Joint Committee on Climate Change

Building Supply Chain Resilience:

Insights into Greening Value Chains for ASEAN

A Collective Intelligence Playbook

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The Joint Committee on Climate Change (JC3)—co-chaired by BNM and Securities Commission Malaysia—was established in September 2019 as a regulator-industry platform, aiming to pursue collaborative action for building climate resilience within the Malaysia financial sector. Members comprise senior officials from Bursa Malaysia and 21 financial industry players, all sharing a common commitment to both financing green and greening finance. Learn more at www.jc3malaysia.com

Building Supply Chain Resilience: Insights into Greening Value Chains for ASEAN

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OBJECTIVES

This Playbook serves as a guide for businesses, industry players, multilateral development institutions, and policymakers in designing programs that support businesses to accelerate decarbonization and strengthen supply chain resilience.

Drawing from Malaysia's experience, it highlights strategies and key building blocks to motivate and enable businesses—particularly small and medium-sized enterprises—to measure, track, manage, and report their greenhouse gas emissions, an essential first step toward building low-carbon competitiveness and supply chain resilience in export-oriented markets. It also offers insights into the necessary tools, training, and financing—and how such arrangements can be scaled in other jurisdictions.

By harnessing the collective intelligence of multiple stakeholder groups and through a close examination of the Greening Value Chain Program of the Joint Committee on Climate Change (JC3), this Playbook bridges the gap between a broad strategic vision and the tactical implementation required to ensure that existing policy tools, services, and interventions are not merely available but truly accessible to businesses.

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ABBREVIATIONS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BNM	Bank Negara Malaysia (The Central Bank of Malaysia)
ESG	environmental, social, and governance
GHG	greenhouse gas
GLCs	government-linked companies
GVC Program	Greening Value Chain Program
JC3	Joint Committee on Climate Change
LCTF	Low Carbon Transition Facility
R&D	research and development
RM	Malaysian ringgit
ROI	return on investment
SMEs	small and medium-sized enterprises
SOE	state-owned enterprise
UNDP	United Nations Development Programme

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EXECUTIVE SUMMARY

Small and medium-sized enterprises (SMEs) constitute more than 99% of enterprises across member states of the Association of Southeast Asian Nations (ASEAN), driving employment, local innovation, and regional supply chains. As various ASEAN member states progress toward net-zero targets, there is broad consensus that decarbonizing SMEs is essential to sustaining regional competitiveness and meeting global environmental commitments. Yet, many SMEs face cost pressures, differing guidance, and limited market incentives, which together hinder meaningful climate action.

In Malaysia, for instance, SMEs contribute about 40% of gross domestic product and 12.2% of total exports, underscoring their substantial influence on the national economy. The Government of Malaysia has pledged to reduce its carbon intensity by 45% (compared to 2005 levels) by 2030 and reach net-zero greenhouse gas emissions by 2050, explicitly recognizing that whether SMEs thrive or lag in their low-carbon transition will largely determine the country's success in meeting those climate targets. Despite several high-level commitments and policy frameworks, tactical specifics often determine whether SMEs capitalize on decarbonization opportunities or classify them as burdens.

This Playbook draws on Malaysia's experience and aims to guide businesses, industry players, multilateral development institutions, and policymakers across ASEAN in developing practical, evidence-based interventions that motivate and enable SMEs to measure, track, manage, and report their greenhouse gas emissions, thereby anchoring the region's competitive edge in a rapidly greening global market.

Despite their strategic importance, SMEs face a complex landscape of climate regulations, limited technical capacity, and constrained access to climate finance. Early results from the Joint Committee on Climate Change's Greening Value Chain (GVC) Program suggest that when SMEs are given the right mix of support, they are more likely to take meaningful first steps toward adopting greener and more sustainable practices.

Nearly a third of SMEs onboarded into the GVC Program began actively measuring and reporting their carbon footprint, with some reporting immediate operational improvements such as lower electricity bills, improved resource efficiency, or increased interest from export clients. These early adopters found that even partial data collection helped identify carbon hotspots and cost-saving opportunities, reinforcing the value of emissions tracking as a business decision, not just a compliance exercise.

However, uptake remains uneven. Some SMEs disengage after initial onboarding, citing a lack of clear next steps, limited buyer pressure, or insufficient incentives. The usage of climate transition loan facilities was viewed as more complex compared to conventional facilities, possibly due to lack of familiarity with administrative processes and procedures.

These results underscore a central theme of this Playbook: Successful decarbonization hinges not just on the availability of programs but on deliberate delivery mechanisms, clear incentives, and sustained engagement across the supply chain ecosystem. By presenting these insights, this Playbook provides a roadmap for designing effective SME decarbonization programs and policy interventions that are truly accessible, actionable, and scalable.

To better understand how to motivate and enable SMEs, this study employed a multipronged, inductive, and qualitative research approach, engaging over 50 respondents through in-depth interviews (under the Chatham House Rule), gathering insights from SMEs, large corporations, financial institutions, and government agencies, in addition to an early sensing exercise through a small survey sample of SMEs and cross-sector focus group discussions.

The research highlights several recurring barriers and uncovers early wins. Some SMEs reported cutting electricity bills by 30%–50% through solar or energy-efficiency upgrades, while a handful of banks piloted sustainability-linked loans that demonstrate commercial viability for decarbonization. These examples reinforce that, while challenges are significant, success stories do exist where supportive policies and targeted incentives align with the operational needs of SMEs.

This report also includes a case study examining the Joint Committee on Climate Change's GVC Program that adopts a blended facilitation approach, pairing technical support—such as capacity building, carbon-tracking tools, and support and engagement of corporate anchors—with concessional financing under the Low Carbon Transition Facility (LCTF). Early outcomes from the GVC Program reveal that blended facilitation can spur greater SME engagement, as reflected in improved carbon awareness and pockets of success in the adoption of measures that lead to decarbonization and cost-saving. The uptake of the LCTF has reached over US$225 million (RM1 billion), representing roughly half of the facility's total US$450 million (RM2 billion) provision and indicating an encouraging level of SME engagement.

As such, the GVC Program's experience offers both promising messages and cautionary reminders. Against this backdrop, the Playbook outlines six tactical levers—ranging from regulatory alignment, accessible green finance, and data infrastructure harmonization, to anchoring low-carbon practices in supply chains and demystifying decarbonization—to address common stumbling blocks and catalyze SME decarbonization at scale. Each lever requires coordinated action from policymakers, financial institutions, large corporations, and SMEs, ensuring that momentum translates into tangible, broad-based impact.

As these stakeholders synchronize their efforts, decarbonization evolves from an abstract policy goal into a profitable and value-creating strategy, ultimately ensuring that SMEs remain resilient and competitive in ASEAN's low-carbon future. Such synergy strengthens local livelihoods, protects the region's export position, and helps fulfill broader climate pledges, thereby generating a more sustainable and inclusive prosperity for the ASEAN region.

MOTIVATING AND ENABLING SMALL AND MEDIUM-SIZED ENTERPRISES' TRANSITION TO LOW-CARBON PRACTICES

Climate change is no longer a distant threat. It is a present and accelerating reality that is reshaping economies, business practices, and societies. According to the Intergovernmental Panel on Climate Change (IPCC), global surface temperatures have already risen by approximately 1.1°C since pre-industrial times and are projected to surpass a 1.5°C increase as early as the 2030s if current emissions trajectories continue unchecked. Globally there have been increasingly frequent and severe physical climate risks including heatwaves, droughts, floods, and storms that disrupt supply chains, damage infrastructure, and threaten economic productivity.

Decarbonization—the process of reducing carbon dioxide and other greenhouse gas (GHG) emissions—is critical to mitigation, which aims to slow or reverse climate change by tackling its root cause. It is also essential to adaptation, by helping economies and industries reduce exposure to climate shocks. For businesses embedded in global value chains, decarbonization is not only an environmental imperative but also a pathway to risk reduction, cost savings, and long-term resilience. Reducing emissions can help stabilize climatic systems over time, while transitioning to low-carbon technologies often improves resource efficiency and buffers firms against volatile energy prices and climate-induced disruptions.

As of June 2024, 107 countries, which are collectively responsible for approximately 82% of GHG emissions, had announced net-zero or carbon neutrality targets. There has been a noticeable shift toward climate-related regulation and attendant investor scrutiny. The Task Force on Climate-related Financial Disclosures, which is now integrated into the International Financial Reporting Standards' Sustainability Disclosure Standard on Climate-related Disclosures, provides a globally recognized framework for firms to report their climate-related risks and strategies, including Scope 3 emissions from their upstream and downstream activities. Financial market regulators in member states of the Association of Southeast Asian Nations—including those in Malaysia, Singapore, and Thailand—have announced or begun phased implementation of disclosures aligned with the International Financial Reporting Standards' Sustainability Disclosure Standard on Climate-related Disclosures.

For export-oriented economies across ASEAN, these developments pose a dual challenge and opportunity. SMEs that cannot credibly measure, report, and reduce emissions risk losing market access as global buyers impose stricter sustainability requirements. Conversely, those that adapt early and align with international standards stand to benefit from preferential procurement, green financing, and enhanced competitiveness in global markets. In this context, decarbonization is not a peripheral issue—it is central to both climate action and economic survival.

Across ASEAN, SMEs represent more than 99% of all businesses, contribute 85% of total employment, and are key enablers of local innovation, economic resilience, and regional integration. SMEs were reported to contribute up to 60% of gross domestic product in some ASEAN member states, highlighting their critical role in some economies. Many ASEAN member states have pledged net-zero targets: Brunei Darussalam, the Lao People's Democratic Republic, and Singapore aim for 2050; while Indonesia and Thailand are targeting 2060 and 2065, respectively. Though timelines vary, the region shares a clear consensus: A green economy is no longer optional, and businesses must be equipped to drive and benefit from this transition.

This imperative is backed by multiple regional strategies that collectively reflect ASEAN's growing commitment to climate action. These include the ASEAN Taxonomy for Sustainable Finance, which provides a framework to classify sustainable economic activities and guide investment decisions; the ASEAN Plan of Action for Energy Cooperation, which promotes regional energy connectivity, energy efficiency, and renewable energy deployment; and the Regional Strategy for Carbon Neutrality, which outlines pathways to achieve long-term emissions reduction targets.

Currently, ASEAN's energy-related carbon emissions are projected to rise by 33% by 2050[1]. This trajectory poses substantial risks not only to regional competitiveness through potential carbon border taxes and investor divestment, but also to public health, with air pollution already contributing to significant disease burdens across member states. Environmental stability is also at stake, with climate-related disasters such as flooding, droughts, and extreme heat events becoming more frequent and severe. Accelerating decarbonization efforts is therefore not just an environmental imperative, but a strategic necessity for safeguarding ASEAN's long-term economic resilience and social well-being.

For businesses embedded in global value chains, transitioning to low-carbon operations is increasingly essential. Climate-related policies and investor expectations are evolving rapidly. Major trading partners are introducing carbon pricing and disclosure regulations, such as the European Union's Carbon Border Adjustment Mechanism, which imposes levies on carbon-intensive imports. Simultaneously, large multinational corporations are decarbonizing their own operations and demanding the same from suppliers, while consumers show a growing preference for sustainable products and services, rewarding companies that demonstrate credible sustainability commitments. In Malaysia alone, some estimates warn of up to US$65.7 billion (RM292 billion) in potential lost export revenues if businesses fail to keep pace with these shifts[2]. Businesses that do not transition risk losing market access, facing higher compliance costs, and being exposed to climate risks that threaten operations and profitability.

[1] International Energy Agency. 2024. *Southeast Asia Energy Outlook 2024*. International Energy Agency, p. 6.
[2] As cited in S. Ali. 2023. *Sustainable Finance and Climate Risk: Opportunities for the Financial Sector*. Kuala Lumpur: Bank Negara Malaysia.

Despite their importance, SMEs often lack the resources to act alone. Many face knowledge gaps, limited access to green financing, overlapping guidance frameworks that cause confusion, and a lack of practical, sector-specific support. Even where financing is available, application processes can be complex, especially for micro- and small enterprises with lean staffing. Without targeted capacity building, streamlined policy frameworks, and incentives aligned with day-to-day business realities, many SMEs risk being left behind in the green transition.

As major buyers increasingly require Scope 3 emissions data, businesses that can demonstrate climate action are better positioned to secure long-term contracts, access green financing, and build credibility in sustainability-conscious markets. For export-oriented businesses, especially in manufacturing and services, going green is a strategic necessity to stay competitive in global value chains.

Delivering decarbonization goals will require tailored support ecosystems for SMEs that blend finance, training, incentives, and clear market signals. Transitioning SMEs is not just an environmental necessity but a development opportunity to enhance resilience and future-proof ASEAN's economies.

Supply Chain Resilience: The Role of Green Value Chains

In an era of increasing climate volatility, geopolitical tension, and pandemics, resilience has become as important as efficiency in global value chains. Denoting an ability to anticipate, absorb, adapt to, and recover from disruptions while maintaining critical operations and continuity of supply, resilience must weather the slings and arrows of acute climate-driven disruptions (e.g., floods and extreme weather) along with more quotidian chronic disruptions of resource scarcity and regulatory shifts. Given that SMEs make a sizeable contribution to the economy but are also relatively more vulnerable to the impacts of climate change, there is a critical need to integrate SMEs into any climate strategy—be it at regional or national levels.

Resilience models have increasingly highlighted decarbonization alongside the usual suite of offerings such as inventory buffers and digital traceability. By tracking emissions and building climate-aligned operations, firms can reduce exposure to regulatory penalties and reputational risk, as well as enjoying the advantages of carbon reduction. Initiatives like the Greening Value Chain (GVC) Program work to strengthen resilience by embedding emissions tracking into SME supply chains, linking decarbonization with competitiveness and stability.

A resilient green value chain has economic advantages, not least of which include cost savings from optimizing efficiency and reducing waste. Embracing green spurs innovation and collaboration, better equipping businesses to navigate swiftly shifting market conditions. Within these contexts, governments and regulators play a leading role in enshrining standards and frameworks for the private sector.

In Malaysia, major domestic policies such as the National Energy Transition Roadmap; the New Industrial Master Plan 2030; and the Financial Sector Blueprint 2022–2026 have set out ambitious climate strategies. At the same time, ASEAN-level frameworks such as the ASEAN Socio-Cultural Community Blueprint 2025; the ASEAN Plan of Action for Energy Cooperation, 2016–2025; and the Framework for Circular Economy for the ASEAN Economic Community reinforce regional goals for sustainability, low-carbon development, and resource efficiency. These policies collectively underscore a growing commitment across ASEAN's diverse economies to support greener growth and strengthen resilience against climate risks. However, operational specifics often determine real-world success, especially among SMEs who need fit-for-purpose support such as tailored capacity building programs, accessible finance solutions, practical emissions measurement tools, and incentives aligned with their day-to-day operations, as shown in **Figure 1**.

Limited Relevance or Accessibility of Training

- Climate-related training is too generic or not sector-specific
- Training is only offered online, excluding SMEs with limited digital access
- Lack of peer learning or networking opportunities in training formats

Cumbersome Administrative Processes

- Climate incentives require exhaustive documentation
- Application processes are time-consuming or unclear
- Mismatch between SME capacity and institutional requirements

Low Financial Literacy and Access to Green Finance

- Limited understanding of green financing instruments
- Fear of debt or unfamiliar financing terms
- Lack of collateral or credit history to qualify for green loans

Uncertainty About Compliance

- Hesitation due to perceived cost or complexity of upgrades
- Lack of trusted, localised advice on emissions tracking or green tech

Underresourced and Overstretched Teams

- SME owners juggle multiple roles, leaving no bandwidth to pursue decarbonisation
- Few or no dedicated sustainability roles in micro and small enterprises

Disconnect Between Policy Ambitions and On-the-Ground Reality

- Policies often overlook implementation bottlenecks
- Tools or programs exist but are not "fit-for-purpose"
- Misalignment between available incentives and SME operational needs

Figure 1: Operational Challenges Facing Small and Medium-Sized Enterprises

SME = small and medium-sized enterprise. Source: UNDP illustration.

The GVC Program, led by the Joint Committee on Climate Change (JC3), was developed to test a blended approach to supporting SMEs through low-carbon transitions. The program combines technical assistance such as emissions measurement and reduction tools with financial incentives through the Low Carbon Transition Facility (LCTF).

By bringing together strategic partners—including software providers (for carbon accounting and outreach), regulators (for policy coherence), corporate buyers (to send market signals), and financial institutions (to facilitate access to finance)—the GVC Program explores how a multistakeholder model can unlock SME decarbonization potential. Malaysia's experience with the GVC Program offers valuable insights for other ASEAN economies aiming to scale green finance, develop SME-aligned carbon reporting mechanisms, and drive supply chain decarbonization. As climate regulation and investor scrutiny grow globally, national initiatives like the GVC Program can catalyze systemic change across the region's interconnected economies.

STAKEHOLDER PERSPECTIVES: COLLECTIVE INTELLIGENCE

Across ASEAN and within Malaysia, many SMEs remain uncertain about how to engage with climate action. Domestically, these issues are shaped by local complexities such as a diverse policy landscape and the challenge of balancing short-term business pressures with long-term climate goals.

To better understand these wider dynamics, we undertook a multipronged research process to inform the development of this Playbook. We began by reviewing global and regional literature to map thematic barriers and contextualize the Malaysian experience. This was followed by early interviews with GVC Program partners and a multistakeholder forum to ground-truth our findings.

Our core insights are drawn from in-depth interviews with 54 stakeholders across 25 organizations—including SMEs, corporates, financial institutions, and public agencies—guided by a semi-structured, inductive approach under the Chatham House Rule. We also surveyed SMEs participating in the GVC Program to supplement the qualitative data. We analyzed these findings using an Impact Value Chain framework, tracing how different stakeholders perceive and act on climate challenges and identifying key bottlenecks in the ecosystem. This approach allowed us to identify practical technical and motivational levers that could potentially accelerate SME transitions.

In the sections that follow, we focus on three critical stakeholder groups—large corporations, SMEs, and financial institutions—to explore how coordinated action can unlock SME decarbonization across Malaysia and beyond.

Large Corporations: Navigating the In-Betweens

Large Malaysian corporations occupy a challenging middle ground between rising global sustainability demands and the practical constraints of working with local SMEs. They must respond to emerging regulations, institutional investor expectations, and multinational buyer standards. On the other hand, they face operational friction when trying to align SME vendors with climate targets.

While many corporates acknowledge the long-term risks of inaction, there is often internal tension between sustainability teams and commercial units. Operational teams express concern that SMEs may lack the time, money, or incentive to engage in carbon accounting, potentially delaying broader decarbonization targets. Some fear first-mover disadvantages, such as pushing too hard on suppliers and risking supply chain disruptions or cost absorption.

> *Right now, we are encouraging our vendors to reduce their Scope 1 and 2 emissions, which in turn are our Scope 3 emissions... If you ask me, the only way is for us to make it mandatory as part of the tender process. If that happens, every vendor will comply.*
>
> *But we don't want to be ahead of the law... Decarbonization and sustainability are not just our agenda—they are national priorities. Everyone has to contribute. Some costs will inevitably come back to customers, but we don't want all of it to fall on us alone.*
>
> — Head of strategic program, corporation with multinational operations

> *We have thousands of vendors. They ensure our security of supply... If they fail to meet global carbon requirements, we risk non-compliance ourselves or losing our vendor pool, which will affect our competitiveness in global markets.*
>
> — Group procurement, a conglomerate

> *We allocated around RM200,000 for a sustainability program engaging our vendors. It includes software subscriptions, training workshops, and onboarding sessions—hoping more suppliers would get on board.*
>
> — Head of sustainability, manufacturer of consumer goods

Importantly, while corporates increasingly expect regulation mandating emissions tracking, most are reluctant to enforce compliance on SMEs themselves, preferring a policy-led baseline to level the playing field.

To address these tensions, several corporations have taken proactive steps such as investing in carbon accounting software, organizing supplier engagement programs as part of capacity building measures, and subsidizing participation costs for SME vendors. These tools range from government-subsidized platforms to private solutions.

Annual investments vary significantly: from about US$1,570 (RM7,000) for basic subscriptions to almost US$300,000 (RM1.3 million) for large-scale, multiyear initiatives. Most corporates interviewed estimate annual spending between US$45,000 and US$68,000 (RM200,000 and RM300,000) on SME-focused sustainability efforts, including training, tools, and financial incentives. However, costs remain a persistent barrier, especially for smaller suppliers.

Outcomes from these efforts are mixed. Some corporations report tangible wins—mainly cost savings from solar initiatives or process efficiencies—but many note that supplier sustainability engagement programs have difficulty yielding a short-term return-on-investment; instead, they focus on long-term benefits such as risk mitigation or preserving reliable local suppliers. Others highlight reputational gains and expanded international client interest, especially when showcasing low-carbon supply chains to overseas buyers. Nonetheless, plenty of unresolved gaps remain: SMEs often lack the technical knowledge, staff capacity, or incentives to engage in emissions tracking without explicit regulatory requirements. Few corporations want to enforce compliance, as they seek to balance maintaining strong supply chain relationships and avoiding potential friction from vendors.

RM200,000–RM300,000

A common annual outlay reported by large corporates for software licenses, training, and partial financing or incentives to engage SMEs in carbon measurement and management.

> *No immediate financial gain... but we preserve our supplier ecosystem by staying compliant with global standards, and that's an intrinsic value for us.*
>
> — Senior manager, infrastructure business

Policy Levers: The Corporate Wish List

Several potential levers might help accelerate SME decarbonization, as shown in **Figure 2**.

Tailored Incentives for SMEs

Many corporations recommend targeted tax breaks or free carbon calculators for SMEs, to offset costs of carbon measurement.

Gradual but Firm Regulatory Baselines

Corporates suggest phased mandates for SMEs, akin to public-listed rules, to foster consistent progress without driving smaller firms out of business.

Capacity Building and Guidance

Interviewees frequently call for structured training, accessible best-practice examples, and a local pool of ESG professionals to advise SMEs, preventing a talent shortfall.

Risk-Sharing Mechanisms

Financing transitional measures cannot fall solely on corporations or SMEs. A public-private risk-sharing approach could facilitate capital flows and lessen cost escalation.

Leading by Example

Government agencies and government-linked corporations should demonstrate effective decarbonization measures, creating market signals that steer the entire supply chain toward low-carbon transitions.

Figure 2: Policy Levers—The Corporate Wish List

ESG = environmental, social, and governance; SMEs = small and medium-sized enterprises. Source: UNDP illustration.

Large corporations play a pivotal role in catalyzing SME climate action, but they cannot act alone. As supply chain anchors, they hold both influence and responsibility in fostering sustainable practices. Their experiences underscore compelling drivers such as global regulations, brand value, and supply chain integrity; but they also remain cautious about imposing demands that might overwhelm SMEs or incur hefty costs.

Unlocking large-scale SME decarbonization will require stronger policy alignment, practical tools, and ecosystem-wide support ensuring that progress is not only aspirational but also achievable and equitable.

> *We don't know what we don't know. Everyone uses different ESG frameworks. That confusion is real.*
>
> — SME manager in manufacturing

Small and Medium-Sized Enterprises: Actions on the Ground

For many Malaysian SMEs, the low-carbon transition hovers between being a strategic opportunity and a weighty consideration. While some recognize the competitive advantage of greening operations, most grapple with more immediate pressures: cost containment, thin margins, and daily operational survival.

SMEs serving multinational or European clients are increasingly required to complete sustainability surveys, demonstrate carbon tracking, or comply with climate-related tender criteria. For these businesses, climate action is becoming integral to maintaining and expanding overseas sales. In contrast, SMEs focused on domestic markets face minimal green or transition pressure and are less inclined to invest time or resources in decarbonization unless tangible returns are clear.

Many SME owners struggle to justify upfront investments—whether for training, tools, or solar installations—when financial returns are uncertain or too long-term. Balancing sustainability with immediate cash flow needs is a recurring tension. With small teams and stretched resources, SMEs often perceive sustainability initiatives as a weighty consideration. Many said they would be more willing to participate if there were clear incentives, external facilitation, or dedicated support.

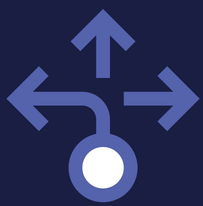
> *No one is giving us a real 'carrot'. If we got extra points in procurement or official recognition, more SMEs would jump in.*
>
> — SME in Oil and Gas supply chain

> *It's not just us—some big corporations and even government bodies don't seem to have the right ESG expertise. That's why everything feels so confusing.*
>
> — SME owner

ESG = environmental, social, and governance

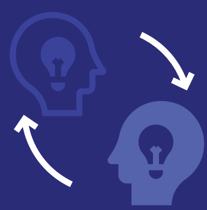
Climate Engagement Challenges for Malaysian Small and Medium-Sized Enterprises

Interviewees frequently cited a multiplicity of climate-related guidelines, standards, and programs with "inconsistent" terminology and unclear links. Without clear direction, many are unsure which frameworks to adopt, or how to reconcile requirements from different clients or regulators. While terms such as "net-zero" and "Scope 3" are familiar, many SMEs lack a working understanding of what emissions measurement entails or how to begin. Even those using tools or templates find that the real challenge lies in knowing what data to collect, where to find it, and how to interpret it. (**Figure 3**).



Limited Awareness of ESG Regulations

- Businesses struggle to keep up with evolving policies
- Malaysia's regulatory landscape includes multiple ESG frameworks, adding complexity



Skill Gaps in Implementing Low-Carbon Practices

- Workforce lacks necessary expertise
- Public and private initiatives exist, but businesses face challenges in accessing the right training

Confusion from Overlapping Programs

- Multiple initiatives with different objectives and frameworks
- Malaysia's diverse government programs require careful navigation to ensure compliance and effectiveness

Insufficient Access to Credible Tools and Technical Support

- Limited availability of standardized ESG tools
- Malaysia has several public-led programs, but they often require industry-specific adaptation

Figure 3: Climate Engagement Challenges for Malaysian Small and Medium-Sized Enterprises

ESG = environmental, social, and governance. Source: UNDP illustration.

Although transition financing schemes such as the LCTF exist, SME interviewees reported limited familiarity, lengthy application processes, and a tendency of banks prioritizing large loans. Requests as modest as US$22,500 (RM100,000) for solar panels were sometimes redirected to standard financing methods.

For many, the long-term value of decarbonization remains theoretical unless it is linked to buyer incentives, lower costs, or market access. Without these tangible motivators, sustainability risks being deprioritized in favor of daily business operations (**Figure 4**).

Export-Driven Demand.

SMEs who serve European or multinational clients are compelled to track emissions and demonstrate efforts in decarbonization, often seeing it as a crucial gateway to maintain or expand overseas sales. In such cases, ESG demands arrive in the form of detailed surveys or annual reporting from major clients.

> *We have no choice; our European customers want carbon data, so we studied and responded to their surveys. Eventually, we saw it could be good for us too.*
>
> – SME in paper and printing industry

> *If I'm not profitable, none of this ESG talk matters. We have staff to pay first.*
>
> – SME business owner

Domestic Minimalism.

By contrast, SMEs primarily serving local markets face limited ESG expectations. Many are reluctant to invest time or funds without tangible returns, citing survival and profit margins as top priorities.

Demand Dilemma.

Some SMEs are intrinsically motivated by environmental or social responsibility-often due to forward-thinking owners or board members-but still weigh direct business benefits.

> *Our European clients push us for carbon data, but local customers don't bother.*
>
> - SME serving export markets

Figure 4: Drivers of Decarbonization for Small and Medium-Sized Enterprises

ESG = environmental, social, and governance; SMEs = small and medium-sized enterprises. Source: UNDP illustration.

> *After installing solar, we cut our electricity bill from RM40,000 a month to half... ROI is around 2.5 years.*
>
> — SME in the manufacturing sector

Despite these barriers, many SMEs have taken concrete steps toward low-carbon practices, often with encouraging results. Some SMEs were introduced to carbon reporting software through corporate buyers or financial institutions. Others relied on free Excel templates. While such tools help, many noted that templates alone are insufficient without hands-on guidance or sector-specific examples.

SMEs that invested in energy-saving measures like solar panels or equipment upgrades reported measurable outcomes. Payback periods varied, but several halved their electricity bills or cut operating costs through cleaner technologies. These cases underline that climate action can be financially viable when it is targeted and well-planned.

A few SMEs highlighted improved bid success with international clients and invitations to join industry dialogues, enhancing their profile, partnerships, and credibility. Intangible gains like employee pride and stronger relationships with corporate customers were also mentioned.

> *Our revenue increased about 15%–20% the same year we introduced ESG initiatives. I can't prove direct correlation, but it sure helped with brand credibility.*
>
> — SME in the oil and gas supply chain

SMEs' investment in decarbonization efforts varied from primarily time investments or under US$2,250 (RM10,000) for training or audits, to close to US$147,000 (RM650,000) for full solar system installations. Median spending hovered around US$22,500 (RM100,000), covering audits, software, minor upgrades, and consultancy fees.

Policy Levers: The Small and Medium-Sized Enterprise Wish List

The following diagram (**Figure 5**) presents the reforms and support measures that could galvanize broader decarbonization.

> *With a clear playbook for SME or for a sector, say automotive or F&B, we'd know exactly what steps to follow.*
>
> — SME from service industry

Unified or Sector-Specific Guidelines
Rather than multiple overlapping frameworks, SMEs want one authoritative standard—either a single national guide or sector-specific guidelines that clarify carbon emissions and ESG reporting requirements.

Easier Access to Green Financing
For smaller loans (e.g., RM100,000–RM300,000), regulators and banks could streamline loan application procedures and strengthen the alignment of incentives to encourage greater support for smaller loan requests.

> *Our solar project is 'too small,' so we're ignored.*
>
> — SME in systems integration business

> *If we got even a 5% scoring advantage in tenders for going green, we'd do it wholeheartedly.*
>
> — SME proprietor

Procurement Preferences or "Carrots"
Large companies, government-linked corporations, or government agencies could offer bidding advantages or official recognition for suppliers that meet specific ESG thresholds.

Practical Training and Technical Support
SMEs prefer practical, sector-tailored training over general ESG workshops. They want step-by-step guidance to pinpoint carbon hotspots, measure them accurately and implement cost-effective solutions.

> *We attended a 2-day talk, but it stayed conceptual.*
>
> — SME from printing industry

> *If there's no compliance date, we'll keep pushing it off. Make it law, but do it in phases and with sufficient lead time for the transition so we can adapt.*
>
> — SME proprietor

Clear Mandatory Timelines
Although SMEs are often perceived as wary to regulation, many acknowledge that a gradual, well-communicated mandate would level the playing field, ensuring that all peers invest in decarbonization at similar pace.

Figure 5: Policy Levers—The Small and Medium-Sized Enterprise Wish List

ESG = environmental, social, and governance; F&B = food and beverage; SMEs = small and medium-sized enterprises Source: UNDP illustration

For Malaysian SMEs, decarbonization becomes attractive only when directly aligned with survival, cost savings, or near-term business growth. In contexts where external pressure calls for action, many SMEs rise to the occasion, often discovering unexpected benefits and overcoming technical hurdles. Yet for the majority, hesitation remains. The reasons are consistent: unclear guidance, fragmented or overlapping frameworks, limited financing options for small-scale projects, and a lack of policy mandates.

Bridging the divide between SMEs' lived business realities and broader climate goals will require deliberate and coordinated action. Unifying standards, tailoring support, simplifying access to green financing, and strengthening market signals are all essential steps. With the right enablers in place, SMEs can shift from viewing climate action as a burden to embracing it as a business imperative: one that is both achievable and beneficial, and also meaningful on the ground.

> *Without profit, none of this ESG matters, but with the right support, I believe we can do both—grow financially and reduce emissions.*
>
> — SME owner

Financial Institutions: Balancing Risk and Reward

Financial institutions in Malaysia find themselves at a juncture between growing their SME lending portfolios and steering those same SMEs toward more sustainable, low-carbon practices. This juncture has been described as a delicate balancing act, highlighting the competing interests between potential gains and operational challenges in green financing for smaller businesses.

SMEs account for about 16.7% of total loans in the Malaysian banking system[3]. Across an array of banks, the SME segment is widely viewed as offering high-growth potential: SMEs contribute over one-third of Malaysia's gross domestic product and often graduate to become mid-market or corporate borrowers. As SMEs mature, banks can cross-sell services—ranging from cash management and trade finance to capital market access—making the "grow with the client" approach a cornerstone of many financial institutions' SME strategies.

However, this comes with elevated credit risks. While the system-wide nonperforming loan ratio in Malaysia averages 1.7%, SME nonperforming loans register about 3.8%[4]. Higher default risk inflates banks' capital requirements and financing costs. Several interviewees also pointed to an administrative imbalance: Applying the same due diligence to a US$100,000 loan as is needed for a US$10 million facility can feel disproportionately burdensome, particularly when resources are stretched.

This dynamic informs how financial institutions perceive SMEs, particularly in the context of green financing. Nonetheless, financial institutions see room for robust returns if underwriting and capacity-building are done effectively.

[3] Asian Development Bank. 2024. *Asia Small and Medium-Sized Enterprise Monitor 2024: Designing an MSME Ecosystem for Resilient Growth in Asia and the Pacific*. Manila.

[4] Footnote 2

> *Maybe we've found the right recipe to drive SME business... We see value in working with SMEs and working with them on green financing... SME business is actually a very profitable segment and a super growth area for us. Ultimately, it's about alignment with our vision—profit, but also not leaving anyone behind.*
>
> — Division head from a large financial group

Many banks remain eager to tap the SME market, but the jump from general financing to green-specific financing requires strategic commitment. Some proactively capitalize on early opportunities to build brand credibility and prepare the bank and its clients for impending climate regulations at home or in export markets. Others, however, highlight the potential for a clear, nationwide mandate that can further incentivize green loans where market forces alone may not suffice. These contrasting approaches reflect how financial institutions strive to capture SME growth while navigating existing regulatory mandates and market incentives for specialized sustainability financing.

To move from ambition to action in greening SME lending, financial institutions in Malaysia are steadily building internal capabilities while testing a range of tools to drive SME participation. Recognizing that financing alone is not enough to generate real emissions reductions, many banks are investing in a mix of capacity building, product innovation, and ecosystem partnerships to create enabling environments for low-carbon transitions.

One common strategy involves bundling concessional funds with commercial loans to make green upgrades more accessible to SMEs. By tapping the LCTF, banks can offer more affordable financing for investments in solar energy, high-efficiency machinery, and other decarbonization technologies.

Some financial institutions have taken this a step further by developing and piloting their own sustainability-linked loan products, which offer interest rate reductions for SMEs that meet predefined emissions reduction targets. These performance-based incentives help align financial benefits with climate action, making decarbonization more tangible and outcome-driven.

> *We know the SME business. We are motivated to work with SMEs. It's natural for us to support them—not just with regular financial services, but also with green transition facilities.*
>
> — Senior executive of a midsize local bank

Beyond financing, banks are working to build the internal knowledge and technical readiness needed to serve SMEs more effectively. Relationship managers, who are often the first point of contact for SME clients, are being upskilled through internal workshops and supported by newly created in-house sustainability teams. This growing internal capability helps relationship managers identify green opportunities, explain financing options, and guide SMEs through the process of integrating sustainability into their business plans.

To lower the barrier to entry, some banks have also begun subsidizing access to carbon-tracking software, enabling SMEs to measure emissions with greater ease. Others simplify the process by offering checklists or benchmarks such as "50% more energy-efficient than standard models" to encourage upgrades without requiring complex calculations. These practical supports are complemented by sustainability-centric academies and forums, where banks bring together SMEs, corporates, and policymakers to share best practices and build shared understanding around green finance.

Collaboration across the ecosystem is another emerging strength. Some banks work directly with large corporations to co-develop green finance packages as part of supply chain upgrade programs. Others engage with government-linked companies (GLCs), such as the Malaysian Green Technology and Climate Change Corporation, or credit guarantee institutions to validate the green credentials of projects and help de-risk SME lending. In a few cases, banks also maintain preferred vendor lists of vetted green technology providers, helping SMEs connect with reputable solution partners to simplify procurement decisions.

Together, these strategies represent a growing body of experimentation and innovation in Malaysia's financial sector, demonstrating that with the right mix of incentives, tools, and partnerships, green finance for SMEs can be made more accessible, practical, and impactful.

A number of banks cite robust returns from specialized SME green programs, claiming a "two-to-five fold return" from cross-selling and strategic bundling services. For the remaining banks, modest uptakes have been reported, indicating the potential for growth with a focus on making such programs more accessible through simpler processes and commensurate compliance steps.

> *We routinely get up to a five-fold return on investment in our SME green-lending programs, so there's definitely a business case when you structure it right.*
>
> — Senior executive at a bank's SME division

Banks reported self-financed investments ranging from about US$110,000 (RM500,000) to over US$675,000 (RM3 million) annually on ESG programs targeting SMEs—covering sponsorship of sustainability forums, capacity building events, digital marketing, web portal maintenance, and subsidies for carbon-accounting software. These investments are in addition to internal human resource and overhead costs.

Others highlight intangible gains like reputational benefits such as boosting the bank's sustainability profile and preparing for potential Scope 3 financed-emission disclosures. Some banks see this forward-looking approach as a strategic investment, anticipating that stronger sustainability requirements in supply chains from multinational corporations or regulators could drive future demand.

Overcoming other key hurdles could unlock further opportunities to increase the adoption of green financing for SMEs. A major barrier is hesitation on the part of SMEs, often due to limited awareness, unclear incentives, or lack of capacity. Pairing regulatory signals or financial incentives with practical support such as training and advisory services can make participation more attractive and achievable. Relationship managers also play an important role as they are well-positioned to promote products like the LCTF, particularly if internal processes are effectively streamlined to support efficiency and ease of delivery.

Stronger uptake could also be encouraged through clearer expectations around emissions reporting. Phased requirements or timelines would help normalize carbon measurement, while better tools and frameworks could support both banks and SMEs in quantifying impact, particularly for more complex projects.

Finally, clarity in policy and definitions will be critical. SMEs often struggle to navigate various carbon reporting requirements or understand what qualifies as a "green" investment. More consistent and harmonized guidance—whether from regulators, industry bodies, or multilateral institutions—can improve confidence and drive adoption across the board.

> *Even when they are free-of-charge, optional sustainability programs often see SME interest at first, then a drop-off. Many eventually say, 'We can't spare the human resources.'"*
>
> — Executive at a commercial bank supporting mid-size exporters

The Low Carbon Transition Facility Experience

Bank Negara Malaysia's (BNM) Low Carbon Transition Facility (LCTF) is designed to help small and medium-sized enterprises (SMEs) integrate sustainable and low-carbon practices into their operations. Available to SMEs across all sectors, the facility supports businesses committed to reducing their carbon footprint. This includes initiatives such as enhancing energy efficiency, incorporating sustainable materials in production, and obtaining sustainability certifications. Key features of the fund are described below.

Tenure:	10 years
Financing size per SME:	RM10 million (US$2.25 million)
Finance rate for SMEs:	Maximum financing rate of 5.0% per annum, inclusive of guarantee fee (if any)
Guarantee:	Guarantee schemes by Credit Guarantee Corporation Malaysia Berhad
Availability:	From 3 February 2022 until full utilization

According to BNM's 2024 Annual Report, the LCTF is part of a wide range of active facilities under the BNM's Fund for SMEs, which provides targeted support to those businesses.

Target Area	Facility	Allocation	Target
Supporting segments with barriers to finance	All Economic Sectors Facility	RM4.9 billion	All sectors, especially younger SMEs and those with insufficient collateral
	Micro Enterprises Facility	RM1.0 billion	Microfinancing for micro entrepreneurs
Promoting growth in targeted sectors	Agrofood Facility	RM3.6 billion	Agrofood-related activities
	PENJANA Tourism Financing	RM0.4 billion	Tourism sector
Accelerating digital transformation and upscaling SMEs	SME Automation and Digitalisation Facility	RM1.3 billion	Adoption of automation and digitalization
	High Tech and Green Facility	RM2.6 billion	Selected high-tech sectors or tech providers
Greening SMEs and building climate resilience	Low Carbon Transition Facility	RM2.0 billion (matching basis)	Adoption of sustainable business practices
	Disaster Relief Facility	RM0.5 billion	Financial relief after floods
TOTAL		RM16.3 billion	

Table 1: Active Facilities under Bank Negara Malaysia's Fund for Small and Medium-Sized Enterprises

Source: Adapted from Bank Negara Malaysia. 2024. *Bank Negara Malaysia Annual Report 2024*. Kuala Lumpur.

As part of BNM's unique mandate to promote the development of a progressive and inclusive financial system for the Malaysian economy, the central bank has undertaken significant efforts to continue to support the economic transformation agenda of the country, including supporting small businesses. In 2024, about US$22.5 million (RM100 million) under the LCTF was earmarked to incentivize SMEs to obtain sustainability and green certification.

As an evolving initiative, the LCTF presents valuable insights into enhancing accessibility for SME financing needs. Clarifying eligibility, enhancing awareness, aligning success metrics, and strengthening monitoring and reporting modalities for SMEs can enhance the effectiveness of such facilities. By overcoming these hurdles, combining programs such as the GVC Program with the LCTF can better support SMEs in their transition.

Overall, the LCTF exemplifies both the promise and the complexities of greening SME finance, highlighting the need for a mutually reinforcing approach between facilities and other initiatives and toolkits to support SME transition.

Policy Levers: The Financial Institution Wish List

Financial institutions broadly agree on a few policy enablers that would make business decarbonization more attractive and feasible for all parties, as shown in **Figure 6**.

Figure 6: Policy Levers—The Financial Institution Wish List

SMEs = small and medium-sized enterprises. Source: UNDP illustration.

The role of financial institutions goes beyond lending: They provide advisory, capacity building, and market signals that shape how SMEs engage with sustainability. But to truly scale impact, banks need a supportive ecosystem with clear policies, risk-sharing mechanisms, streamlined procedures, and strong demand signals. With these enablers in place, green finance can shift from a niche offering to a core driver of resilience, competitiveness, and long-term growth for both banks and the SMEs they serve.

CASE STUDY: LESSONS FROM THE GREENING VALUE CHAIN PROGRAM

In January 2023, JC3 rolled out the GVC Program, adopting a blended facilitation approach that couples targeted financing through BNM's LCTF with hands-on support to help businesses measure, monitor, and report their greenhouse gas emissions—an essential first step toward reducing their carbon footprint. Through the GVC Program, SMEs can access training on climate and sustainability basics; software to record emissions data; and, if needed, concessional loans under LCTF to fund transition activities. The GVC Program, therefore, focuses on holistic support, empowering SMEs with the necessary resources to measure, manage, and reduce their environmental impact (**Table 2**).

Bursa Malaysia	Malaysian Green Technology and Climate Change Corporation	Pantas
National stock exchange standards-setter for corporate sustainability practices: Bursa Malaysia introduced its Centralized Sustainability Intelligence Platform for climate and ESG disclosures. A recent entrant to the GVC Program, Bursa Malaysia aims to bring hundreds of SME suppliers on board through its network of listed companies to act as anchors.	Government-linked agency that has traditionally supported public sector agencies and promoted green technology and sustainable practices: Through the GVC Program, it has expanded its Low Carbon Operating System platform to participating SMEs and provided technical assistance.	A climate tech startup offering ESG software solution: In addition to an enterprise platform used by large corporations and banks to track their own emissions and manage their supply chain sustainability, Pantas provides a lighter version for SMEs ("Pantas Lite").
Anchor Partners		
Each partner identifies large corporations or banks as "GVC Anchors", which in turn invite their SME vendors to track emissions and tap into LCTF financing (e.g., for solar or equipment upgrades).		

Table 2: Greening Value Chain Program Strategic Partnerships

ESG = environmental, social, and governance; LCTF = Low Carbon Transition Facility; SMEs = small and medium-sized enterprises.
Source: Authors' compilation.

Rather than dictating a single blueprint, each strategic partner shapes their unique GVC Program engagement models. Nonetheless, all GVC Program pathways feature three core and interconnected pillars, as shown in **Table 3**.

Capacity-Building	Capacity building for knowledge and skills equipping: Workshops on climate fundamentals and step-by-step guidance for carbon-accounting software are offered, covering topics such as climate change fundamentals, ESG reporting frameworks and standards, and practical strategies for reducing emissions.
Software Access	SMEs gain access to a carbon management tool offered by GVC partners—often with full or partial subsidies—to measure, record, and report GHG emissions data, which is an important feature of the GVC Program.
Financing through the LCTF	SMEs can apply to participating banks for concessional loans to fund transition activities or green upgrades such as solar panel installations or energy-efficient machinery and equipment, in addition to waste management and recycling and process optimization.

Table 3: Three Core Pillars Featured in All Greening Value Chain Program Pathways

ESG = environmental, social, and governance; GHG = greenhouse gases; GVC = Greening Value Chain; SMEs = small and medium-sized enterprises.
Source: Authors' compilation.

BNM rolled out the LCTF in 2022 as a concessionary-rate financing scheme to support SMEs in their decarbonization efforts. While the facility significantly reduced financial risk for banks and borrowers, initial uptake highlighted an important insight: Financing alone is not always enough. Many SMEs required not just capital but also the tools, training, and technical support needed to understand and act on emissions. In response, JC3 launched the GVC Program to test whether pairing finance with practical, hands-on support could more effectively empower SMEs to pursue measurable, sustained emissions reductions. This integrated approach recognizes that capacity building and accessibility are key enablers in unlocking the climate potential of Malaysia's SME sector.

> *Financing alone wasn't enough—we engaged with stakeholders and it was found that many SMEs need training, data tools, and ongoing support to truly decarbonise.That's what led to the GVC Program.*

As of the first quarter of 2025, almost 200 SMEs were actively reporting emissions data: Nearly 30% of over 650 SMEs had onboarded, with the largest segments being professional services (46%) and manufacturing (16%) among a diverse range of other sectors (**Figures 7** and **8**). The number of SMEs actively reporting emissions data in 2025 is a promising increase compared to 2023 during which just over 40 SMEs began to report emissions.

Sectors of SMEs registered

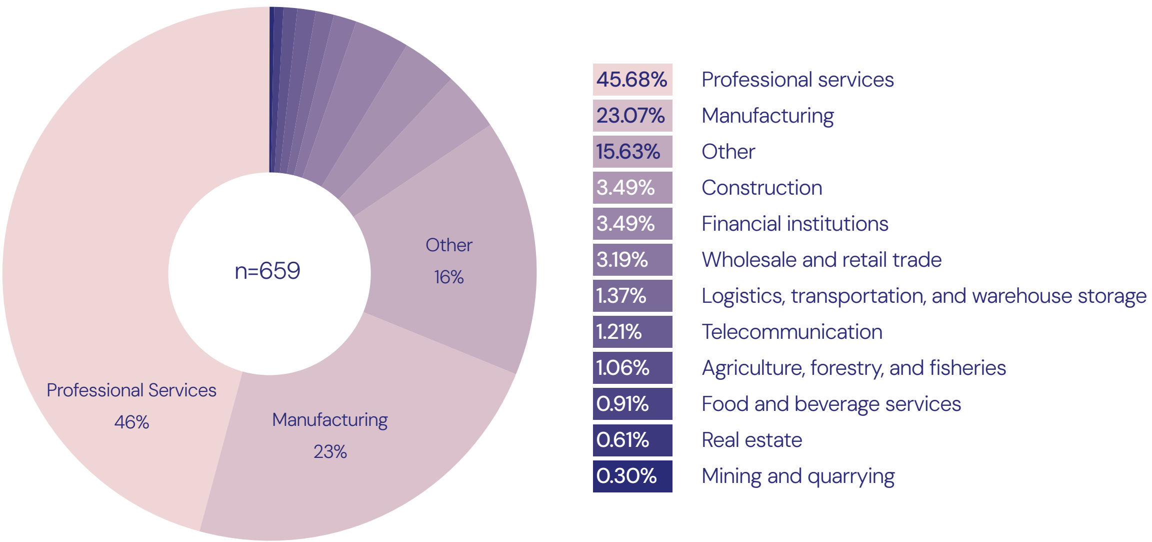


Figure 7: SMEs Onboarded GVC Data Reporting Platforms by Industry Sector

GVC = Greening Value Chain, SMEs = small and medium-sized enterprises.
Source: Author's compilation based on data provided by strategic partners of the GVC Program.

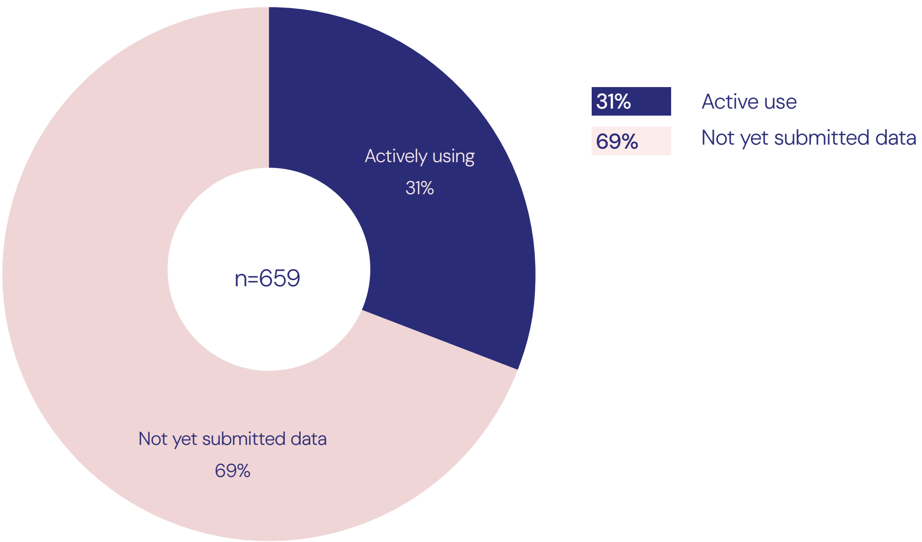


Figure 8: Percentage of SMEs Actively Using Data Platforms to Track Emissions

SMEs = small and medium-sized enterprises.

Source: Author's compilation based on data provided by strategic partners of the GVC Program.

In terms of anchor corporates, more than 10 across a diverse range of sectors (e.g., manufacturing, services, utilities) are now indicatively part of the program, with growth expected to continue during 2025, which will drive increased SME engagement (**Table 4**).

Achievements	Gaps and Challenges
Growing Awareness Many SMEs stated they never tracked carbon emissions prior to the GVC Program. Participating SME interviewees revealed new readiness for emissions measurement and decarbonization actions.	**"Partial" Engagement** Many SMEs dropped off after initial training when GVC participation was not mandatory or when they lacked clarity on next steps and incentives. This closely reflects the general hesitation among SMEs to engage in decarbonization.
Standardizing Reporting By using common software, anchor companies can see partial Scope 3 data from their suppliers.	**High variance in data quality** Many SMEs are unsure of their emissions sources and what data to collect, resulting in inconsistent or incomplete reporting. It reflects the need for ongoing training and support in data collection, improving data accuracy over time.
Successes Some SMEs used the software to identify major carbon hotspots and made immediate changes to reduce emissions and operating costs.	**Banking processes and SME experience** Some SMEs reported that, when inquiring about the LCTF, they were sometimes directed toward standard loan products instead. This suggests a gap in either knowledge or promotional effort around green financing, highlighting the need for additional training and guidance for both banks and SMEs.
Positive Behavioral Change Even partial data entry helped some SMEs see energy cost-saving opportunities. However, absent mandated compliance or strong buyer incentives, many SMEs remain noncommittal.	

Table 4: Early Outcomes of the Greening Value Chain Program—Achievements, Gaps, and Challenges

SMEs = small and medium-sized enterprises. Source: Author's compilation

While the GVC Program ultimately aims to reduce GHG emissions across the supply chain, quantifiable impacts may not yet be fully visible, an expected challenge in most programs of such scope in the early stage. However, the inclusive nature of the GVC Program has already led to progress in laying the foundation for a stronger embedding of sustainability in supply chains.

> *We see about 40 SME suppliers actually collecting data. Some forget. Without a push or regulation, they drift away.*
>
> — GVC Anchor from a large corporation

> *No immediate ROI, but it helps suppliers realize electricity is half their carbon. Some replaced lights or machines. That's progress.*
>
> — GVC Anchor from a large corporation

PANTAS TAKEAWAYS AND EXPERIENCE

Pantas has been a strategic partner since the inception of the GVC Program, which was launched in conjunction with COP27's Finance Day in 2022. As a private startup providing carbon management and ESG software solutions, Pantas offers both an enterprise platform for large corporations and banks, and a lighter version for SMEs. Through this model, GVC Anchors gain visibility into their supply chain's emissions while SMEs gain access to carbon management tools and educational resources. Meanwhile, banks participating in the GVC Program provide SMEs with an avenue for climate transition financing options, potentially helping them to "green" their operations.

Pantas' experience in the GVC Program offers insights that may be relevant for similar initiatives in other jurisdictions. Its approach, aligned with international solution standards, combines user-friendly, emissions-tracking software with targeted training and awareness-building, improving the accuracy of data reported by SMEs and enabling more robust baselines, progress tracking, and decision-making.

Of roughly 150 companies actively reporting data on Pantas' platform, 12 have consistently tracked their emissions performance over the past 2 years, providing useful insight for understanding the decarbonization potential of SMEs. Examples include the following (**Figure 9**):

- Eight SMEs achieved an average 9% reduction in GHG emissions in 2024 compared to their 2023 baseline, representing a total reduction of 1,540 tons of carbon dioxide equivalent.
- Four SMEs recorded an 18% emissions increase (an aggregate increase of 2,138 tons of carbon dioxide equivalent), largely attributed to increased business activities.

Different start times for SME participation and ongoing business expansion further complicate measuring year-on-year changes. Consequently, it must be considered that the data presented in this report should be viewed as preliminary evidence of and early-stage insights into potential emissions reduction gains in the GVC Program. These efforts nonetheless offer a valuable proof-of-concept for integrating SMEs into broader decarbonization efforts.

The data insights gained by SMEs through platforms like Pantas' have empowered SMEs to identify potential areas for emissions reductions, while also underscoring the challenges inherent in SMEs' transitioning to low-carbon operations. Several SMEs, for example, have reported early successes using newly acquired data insights and capacity-building knowledge. One manufacturing SME reduced its electricity bill by half by installing solar panels and adopting other efficiency measures, while a logistics company lowered its fuel consumption through business process improvements. In other instances, data insights were used to influence business decisions: A services-based SME assessed the viability of utilizing renewable energy solutions, quantified projected savings and efficiency gains, and ultimately achieved a net positive return on investment. These early successes highlight how data-driven decisions not only can accelerate the green transition but also enhance financial performance, reassuring other ecosystem participants that practical support and resources are indeed available and accessible.

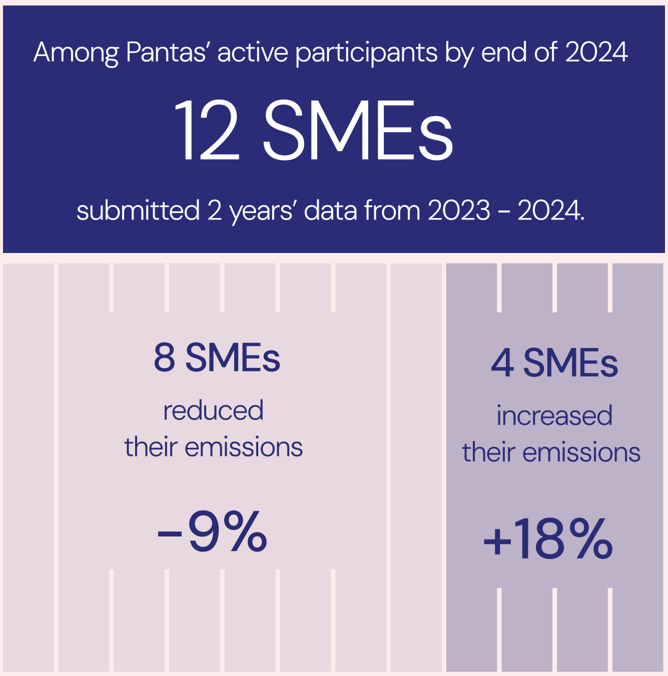


Figure 9: GHG Emissions Performance of SMEs, 2024 versus 2023

GHG = greenhouse gas emissions, SMEs = small and medium-sized enterprises.
Source: Author's compilation based on data provided by Pantas, a strategic partner of the GVC Program.

One of the clearest lessons to emerge from the GVC Program is that blended facilitation works best. Combining the support of corporate anchors with training, software tools, and access to financing has proven far more effective than offering finance alone.

For many SMEs, this integrated approach provides both the practical tools and motivational context to begin their decarbonization journey. Participants who have started tracking their emissions report a better grasp of their carbon hotspots, as well as a clearer understanding of why emissions reduction matters. That said, interventions need to demonstrate longevity across the business cycle—many SMEs need sustained support, repeated follow-ups, or sector-specific guidance to stay on track. A practical next step could be to develop a GVC handbook with clear, step-by-step instructions tailored to different sectors, ensuring that SMEs have a reliable reference long after initial workshops conclude.

Despite the availability and low-risk advantages of the LCTF, there are some challenges. SMEs often encounter challenges when seeking small green loans: Some are unaware of the facility, while others are redirected to conventional financing due to procedural complexities. To enhance greater access and uptake, financial institutions could benefit from clearer internal protocols and streamlined processes for handling smaller green loan applications. Establishing a more direct, simplified route can also ensure that the facility fulfills its catalytic potential.

> *We discovered if it's voluntary, you'll only get partial participation. But the ones who do it see real cost savings or brand credibility.*
>
> — Large corporation serving as GVC Anchor

> *I heard about the GVC Program's free carbon tool and wanted to apply. It was sponsored by the bank, so we had to go through several approvals. Altogether, it took about six months before we got access.*
>
> — Family business owner, GVC participant

Another recurring challenge is data collection and continuity. While initial carbon tracking efforts are promising, maintaining monthly or quarterly updates is challenging for most SMEs. Without regulatory obligations or tangible rewards, emissions tracking tends to drop in priority. In this context, the role of corporate anchors becomes crucial. SMEs that receive ongoing encouragement or incentives from their major customers are far more likely to stay engaged. Anchors that adopt a hands-on approach—such as offering preferred supplier status or procurement advantages to participating SMEs—report significantly stronger buy-in.

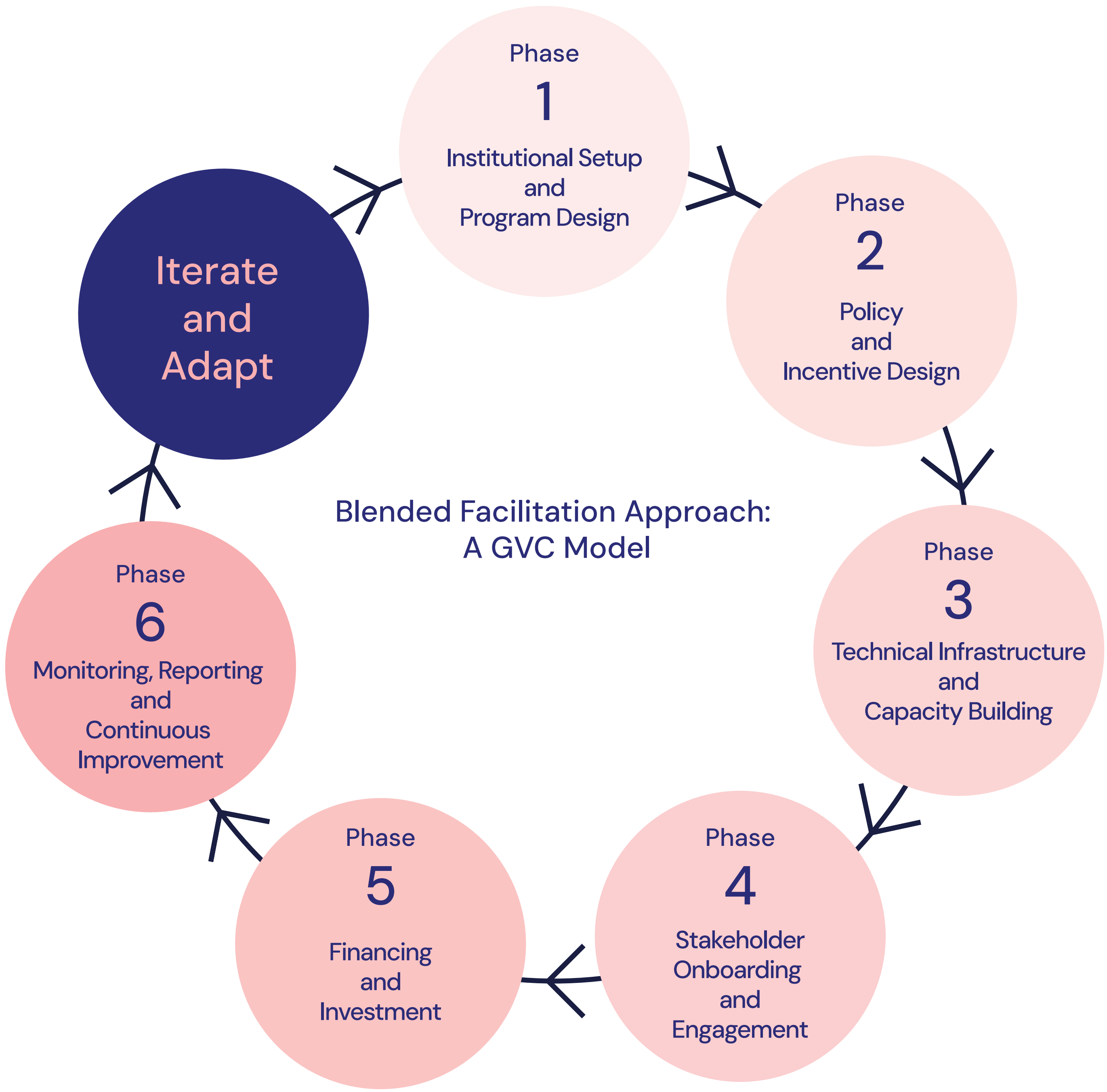
The GVC Program holds interesting insights for regional scale-up. Its blended, multistakeholder model could be replicated across ASEAN, while cross-border collaboration (whether through harmonized guidance, regional incentives, or shared technical infrastructure) could amplify the impact of similar programs across the region. Partnering with multilateral development banks or ASEAN-wide industry platforms may offer a powerful way to scale pilots, share lessons learned, and build a stronger foundation for low-carbon transitions across Southeast Asia.

> *I'm not sure if "misalignment" is the right word, but everyone seems to be doing their own thing with minimal coordination. Regulators and associations need to have better alignment on financing, regulation, and infrastructure.*
>
> — Senior executive of a conglomerate

> *It's an important first step: measuring and understanding where emissions come from. With better synergy among anchors, banks, and SMEs, GVC can truly embed a low-carbon mindset in the supply chain.*
>
> — Representative of a public institution

Replicating the GVC Model

The following six-phase approach can serve as a flexible guide for others looking to replicate or adapt GVC-like programs (**Figure 10**).



Phase 1: Institutional Setup and Program Design

- Designate a Lead Agency: Assign one government body for overall authority.
- Multi-Stakeholder Steering Committee: Include relevant ministries, banks, industry associations, and tech providers.
- Define Objectives and Scope: Identify target sectors, set emissions goals/timelines, and secure funding sources (public budget, development-bank loans, private sector, international grants).

Phase 2: Policy and Incentive Design

- Align with National Climate Strategy: Integrate SME decarbonization into existing policies and NDCs.
- Offer Incentives: Financial (tax breaks, soft loans, subsidies) and non-financial (procurement advantages, awards).
- Set Reporting Requirements: Phase in carbon-reporting from voluntary to mandatory.
- Develop Sector-Specific Guidance: Tailor tools and training for priority industries.

Phase 3: Technical Infrastructure and Capacity Building

- Adopt/Develop Carbon-Accounting Platform: Ensure user-friendly, interoperable software for SMEs.
- Training Programs: Cover climate basics, ESG standards, carbon accounting, and emission-reduction tactics.
- Ongoing Support: Provide helpdesk or advisory service to assist with data collection and software usage.

Phase 4: Stakeholder Onboarding and Engagement

- Identify Anchor Companies: Recruit large buyers (GLCs, PLCs, banks) committed to supply-chain sustainability.
- Communication and Outreach: Partner with business associations for broad SME awareness.
- Streamline Onboarding: Simplify registration, training sign-up, and software setup.
- Peer Learning: Facilitate best-practice sharing among SMEs.

Phase 5: Financing and Investment

- Green Financing Facility: Create or expand a dedicated fund or loan guarantee scheme.
- Engage Financial Institutions: Encourage preferential green loans and staff incentives for green-lending.
- Explore Innovative Finance: Blended finance, crowdfunding, or other models to spur private investment.

Phase 6: Monitoring, Reporting and Continuous Improvement

- Define KPIs: e.g., number of SMEs enrolled, emissions data reported, reductions achieved, finance mobilized.
- Data Analysis: Regularly evaluate SME performance and program outcomes.
- Publish Progress: Issue reports for stakeholders, showcasing results and lessons learned.

Iterate and Adapt
Adjust policies and operations based on feedback, data trends, and best practices.

Figure 10: Replicating a GVC Model in Other Jurisdictions

ESG = environmental, social, and governance; GLC = government-linked company; KPI = key performance indicator; PLC = publicly listed company; NDCs = Nationally Determined Contributions; SMEs = small and medium-sized enterprises. Source: UNDP illustration.

RECOMMENDATIONS: DRIVING SUCCESSFUL IMPLEMENTATION

To achieve low-carbon ambitions at the regional and national levels, SMEs must be equipped and incentivized to transition. This requires coordinated action from policymakers, large corporations, financial institutions, and SME development agencies. Policymakers and development agencies have the ability to create regulatory clarity, incentives, and ecosystem integration that allows SMEs to move forward confidently. Financial institutions can build practical pathways to green lending, while large corporations can drive transformation through their supply chains. SMEs themselves, equipped with the right tools, will be well-placed to manage costs, access new markets, and thrive in an increasingly climate-conscious economy.

Drawing on stakeholder insights during interviews, as well as scoping existing and emerging regional legislative and policy shifts, the following six Tactical Levers make up the planks of a playbook to unlock SME participation and accelerate emissions reduction at scale (**Figure 11**).

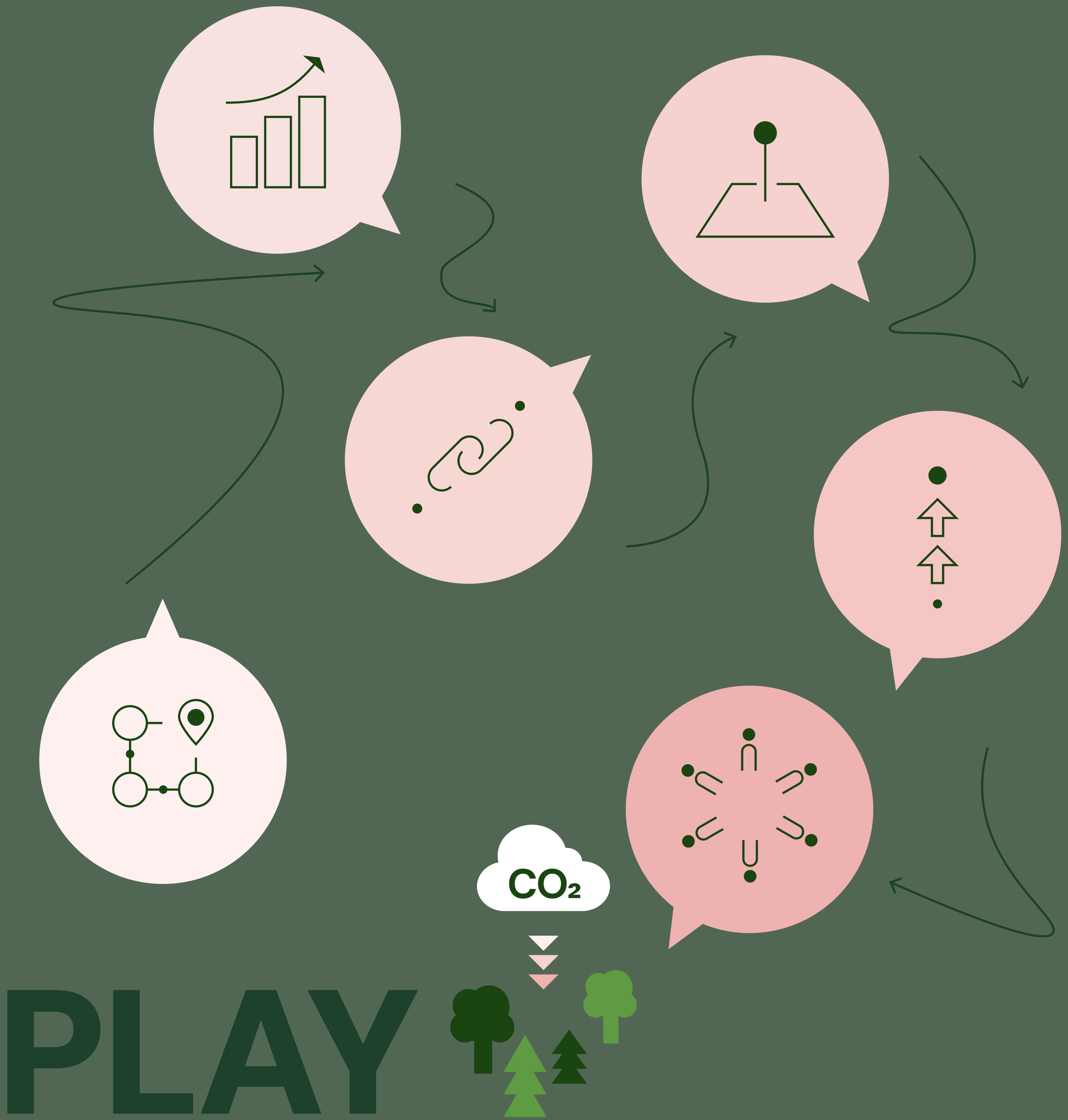
The insights gleaned from the interviews and engagements suggest that persistent barriers are situated at earlier implementation and capacity building stages. Implementing these levers would allow initiatives such as the GVC Program to be scaled up and sustainable, with the overarching goal of transforming the enabling environment for SMEs to make decarbonization both viable and valuable.

These levers are already in use across ASEAN to varying degrees and through diverse mechanisms. Jurisdictional challenges, market maturity, and institutional capacity shape how each country activates them. In Malaysia, all six levers are being leveraged to some extent across a spectrum of tools, programs, and initiatives including public sector mandates, blended finance facilities, supply chain policies, and capacity building programs, highlighting the growing momentum to align policy ambition with practical delivery.

Figure 11: Six Tactical Levers to Drive Successful Implementation

Source: UNDP illustration.

Tactical Levers



Tactical Lever 1
Establish a Clear, Phased, and Agile Regulatory Pathway

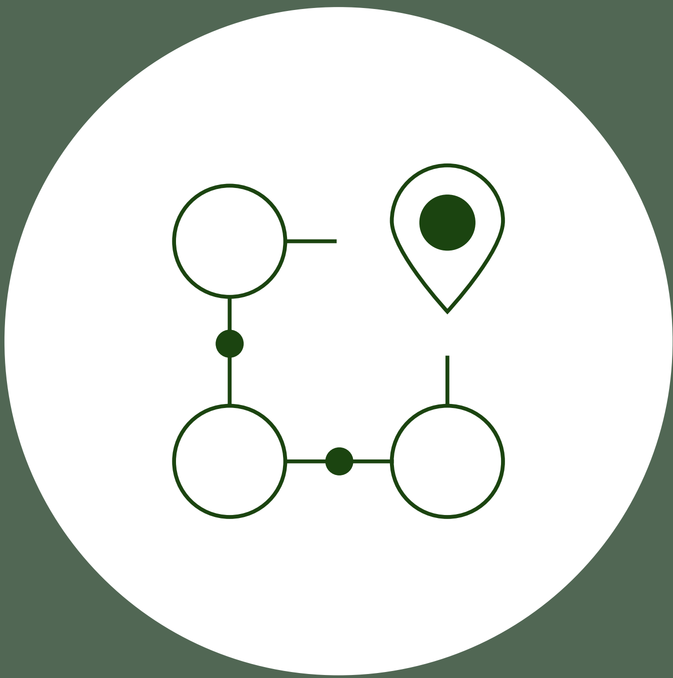
Tactical Lever 2
Make Green Financing More Accessible and Progressively Scalable

Tactical Lever 3
Anchor and Strengthen Decarbonization in Supply Chains

Tactical Lever 4
Localize Climate Communication and Demystify Decarbonization Domestically

Tactical Lever 5
Upgrade, Enhance, and Harmonize Platforms and Data Infrastructure

Tactical Lever 6
Foster Ongoing Innovation and Cross-Sector Collaboration



Tactical Lever 1: Establish a Clear, Phased, and Agile Regulatory Pathway

Why This Matters

SMEs often cite the multiplicity of regulations as a principal reason hindering greater climate engagement and timely decarbonization. Large corporations, financial institutions, and public agencies likewise emphasize that gradual but firm mandates—grounded in practical timelines and stakeholder input—are critical to ensuring consistent and sustainable engagement. A coherent regulatory pathway not only clarifies what SMEs should do, it also shows how their efforts contribute to national and regional climate goals. By reviewing existing policies, identifying gaps, and engaging stakeholders early, governments can tailor requirements, avoid conflicting rules, and ensure SMEs have fit-for-purpose guidance and resources at each phase of their low-carbon journey.

Key Steps

1. Harmonize Requirements for Simpler Compliance

- **Map Existing Frameworks**
  Review regulations and frameworks to identify gaps, overlaps, and barriers that create uncertainty for businesses.
- **Engage Stakeholders Early**
  Gather feedback from businesses, banks, and industry groups to shape regulations and frameworks that reflect day-to-day operational concerns.
- **Align with International Standards**
  Reduce duplication in local regulations through strong reference to international frameworks, to ensure global requirements are met.

2. Prioritize Early Wins

- **Focus on Scope 1 and Scope 2 Emissions**
  Simplify mandatory carbon reporting to initially examine Scope 1 and Scope 2 emissions, such as purchased electricity and direct fuel use in stationary and mobile combustion.
- **Stagger Implementation Phases**
  Break the decarbonization process into manageable steps; provide basic templates or digital tools for early compliance and refine them over time.
- **Simplify and Communicate**
  Communicate the availability of templates and digital tools through business associations, social media, and trusted channels to boost awareness. Leverage on visual guides to illustrate specific actions.

3. Introduce Tiered Mandates

- Institute Sector-Specific Timelines
  Phase in carbon reporting by sector and enterprise size. Begin with high-emission industries or those with strong export exposure with gradual extension to other sectors.
- Provide Non-Penalized Early Mandates
  Provide a transition window where reporting is encouraged but non-reporting is not penalized, gradually shifting from incentives to regulatory compliance after instilling familiarity.
- Set Clear Targets
  Link mandates to national or ASEAN-level carbon reduction goals, clearly indicating how improvements feed into broader climate targets.

4. Balance "Carrots" and "Sticks"

- Offer Incentives
  Pair mandated carbon reporting with incentives such as partial grants for carbon-audits, tax rebates for green upgrades, or tax exemptions for filing audited carbon data.
- Create a Support Ecosystem
  Partner with development banks or domestic financial institutions to provide concessional financing or utilize blended models to lower costs for SMEs to pursue green upgrades.
- Establish a Feedback Mechanism
  Develop clear avenues for businesses to share practical challenges, enabling policymakers to adapt rules and incentives.

Stakeholder Roles

Government and Regulators	• Review and Alignment: Coordinate existing policies, set phased mandates, and manage stakeholder engagement. • Funding and Incentives: Allocate funds and provide tax relief to businesses seeking to manage implementation costs. • Monitoring and Feedback: Operate a feedback loop so regulators can adapt rules in response to operational considerations.
Financial Institutions	• Lending and Advisory: Offer specialized green financing tools that support regulatory requirements. • Capacity Building: Equip relationship managers to guide businesses on available incentives and compliance steps.
GLCs, SOEs, and Large Corporations	• Supply Chain Alignment: Uphold or exceed the official mandates, incorporate them in vendor agreements. • Capacity-Building: Provide technical support to smaller vendors in the value chain.
SME Development Agencies	• Sector-Specific Guidance: Develop easy-to-follow material that translates regulations into day-to-day actions. • Coordination Role: Act as intermediaries between businesses and regulators, gathering on-the-ground feedback.
SMEs	• Early Adoption: Implement initial reporting requirements to ease subsequent transitions stages. • Proactive Feedback: Participate in feedback mechanisms and request clarifications or adjustments where needed.

Risk Management
Onerous mandates or complex reporting can discourage smaller businesses from participating in the onset, while delays in introducing requirements can stall meaningful progress. Balancing enforcement and incentives—plus continuous capacity building and stakeholder feedback—will maintain momentum.

Tactical Lever 2: Make Green Financing More Accessible and Progressively Scalable

Why This Matters

Even when green financing is available—through development loans or special facilities—SMEs may still face challenges in accessing them. Factors such as high perceived risk, uncertain application processes, or minimal knowledge of available options can deter SMEs from pursuing low-carbon upgrades. By streamlining application procedures, clarifying eligibility, and encouraging accessible green finance, policy interventions can empower SMEs to confidently invest in climate-friendly technologies or processes.

Key Steps

1. Simplify Green Loan Facilities

- **Create a Clear "White List"**
  Provide a quick-reference guide outlining eligible decarbonization measures (e.g., solar, energy-efficient equipment) to help businesses understand what qualifies for support. As market familiarity grows, gradually evolve this list into a principles-based framework to allow for greater flexibility and innovation.

- **Streamline Processes**
  Develop an "express lane" for small-ticket financing requests, featuring reduced paperwork and faster approvals. This is particularly useful for micro and small enterprises.

- **Coordinate with Regulators**
  Maintain regular dialogue between financial institutions and regulators to align administrative overhead, ensure consistent reporting requirements, and refine oversight as needed.

2. Adopt Phased Metrics for Measuring Impact

- **Start with Intensity Metrics**
  Focus initially on emissions per unit of output (e.g., GHG per ton of product) to accommodate high-growth SMEs whose total emissions may still rise.

- **Raise the Bar Gradually**
  Transition to absolute emissions targets once SMEs can reliably measure data and better manage growth.

- **Use Data to Drive Scale**
  Encourage SMEs to share improvements with financial institutions, building a performance record that can reduce perceived risks and promote larger green investments.

3. Offer Tiered Incentives and Risk-Sharing

- **Provide Partial Guarantees and Subsidies**
  Provide development bank guarantees that lower the credit risk for lenders, along with tax breaks, interest-rate subsidies, or small grants for decarbonization projects.
- **Present Blended Finance Solutions**
  Combine public, private, and philanthropic capital to mitigate default risks for SMEs operating in higher-risk sectors or seeking substantial green investments.
- **Promote Innovative Mechanisms**
  Explore performance-based models—like shared-savings contracts—where SMEs repay loans through the cost savings generated by decarbonization investments.

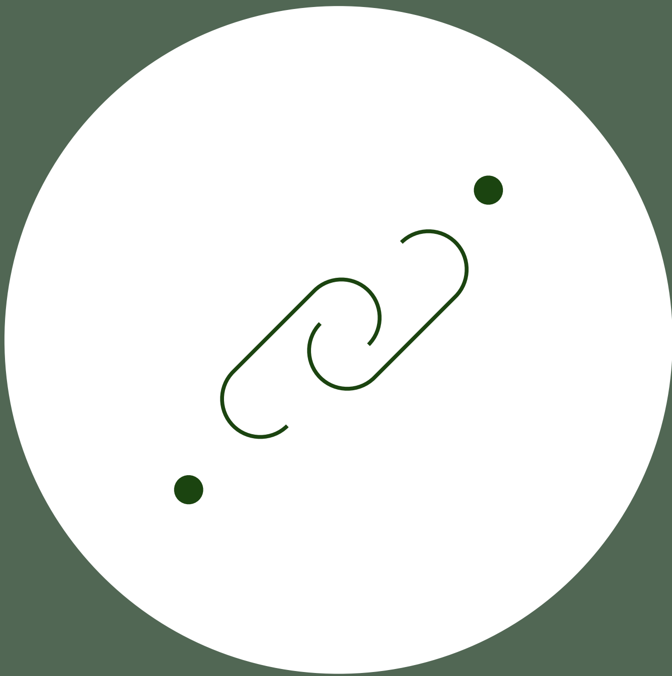
4. Build Relationship Managers' Capacity

- **Offer Centralized and Structured Training**
  Strengthen the capacity of bank's relationship managers through structured, cross-agency training on green financing schemes, the streamlining of processes, and the use of sector-relevant case examples to enhance SME engagement.
- **Provide Sector-Based Templates**
  Equip relationship managers with simple ROI calculators, check-list or case-study templates to assist SMEs in making informed investment decisions.
- **Institute Strong Regional or Branch-Level Support**
  Deploy green finance officers in secondary cities or through SME agency networks for hands-on guidance, ensuring access to support for rural and smaller businesses.

Stakeholder Roles

Financial Institutions	• Simplify Underwriting Processes: Adopt simple, standardized criteria (e.g., white lists, streamlined documentation) and actively promote green financial products. • Targeted Capacity Building: Equip front-line staff with specialized training, ROI tools, and access to performance-based financing models such as shared-savings agreements. • Finance Innovation: Pilot new financing mechanisms (e.g., sustainability-linked loans or blended finance structures) to expand SME access to capital.
Government and Regulators	• Regulatory Coordination: Align policy oversight with financial institutions' processes to avoid duplication or contradictory requirements. • Risk Mitigation Schemes: Offer partial guarantees or co-funding that reduces lenders' risk appetite barriers. • Incentive Structures: Introduce targeted tax credits, interest rate subsidies, or matching grants for SMEs.
Solution Providers	• Technical Expertise: Collaborate with financial institutions to demonstrate ROI and support implementation of pay-from-savings models tailored for SMEs. • Platform Integration: Develop simple digital tools that generate basic GHG estimates and sector-specific lending templates.
GLCs, SOEs, and Large Corporations	• Supply-Chain Support: Encourage SME vendors to access green finance by offering endorsements, co-investment signals, or credit support mechanisms to reduce perceived risk. • Sector-Focused Guidance: Share best practices, sector data, and recommended technology upgrades within value chains.
SME Development Agencies and Chambers	• Green Advisory Services: Provide or coordinate on-the-ground advisory, linking SMEs with banks and solutions. • Outreach and Training: Organize targeted workshops, roadshows, or mobile clinics to raise SME awareness of green finance opportunities and build capacity for strong loan applications.
SMEs	• Proactive Application: Seek out simplified financing channels, especially "express lane" loan processes. • Transparent Data Sharing: Track relevant metrics (e.g., intensity-based) to demonstrate improvements and attract better lending terms over time.

Risk Management
Uncertain approval processes or eligibility criteria can undermine SME confidence, causing them to default back to conventional loans or halt green investments altogether. By simplifying requirements, embedding training and advisory support, and sharing performance data, green financing becomes more accessible, fosters greater lender trust, and scales decarbonization across diverse SME segments.



Tactical Lever 3:
Anchor and Strengthen Decarbonization in Supply Chains

Why This Matters

Many SMEs operate as vendors for larger entities—whether they are publicly listed companies, GLCs, government agencies, or multinational corporations. When these “anchors” weave emissions standards and green procurement requirements into their contracting processes, SMEs gain both tangible incentives, such as stable demand or co-financing, and clear signals that decarbonization is the new norm. By standardizing reporting, offering capacity building, and recognizing strong performance, anchors can accelerate the pace at which SMEs adopt low-carbon practices.

Key Steps

1. Mandate Tiered Carbon Reporting

- **Move to Next Stage of Phased Approaches**
  Mandate Scope 3 emissions disclosure for publicly listed companies and GLCs, gradually extending to other large corporates, while keeping SMEs' obligations focused on Scope 1 and 2.
- **Calibrate Timelines**
  Maintain a clear compliance horizon with firm deadlines so that both large corporations and SMEs are clear that "business-as-usual" is no longer viable and can steadily build capacity without facing abrupt changes.
- **Lead by Example**
  Urge government agencies and GLCs to take the lead by disclosing their value chain GHG emissions, using lessons from their experience to inform and refine broader reporting frameworks before scaling to wider markets.

2. Make Sustainability Criteria a Supplier Requirement

- **Incorporate Scope 3 Targets**
  Encourage large buyers (publicly listed companies, GLCs, government agencies, and multinational corporations) to set explicit Scope 3 emissions reduction goals, which then cascade into vendor evaluations.
- **Support Cost-Sharing Mechanisms**
  Share costs for green technologies (e.g., software subscriptions or carbon audits), where possible, to reduce the financial burden on smaller suppliers.
- **Use Contractual Levers**
  Include standard green procurement clauses and model contract language outlining reporting obligations and expected reductions over time.

3. Provide Clear Guidance and Capacity Building

- **Create Baseline Toolkits**
  Offer sector-specific and streamlined carbon reporting frameworks, showing SMEs a practical way to measure emissions.
- **Showcase Peer Success**
  Feature real-world examples of SMEs—ideally from comparable sectors—that have improved efficiency, reduced costs, or unlocked new markets through decarbonization efforts, helping others visualize tangible business benefits.
- **Host Training and Coaching**
  Provide training sessions to help SMEs understand anchor requirements, document data accurately, and identify feasible emissions reduction strategies.

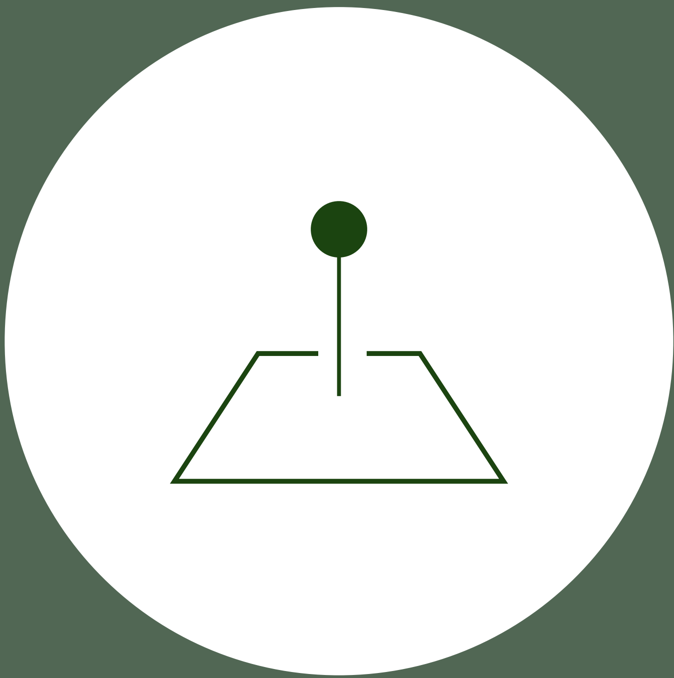
4. Recognize and Reward

- **Confer Preferred Supplier Status**
  Support SMEs demonstrating consistent emissions tracking or sustained reductions by acknowledging ‘preferred supplier’ status or showcasing them as sustainability leaders.
- **Align with Public Tenders**
  Government agencies and GLCs can integrate green criteria into procurement procedures, reinforcing that meeting sustainability standards can lead to broader business opportunities.
- **Announce Reporting Thresholds Early**
  Ensure SMEs have adequate lead time to prepare for upcoming carbon or sustainability benchmarks, enabling them to plan upgrades, allocate resources, and adopt necessary systems with minimal disruption.

Stakeholder Roles

GLCs, SOEs, and Large Corporations	• Supply Chain Decarbonization Programs: Define clear sector guidelines, timelines, and vendor emission thresholds. • Co-Investment: Offer partial funding or software subscriptions for smaller vendors to jump-start carbon measurement. • Recognition and Incentives: Provide "preferred supplier" status or priority tender evaluation for SMEs that meet or exceed targets.
Government and Regulators	• Green Procurement: Incorporate decarbonization requirements into public tenders, reinforcing demand for low-carbon goods and services. • Lighthouse Leadership: Publish operational emissions data, pilot new reporting methods, and refine best practices for broader rollout.
SME Development Agencies	• Capacity Building: Host workshops, develop toolkits, and coordinate coaching to help SMEs meet anchor requirements. • Centralize Information Access: Act as a coordination point to clarify policy requirements and connect SMEs with anchors and regulators.
Financial Institutions	• Supportive Lending: Provide specialized credit lines or preferential rates for SMEs adopting anchor-driven decarbonization upgrades. • Data Sharing: Collaborate with anchors to recognize SMEs with strong performance, streamlining green-finance applications.
SMEs	• Proactive Engagement: Embrace anchor-led reporting, seek out co-financing, and use capacity-building sessions to optimize emission reductions. • Enable Policy Feedback: Share practical challenges with anchors, regulators, and SME agencies to continually refine guidelines.

Risk Management
Without a common baseline or coordinated approach, SMEs can be pulled in multiple directions by differing anchor requirements—leading to confusion, duplicated reporting, or frustration. Ensuring harmonized frameworks, offering clear timelines, and providing on-the-ground support helps minimize overload and fosters real uptake of sustainable supply chain practices.



Tactical Lever 4: Localize Climate Communications and Demystify Decarbonization Domestically

Why This Matters

Often, SMEs remain disengaged from climate measures due to limited information, inaccessible terminology, and a perceived lack of near-term ROI. Family-owned businesses can be especially hesitant if owners see no direct profitability. By reframing technical emissions concepts in clear, business-relevant terms, policymakers and ecosystem partners can make decarbonization feel more tangible and attainable for SMEs. Providing accessible tools such as carbon calculators and step-by-step training enables SMEs to understand how small actions can yield long-term business gains, including competitiveness and regulatory readiness.

Key Steps

1. Strengthen the Business Case for Decarbonization

- **Highlight Bottom-Line Benefits**
  Show how green practices such as improving energy efficiency or reducing waste can lower operational costs and open access to new revenue streams, including export markets with climate disclosure requirements.

- **Use Local Case Studies**
  Provide SMEs with relatable examples of how others have started their decarbonization journey (e.g. switching to solar, adopting energy audits, or applying for green loans), making the transition feel achievable.

- **Emphasize Consumer Demand**
  Emphasize the rising demand for sustainable products among consumers and buyers, reinforcing that strong sustainability credentials are becoming a key driver of market competitiveness.

2. Demystify Carbon Metrics

- **Simplify Emissions Accounting Through Practical Analogies**
  Position emissions data in familiar, business-relevant terms—for example, likening carbon factors to currency exchange rates—so SMEs can apply straightforward "conversion values" between energy consumption and emissions output without requiring technical expertise. This helps demystify carbon accounting by reducing perceived complexity.

- **Promote Uptake of Free Carbon Calculators**
  Encourage the development and use of free, reliable, and user-friendly GHG emissions calculators (focused on Scope 1 and 2) covering common energy sources nationwide.

- **Promote Similar Tools Across ASEAN**
  Encourage adoption of local or regionally endorsed carbon tracking tools across ASEAN, emphasizing consistency in methodology and compatibility with international standards.

3. Deploy Targeted, Sector-Specific Campaigns

- Tailor Content to Industry
  Move beyond generic knowledge materials and instead customize across sectors with cost-benefit examples and practical checklists.
- Improve Visibility of Available Information
  Partner with industry associations, trade publications, and other trusted communication outlets where SMEs seek information.
- Pair with Business Development
  Fold sustainability sessions into industry roadshows or expo events, attracting participants who also seek networking and business leads.

4. Establish a Carbon Literacy Baseline

- Integrate Sustainability in the National Agenda
  Assign a lead government body to work across ministries, GLCs, and industry groups to establish a minimum level of climate awareness using short courses, multi-language campaigns, or mandatory modules in specific business licenses.
- Provide Accessible Resources
  Distribute concise how-to videos, recorded webinars, and practical tip sheets that SMEs can revisit as needed—especially during key reporting periods.
- Offer Mini-Grants and Incentives
  Offer small subsidies for training or software adoption, helping SMEs overcome early cost barriers. Encourage local educational institutions to host capacity building programs, ensuring wide geographic reach.

Stakeholder Roles

SME Development Agencies and Chambers	• Outreach and Campaigns: Organize industry-specific sessions, develop simplified toolkits, and coordinate local green business "bootcamps." • Community Building: Foster peer learning platforms where SMEs share experiences and challenges.
Government and Regulators	• National Carbon Literacy: Embed basic climate knowledge in vocational and business licensing frameworks. • Incentive Schemes: Support training videos, calculators, or mobile clinics to widen SME engagement.
GLCs, SOEs, Large Corporations, and Financial Institutions	• Supplier Education: Invite SME vendors to "green demos" or open days, providing real-world examples and networking opportunities. • Co-Marketing: Collaborate on case studies that highlight mutual wins for anchor buyers and greener SMEs.
Media and Educational Institutions	• Mass Communication: Broadcast short stories on local TV, publish case articles, and develop radio segments that highlight SME cost savings from decarbonization. Ensure content is accessible in multiple languages. • Curriculum Inclusion: Integrate basic carbon accounting into technical and vocational education, ensuring future generations of SME owners are prepared.
SMEs	• Active Participation: Attend relevant training, test out free carbon calculators, and explore peer networks. • Information Sharing: Share cost-savings and ROI data, encouraging more peers to see the business advantages of going green.

Risk Management

If technical language and abstract policy remain the focus, SMEs may be disengaged due to intimidation or a perceived lack of relevance. By making messages practical, profit-centric, and easy to access, policymakers and ecosystem players can sustain SME interest and underscore that business survival goes hand-in-hand with climate resilience.

Tactical Lever 5: Enhance and Align Platforms and Technical Infrastructure

Why This Matters

Multiple carbon-accounting platforms, varying instructions, and the lack of interoperability of different platforms (e.g., with anchor company systems or with existing reporting frameworks) sometimes hinder sustained participation from SMEs. By aligning reporting requirements, financing resources, and practical guidance, SMEs will have fewer barriers to measuring emissions accurately, while banks, anchors, and regulators can access consistent data.

Key Steps

1. Maintain a Central Portal

- **Consolidate Financing and Guidance**
  Develop a centralized portal for SMEs to find relevant financial schemes, regulations, sector guides, and success stories for peer support.
- **Enable Automatic Data Inputs**
  Collaborate with utilities (e.g., energy providers) so usage data and emission factors can be automatically uploaded, streamlining data entry.
- **Ensure Application Programming Interface (API)-Compatibility**
  Adopt open-data standards or API-based architectures that allow interoperability or sharing of metrics across different platforms (e.g., anchor systems, national GHG inventories).

2. Offer a Government-Supported Free Carbon Calculator

- **Keep It Basic and Scalable**
  Provide a simple, user-friendly tool focused on Scope 1 and 2 emissions from common energy sources. Over time, integrate advanced features (Scope 3) as take-up increases and matures.
- **Work Toward Interoperability**
  Ensure that calculators be API-compatible with the central portal and recognized by regulators, enabling easy data transfer to anchors, banks, or government agencies.
- **Communicate and Promote Adoption**
  Communicate the availability of the calculator and portal through business associations, social media, and in-person events to boost awareness and increase adoption to reach SMEs who may be unaware of the resources.

3. Promote a Consistent Data Approach for Banks and Corporate Anchors

- **Align on Common Metrics**
  Encourage large corporations and financial institutions to align baseline frameworks or emission factors, streamlining data entry requirements for SMEs.
- **Foster Gradual Standardization**
  Introduce a phased timeline for consistent reporting across all supply chain participants; as anchor adoption grows, more SMEs will follow suit.
- **Enhance Data Interoperability and Alignment**
  In the long run, develop standardized and interconnected data systems that enable tiered disclosure, aggregated reporting, and secure API integration. These systems should facilitate seamless data exchange across official GHG inventories, enterprise ESG reporting, and cross-sector climate analyses, ensuring consistency while allowing for decentralized data management.

Stakeholder Roles

Government and Regulators	• Technology Roadmap: Commission or endorse a shortlist of integrated solutions and ensure alignment with open-data or API standards. • Data Security and Oversight: Set guidelines around data privacy, ensuring platform credibility and adoption.
SME Development Agencies	• Platform Coordination: Maintain a green SME portal, updating resource links, toolkits, and white lists for green investments. • Outreach and Training: Deliver user guides or quick demonstrations to SMEs on how to use the portal and calculators.
Utilities and Tech Partners	• Automated Data Flows: Work toward an automated upload of usage data or emission factors into the central portal, minimizing manual input for SMEs. • Software Upgrades and APIs: Collaborate with regulators to ensure calculators and corporate systems are interoperable.
GLCs, SOEs, Large Corporations, and Financial Institutions	• Align Frameworks: Align on common metrics or toolkits to ease SME reporting. • Platform Integration: Ensure internal procurement and lending platforms are interoperable with other portals and government-approved calculators.
SMEs	• Timely Data Entry: Embrace standardized tools for consistent, accurate reporting. • Feedback Loop: Communicate usability issues or data gaps, helping refine the central portal's features over time.

Risk Management
Launching overlapping portals can overwhelm SMEs. Ensuring cross-agency coordination, adopting API-friendly systems, and promoting interoperability can help align data solutions, ensure streamlining, and encourage broader SME engagement.

Tactical Lever 6:
Foster Ongoing Innovation and Cross-Sector Collaboration

Why This Matters

SMEs often lack the research and development (R&D) capacity to explore new green technologies or processes on their own. Public–private partnerships, accelerator programs, and innovation vouchers can fill these gaps by funding pilot projects, while large corporations can help SMEs test materials, reuse waste streams, or adopt circular practices. By ensuring these initiatives are user-friendly and well-publicized, the ecosystem can spur faster adoption and help SMEs scale up low-carbon solutions. At a regional level, ASEAN-wide alignment and shared pilot models can enable SMEs operating across borders to leverage proven solutions.

Key Steps

1. Expand Grants and Accelerators

- **Offer Innovation Vouchers**
  Provide micro-grants that SMEs can use to experiment with energy audits or pilot low-carbon digital solutions.
- **Mobilize Private Capital**
  Encourage impact investors and philanthropic foundations to support accelerator programs or matching grants that focus on decarbonization.
- **Streamline Application**
  Keep application requirements optimized and user-friendly, preventing SMEs from being deterred by complex processes.

2. Enhance Partnerships Between Large Corporations and SMEs

- **Encourage Best Practice Sharing**
  Urge large enterprises to act as anchors, and open labs or sponsor pilot projects to allow SMEs to utilize existing infrastructure and knowledge.
- **Leverage Trade Associations**
  Have government, public universities or industry groups facilitate linkages, optimizing R&D costs and the use of digital solutions for SMEs that collaborate with corporate anchors.
- **Monitor and Scale Successful Pilots**
  Track ROI and emissions improvements, and replicate promising models across other sectors or regions.

3. Foster Cross-Border Initiatives

- **Align ASEAN-Level Frameworks**
  Collaborate to align green taxonomies or technology standards across member states which can assist SMEs that may be operating regionally.
- **Promote Regional Knowledge Sharing**
  Organize forums or networks where SMEs can learn from neighboring countries' successes and adapt proven strategies to local contexts.
- **Seek Co-Financing for Transnational Pilots**
  Explore support for resources that can support cross-border decarbonization pilots, scaling effective solutions region-wide.

Stakeholder Roles

Innovation Agencies, Impact Investors and Philanthropic Foundations	• Funding Mechanisms: Provide support or matching grants for green R&D. Launch innovation voucher schemes geared toward low-cost SME decarbonization. • Accelerator Mentorship: Offer coaching, networking, and investor exposure to fast-track green SME ideas.
GLCs, SOEs and Large Corporations	• Open Labs and Pilots: Welcome SMEs to test new materials, processes, or circular economy models. • Supply Chain Collaborations: Co-invest in technology transfers or co-development programs for promising SME solutions.
Government and Regulators	• Enabling Policies: Provide tax incentives or optimized regulations encouraging public–private R&D. • Facilitation and Coordination: Broker partnerships between SMEs, large corporations, and financial backers; track pilot outcomes to inform policy updates.
SME Development Agencies and Chambers	• Linkage Role: Introduce SMEs to suitable large corporate partners or innovation funds, collecting and disseminating best practices. • Joint Programs: Co-host sector-focused hackathons, business fairs, or sustainability summits that showcase SME innovations.
Regional Bodies (ASEAN)	• Framework Alignment: Help unify green taxonomies, ensuring SMEs can scale solutions across borders. • Shared Success Stories: Collect and distribute cross-border case studies, highlighting replicable models.
SMEs	• Active Participation: Seek out accelerator spots, grants, or pilot openings and be open to adapting processes for testing. • Feedback and Scaling: Share results of pilot projects with peers, trade groups, and policy facilitators to encourage broader adoption.

Risk Management
Innovation funds that are too small, complex, or lack promotion can hinder greater SME participation. Ensuring user-friendly processes, publicizing success stories, and aligning collaboration between funders, large corporations, and SMEs can ensure the sustainability of initiatives and that outcomes are impactful.

SME Impact

The six tactical levers outlined in this Playbook aim to reshape the structural environment for SMEs by tackling the policy, finance, data, communications, and innovation barriers that can hinder meaningful and sustained participation in decarbonization.

SMEs have cited a mix of administrative uncertainty, unclear ROI, and limited technical or financial capacity as key reasons for delaying decarbonization. Rather than focusing solely on compliance, these levers emphasize enabling conditions: reducing friction, clarifying business cases, standardizing expectations, and amplifying peer examples that can spark broader momentum across sectors and the region. Across ASEAN, countries are facing similar challenges, including a plurality of programs, inconsistent standards, and gaps in SME capacity. Malaysia's experience with the GVC Program offers early signals that a bundled approach combining financing, digital tools, and ecosystem partnerships can catalyze behavior change and emissions reduction.

When applied in concert, these levers can reduce friction points for SMEs making decarbonization simpler to understand, more affordable to adopt, and ultimately more rewarding in the marketplace.

CONCLUSION

As ASEAN members states pursue their respective net-zero targets, it has become clear that SMEs not only power domestic economies but are the connective tissue of global value chains. Enabling their decarbonization is essential to meeting national climate goals and securing long-term economic resilience and competitiveness.

This Playbook provides a step-by-step guide for programmatic GVC implementation and surfaces six Tactical Levers to bridge the gap between strategic intent and practical delivery. Importantly, many of these approaches are already being implemented across ASEAN with varying levels of institutional maturity, policy coherence, and market incentives, creating rich opportunities for bilateral and multilateral cooperation.

As the region looks ahead, several imperatives come into sharper focus. First, harmonization across borders will be key. With businesses operating in cross-jurisdictional supply chains, mechanisms such as the ASEAN Taxonomy for Sustainable Finance and the ASEAN Capital Markets Forum will serve to unlock and channel capital toward sustainability. For example, the ASEAN sustainable finance market has already shown rapid growth, recording an aggregate US$19.1 billion in sustainable bond issuances in 2023[5].

Scaling up blended models—as exemplified by the GVC—can improve uptake by embedding finance within ecosystems of technical support, anchor partnerships, and policy coherence. Where such models are designed with flexibility and sectoral relevance, they have the potential to unlock measurable emissions reductions and strengthen local supply chain resilience.

Carbon calculators, disclosure systems, and performance monitoring tools must be interoperable, reliable, and accessible to assure take-up. As new digital tools emerge, public–private partnerships can ensure that data flows remain efficient and oriented toward shared environmental and economic outcomes.

This is a moment for sustainability leadership to thrive in the arena of shared regional opportunities. Businesses look to policymakers for clarity. Financial institutions must champion innovation while large corporations can leverage their economies of scale to pull smaller businesses into green markets. With the right support, tools, and resources, SMEs themselves will not just adapt but lead.

Building on the foundation of this Playbook, future research could include conducting industry-specific analysis to systematically address sector prioritization, as well as examining case studies from other ASEAN member states. This would help ensure that tools and support are contextualized at a more granular level to meet the region's diverse economic and regulatory landscapes, along with its varied institutional capacities. Future expansions of the Playbook might also focus on micro-enterprises, which face distinct vulnerabilities relative to other types of SMEs and would likely benefit from targeted strategies such as climate risk insurance, disaster preparedness training, and concessional financing for recovery efforts. Furthermore, situating these strategies within a broader just-transition framework—by incorporating social considerations—would bolster inclusivity and long-term stability. Together, these efforts will enhance decarbonization outcomes and strengthen resilience across ASEAN.

[5] ADB. 2024. Sustainable Bond Market Posts Strong Growth in ASEAN+3 Economies. News Release. 21 March.

APPENDIX

Research Design

This study employed an inductive, qualitative methodology centered on in-depth stakeholder interviews under the Chatham House Rule, supplemented by additional data collection from GVC Program partners and participating SMEs. Grounded in purposive sampling, we engaged 54 key decision-makers spanning SMEs, large corporations, financial institutions, government agencies, and government-linked corporations (**Figure A1**). The study also incorporated focus group discussions and secondary research to enrich the analysis. All stakeholder engagements took place during February–March 2025. This multi-layered approach provided a holistic understanding of SME decarbonization challenges and opportunities, both within Malaysia's local context and in alignment with broader ASEAN trends.

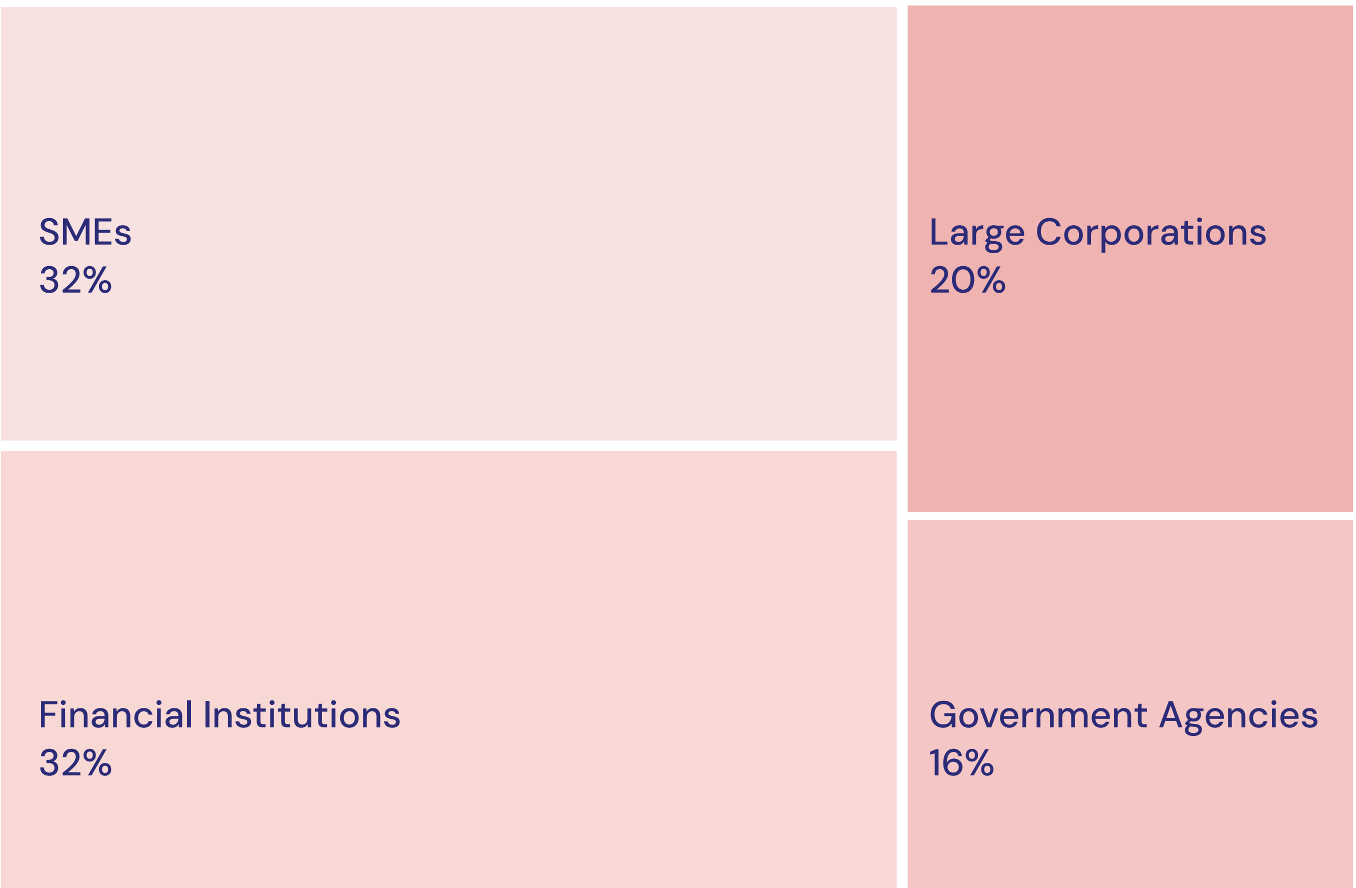


Figure A1: Composition of Stakeholders

SMEs = small and medium-sized enterprises. Source: UNDP illustration.

Primary Research	Qualitatative research by in-depth stakeholder interviews, under Chatham House Rule to ensure an open and authentic exchange	Perspectives from financial institutions, large cooperations and SMEs in Malaysia	Engaged with government agencies and international institutions
		Quantitative insights drawn from GVC program partners and SMEs	Interviews and online surveys conducted from February to March 2025
Secondary Research	On Malaysian policies, ASEAN SME green transitions experiences, and available financing or incentives.		

Figure A2: Research Design at a Glance

ASEAN = Association of Southeast Asian Nations; GVC = Greening Value Chain; SMEs = small and medium-sized enterprises.
Source: UNDP illustration.

These stakeholders primarily represented organizations involved in the GVC Program or financial institutions offering the LCTF. This balanced composition provided a holistic perspective on the challenges and opportunities SMEs face in decarbonizing their operations. Findings and insights were synthesized through the:

- Impact Value Chain framework, which examines how stakeholders identify climate-related problems or opportunities, deploy specific resources and actions, and ultimately shape outputs, outcomes, and impact; and
- Capability, Opportunity, and Motivation Behavior Model, which guides exploration of the capabilities, opportunities, and motivations that enable or hinder SME participation in low-carbon initiatives.

The central objective was to capture stakeholders' perspectives on the opportunities and challenges SMEs face in the climate agenda, exploring how policymakers can foster an environment that motivates and enables SMEs to measure and manage emissions (**Figure A2**). We also examined how the GVC Program offers real world lessons through a blended approach, focusing on tactical, practical measures needed to convert barriers into opportunities for low-carbon transitions.

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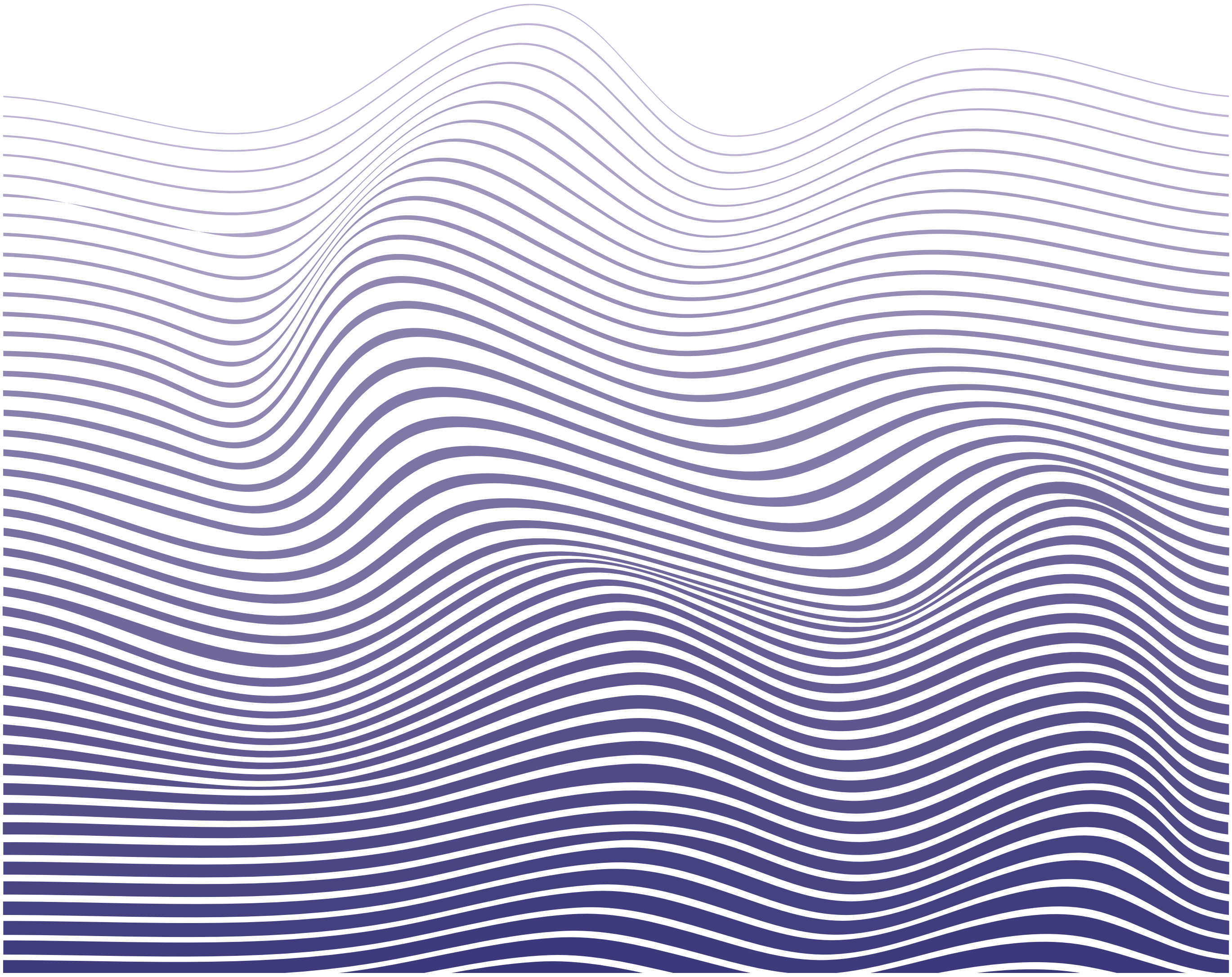

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