

Circular Solutions in Viet Nam: Lessons from the Towards Zero Waste Accelerator

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DEUTSCHE ZUSAMMENARBEIT

Implemented by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM
BỘ TÀI CHÍNH

Imprint

As a federally owned enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

Published by:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

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Global Programme “Go Circular”

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Design:
now [nau], Frankfurt/Main

Photo credits:
GIZ, To the Finish Line (TFL), WWF

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ)

Digital publication only

Ha Noi, 2026

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Preface

The transition from a linear to a circular economy is necessary in the context of resource constraints, environmental pollution, and climate challenges. Across Viet Nam, a growing number of enterprises are adopting innovative approaches to minimise waste, extend the use of materials, and generate long-term environmental and economic value.

A landscape review in 2023 revealed that technology, capacity and finance constraints were the most significant barriers to the growth of circular business solutions. To address these barriers, the **Towards Zero Waste Accelerator programme** was launched to support selected circular start-ups and SMEs through capacity building, strategic networking, and business-growth support, and followed up with further targeted support on Impact Investment Readiness.

This publication documents our journey by bringing together prior landscape insights and lessons from the subsequent business support programmes. It highlights the opportunities and challenges faced by circular economy enterprises and captures key lessons learned to inform and inspire future initiatives that support the transition towards a circular economy.

→ *This publication is part of the global programme "Go Circular" which is commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Its objective is to support the transition to a circular economy at a global level and in selected partner countries, including Viet Nam. Go Circular works in three prioritized areas: i) Promoting innovations, ii) Scaling up solutions, and iii) Actions in global alliances. In Viet Nam, Go Circular works closely with the Ministry of Finance (formerly Ministry of Planning and Investment, MPI) as the key political partner to disrupt the linear economy with circular business models.*

Go Circular

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List of abbreviations

B2B	Business to Business
B2C	Business to Consumer
CAPEX	Capital Expenditure
CE	Circular Economy
CRM	Customer Relationship Management
D2C	Direct-to-Consumer
EPA	Environmental Protection Agency
ESG	Environmental, Social and Governance
EU	European Union
FTU	Foreign Trade University
GHG	Greenhouse Gas
IP	Intellectual Property
ISO	International Organization for Standardisation
IoT	Internet of Things
LCA	Life Cycle Assessment
MPI	Ministry of Planning and Investment
MVPs	Minimum Viable Products
MoU	Memorandum of Understanding
NGOs	Nongovernmental Organisations
OEM	Original Equipment Manufacturer
QA	Quality Assurance
SIHUB	Saigon Innovation Hub
SME	Small and Medium Enterprises
SOP	Standard Operating Procedures
TZWA	Towards Zero Waste Accelerator programme
USDA	United States Department of Agriculture
VCCI	Viet Nam Chamber of Commerce and Industry
WASI	Western Highlands Agriculture and Forestry Science Institute

Introduction

What is Circular Economy (CE)?

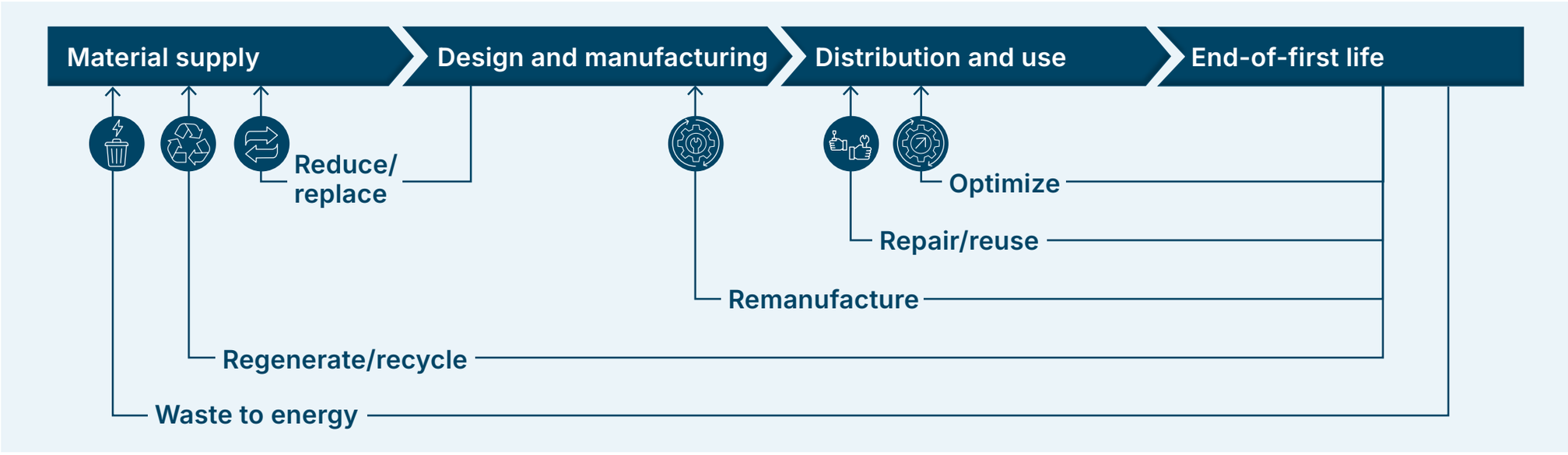
In a traditional linear economy, products are typically disposed of at the end of their life cycle. At best, some components may be recycled, provided that appropriate systems for collection, sorting, and processing are in place.

In contrast, the circular economy seeks to move beyond linear patterns of resource extraction, production, consumption, and disposal by reducing overall material use, redesigning products and services to be less resource-intensive and recovering waste as a valuable input for new production cycles (EPA, 2023).

The European Union (2023) further emphasises the importance of maintaining the value of products, materials, and resources for as long as possible by returning them to the product cycle at the end of their use.

Complementing this perspective, Viet Nam's Law on Environmental Protection (2020) highlights the role of design, production, consumption, and service activities in reducing raw material extraction, extending product lifecycles, limiting waste generation, and minimising negative environmental impacts.

Figure 1: Comparison of Circular Economy processes compared to linear practices



Classification of CE Solutions:

According to the EU categorisation system[1], there are four groups of circular models.

Categorisation of CE models	
Group 1: Circular Design Models	Activities contributing to Circular Design and Production aim at increasing resource efficiency through: 1. design innovation, 2. process innovation and reengineering and/or 3. material innovation and substitution.
Group 2: Optimal Use Models	Activities contributing to Circular Use aim at increasing resource efficiency through: 1. product and asset lifecycle extension based on reuse, repair, repurpose, refurbishment or remanufacturing strategies and/or 2. product and asset use-optimizing leasing and sharing models.
Group 3: Value Recovery Models	Activities contributing to Circular Value Recovery aim at increasing resource efficiency through the recovery of wastes in preparation for reuse and recycling or other circular economy strategies.
Group 4: Circular Support Models	Activities in the Circular Support category group aim at enabling other circular activities/projects and thus indirectly contribute to increasing resource efficiency.

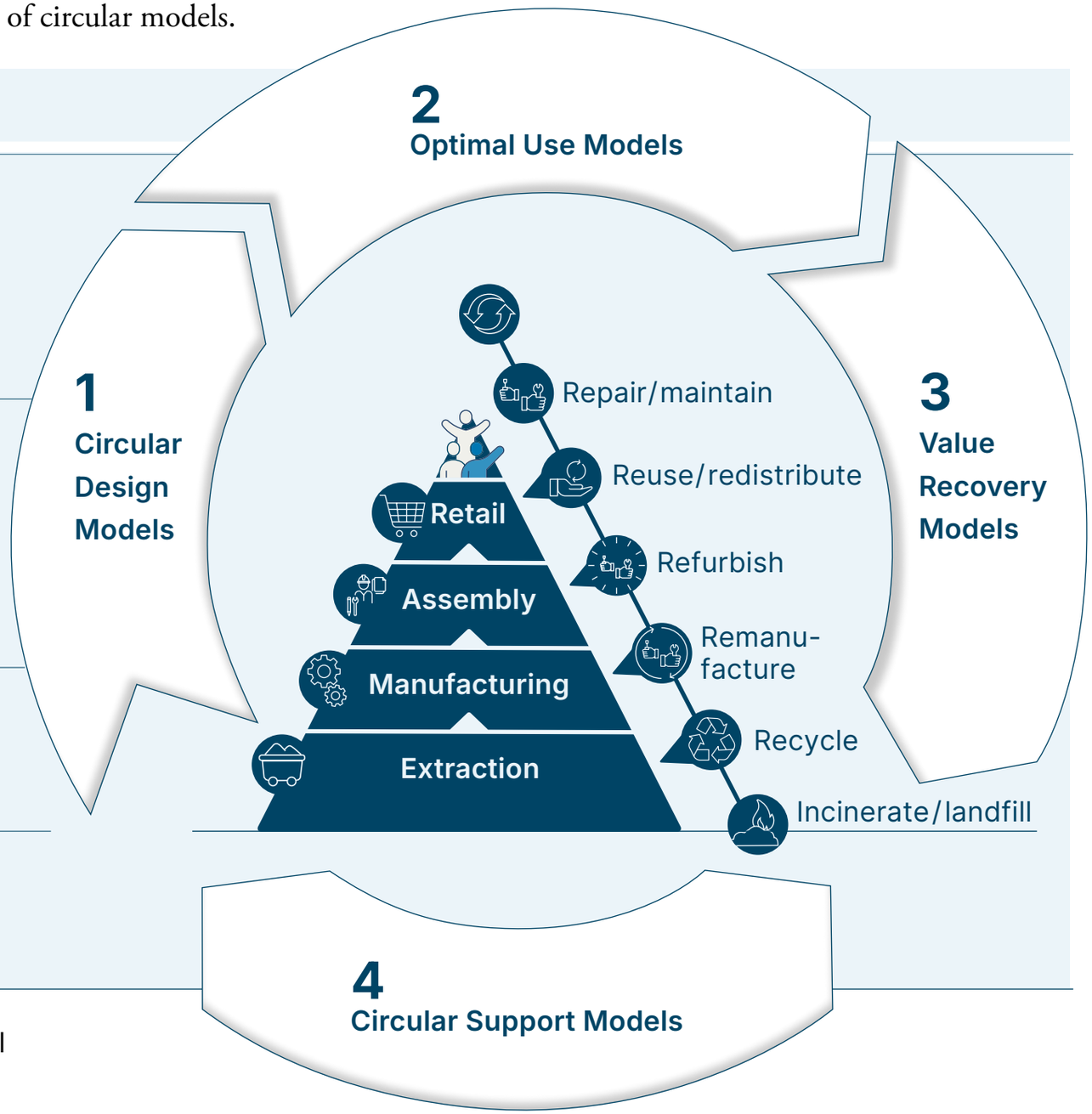


Figure 2: Business Model Categories mapped on the Value Hill

1 European Commission; Categorisation System for the Circular Economy; 2020

Towards Zero Waste Accelerator

Prior Landscape Findings

The landscape study conducted together with Evergreen Labs in 2023 identified key challenges and support needs of circular economy (CE) solutions through interviews with 25 businesses operating across 4 sectors: organics, textiles, electronics, and plastics. The findings revealed that technology, capacity and finance constraints were the most significant barriers to growth. For plastic-related solutions in particular, the greatest challenges were associated with changing consumer behaviour and building partnerships with corporations to create stronger synergies.

The interviews also highlighted a strong demand for continued support. Although 76% of the interviewed solutions had previously participated in competitions, accelerator programmes, or other support initiatives, most continued to face challenges in scaling their businesses. Networking emerged as the most frequently requested form of support, including access to customers, industry networks, media exposure, and connections with government stakeholders. Many solutions were interested in building stronger partnerships with corporations to support product development, market access, and business growth. In addition, businesses highlighted the importance of tailored capacity-building support, including technical expertise, marketing, sales, branding, human resource development, and access to government incentives.

Access to finance emerged as another key priority, particularly during the MVP stage and subsequent growth phases. While competitions and grants can provide valuable, non-dilutive, and relatively low-risk capital, many businesses noted that grant funding often involves disproportionate administrative and reporting requirements, even when the amounts awarded are comparatively small. As companies grow, they face an additional challenge in identifying investors whose expectations align with the longer-term return horizons typical of impact-driven and circular business models.



TZWA Programme Implementation

The Towards Zero Waste Accelerator (TZWA) was developed to support innovative solutions contributing to Viet Nam's circular economy across key sectors such as plastics, organics, textiles, and electronics. Implemented with Schoolab and BambuUP from September 2024 to April 2025, the programme aimed to help selected businesses validate and scale their circular business models by strengthening their product-market fit, testing solutions with customers, and building the capabilities needed for growth. From over 100 applications, 10 circular solutions were selected based on technical and commercial feasibility, impact, team capacity, and commitment. The business cases and programme journeys of eight of these solutions are presented in the next section.

Support needs of the companies were identified through site visits and direct consultations with selected businesses. Based on these insights, tailored workshops, 1-on-1 mentoring, expert office hours, and group sessions on shared topics, including supply chain and female leadership, were delivered. The businesses developed action plans during the mentoring phase and continued implementing them after with follow-on support from GIZ.

To provide comprehensive support in addressing strategic challenges and creating networking opportunities, the programme actively engaged a diverse range of partners. These included short-term experts who provided mentoring and training on specific topics; investors and ecosystem organisations such as Genesia, Earth VC, VSV Foundation, and Impact Investment Exchange; corporate partners such as Faslink, GenViet Jeans, and Sunhouse; and academic and research institutions, including the Center for Innovation and Entrepreneurship of Tra Vinh University, Duy Tan University, and the FTU Innovation and Incubation Space. In addition, the programme received support from government bodies such as Saigon Innovation Hub (Sihub) and the Viet Nam Chamber of Commerce (VCCI Mekong).

The main programme concluded with a Demo Day in April 2025, where the businesses presented their progress and strategic growth plans while connecting with investors, corporate partners, mentors, and other stakeholders. Informal networking events and community nights were organised throughout the programme to strengthen connections among participants and ecosystem stakeholders.

Following the completion of TZWA, an additional initiative aimed at strengthening the investment readiness of circular economy (CE) businesses in Viet Nam was launched at the end of 2025. Through this programme implemented with Impact Investment Exchange, nine selected companies, include several TZWA alumni, received further targeted training and 1-on-1 mentoring focused on pitching skills, financial modelling, and impact measurement and reporting. The programme concluded with an investor webinar, during which the three most promising companies had the opportunity to pitch directly to impact investors.

Implementing Partners

BambuUP Connect to Innovate

SCHOOLAB PARIS - SAN FRANCISCO - HO CHI MINH CITY

IIX

Key Achievements

→ **Product development and market validation:** The programme supported participating ventures in strengthening both product development and market validation. This included helping startups refine and test their offerings, such as Lemit Foods' blended meat products made from young jackfruit and meat, as well as enabling agri-tech ventures such as Enfarm and Wesolife, to conduct field trials with pilot farms. In parallel, businesses also received support in market research and customer validation. For example, Nguyên Khôi Farm used consumer insights to refine its marketing and sales strategies and better align its products with market demand to scale production without waste.

→ **Networking and corporate partnerships:** Through the programme, start-ups had opportunities to network with peer start-ups and corporations, enabling valuable collaboration opportunities. A notable example is Ecosoi, which produces fibres from pineapple leaves, established partnerships with the fashion brand Faslink and Trung Quy Textile Company to develop a pilot fashion line made from pineapple fibre.

→ **Impact assessment and reporting:** In addition, companies received capacity building and support in measuring and assessing their product's impact and life cycle. This led to AirX Carbon carrying out a carbon footprint assessment for its pallet made from agricultural waste.

→ **Optimizing operational procedures:** The programme also helped startups enhance their operational capabilities. For example, Meron – a sustainable food supply platform – was supported in developing a traceability and inventory management system for direct-to-consumer e-commerce operations to prevent waste in the food value chain, while KHAAR – an upcycling fashion company using fabric waste – developed and tested the concept for a pre-order system to streamline demand planning and avoid waste in design and production.



Supported Circular Solutions

Select your topic





CS 3
→ **Ecosoi**
Pineapple-Based Circular Textiles

CS 5
→ **Nguyen Khoi Farm**
Circular and Organic Pork Farm

CS 2
→ **Enfarm**
Smart Soil Nutrition

CS 6
→ **Wesolife**
Modular Aquaculture Leasing Model

CS 4
→ **Meron Farm**
Sustainable Warehouse and Agricultural Standards

CS 8
→ **KHAAR**
Circular Fashion for the Future

CS 7
→ **Lemit Foods**
Upcycled Plant-Based Meat

CS 1
→ **AirX Carbon**
Net Zero Pallet

CS1

AirX Carbon Net Zero Pallet

NETZERO PALLET®

Sector: **Logistics Pallets**
Founding year: **2015**
Website: **AirX – makes #netzero possible**
Target Markets: **Viet Nam, export markets**
CE categorisation:
1e. Secondary material substitution
3c. Biomass recovery and valorisation

♀women-led



Context

Global supply chains rely on billions of logistics pallets each year, with wood, and especially virgin timber, remaining the dominant pallet material[2]. At the same time, Viet Nam generates nearly 160 million tonnes of agricultural waste and by-products, with post-harvest crop residues accounting for over 90 million tonnes[3], and approximately 1.8 million to 3.8 million tonnes of plastic waste per year.[4] Only a small fraction of this waste is properly managed, let alone recycled; the majority is left to rot or burnt under the open sky.

Business Brief

AirX Carbon converts agricultural waste and hard-to-recycle plastic into industrial pallets. Its NetZero pallet portfolio includes two-product lines: one made from around 95 % agricultural residue and another from mixed plastic waste. Using proprietary eco-bond chemistry and simulation-driven 3D moulding technology, the pallets deliver durability and performance while meeting EU transport and hygiene/fumigation standards.

2 IMARC Group; Pallet Market Size, Share, Trends and Forecast by Type, Application, Structural Design, and Region, 2026–2034; 2026
3 FoodNavigator; 'Tremendous potential' for upcycling agri-waste into high-value products in Vietnam, but challenges remain – expert; 2025
4 SWITCH-Asia; Plastic Policies in Vietnam: Country Profile; 2025

CS1

AirX Carbon Net Zero Pallet

Circular Innovation and Impact

- **Waste Valorisation:** AirX Carbon transforms agricultural residues and hard-to-recycle mixed plastics into durable pallets, keeping these materials away from open burning, landfill, and incineration. They have developed a common technology platform that converts two major waste streams – agricultural residues and mixed reject plastics, into durable logistics pallets.
- **Environmental and Climate Protection:** By replacing wooden pallets, AirX Carbon reduces deforestation, waste, and CO_2.

Challenges and Way Forward

- **High CAPEX For Customisation:** To meet specific client requirements, especially international logistics, the company must invest in custom moulds, machinery, and tooling, each requiring substantial upfront capital (CAPEX). This creates a significant bottleneck for customer acquisition and scaling. To address this challenge, AirX is adopting an asset-light model through local joint ventures and technology licensing, enabling partners to finance production capacity while AirX generates revenue from its technology and intellectual property (IP).
- **Long Sales Cycle:** Procurement decisions by multinational companies are often slow and require strong proof of performance. AirX accelerates the adoption process by providing verified data. Through the accelerator programme, the company conducted an ISO 14067 carbon footprint assessment benchmarking its solution against wood and plastic pallets. This evidence helps customers reduce adoption risk and supports progress towards their sustainability goals.
- **Limited Carbon Market Monetisation:** Viet Nam's carbon market is still developing, limiting near-term carbon credit opportunities. As a result, AirX treats carbon revenue as a future opportunity and focuses on growing its core business based on current product margins.
- **Circular Economy Infrastructure:** AirX Carbon is considering a pallet pooling model, in which pallets are reused across multiple clients through a reverse logistics network. While this could create recurring revenue and reduce waste, it requires significant infrastructure for maintenance, tracking, and logistics. Due to the high CAPEX and operational complexity, the company sees this as a medium-term opportunity after scaling its core business capacity.

CS2

Enfarm Smart Soil Nutrition

Sector: **Precision Agriculture**
Founding year: **2022**
Website: **enfarm**
Target Markets: **Viet Nam, Malaysia, Indonesia**
CE categorisation:
4a. Circular enabling tools and service

♀women-led





Context

Less than half of the nitrogen applied to crops as fertiliser is taken up by plants[5], while the production and use of nitrogen fertilisers account for approximately 5 % of global greenhouse gas emissions.[6] Excessive use of chemical fertilisers in agriculture further contributes to soil degradation, nutrient loss, and water pollution. Over time, these impacts weaken soil fertility and resilience, threatening long-term productivity and farmer income.

Business Brief

Enfarm is an agronomic decision platform. Its solution combines affordable soil sensors, a mobile app, and an AI calibration engine to translate field data into practical fertiliser and irrigation recommendations. By helping farmers use nutrients already available in the soil more effectively, Enfarm reduces input waste, lowers costs, and supports yield, soil health, and climate resilience. Its main users are coffee and durian farmers, as well as agribusiness partners.

Circular Innovation and Impact

- → **Waste Prevention:** Enfarm targets fertiliser overuse, which is a major pollutant and climate emitter as well as cost factor in Vietnamese agriculture.
- → **Environmental Protection and Regeneration:** Promotes healthier soils, less runoff, and stronger microbial ecosystems, as well as water savings.

5 Our World in Data; Can we reduce fertilizer use without sacrificing food production? 2021
6 Nature Food; Greenhouse gas emissions from nitrogen fertilizers could be reduced by up to one-fifth of current levels by 2050 with combined interventions; 2023

CS2

Enfarm Smart Soil Nutrition

Challenges and Way Forward

- → **Behaviour Change:** Farmer behaviour change remains a key challenge, as many farmers still rely on reactive decision-making and are not accustomed to regular monitoring or preventive crop care. Digital adoption is also uneven, particularly among users who are less familiar with mobile applications. In addition, some crops require less frequent fertiliser application, which reduces engagement with sensor-based services and can lower the perceived value of a subscription model. To address these challenges, Enfarm is improving the customer journey through clearer recommendations, timely notifications, onboarding support, and stronger B2B engagement. The company is also expanding beyond soil-focused advice towards a broader digital crop-care model that can deliver value throughout the growing season.
- → **Trust Barriers:** Because Enfarm's recommendations combine AI with agronomic rules, some farmers may not fully understand or trust the guidance provided. To increase adoption, recommendations need to be clear and localised, explaining not only what actions to take but also why they matter. Independent validation and on-farm evidence are also critical to strengthening credibility among farmers and institutional partners.
- → **Regional Calibration Timeframes:** Before recommendations can be optimised for a new crop or region, Enfarm needs local calibration and validation. This can take time and may slow expansion. Through the accelerator programme, En farm conducted soil testing with 30 orchards in Dak Lak Province as well as surveys with 50 farmers across Viet Nam, helping the company build more precise and localised recommendations for durian farmers.

At the same time, Enfarm is developing a platform that works across different soil conditions with less regional calibration. Recommendations are generated by combining location and weather data, inputs from Enfarm's sensor network, and farmer-provided information. Farmers can use the platform indpendently or combine it with Enfarm sensors for greater accuracy. This lower-cost model is expected to accelerate market penetration and enable more farmers to experience Enfarm's services before investing in sensor-based solutions.

- → **Sensor Supply Chain Risks:** Enfarm currently imports key sensor components from China, with limited local alternatives. This creates supply chain concentration risk. To improve long-term resilience, the company will need to diversify suppliers and continue strengthening product design, sourcing, and quality control.
- → **Institutional Credibility:** Enfarm has already established external validation through the WASI wet-lab benchmarking and field trials, but to work with larger institutional buyers and public/ESG programmes, it will need to keep strengthening independent impact evidence, reporting, and certification pathways.

CS3

Ecosoi Pineapple-Based Circular Textiles

Sector: **Natural Textiles**
Founding year: **2021**
Website: **ECOSOI – Weaving life with green fibres**
Target Markets: **Viet Nam, export markets**
CE categorisation: **3c. Biomass recovery and valorisation**

♀women-led



Context

The pineapple cultivation in Viet Nam creates roughly 2 – 3 million tonnes of pineapple leaves per year which are mostly openly burned on the field.[7] At the same time the market for natural fibres is growing as they offer a sustainable alternative to petroleum-based synthetics.

Business Brief

Ecosoi is a Viet Nam-based startup innovating in the bio-based textile industry by creating fibres, yarns and fabrics derived from pineapple waste, notably the plant leaves which are typically discarded or burned on the field. By transforming pineapple agricultural residues into high-value woven and knitted fabrics, Ecosoi supports both upstream waste valorisation and downstream sustainable fashion.[8]

Circular Innovation and Impact

- → **Waste valorisation:** Agricultural waste (pineapple leaves) is processed into fibre, yarn, and then finished fabric.
- → **Livelihood Support and Environmental Protection:** Instead of being burnt, pineapple leaves can generate additional income for farmers.

7 VietNamNet Global; Lecturer's startup sparked by seeing burning leaves in a pineapple field; 2025
8 VietNamNet; Lecturer's startup sparked by seeing burning leaves in a pineapple field; 2025

CS3

Ecosoi Pineapple-Based Circular Textiles

Challenges and Way forward

- **Cost Optimisation:** Ecosoi produces fibre directly from pineapple leaves and works directly with local farmers, eliminating intermediaries. Due to the small production scale and the outsourcing of certain processes such as yarn and fabric manufacturing to weaving partners, the product costs are relatively high compared to those of conventional cotton and linen products. The company is working to reduce yarn processing costs by 10% to make its pineapple-based fabric more commercially viable.
- **Production Process Alignment for Scaling Up:** Ecosoi made notable progress in fabric R&D, including the development of more than 30 woven samples and the production of 100 knitted polo-shirt samples for consumer testing. These samples helped to validate the product's potential and facilitated the establishment of relationships with customers and partners such as Faslink. However, transitioning from prototype development to mass production requires greater resource capacity and stronger operational capabilities. In addition, Ecosoi encountered challenges in maintaining consistency within its distributed production model. While the combination of in-house and partner facilities enabled more flexible scaling, it also introduced variability in product quality.
- **Access To Finance:** Ecosoi expects to receive a significant number of orders in 2026 from strategic partners and therefore plans to build a second facility to increase production capacity. This requires additional financing which could come in the form of a bank loan or fund investment. However, to achieve this, the company must first demonstrate its ability to scale and sustain long-term growth.
- **Partnerships vs. Control:** With multiple MoUs concluded, coordination with multiple actors in the textile value chain slowed progress. Establishing shared expectations, production timelines, and IP boundaries remains a critical challenge for ecosystem collaboration.
- **Branding vs. B2B:** The team managed personal branding and product promotion in parallel but found it difficult to maintain consistent storytelling across platforms. Ecosoi must streamline its communication strategy and CRM system to sustain engagement with B2B leads while building retail awareness.



CS4

Meron Farm Sustainable Warehouse and Agricultural Standards

MERONFARM
Good Food, Good Connect

Company name: **Meron Viet Nam JSC**
Sector: **Grocery Retailing and Agro-Logistics**
Founding year: **2024**
Website: **www.meronfarm.vn**
Target Markets: **Viet Nam,**
CE categorisation:
2c. Distribution and access models enabling circularity
3a. Waste collection and reverse logistics
4a. Circular enabling tools & service

♀women-led





Context

Up to one-third of food produced is lost before consumption[9]. Direct-to-consumer e-commerce models can shorten the supply chain and thus reduce food waste, while increasing the share of the final retail prices going to farmers.

Business Brief

Meron Farm is a start-up distributing fresh and sustainably grown vegetables and fruits through their e-commerce platform. Through that they connect smallholder farmers directly with end-consumers in Ho Chi Minh City, thus minimising food waste in distribtion.

Circular Innovation & Impact

- → **Preventing Waste:** Meron is reducing food and packaging waste in the food supply chain through optimizing the supply chain.
- → **Livelihood Support and Environmental Protection:** The income for smallholder quasi-organic farms improves through more direct access to end consumers.

9 Journal of Cleaner Production; Economic and environmental consequences' of postharvest loss across food supply chain in the developing countries; 2021

CS 4

Meron Farm Sustainable Warehouse and Agricultural Standards

Challenges & Way forward

- **Food and Packaging Waste Remain Key Areas for Improvement:** Under the accelerator programme, the company ran a three-month pilot (August – October 2025) using banana leaves to package vegetables, preventing the use of over 7,000 plastic bags as estimated by the company. However, the approach faced challenges, including faster spoilage in humid conditions and slower packaging due to inconsistent leaf size and quality. To improve efficiency and reduce costs, Meron plans to outsource the packaging to farmers, creating additional income for local communities. Exploring bioplastic wrapping is another challenge due to a limited number of local suppliers, which already operate at full capacity and no longer accept small orders, while also carefully evaluating whether bioplastic alternatives would be more environmentally sustainable in terms of final disposal and recycling options. For carton boxes, reuse remains difficult due to hygiene concerns and high reverse logistics costs. Currently, Meron collects used boxes within a 500-metre radius of its warehouse and is exploring partnerships to establish return points where customers can exchange packaging for loyalty rewards.
- **Digital Infrastructure Rebuilding:** Meron Farm aims to transition from an informal family-run farm into a traceable, semi-digitised operation. However, the dissolution of a former tech partnership forced the company to rebuild its digital infrastructure from scratch, delaying platform development and customer-facing features.

By the end of 2025, Meron had implemented a warehouse management system to optimise operational flow. They also completed the Farmmap interface, enabling customers to access information about suppliers and farming methods. In the future, Farmmap will be upgraded with a traceability system that allows customers to verify product origins, production processes, quality standards, and certifications.

- **Lack of Formal Organic Certification:** Rather than pursuing expensive third-party certifications, Meron opted for internal standards and traceability tools. While cost-effective and more realizable for small-scale farmers, this strategy limits credibility with premium buyers and institutional partners, particularly in export or B2B markets. They developed a “Meron Agricultural Standard” for sustainable sourcing from local farmers, including certification criteria and guidebooks.
- **Complexity of Hybrid Sales Model:** Meron balances warehouse optimisation, community-based sales, and farmer co-planning. While each component has merit, managing such complexity strains limited resources and may dilute brand focus unless operationally streamlined.

CS5

Nguyen Khoi Farm Circular and Organic Pork Farm

Company name: **Nguyen Khoi Green JSC**
Sector: **Circular Agriculture and Sustainable Livestock**
Founding year: **2019**
Website: **Nguyen Khoi - Natural Pork – High Quality Pork from Natural Farm**
Target Markets: **Viet Nam**
CE categorisation: **3c. Biomass recovery and valorisation**

♀women-led



Context

Viet Nam ranked sixth globally in pork production in 2024[10]. The pork industry contributes significantly to greenhouse gas emissions and environmental pollution, particularly through manure and wastewater management.[11] Asymmetric consumer preferences for specific pork cuts create a market imbalance, highlighting the need to better valorise less popular cuts.

Business Brief

Nguyen Khoi Farm is a vertically integrated pig farming business. Their approach builds on a zero-waste livestock model, seeking to improve profitability, reduce food waste, and offer nutrient-rich byproducts for new product categories such as pet food or value-added meat products.

Circular Innovation and Impact

- → **By-product Valorisation:** Low-value pork parts are repurposed into sausages, pâtés, and other consumer goods, reducing waste and increasing revenue per animal.
- → **Animal welfare and environmental protection:** The farm emphasises health-oriented animal husbandry, using bio-beds and local feed sources, while experimenting with smart agriculture and regenerative practices.

10 VietNamNet; Booming pork demand sparks race among Vietnam's top pig producers; 2025
11 FAO; Greenhouse gas emissions from agrifood systems. Global, regional and country trends, 2001–2023; 2025

CS5

Nguyen Khoi Farm Circular and Organic Pork Farm

Challenges and Way Forward

→ **Limited Circular Ecosystem for Smallholder Livestock:** In the livestock value chain, particularly in pork, few models exist to support full animal utilization or to provide circular supply chain inputs. Nguyen Khoi's efforts to transform undervalued pork cuts into premium products are innovative, but they operate within a context that lacks enabling infrastructure and peer reference points.

→ **Need for Clearer Marketing, Distribution and Go-to-Market Strategy:** Nguyen Khoi has made initial efforts to refresh its brand identity but lacks a cohesive storytelling approach to explain the benefits of its products. Educating consumers and positioning the brand in ethical and premium segments is key for market penetration.

On the distribution side, Nguyen Khoi Farm requires a well-structured strategy that can effectively serve both B2B and B2C segments. The company aims to supply premium fresh meat to hotels and restaurants, while offering fresh meat, ready-to-cook, and processed products to household consumers.

Under the accelerator programme, Nguyen Khoi conducted surveys with B2C customers in 2025 to better understand market demand. The findings showed that most customers consume pork 6–7 meals per week, and that key purchase drivers include reasonable pricing, convenient access through distribution channels, and transparent communication about product origin and quality.

These insights enabled the company to refine its marketing strategy by emphasizing themes such as family safety, environmental sustainability, animal welfare, and product traceability. In parallel, the company has begun exploring recyclable and compostable packaging solutions and developing labels that clearly explain disposal methods. Nguyen Khoi Farm also revised its distribution strategy to improve product accessibility.

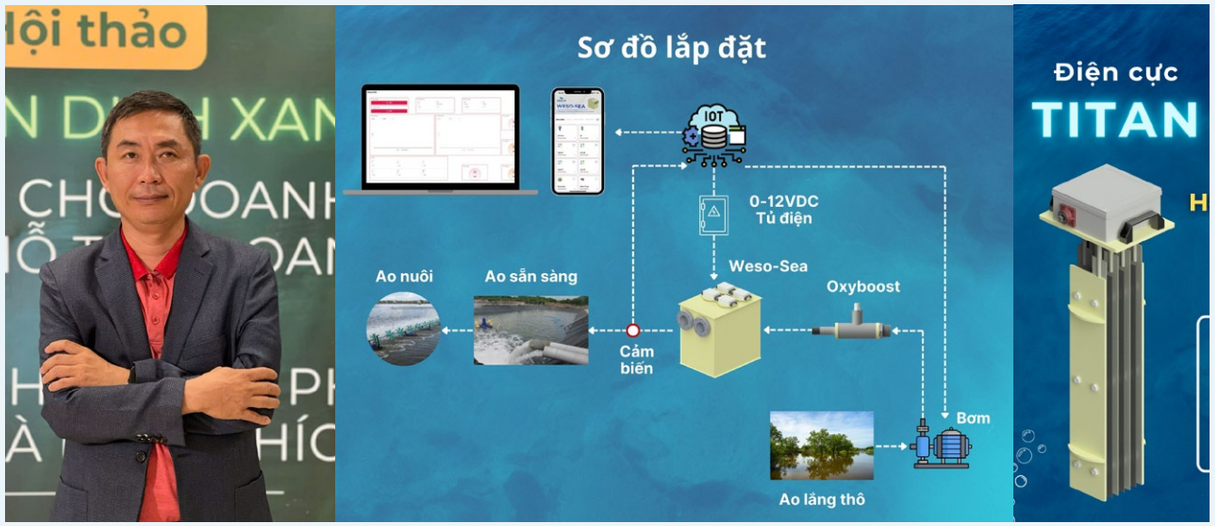
→ **Underdeveloped Digital Infrastructure for Operational Efficiency:** While the team began digitising aspects of the operation, technology integration across the value chain remains limited. Effective circular models rely on strong internal systems for traceability, quality monitoring, and data reporting. Without a solid digital backbone, Nguyen Khoi risks inefficiencies and missed opportunities for transparency and impact demonstration.

→ **Capital Requirements and Certification Gaps:** Scaling up will require investments in processing, logistics, and product innovation. At the same time, Nguyen Khoi has not yet pursued third-party certifications such as animal welfare or environmental impact, which are increasingly expected by institutional buyers and ESG-oriented investors. Bridging these gaps is essential to unlocking new funding channels, such as from impact investors, and large-scale distribution opportunities.

CS6

Wesolife Modular Aquaculture Leasing Model

Company name: **Wesolife Co Ltd**
Sector: **Precision Electronics for Aquaculture**
Founding year: **2020**
Website: **Wesolife**
Target Markets: **Viet Nam**
CE categorisation:
1b. Process technologies enabling circularity
2c. Circular Use models
4a. Circular support model



Context

Chlorine-based compounds are widely used in shrimp farming in Viet Nam for water disinfection. Their overuse and continued reliance can damage the aquatic environment, while chlorine disinfection may not fully eliminate chlorine-resistant bacteria.[12]

Business Brief

Wesolife is a company providing advanced technology solutions for water treatment and disinfection in shrimp and fish farming, ensuring safe and chemical-free operations. In addition to offering modular hardware integrated with an IoT platform, the company's key innovation lies in its leasing-based business model, which lowers upfront investment barriers and makes the technology more accessible to aquaculture farmers. Their product suite includes water disinfection without using chlorine powder (Weso-Sea); increase of dissolved oxygen levels in water (OxyBoost), water circulation (HelixPump) and Central IoT hub plus app.

Circular Innovation and Impact

→ **Resource Efficiency and Waste Prevention:** According to the company's estimates, an average shrimp farm using the system can avoid up to 800 kg of chlorine per crop, equivalent to approximately 18 plastic containers with a net capacity of 45 kg each.

12 Elsevier – Aquaculture Reports; Use practices of antimicrobials and other compounds by shrimp and fish farmers in Northern Vietnam; 2017

CS6

Wesolife Modular Aquaculture Leasing Model

- **Circular Use:** Devices are leased and returned to Wesolife for any needed repair, remanufacturing, or recycling-delaying or eliminating e-waste generation.

Challenges and Way Forward

- **Farmer Education and Behaviour Change:** Despite interest in electrolyzed water solutions, many shrimp farmers remain hesitant due to familiarity with traditional chemical methods. Wesolife learned that market education, not product features alone, is essential to shift deeply rooted behaviours. This required reframing marketing from promotion to science-based storytelling and community engagement.Wesolife organised two demo sessions in 2025 (June and October) to showcase its products to shrimp farmers and invited them to visit a reference farm that uses all four solutions. 70% of participants indicated that they would consider adopting the solutions for the next farming season. However, farmers remain concerned about the availability of technical support, maintenance and warranty services, as well as initial cost support policies or any other available green finance support.
- Fragmented Product Strategy and Sales Model: The startup operates across four different hardware solutions (Weso-Sea, OxyBoost, HelixPump, etc.), each with its own sales and support requirements. The team acknowledged the need to streamline its product focus and improve post-installation support, particularly for demo farms that use multiple systems.
- **Process Maturity and ISO Standardisation:** While Wesolife began drafting ISO-compliant documentation, the company is still early in process formalisation. Completing the ISO audit and integrating consistent quality assurance practices will be key for institutional partnerships and regulatory compliance.
- **Human Resource and Regional Expansion Constraints:** Wesolife trained new technical staff but faces challenges expanding to new provinces due to limited resources. Scaling up across regions like Ca Mau or Da Lat requires operational playbooks and a dedicated customer success function to maintain service levels across distributed farms.



CS7

Lemit Foods Upcycled Plant-Based Meat

Company name: **Innovative Foods Technology Joint Stock Company (IFT))**
Sector: **Plant-Based Foods**
Founding year: **2023**
Website: **Lemit Foods**
Target Markets: **Viet Nam**
CE categorisation: **3c. Biomass recovery and valorisation**

♀women-led





Context

Because of its resilience and adaptability, jackfruit is one of six fruits reported to be driving growth in Viet Nam's fruit and vegetable export sector.[13] To maximize crop quality, farmers practice fruit thinning by strategically removing up to 90 % of young pods early in the cycle leaving just one to three fruits per main stem, in order to ensure the remaining fruits receive optimal nutrients to grow larger.[14]

Business Brief

Lemit Foods is a food ingredient company that develops meat alternatives from agricultural by-products, notably young jackfruits. Their mission is to offer affordable, nutritious, and low-carbon meat substitutes to Vietnamese and export markets.
Their B2C product range includes plant-based sausages, patties, and chả lụa (Vietnamese sausage) – with a strong emphasis on regional flavors and clean labels.
The company is further exploring a B2B model supplying young jackfruit ingredients to OEM processors, who then use these inputs to produce vegan or blended meat products by combining them with other protein sources.

13 VietnamPlus; Vietnam's fruit, vegetable exports exceed 7 billion USD in 10 months; 2025
14 MDPI; The Utilization of Jackfruit (Artocarpus heterophyllus L.) Waste towards Sustainable Energy and Biochemicals: The Attainment of Zero-Waste Technologies; 2023

CS7

Lemit Foods Upcycled Plant-Based Meat

Circular Innovation and Impact

- → **Waste Valorisation:** Marketing food ingredients and products from young jackfruits
- → **Environmental and Climate Protection:** Contributing towards reducing environmental impacts related to meat consumption.
- → **Farmer Livelihood Improvement:** Creating additional income sources for local farmers.

Challenges and Way Forward

- → **B2C Market Penetration Constraints:** The company currently offers 15 B2C products and solid reported revenue growth. However, increasing competition in the plant-based market highlights the need for a stronger and more differentiated value proposition, particularly around health benefits, sourcing stories, and packaging innovation. While Lemit has expanded cost-effectively to more than 25 provinces in Viet Nam through distributors and agents, this model limits direct control over brand positioning, customer insights, and marketing execution, as the company does not yet have a dedicated in-house sales team.
- → **Limited funding for R&D and production:** Lemit has ambitious product diversification goals, including launching new jackfruit-based products such as blended meat alternatives as sought by potential corporate clients. With support from the accelerator programme, the company conducted market research to assess opportunities in both domestic and international markets, as well as developed and tested new formulations with culinary experts and target customers. To scale up, the company is seeking funding for R&D, selective machinery upgrades, quality management, pilot production, and market development with international buyers.
- → **B2B Model Still at Early Stage:** The company needs to further validate its 3 B2B ingredient prototypes through OEM pilots and application testing, while strengthening R&D capabilities in fermentation, ingredient standardisation, structured fibre applications and product stability. It also aims to enhance export readiness by developing traceability, ESG, and certification systems to meet international market requirements.



CS8

KHAAR Circular Fashion for the Future

Company name: **Khaar World Co Ltd**
Sector: **Ethical Fashion & Recycled Textiles**
Founding year: **2024**
Website: **KHAAR**
Target Markets: **Viet Nam and Singapore**
CE categorisation:
1e. Circular Design & Production model
3b. Material recovery from waste

♀women-led



Context

Every year, 92 million tonnes of textile waste are generated globally[15], with a considerable share originating from design and merchandising processes. Fashion designers produce around 50 – 150 prototypes per possible design, many of which are being destroyed to protect confidentiality. Among produced items, up to 30 % are estimated to remain unsold[16].

Business Brief

KHAAR is a Vietnamese fashion brand that designs and produces high-end ready-to-wear garments using upcycled and recycled textiles. Its core products include limited-edition apparel such as jackets, trousers, and dresses, created from textile scraps sourced from local garment factories.

Circular Innovation and Impact

- → **Waste Valorisation:** KHAAR reuses textile scraps to create quilted fabrics, which serve as the base material for its garments.
- → **Waste Prevention:** The company aims to prevent over-production through a planned pre-order model that streamlines production and 3D prototyping to minimise sampling waste. The company estimates that combining 3D prototyping with quilting techniques could reduce fabric waste by up to 30 % compared with its current process.

15 Global Fashion Agenda; Pulse of the Fashion Industry; 2017–2019
16 Good On You; Why Do Some Fashion Brands Destroy and Burn Unsold Clothes?; 2022

CS8

KHAAR Circular Fashion for the Future

Challenges and Way Forward

→ **3D Prototyping and Pre-order Platform:** KHAAR uses fashion design software and fabric scanning technology to visualise, test, and adjust garments in 3D by capturing fabric textures, drape, and thickness. This enables highly realistic garment simulations, reducing the need for physical samples and minimising material waste.
Under the accelerator programme, KHAAR developed and tested the concept for a digital pre-order system, with implementation planned after the programme. The system would allow KHAAR to validate consumer interest before physical production, helping reduce the risk of overproduction and unsold inventory.
In a small-scale online survey to assess market response, most respondents indicated they would consider preordering from a 3D prototype if the visual quality were highly realistic, the brand conveyed a strong sustainability story, and the products are positioned as limited editions. However, concerns remained around garment fit and finish, platform reliability, and return or exchange policies.

→ **Operational Readiness for Scaling Still Under Development:** The scaling of the quilted fabric production requires semi-industrialization. A business plan and break-even analysis have been drafted to guide potential automation of up to 50% of this process in the future. However, full automation requires capital investment and workflow redesign, meaning scaling remains constrained by current semi-manual production capacity.

→ **Limited Ecosystem Support for Fabric Waste Circularity:** While committed to using recycled textiles, KHAAR struggles to secure a stable supply chain for fabric scraps in Viet Nam. The ecosystem for upcycling and fabric waste management is still underdeveloped, making it difficult to achieve production goals at scale without further partnerships or infrastructure investment.

→ **Balancing Artistic Identity and Commercial Viability:** As a brand rooted in slow fashion and design experimentation, KHAAR must navigate the tension between creative integrity and scalable business models. Aligning storytelling, product pricing, and sustainability proof points will be crucial in converting visibility into consistent B2B and D2C sales.

Conclusion and Lessons Learned

Viet Nam's growing circular economy ecosystem demonstrates significant potential to address environmental challenges while creating new products, services, income opportunities, and business models. The eight solutions presented in this publication illustrate the diversity of circular innovation already emerging across agriculture, aquaculture, food, textiles, logistics, and digital technologies. Their approaches range from valorising agricultural and textile waste to preventing food and packaging waste, extending the lifetime of equipment and improving resource efficiency.

At the same time, the experiences of participating businesses show that developing an innovative circular solution is only the first step. Moving from an initial idea or pilot to a commercially viable and scalable business requires market validation, reliable production processes, access to customers and partners, appropriate financing, and credible evidence of environmental and social impact. Many circular enterprises must also overcome challenges that are particularly relevant to emerging business models, including higher initial costs, limited circular infrastructure, long customer adoption cycles, uncertain demand and evolving regulatory frameworks, and the need to change established behaviours as well as internal capacities.

The Towards Zero Waste Accelerator responded to these needs through tailored capacity building, mentoring, field testing, market research, partnership development, and operational support. Participating companies were able to test products in real-world conditions, gather customer feedback, improve internal systems, develop new products and business models, and establish relationships with corporate partners, farmers, investors, and other ecosystem actors. The subsequent Impact Investment Readiness Programme complemented this support by strengthening financial modelling, pitching, impact measurement, and engagement with potential investors.

Lessons

→ Support for circular businesses should be tailored to their development stage and specific business models.The product, value chain, operations, and market context of circular solutions are often highly specific in both technical and contextual terms. Early-stage enterprises may primarily require product testing, customer validation, and technical expertise, while more established businesses often need support with operational systems, quality assurance, certification, production capacity, and market expansion. Standardised accelerator activities can provide a useful foundation, but **individual mentoring and targeted technical assitance** (including personal check-ins, peer exchange, and field visits) **are essential** for addressing company-specific barriers while also building the necessary rapport with the founders.

→ **Partnerships are fundamental** to the success of circular business models. Many of the solutions depend on collaboration across value chains, including relationships with farmers, manufacturers, laboratories, technology providers, distributors, corporate buyers, and waste suppliers. Such partnerships can provide access to materials, infra structure, knowledge, customers, and production capacity. However,

collaboration also requires clear expectations, aligned incentives, defined responsibilities, and appropriate safeguards for intellectual property and product quality.

→ **Market development and behaviour change need to be addressed alongside technological innovation.** Several participating businesses offer alternatives to familiar products or practices, such as chemical inputs, conventional packaging, virgin materials, ortraditional production systems. Adoption therefore depends not only on the performance of the solution but also on trust, affordability, convenience, communication, and after-sales support. Demonstration projects, reference customers, transparent impact information, and clear communication of economic benefits targeted for the specific market can help reduce perceived risks and encourage adoption.

→ **Access to finance remains a central constraint.** Circular businesses often require capital for research and development, machinery, certification, working capital, digital infrastructure, and market expansion. At the same time, they may face longer development and return periods than conventional businesses. Investment readiness support should therefore combine financial modelling and fundraising strategies with stronger market evidence, impact measurement, governance structures, and realistic plans for scaling. Grants and other non-dilutive funding remain important for experimentation and early-stage development, while investment and appropriate debt instruments become increasingly relevant as businesses demonstrate commercial traction. Future programmes should provide companies with a tailored suite of funding sources from the whole spectrum and design the fundraising and business development strategy accordingly early in the process.

→ **Credible impact measurement is key** for both business development and investment readiness. Circular enterprises need practical systems to demonstrate how their activities reduce waste, avoid emissions, preserve resources, support livelihoods, or regenerate ecosystems. Traceability tools, product assessments, life cycle approaches, and clearly defined impact indicators can strengthen customer trust, improve internal decision-making, and support engagement with investors and institutional partners.

The experiences documented in this publication show that accelerator and investment readiness programmes can play an important role in helping circular enterprises move from promising concepts towards viable and scalable solutions. However, short-term business support programmes cannot address all barriers alone. Continued cooperation between government institutions, businesses, investors, research organisations, development partners, and industry networks is needed to create an enabling environment for circular innovation.

By building on the lessons from the Towards Zero Waste Accelerator and the Impact Investment Readiness Programme, future initiatives can provide more targeted and longer-term support, strengthen connections between circular enterprises and market actors, and improve access to suitable financing. Supporting these businesses to grow will contribute not only to waste reduction and resource efficiency, but also to the wider transition towards a more resilient, inclusive, and circular economy in Viet Nam.

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