
Case studies from circular MSMEs in ASEAN

source: www.nornorn.com

www.nornnorn.com

Thailand

Most hospitality businesses and consumers, both in Southeast Asia and worldwide, face challenges in accessing high-quality mattresses. Many are seeking flexible payment options to make these mattresses more affordable while also looking for sustainable solutions for disposing of used mattresses.

This also offers an excellent opportunity to explore innovative ways to recycle mattresses, making them financially viable and environmentally beneficial. By finding solutions to recycle these mattresses, we can significantly reduce the volume that ends up in landfills and mitigate the environmental impact caused by their disposal. This presents an opportunity for businesses to address these challenges and play a role in creating a more sustainable future.

nornnorn addresses mattress disposal issues by offering affordable, subscription-based access to quality mattresses. For home-use customers, the subscriptions last from 12 to 84 months, and for businesses, the duration is from 60 to 120 months, aligning with the hospitality industry's mattress replacement cycles. Upon completion of each subscription term, nornnorn retrieves the mattresses for recycling without any additional charges.

nornnorn's monthly subscription fee includes recycling costs, offering a hassle-free solution to mattress disposal. This ensures affordable recycling and helps reduce the need for new natural resources.

Consequently, this minimises future greenhouse gas emissions from energy-intensive extraction processes. Since the third quarter of 2018, nornnorn has offered services in Thailand and Indonesia. Overcoming various challenges, such as limited access to debt financing for product acquisition, the startup has creatively addressed this obstacle by issuing green bonds and digital investment tokens.

Research and development have been pivotal in nornnorn's journey. The startup has been awarded a USD 28,000 R&D grant from Thailand's Office of National Higher Education Science Research and Innovation Policy Council (NXPO), as well as two separate GBP 80,000 grants from NXPO and the UK Royal Academy of Engineering. nornnorn has earned numerous accolades globally, including winning Switzerland's World Tourism Forum Lucerne Startup Innovation Camp 2021 (Impacting Category) award and Thailand's National

Innovation Award 2022 (Social and Environmental Contribution Category). Its founder & CEO has also been recognised as a Tatler Asia Leader of Tomorrow (Generation T) 2020 and won the Family Business Successor of the Year Award 2022 from the Business and Professional Women Association of Thailand - Bangkok under the Patronage of HM the Queen of Thailand.

'Business should not only be for profit. It should also contribute to a better world.' - Nophol Techaphangam, founder & CEO of nornnorn

By implementing a circular economy, nornnorn has emerged as a leader in the mattress industry and is well-equipped to meet the growing demand for sustainable services from businesses and consumers alike.

Image source: facebook/nornorn

source: www.vnfoods.vn

vietnam food
SUSTAINING OUR FUTURE

www.vnfoods.vn

Viet Nam

Founded in 2014, Vietnam Food (VNF) has quickly become a pioneer in Viet Nam's shrimp co-products processing sector by revolutionising the seafood industry. VNF's business focuses on upcycling shrimp by-products into applicable and high-value products.

The story of VNF began with the shrimp industry in Viet Nam, a crucial economic sector with an export value of over USD 3 billion. However, as the industry has grown, it has generated significant waste and by-products, totalling over 2 million metric tons annually. This waste comes from the farming stage (such as moulting shells, wet sludge and dissolved nutrients in wastewater) and the processing stage (including shrimp heads and shells). Most of this waste is discarded directly into the environment, while some is turned into low-value products such as fertilisers. This waste causes severe pollution and hinders the shrimp industry's sustainable development, highlighting the urgent need for change to reduce the environmental impact and adopt a more sustainable approach.

On the other hand, shrimp heads and shells contain many valuable nutrients such as chitin and protein that can be converted into a wide range of bioactive ingredients applicable in a variety of industries (Food, Supplement, Pharmaceutical, Pet Care, Agriculture, Industrials, etc.).

Therefore, VNF has established a mission to capitalise on this untapped potential, offering cost-effective alternatives to conventional practices. Inspired by countries like Norway, where by-product value surpasses the original value, VNF sees an opportunity to revolutionise Viet Nam's agricultural supply chain. With agriculture being a cornerstone of Viet Nam's economy, VNF's primary goal is to reduce reliance on chemicals and depleting natural resources (e.g. fish meal, fossil fuels) by introducing bio-solutions that support more sustainable farming practices.

In 2014, the company established a highly reliable supply chain for its products, leading to its emergence as a prominent player in the feed attractants market by 2016. Building on this success, VNF expanded its product range in 2018 to include high-value food ingredients and biopolymers. Since 2019, VNF has been dedicated to

introducing cutting-edge biotechnologies to boost its sales both domestically and internationally. Impressively, from shrimp heads alone, VNF now produces 80 different products with a high utilisation rate of 70-80%, including bio-nutrients (shrimp peptides), biopolymers (chitin & chitosan), food ingredients and natural antioxidants (astaxanthin). By 2024, their production had reached a staggering 50,000 metric tons annually.

Most shrimp by-product processors worldwide typically collect only one component, such as protein or shell, and discard the rest, utilising only 4-30% of the shrimp by-products. This approach results in high chemical usage and heavy pollution, with the production of 1 ton of chitin leading to the release of over 330 tons of highly polluted wastewater. This method is not thorough or sustainable.

Unlike conventional methods, VNF utilises a comprehensive circular economy (CE) approach that employs shrimp heads and discarded shells to reduce waste. Through advanced research and development, it has reduced freshwater usage by 60-80% and decreased contamination levels. Additionally, VNF reuses nutrient-rich water outflow in its processing and utilises it to develop probiotic products, aiming to conserve water and energy. The CE approach taken by VNF emphasises transparency in the supply chain, cost and price competitiveness, and quality assurance through certifications such as FSSC, ISO, GMP, HACCP, Halal, EU Code and FDA and highlights the overall benefits of the company's eco-friendly solutions to customers.

Like other MSMEs, especially technology enterprises with the heavy initial investment required, VNF faces challenges in terms of financing barriers. However, it takes a different approach. Instead of relying on a single funding stream, VNF divides its funding into stages, ensuring that each phase aligns with its goals. In recognition of its sustainable and innovative model, it has received support from the government, minor contributions from global NGOs and private capital from shareholders. Specifically, it has secured funding from participating in projects organised by the Ministry of Science and Technology of Vietnam, the Agency for Enterprise Development under the Ministry of Planning and Investment, and USAID Improving Private Sector Competitiveness. This funding is used for research and development, production facilities, international quality certification, global partner connections and more, showcasing the potential for added-value impact and delivering on its sustainability commitments on a broader scale.

'The circular economy will become a must, not an option. Sustainability is compulsory, and SMEs need to adapt as soon as possible. There is no time to waste.' - VNF Strategic Team.

The message from VNF emphasises the urgency and inevitability of adopting CE sustainability while urging new SMEs to prioritise these practices immediately. The main lesson from VNF is the innovative use of what others perceive as 'waste', turning it into valuable resources, contributing to sustainable development, inclusive business and a CE model.

Image source: www.vnfoods.vn

econox

www.econoxlaos.com

Lao PDR

Econox is a sustainability consulting firm that offers services to a broad spectrum of clients, including government agencies, local communities and the private sector. The firm operates in various areas, such as impact assessment and environmental campaigns, and develops tools and standards for sustainability practices.

Founded in 2018 and based in Lao PDR, Econox aims to contribute to environmental protection and sustainability practices within the specific context of Lao PDR. Currently, the firm has 6 full-time employees and 28 part-time young journalists who are working on a project called Econews.

Though Econox does not directly focus on the 9R circular economy principles, it is an enabler for the transition towards CE and green business in general. One of Econox's most notable projects is its support for the Plastic Free Lao PDR Label. It helps companies reduce single-use plastics (SUPs) in their services and operations to enable a circular ecosystem.

'The Plastic Free Lao PDR Label is coordinated by Lao PDR Small and Medium Enterprise Service Centre (SSC), in collaboration with the Lao Hotel and Restaurant Association. In Plastic Free Lao PDR, Econox provides several services:

1. Standard audits to ensure businesses meet the standard for receiving the plastic-free label.
2. Consultancy on reducing single-use plastics (SUPs) and green business marketing through social media.
3. Collecting data on SUP consumption among the members for use in the SUP reduction strategy.
4. Offline and online training, guidance and advice for businesses in the hospitality sector to adopt SUP-free service and operation.
5. Creating initiatives to help all members reduce SUPs (e.g. through the Rent Your Cup service).'

Econox collaborates closely with the Ministry of Natural Resources and Environment and the Ministry of Industry and Trade on some of its projects. One of their collaboration arrangements is the Green Label project, which is scheduled to be launched soon. The Green Label will provide accredited assurance for businesses that adhere to sustainability principles, enabling them to communicate their environmental performance effectively to customers.

Image source: facebook/econoxlaos

For the last few years, the Government of Lao PDR has taken an interest in the sustainability agenda. However, Econox has found it challenging to run the business given the limited incentives for companies to operate in this field. Additionally, the strict legal requirements and permissions to operate are seen as factors that inhibit the company's growth. On the bright side, along with the rising interest in sustainable development from the international community, grants are now more accessible for Econox. Econox is supported by grants from external organisations such as UNDP, GIZ and USAID.

BAMBUHAY
SAVING THE PLANET, SAVING LIVES

www.bambuhay.ph

The Philippines

Bambuhay is a unique circular business that combines circular input production and a subscription model to ensure responsible post-consumption behaviour related to its products. The enterprise is based in the Philippines and aims to combat plastic waste issues in a country known as one of the world's biggest plastic polluters.

Established in 2019, Bambuhay offers products such as a plantable toothbrush that can be grown into a tree or bamboo after three months of use, natural carbon-infused soft bristles, a reusable bamboo straw, bamboo vinegar, a bamboo handle, and a bamboo casing to minimise water absorption.

As a circular enterprise, Bambuhay focuses on creating products from sustainable materials and runs a revolutionised product subscription business model for toothbrushes. Bambuhay has created a circular subscription to plantable toothbrushes, where customers can use toothbrushes for three months and then return them through collection points provided in public areas. The collected used toothbrushes are then replanted by the community in designated sites. Each planted toothbrush has a QR code to allow customers to monitor growth. In addition to toothbrushes, Bambuhay also produces other bamboo-based products, such as drinking straws made of small bamboo poles that are rarely used and wasted by bamboo kraft makers. Furthermore, they utilise bamboo leaves as tea flavouring, and the by-products are processed into bamboo-activated carbon, which can be useful as an ingredient for derivative products.

As a business, Bambuhay exists because the founders are environmentalists who aspire to create sustainable solutions from local potential. The founders created toothbrushes as the main products because they faced an allergy that motivated them to use better and safer toothbrushes. Therefore, their concern is to make a product that could favourably impact the environment and consumers' health.

Image source: www.bambuhay.ph

Furthermore, the company contributes to land restoration by planting used bamboo toothbrushes. The business has garnered significant attention for its unique and innovative approach, providing valuable experience through international visits to learn best practices in circular business models from other countries.

As a social enterprise, Bambuhay perceives profits as coming after the impacts. Until today, the company has sold 1.4 million toothbrushes, meaning that at the same time, it prevents plastic waste from used toothbrushes. The business has had a tangible and beneficial effect on 13,910 farmers, offering them a more stable and sustainable income source and lifting 68 families out of poverty. Additionally, its efforts have contributed to the prevention of approximately 1,100 metric tons of plastic waste and the planting of about 40,000 trees and bamboos.

kloth

www.klothcircularity.com

Malaysia

In the age of fast fashion, the rapid production and consumption of clothing have led to an enormous amount of textile waste. Kloth Circularity (Kloth) is a Malaysian social enterprise striving to keep these textiles away from incinerators and landfills. Founded in 2013 by two women, the enterprise has since expanded into Singapore, Australia and the UAE.

The Kloth initiative aspires to serve as a driving force for advancing the textiles, clothing and plastics circular economy. It is founded on the 5R philosophy of CE: 'Rethink, Reduce, Reuse, Repurpose, Recycle'. Kloth has established and cultivated collaborative value chains with diverse stakeholders, offering a comprehensive textile solution encompassing supply, production, upcycling and recycling. This approach considers environmental, economic and social impacts to ensure a sustainable and circular textile industry. Under Kloth's umbrella, a diverse portfolio of cause-driven brands exists, such as Kloth Cares, Kloth Woman Up, Kloth Textile and Kloth Wear.

Kloth Cares, Kloth's recycling initiative, has teamed up with Life Line Clothing Malaysia (LLCM), a certified textile recycler in Malaysia. It aims to collect and manage textile and fabric waste from designated recycling bins across Malaysia. At LLCM, the collected textiles are sorted and graded to determine their condition (Grade A and Grade B) for potential reuse, repurposing or recycling.

Kloth Cares has encouraged corporations, industry players, government agencies, academic institutions, NGOs and others to be mindful of their clothing consumption and disposal. Since August 2018, it has recycled over 8.2 million kilos of textiles and clothing waste, installed over 500 recycling bins, and organised over 1,000 recycling campaigns across Kuala Lumpur, Selangor, Melaka, Negeri Sembilan and Johor. Kloth aims to divert 4 million kilos of unwanted textiles and clothing from incinerators and landfills annually.

Kloth's impact goes beyond the environment to make a meaningful difference in society through its brand, Kloth Woman Up. Launched in 2020 during the pandemic, Kloth Woman Up advocates for the #SHEconomy by offering job opportunities to marginalised, struggling and vulnerable women. This initiative aims to help

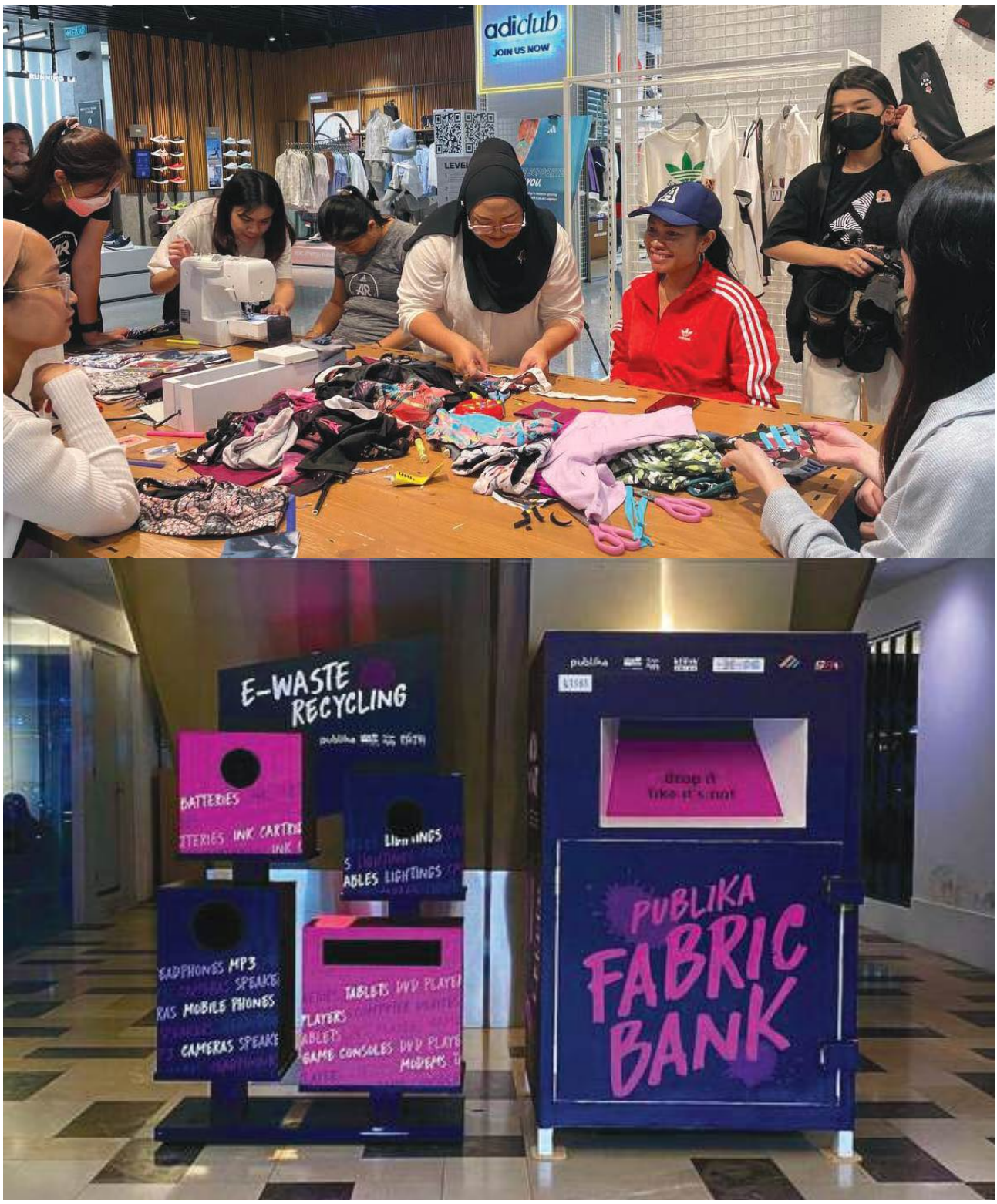


Image source: facebook/Kloth Circularity

these women earn fair wages and enhance their living standards. The Kloth Woman Up movement has already positively impacted over 50 women in Malaysia and Singapore, providing training and employment opportunities. It produces upcycled merchandise such as reusable face masks, pouches and tote bags and has paid up to USD 50,000 in wages.

Lastly, Kloth has continuously developed the brands Kloth Textile and Kloth Wear to provide sustainable solutions for textile supply and garment production, particularly in the activewear and corporate uniform sectors. With over 30,000 products made from sustainable fabric sewn and sold, it has recycled over 310,000 loose plastic bottles into higher-value products.

plana

www.plana.co.id

Indonesia

Plana (Plastic for Nature) is an Indonesian-based social enterprise specialising in producing building materials made from recycled plastic. The company employs innovative techniques to combine plastic waste and husks, resulting in the creation of 'Plana Wood' products such as tiles, planks, decking and beams. These products are commonly used in construction for roofing, flooring and wall applications. Plana is dedicated to serving as a pioneering enterprise that offers a viable solution to the plastic waste predicament while providing the industry with environmentally sustainable materials.

Plana works in line with circular economy principles, particularly in utilising plastic waste as materials and giving a new life to materials as products, which covers the principle of recycling. Plana Wood contains at least 80 per cent recycled content. The business has had an impact on recycling more than 400 metric tons of waste, preventing the use of materials equivalent to 1,500 trees, and supporting the livelihoods of more than 100 farmers.

Indonesia was previously known as one of the significant contributors to plastic waste worldwide. The country has very limited infrastructure for collecting and processing post-consumer waste. Nevertheless, businesses like Plana see this unmanaged waste as an opportunity. With their expertise and cutting-edge technologies, they add value to their products and maintain exceptional quality, enabling their products to compete effectively with conventional ones.

'..make your product sustainable, don't (just) make a sustainable product' - CMO of Plana.

Plana's endeavour to advance circular principles within the business sphere has met with a number of challenges. Yet its determination is rooted in the idealistic pursuit of creating influential, sustainable business practices with a focus beyond mere profitability. The founders of Plana are firm in their conviction that their adherence to circular economy principles will yield future advantages, envisaging the rise of the circular economy as a concept on par with digitalisation. Plana is also confident that future market trends will favour circular products

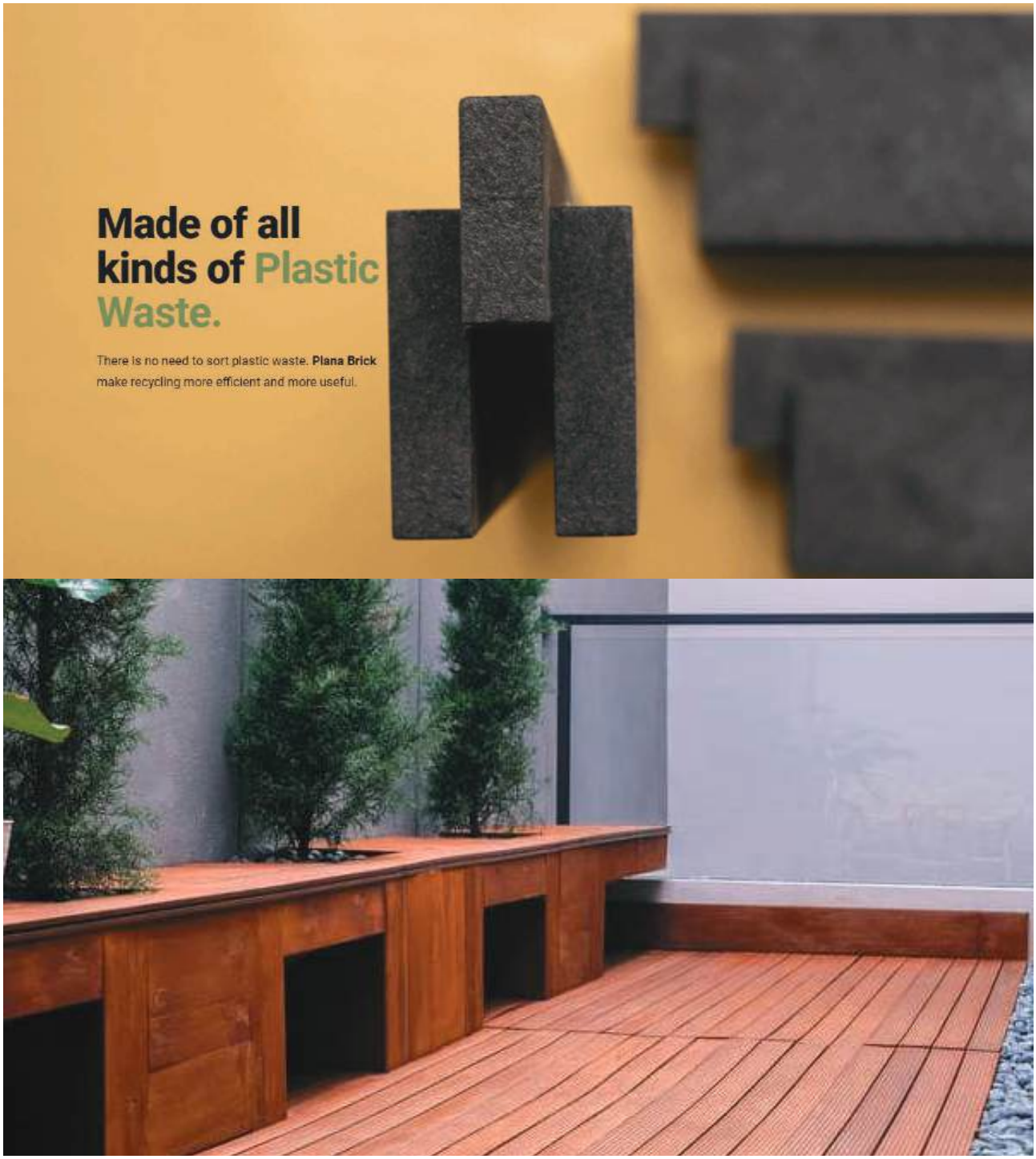


Image source: www.plana.co.id

underpinned by growing global concerns about the triple planetary crisis. Moreover, the distinct positioning of the company's products contributes to the uniqueness and appeal of its business. Despite the scarcity of sustainable construction materials available on the market, society's and developers' rising awareness of sustainability reinforces its pioneering stance. Notably, this self-motivated approach has enabled Plana's business model to operate independently, without external financial backing, at least until 2024 (bootstrapping).

Promoting circularity, Plana has received recognition such as Tempo Indonesian Circular Economy Awards 2022, Innovation in Circular and Recycled Product Awards from the Indonesian Ministry of Public Works, and Outstanding Achievement & Continuous Contributions to Advance Indonesia SMEs from the Indonesian Ministry of Cooperatives and SMEs.

IG @tebalik.plastik

Brunei Darussalam

Tebalik Plastik is a youth-led enterprise based in Brunei. The organisation's business model revolves around recycling plastic waste. Founded in 2022, Tebalik Plastik specialises in the collection and repurposing of plastic waste into new products, such as coasters, while also providing environmental assessment services to other organisations. The company targets consumers who are predominantly young professionals with a higher educational background and who are more inclined towards sustainable practices.

Despite being relatively new, Tebalik Plastik has implemented several initiatives, including collaborating with local communities to collect plastics and transform them into bespoke products, and offering consultancy on sustainability practices. The activity is inspired by Precious Plastic, where the collected plastic waste is processed using appropriate technology into products such as coasters.

The inception of Tebalik Plastik was motivated by a dual mission to advance sustainability and tackle the urgent problem of plastic waste in Brunei, while also granting the founders greater independence in their work environment. Both objectives are equally important to the founders, enabling them to achieve a better work-life balance.

Tebalik Plastik has encountered several operational obstacles, such as greater internal transparency and limited funds for operational and technological expenses. To address the latter, Tebalik Plastik must depend on competition, grants and personal savings to sustain the organisation. Furthermore, the firm relies heavily on international grants to fund its activities. Tebalik Plastik has also observed sceptical attitudes from the community regarding the relevance of their project.

'It's been suggested that some individuals consider this project unimportant because it encroaches on their convenience, with the health of the Earth not being a high priority for them.' - Tebalik Plastik.

Image source: facebook/Tebalik Plastik

Tebalik Plastik discovered that Brunei's Government has proactively implemented waste management and sustainability practices. For instance, in 2011, the Government introduced the 'No-Plastic Bag Weekend Initiative' to encourage consumers to bring their reusable bags when shopping, which evolved into the 'No Plastic Bag Everyday Initiative' in 2018. However, it is worth noting that this initiative has only been rolled out in a limited number of large supermarkets. Additionally, the Darussalam Enterprise (DARE) programme provides valuable workshops and training to businesses on sustainable practices and sheds light on various initiatives that champion sustainability and circular economy efforts.

www.kfp.com.kh

Cambodia

Mangoes are a significant commodity in Cambodia, popular within the country, and exported to other nations. Kirirom, a local Cambodian company, specialises in producing dried mangoes from the local variety known as Keo Romet.

Kirirom is committed to preserving the value of mangoes by addressing the issue of food waste. Since ripe mangoes spoil quickly, Kirirom saw an opportunity to prolong their consumption by drying them.

The circular principle is at the core of Kirirom's business model, as it strives to maximise the use of cascaded mango production. While the main product is mango flesh, the production of dried mangoes also generates a substantial amount of peel. Instead of discarding this peel, it is repurposed into compost, animal feed and biogas. In addition to optimising material usage, Kirirom also integrates sustainable practices such as using solar panels in production, recycling production water and harnessing gas from wastewater management to power the boiler.

Looking ahead, Kirirom aims to transition the farm into a fully organic one and intends to participate in future carbon reduction and carbon credit initiatives.

The founders of Kirirom also recognised the importance of minimising their business's environmental impact. They believed embracing circular practices in their operational processes could enhance the company's reputation within the community and among customers, particularly as it ventured into European markets. The company decided to optimise its production line by recognising the potential of utilising mango by-products. These by-products, specifically mango peel, were deemed valuable as they could be transformed into compost fertilisers, animal feed and biogas, complementing the energy requirements for production.

Image source: www.kfp.com.kh

However, Kirirom has faced challenges in implementing these initiatives. High investment costs, compounded by the absence of financial support from the Government, posed significant obstacles. Additionally, the limited product market and stringent requirements in export markets further complicate matters. As a result, the business still needed technical assistance and capacity building to navigate these challenges effectively.

ANNEX 2
Methodology and findings

1. Quantitative analysis:

The quantitative component of the study involved responses from 655 MSMEs across ASEAN. Indonesia's unique economic, environmental and industrial context might influence the responses in ways that are not entirely representative of other member states. Therefore, while the quantitative data provide a substantial basis for analysis, the results should be interpreted with an understanding of this potential bias.

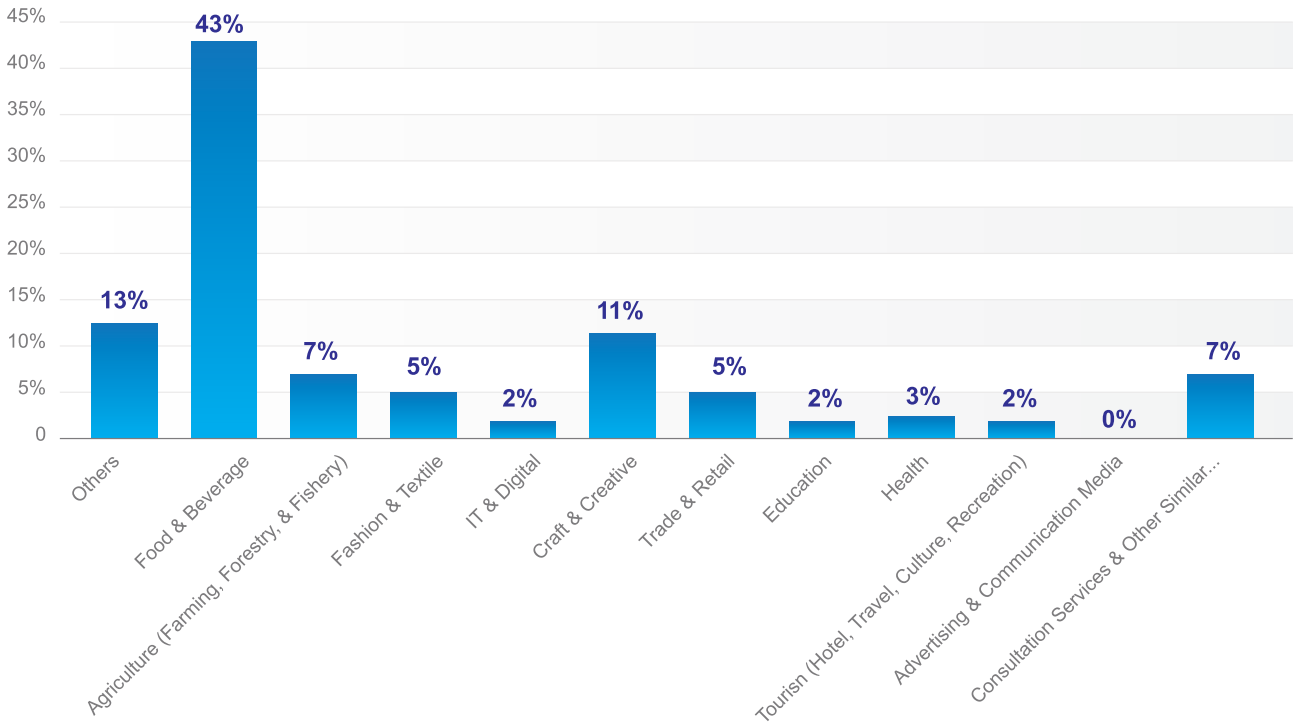
2. Qualitative analysis:

The qualitative analysis was conducted through online interviews and open-ended questionnaires with 12 government bodies from various ASEAN Member States and 8 MSMEs identified as circular enterprises. The limited number of government and MSME participants and the geoFigure and sectoral diversity of these participants may not fully capture the vast array of perspectives and experiences related to circular economy practices across the entire region. Moreover, the reliance on online methods, although necessary, might limit the depth of engagement compared to face-to-face interactions, potentially affecting the richness of the data collected.

3. MSME classification:

Using the OECD criteria, this study classifies MSMEs based on the number of employees. This approach does not consider other potentially significant factors, such as annual turnover, industry type or capital investment, which might influence an enterprise's ability to adopt circular economy practices. The OECD criteria provide a standardised method for classification but may not fully reflect the operational and economic realities specific to ASEAN MSMEs. This could impact the applicability of the findings to all MSMEs within the region.

Figure 10 Distribution of sectors identified on 9R practices

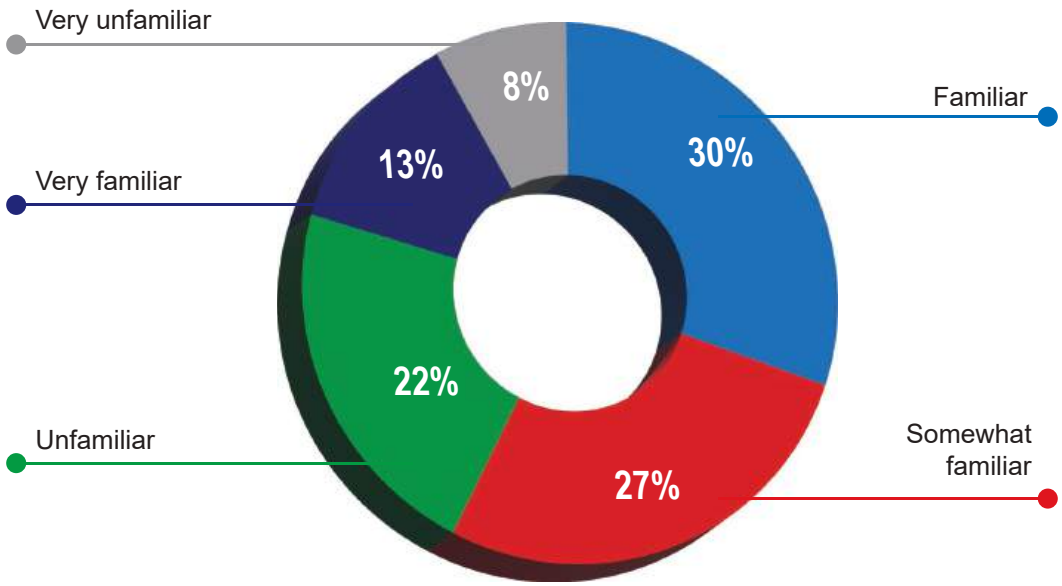


The study identifies MSME practices from multiple sectors, including Food and Beverage, Agriculture, Fashion and Textile, Craft & Creative Industry, and Trade & Retail. Notably, 43% of these respondents are from the Food and Beverage industry, making it the most represented sector. This is followed by the Craft and Creative Industry, which accounts for 11%, and Agriculture which represents the same percentage as Consultation Services (7%).

By evaluating MSME practices against these nine principles, the study assesses how deeply CE strategies are integrated within business operations. This approach highlights areas where ASEAN MSMEs excel and identifies opportunities for wider application of circular practices.

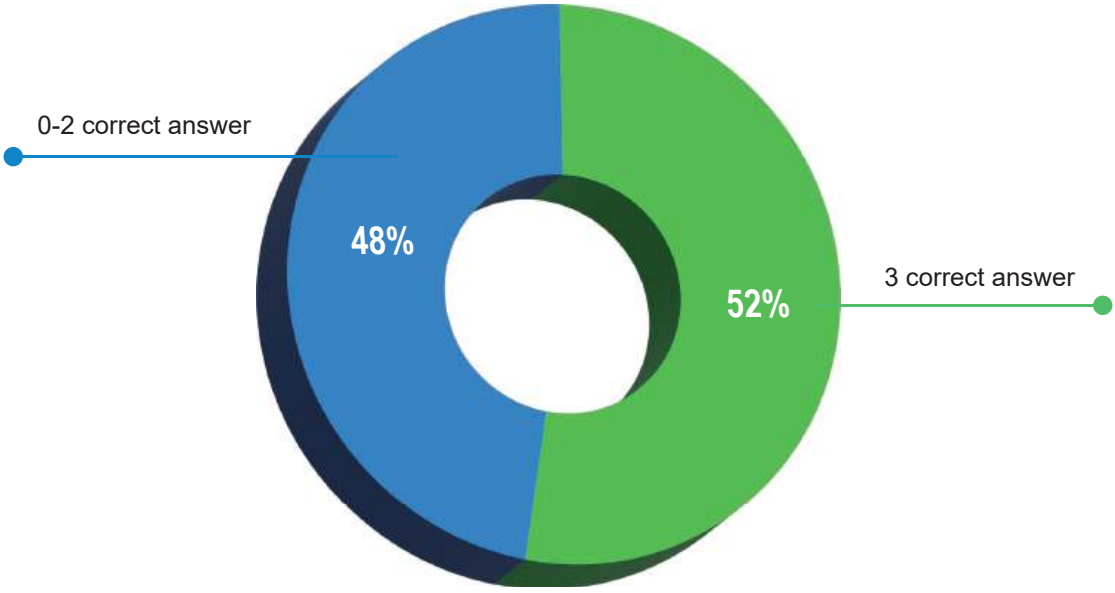
The survey, comprising 15 questions, was designed to identify circular practices implemented within businesses. It covers a range of activities from the 9R framework, such as digitalising transaction systems, optimising materials, improving repairability and collecting and recycling waste.

Figure 11 MSMEs self-assessment on familiarity towards circular economy



The survey assessed familiarity in two steps. Firstly, it will provide a self-assessment for the MSMEs to claim their familiarity with the term ‘CE’. In general, the term ‘circular economy’ has drawn the attention of MSMEs, given that among 655 respondents, 70% of MSMEs are somewhat or very familiar with the term. Meanwhile, 30% of respondents admitted to being unfamiliar and very unfamiliar with the term CE.

Figure 12 MSMEs knowledge test results on familiarity with circular economy



Secondly, the survey delved into the familiarity of MSMEs regarding CE by posing three specific questions designed to measure their grasp of the concept, particularly among those MSMEs that claimed to be somewhat familiar with the term circular economy. The results indicated that among 459 respondents, 52.5% of MSMEs demonstrated a solid understanding, as evidenced by their ability to answer all three questions correctly.

Self-assessment scoring on 9R identification

The survey, comprising 15 questions, was designed to identify circular practices implemented within businesses. It covers a range of activities from the 9R framework, such as digitalisation of transaction systems, optimisation of materials, repairability, and waste collection and recycling. To assess the integration of these practices, the survey employed a scoring system based on the extent of adoption of 9R principles within the business processes.

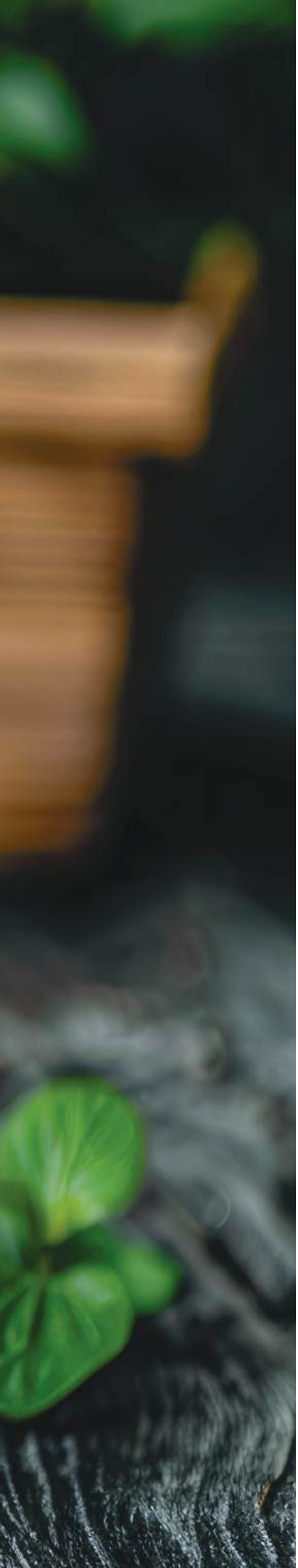
A score of 2 points indicates that the business has implemented the principles in more than 50% of its processes and activities. A 1-point score suggests that implementation is still limited, indicating that the business is in the transitional phase of adopting these practices. A score of 0 points means that the practice is not implemented at all.

Lessons learned from the study

- Conducting interviews with governments can be challenging due to scheduling and managing the study's timeline. One option for in-depth information-sharing is providing written questionnaires with descriptive questions, which allows the informants to collect more information.

- The survey used a self-assessment method that awards points based on the answers provided by MSMEs. The final points will show the current state of MSMEs regarding their CE implementation. This kind of assessment could incentivise MSMEs to fill out the survey, giving mutual benefits from the process of the quantitative method.

- In future, survey questions should be more detailed and specific when the target respondents come from a range of backgrounds, as the contexts of MSMEs from various sectors are different in terms of business and practices. For example, Food and Beverages might not have repair practices in the business process; hence, the question about repair activity is not required for respondents from the F&B sector.



ANNEX 3
Success story

Success story from Green Blue LLC: Advancing resource efficiency and cleaner production in Azerbaijan

In the heart of Azerbaijan, Green Blue LLC has emerged as a beacon of sustainability and innovation. The company specialises in producing wood pellets from waste materials, and it exemplifies the principles of resource-efficient and cleaner production (RECP) under the EU-funded EU4 Environment initiative. This narrative explores how Green Blue has successfully implemented RECP methodology of the United Nations Industrial Development Organization (UNIDO) to enhance its operations, reduce environmental impact, and foster economic growth.

Founded in 2007 and located in Mingachevir, Green Blue LLC has a clear mission: transforming wood waste into high-quality pellets while minimising environmental harm. The company sources its raw materials from the sanitary felling of dry, emergency, and diseased trees in local parks, ensuring its production process is sustainable and resource efficient. With a production capacity of 1,500 kg per hour, Green Blue employs 14 dedicated staff members and adheres to various certifications, including ISO standards.

The RECP methodology integrates preventive environmental strategies into production processes, products, and services. For SMEs like Green Blue, adopting RECP practices means reducing production costs, enhancing competitiveness, and promoting environmentally friendly practices. This initiative not only aligns with the principles of the circular economy but also helps SMEs navigate the challenges of modern production.

In 2024, Green Blue participated in the RECP Demonstration Project, which involved a comprehensive assessment of its operations. The project, implemented by UNIDO, aimed to identify opportunities for improving resource efficiency and reducing environmental risks. Following the assessment, the RECP team proposed several options, two of which were prioritised by Green Blue for implementation.

Prioritised RECP options

1. Investment in a belt drying machine

One of the key recommendations was for Green Blue to invest in a low-temperature belt dryer. This equipment would enable the company to process raw materials consistently with the required humidity levels. Previously, the lack of a drying system limited the types of raw materials the company could accept, particularly those with high moisture content.

The advantages of a belt drying system are manifold. It is known for its high productivity and low energy consumption, making it an ideal choice for Green Blue. By implementing this technology, the company could potentially double its production capacity, leading to increased output and reduced operational costs. This investment aligns with the RECP principles and positions Green Blue for future growth in a competitive market.

2. Dust collection and raw material recovery

The second prioritised option involved the installation of a dust collection system. During the production process, a small amount of dust is generated, which can lead to emissions and waste. By capturing this dust, Green Blue can significantly reduce its environmental impact while recovering valuable raw materials.

The dust collected during processing can be reintegrated into the production line, promoting a circular economy approach. This minimises waste and maximises resource utilisation, contributing to the overall sustainability of the production process. Implementing this system will enhance the company's operational efficiency and environmental performance.

Green Blue began implementing these changes following the assessment and prioritisation of the RECP options. The company's management and staff were actively involved in the transition, ensuring everyone understood the required benefits and operational adjustments.

The anticipated outcomes of these initiatives are significant. Green Blue is set to increase its production capacity by investing in a belt drying machine, allowing it to meet growing market demands while maintaining its commitment to sustainability. The dust collection system will improve the company's environmental footprint and reduce costs associated with raw material procurement.

Image Source: EU4Environment/UNIDO

Green Blue LLC's journey [1] toward resource efficiency and cleaner production exemplifies the positive impact of the RECP methodology in Azerbaijan. By prioritizing sustainable practices and investing in innovative technologies, the company is enhancing its competitive advantage and contributing to the broader goals of environmental preservation and economic growth.

The success of Green Blue serves as an inspiring model for other SMEs in the region, demonstrating that it is possible to achieve profitability while prioritising sustainability. As the company continues to evolve and adapt to the changing landscape of production, it remains committed to its mission of creating a greener, more sustainable future for Azerbaijan.

The story of Green Blue LLC is just one of many within the EU4Environment initiative aimed at fostering a greener economy in Eastern Partnership countries. As more companies adopt RECP methodologies, the collective impact on environmental sustainability and economic resilience will continue to grow, paving the way for a more sustainable future.

For more information about the RECP initiative and its impact on businesses in Azerbaijan, visit the EU4Environment program, www.eu4environment.org.

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*This article has been adapted with permission and acknowledgement from the United Nations Industrial Development Organization (UNIDO).

The European Union for Environment (EU4Environment) Action. (n.d.). *Greening the industry: Azerbaijani pellets producer Green Blue LLC benefits from taking part in the EU4Environment company assessment*. Retrieved from https://www.eu4environment.org/news/greening-the-industry-azerbaijani-pellets-producer-green-blue-llc-benefits-from-taking-part-in-the-eu4environment-company-assessment/

[1] https://www.eu4environment.org/app/uploads/2024/09/EN-RECP-Green-Blue.pdf

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