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KEY POINTS

- Digitalization of the plastics value chain can be a high-impact strategy, empowering both formal and informal waste sectors to advance a circular plastics economy.
- Assessing the readiness and potential impact of digitalizing the plastics value chain requires an evaluation of the maturity level of the enabling factors in the country and all sectors within the plastics value chain.
- A digital maturity assessment tool developed as part of the Asian Development Bank's technical assistance project to address plastic pollution highlighted key areas for improvement in Viet Nam, such as awareness, monitoring, tracking at a national level. In Indonesia, it highlighted challenges in awareness and digital skills in the plastics value chain, with adoption of digital tools in the physical and financial supply chains limited to Jakarta and Bali.

Transforming the Plastics Value Chain: Introducing a Digital Maturity Assessment Tool

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INTRODUCTION

Marine plastic waste has emerged as a significant global ecological threat, reaching approximately 150 million metric tons in oceans and escalating at a rate of 8–12 million metric tons annually, with mismanaged plastic waste originating particularly from Asian countries.[1] To address this issue, the Asian Development Bank (ADB) initiated a regional technical assistance project addressing plastic pollution from source to sea in Asia and the Pacific.[2] The project promotes circular economy solutions to curb plastic waste and restore ocean health.[3] It also includes a digital component focusing on the digitalization of the plastics value chain and accelerating plastic circularity in Indonesia and Viet Nam.

Notes: In this publication, "$" refers to United States dollars. ADB recognizes "Vietnam" as Viet Nam.

1. World Economic Forum, Ellen MacArthur Foundation, and McKinsey & Company. 2016. *The New Plastics Economy: Rethinking the future of plastics*.
2. ADB. Regional: Promoting Action on Plastic Pollution from Source to Sea in Asia and the Pacific.
3. The basic principles of a circular economy are that waste is designed out of systems, products and materials are kept in use, and natural ecosystems are regenerated.

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BACKGROUND

Digital solutions have the potential to accelerate the circularity of plastics. Such solutions include a range of mobile applications or apps, web platforms, digital marketplaces, those enabled by the Internet of Things (IoT), and artificial intelligence (AI) and machine learning solutions. These enable traceability, support the physical and financial aspects of the value chain, and bridge the formal and informal waste management sectors with private sector actors to the post-consumer materials markets. These solutions can also support and enhance plastic pollution data collection, reporting, and monitoring efforts.

While there are expectations for digital solutions to accelerate the transformation of the plastics value chain to a circular model, there are also challenges to countries' readiness to apply these digital solutions and realize this potential.

Digitalization of the plastics value chain requires readiness at two levels: the national-level enablers, and the value chain-specific systems and its stakeholders. Both levels influence the ability to operationalize and scale up the application of digital solutions in the plastics value chain. Digitalization efforts must be cognizant of the complex interplay of societal and economic structures, including public, private, and informal sectors, within the plastics value chain.

Evaluating the digital readiness of the plastics value chain in a country, as well as identifying its capabilities and opportunities to support this digital transformation, can help determine the gaps between its current and target state and define the road map for digitalization of the plastics value chain.

The digital maturity assessment tool developed under the project allows for a quantification of the digital readiness of the plastics value chain at a national level. It can guide relevant government agencies on a pathway to implement digitalization of the value chain. While it is specifically designed for a country level within the context of Southeast Asia, it could also be applied in a city- or provincial-level ecosystem.

Currently, there is no other tool such as this, which has been purposefully built for the digitalization of the plastics value chain. However, this can be seen as a prototype or a work in progress that can be refined the more it is used and applied in different contexts, to suit various conditions.

DIGITALIZATION OF THE PLASTICS VALUE CHAIN: NATIONAL-LEVEL ENABLERS

The digitalization of the plastics value chain requires robust national enablers to support process transformation and address challenges across the physical and financial supply chains. National enablers can be seen as the basic infrastructure and institutional systems that are required for digital solutions to support the acceleration of plastic circularity.

Understanding the national enablers is the first step in the digital maturity assessment process and, ultimately, building the digital road map for accelerating plastic circularity (Figure 1). These enablers influence the digitalization of the plastics value chain (as discussed in the next section) and also inform the development of the digital maturity grid, which is used to quantify the level of digital maturity.

Key enablers include digital literacy, infrastructure, governance, digital finance, and cybersecurity. These elements collectively prepare stakeholders to adopt, develop, and apply solutions for enhancing circularity in the plastics value chain. Lessons from countries such as Indonesia and Viet Nam offer valuable insights on strengthening these enablers. Together, these enablers ensure stakeholders can effectively and sustainably adopt digital solutions for a circular plastics economy.

Digital Literacy and Infrastructure

Digital literacy is essential for engaging stakeholders across the plastics value chain, from marginalized groups to waste management specialists who need to integrate digital technologies into their daily operations. In Indonesia, gaps in digital literacy, particularly among smaller stakeholders, hinder the effective use of digital tools.[4] Similarly, in Viet Nam, despite about 80,000 information technology graduates each year, the workforce faces shortages due to the migration of skilled professionals overseas, leaving gaps in digital proficiency.[5]

Infrastructure challenges further complicate digitalization efforts. In Indonesia, 80% of the unconnected population live in rural areas of the three most populous islands of Sumatra, Java, and Bali.[6] Viet Nam fares better with 95% 4G coverage and ambitious plans to extend 5G to 57% of the population by 2025. Mobile internet use in Viet Nam stands at 60%, and platforms like Zalo and Facebook dominate the digital space, indicating strong potential for integrating digital tools into the value chain.[7]

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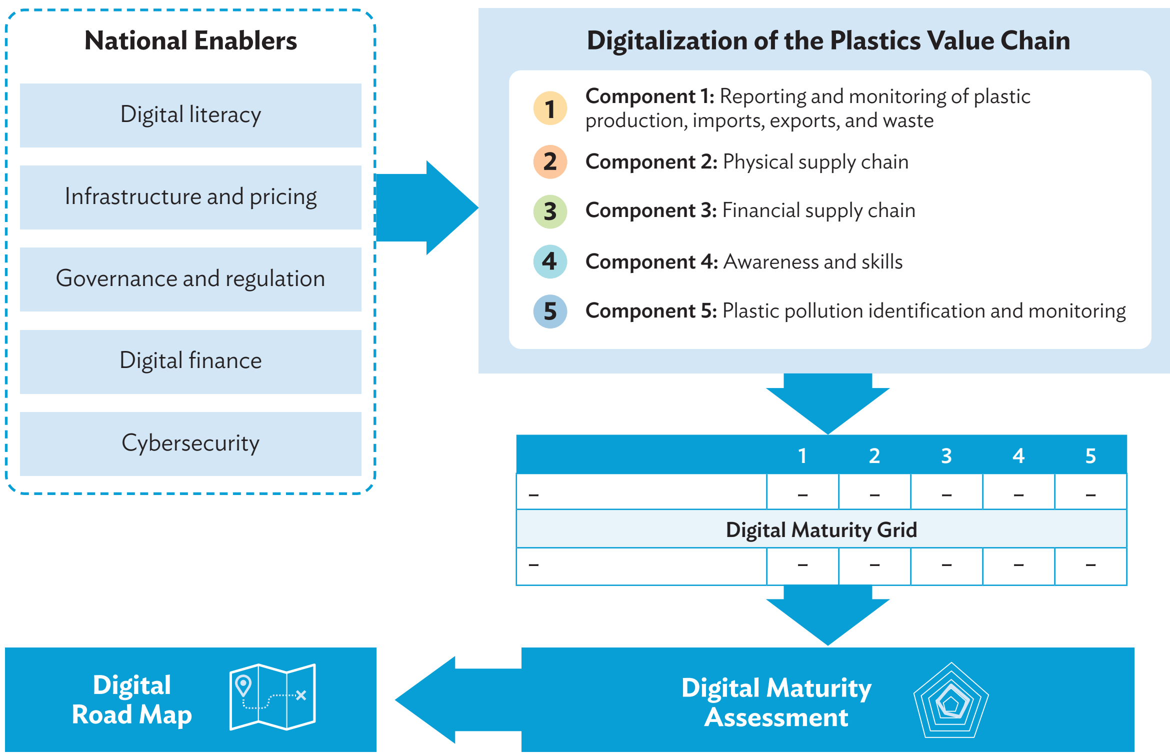
4 East Ventures. 2023. East Ventures launched the East Ventures – Digital Competitiveness Index 2023. Press release. 5 April.
5 A. Cameron et al. 2019. *Vietnam's Future Digital Economy—Towards 2030 and 2045: Summary Report*. Commonwealth Scientific and Industrial Research Organisation.
6 GSMA. 2022. *The State of Mobile-Enabled Climate Technology in Indonesia*.
7 S. Kemp. 2023. Digital 2023: Vietnam. *DataReportal*. 13 February.

Figure 1: Developing a Digital Road Map for the Plastics Value Chain



Source: Authors.

Governance, Regulation, and Data Strategy

Governance and regulation underpin the adoption of digital tools in waste management, setting standards for operations and data privacy. Indonesia's initiatives, such as SIBERKREASI[8] and personal data protection laws, have set a regulatory base for the advancement of digital literacy and safe adoption of digital tools as the country progresses with digitalization. Similarly, Viet Nam has centralized governance under its Ministry of Information and Communications, which focuses on policymaking and regulations on cybersecurity and infrastructure in the information and communication technology (ICT) sector. This approach ensures alignment between digital strategies and national objectives.

The demand for robust data strategies is evident in both countries. Viet Nam, with a 79% internet penetration rate, aims to enhance its digital economy, which is projected to reach $43 billion by 2025 (footnote 7). A comprehensive approach to data management will be key to leveraging insights for decision-making and operational improvements.

Digital Finance and Cybersecurity

Digital finance is critical for simplifying transactions and increasing transparency within the plastics value chain. In Indonesia, financial technology adoption among small and medium-sized enterprises remains low, hindered by costs and security concerns.[9] Viet Nam faces similar barriers, including mistrust in banks and high fees for digital transactions. To address this, the government targets 80% financial inclusion by 2025, with plans to expand services to underserved groups and rural areas, particularly benefiting women and farmers.[10]

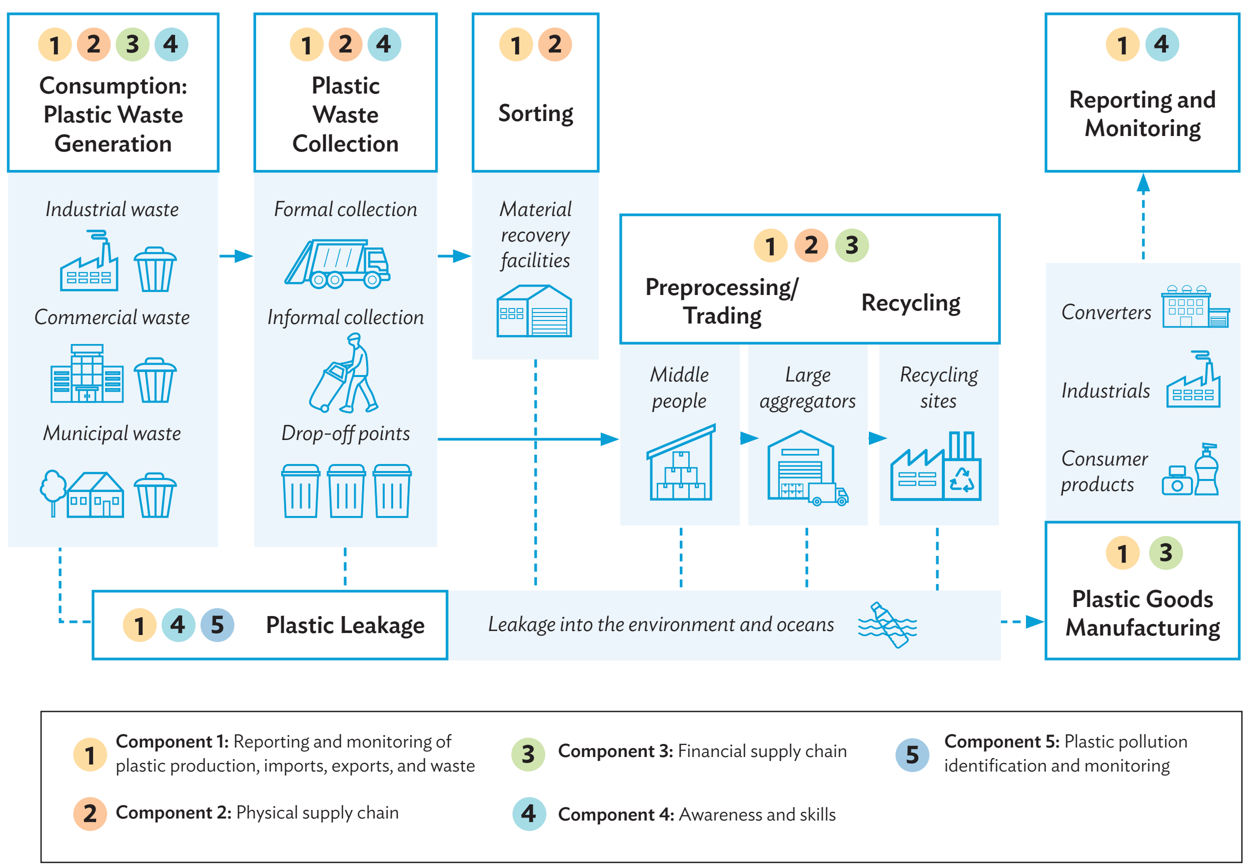
8 SIBERKREASI (CyberCreation: National Digital Literacy Movement).
9 S. Kumar et al. 2023. Indonesia's Fintech Industry Is Ready to Rise. *Boston Consulting Group*. 29 March.
10 Viet Nam News. 2023. Vietnam Among World's Earliest in Banking Digital Transformation: Forum. *Asia News Network*. 30 May.

Cybersecurity risks escalate as digital tools proliferate. In Viet Nam, according to the Viet Nam National Cyber Security Center, cyberattacks surged by 10.3% in early 2022, with critical infrastructure and sensitive data frequently targeted. Advanced persistent threats pose significant challenges, underscoring the need for robust security measures. Viet Nam has made notable strides, ranking 25th in the Global Cybersecurity Index, but sustained efforts are necessary to mitigate evolving threats.[11] Cybersecurity strategies must include training employees, adopting best practices, and implementing safeguards to protect digital ecosystems.

DIGITALIZATION OF THE PLASTICS VALUE CHAIN: FIVE COMPONENTS

As shown in Figure 1, the digitalization of the plastics value chain can be divided into five components: (i) reporting and monitoring of plastic production, imports, exports, and waste; (ii) physical supply chain; (iii) financial supply chain; (iv) awareness and skills; and (v) plastic pollution identification and monitoring. These components help bring circularity into the value chain—from increasing traceability and transparency, easing the management and flow of the physical and financial supply chains, to raising awareness and influencing behavior change, and supporting the monitoring and prevention of plastic pollution. Additionally, these components are present across the plastics value chain (Figure 2), and digitalizing the components can benefit multiple parts of the circular plastics economy.

Figure 2: Five Components of Digitalization Along the Plastics Value Chain



Source: Authors.

[11] National Cyber Security Index. Archived data from 2016-2023 (accessed 2 December 2024).

Reporting and Monitoring of Plastic Production, Imports, Exports, and Waste

Digitalization enables the creation of robust platforms for tracking the production, import, export, and disposal of plastics across its life cycle. Integrating ICT, as well as enabling blockchain and IoT, can enhance traceability and ensure accuracy and security of data. These digital systems can help monitor compliance with international standards, aid policymakers in enforcing regulations, and support circular economy goals by increasing the transparency of material flows. Efforts to monitor recycled plastics and waste can benefit from improved integration between producers, recyclers, and other actors in the plastics value chain, leading to a transparent ecosystem.

Physical Supply Chain

Digital solutions such as smart sensors, IoT devices, AI-driven logistics platforms, and other digital technologies can revolutionize the physical plastic supply chain. These technologies optimize operations by predicting demand, streamlining transportation, and enhancing inventory management. Integration with regulatory systems can promote seamless compliance with environmental policies and reporting requirements. Digital platforms for suppliers to coordinate on logistics can help match supply and demand for recycled materials, providing stability in the supply chain.

Financial Supply Chain

Digital financial tools—such as e-invoicing, e-wallets, or online platform payment systems—are reshaping how stakeholders in the plastics value chain conduct financial transactions. These solutions provide greater transparency, convenience, and security, reducing the risk of fraud and delays. In addition, mobile and online payment platforms increase access to financial services for small-scale recyclers and informal sector workers, enabling their integration into the formal value chain and increasing social inclusion.

Awareness and Skills

Digital platforms and mobile applications are key to spreading awareness about the environmental impact of plastics and fostering behavior change. These tools can guide individuals, households, and industries on best practices for reducing, reusing, and recycling plastics. Gamification and AI-driven educational tools can also engage users in learning how to segregate waste effectively and improve the quality of recycled materials. Online training programs and knowledge-sharing platforms equip waste management professionals with the skills needed for modern, tech-enabled recycling methods, closing the gap between waste generation and proper management.

Plastic Pollution Identification and Monitoring

Advanced digital systems—such as satellite imaging, drone technology, and AI-driven analytics—play an important role in identifying and quantifying plastic pollution in the environment. These systems provide real-time data on pollution hotspots, aiding cleanup efforts and resource allocation for pollution prevention. Mobile apps and citizen science platforms encourage public participation in reporting plastic waste, creating a data repository for analysis. Furthermore, IoT-enabled sensors in waterways and coastal areas can monitor plastic leakage that ensures continuous oversight and can support targeted policy interventions backed by reliable data.

The components of the digitalization of the plastics value chain demonstrate the potential of digital technologies to accelerate the shift to a circular plastics economy. These components are key to building a transparent, efficient, and sustainable plastics value chain. Digitalizing these components helps to integrate the public and private sector actors with the informal waste collection sector, which developing economies depend on for scaling up collection and recycling rates to meet national action plans on plastics.

A CLOSER LOOK AT THE DIGITAL MATURITY ASSESSMENT TOOL

The digital maturity assessment tool, which has been prepared in the form of a grid, provides a means to measure a country's ability to use, deploy, and maintain a range of digital solutions related to plastics management. The grid is split across the five components of the digitalization of the plastics value chain, as illustrated in Figure 1.

Digital Maturity Grid

The grid is used to develop a quantitative assessment of the baseline situation, and can also be used to set goals and develop a vision for digitalization. This enables the development of strategies and recommendations to shape the digitalization road map of the plastics value chain.

In the grid, each component has corresponding assessment questions that consider various factors, from cybersecurity to social equality in digitalization (Figure 3). These factors influence the assessment of the national enablers, especially since it is recognized that institutional changes are required to support digitalization. In certain components, there are overlaps across the factors that influence the digitalization of the plastics value chain (e.g., data governance frameworks and cybersecurity measures).

Figure 3: Questions to Assess the Components of Digitalization of the Plastics Value Chain

COMPONENT 1
Reporting and monitoring of plastic production, imports, exports, and waste

- What are the extent and coverage of plastic reporting systems (e.g., covering levels of government and geographic areas)? Do systems include formal and informal sectors?
- How are data monitored and how complex are the systems (e.g., feedback process, systems change analysis, and parameters) considered?
- Is there access to digital tools and technologies for reporting and monitoring at various levels (e.g., government, large recyclers, aggregators, waste banks, and informal waste collectors)?
- Are there sufficient data protection national policies and/or promulgated legislation?
- Is there a data governance framework in place (i.e., where/how data should be stored and used, accessed, and shared; with a centralized or integrated system; and with governance structures and processes available, etc.)?
- Is there stakeholder collaboration of the reporting and monitoring of plastic (i.e., data collaboration and selection from public, private, civil society)?

COMPONENT 2
Physical supply chain

- What is the availability and level of access to digital tools and technologies for plastic collection, disposal (landfills, recycling), segregation, and sorting?
- What is the availability and level of access to digital tools and technologies for plastic and plastic waste logistics?
- What is the supply chain financial sustainability and market penetration (i.e., are digital solutions operating effectively in the long term, with market-driven approaches, public support or private funding, and user base)?
- Are digital service providers actively strengthening the capacity of the informal sector (e.g., waste collectors and small aggregators) in the supply chain?
- Are there sufficient data protection national policies and/or promulgated legislation?
- Is there a data governance framework in place (i.e., where/how data should be stored and used, accessed, and shared; with a centralized or integrated system; and with governance structures and processes available, etc.)?

COMPONENT 3
Financial supply chain

- What is the availability and level of access to digital financial solutions for plastic and plastic waste trading (i.e., types of solutions that exist and geographic coverage)?
- What is the accessibility of digital financial solutions to the whole population (particularly waste pickers, informal sector traders, or those in remote areas)?
- Are there sufficient cybersecurity laws and governance systems in place (e.g., Financial Services Authority rules)?
- What is the level of payment protection in the financial supply chain (i.e., links to banking regulation and governance)?

COMPONENT 4
Awareness and skills

- What is the availability of digital solutions that provide practical education or guidance to users (e.g., households and small businesses) on waste classification, sorting, and segregation?
- What is the availability of digital marketing tools (i.e., types of solutions that exist and geographic coverage)?
- What is the level of accessibility of digital marketing campaigns (who/where are they targeted for, particularly considering the poorer population and those in remote areas)?
- What is the level of digital skills across the population (e.g., using waste management apps and performing digital payments)?

COMPONENT 5
Plastic pollution identification and monitoring

- What are the extent and coverage of plastic waste identification systems (e.g., marine waste, city level, and geographic inclusion of remote islands)?
- How are plastic waste identification data used (e.g., feedback process, systems change analysis)?
- What is the level of access to digital tools and technology for plastic pollution identification (e.g., government, community groups, nongovernment organizations, households)?
- Are there sufficient data protection national policies and/or promulgated legislation in place?
- Is there a data governance framework in place (i.e., where/how data should be stored and used, accessed, and shared; with a centralized or integrated system; and with governance structures and processes available, etc.)?

Source: Authors.

Table 1: Overall Digital Maturity Levels of the Plastics Value Chain at the Country Level

Scoring	1 ■□□□□	2 ■■□□□	3 ■■■□□	4 ■■■■□	5 ■■■■■
Level	**Initiating**	**Enabling**	**Integrating**	**Optimizing**	**Pioneering**
Description	Basic digital awareness is absent or not broadly apparent, with limited understanding of the need for digital systems, and with limited evidence of intent to progress.	Basic functionality of digital approaches and solutions enables the improvement of assets, operations, and data management in the plastics value chain. There are beginnings of a plan to progress with digital technologies.	Established digital solutions and approaches provide real benefits for the plastics value chain across large parts of the country, with solutions integrated into strategic and operational planning.	The plastics value chain sees the benefits from established digital solutions and approaches. Remote and real-time data monitoring, under strict cybersecurity and data governance protocols, is used in agile operations.	All sectors in the plastics value chain have a fully embedded digital capability that is recognized as world-class. Solutions deployed are breaking new ground and advancing the state of digital transformation.

Source: Authors.

Maturity Levels and Scoring

The responses to the assessment questions are chosen from a series of scenarios, as opposed to a binary "yes" or "no" answer. These scenarios were developed based on the five levels of digital maturity, which then equate to a score depending on the response (Table 1). The score ranges from level 1, the beginning or "Initiating" status, to level 5, an advanced or "Pioneering" status.

Responses to the questions should be guided by discussions with relevant stakeholders, as part of the early engagement to develop a digitalization road map. If information is not available from stakeholders, secondary sources and existing publications can help with selecting the most appropriate scenario response.[12]

There are specific examples of scenarios and metrics for each of the 25 assessment questions in the digital maturity grid. One example is shown in Table 2.

[12] Secondary sources can include the E-Government Survey of the United Nations Department of Economic and Social Affairs, Information and Communication Technology (ICT) Development Index of the Telecommunication Development Sector (ITU-D) under the International Telecommunication Union, ITU-D Global Cybersecurity Index, and the Global Innovation Index of INSEAD and the World Intellectual Property Organization, among others.

Table 2: Example Scenarios for Each Digital Maturity Level for a Subcomponent Question

Component and Question	Initiating 1	Enabling 2	Integrating 3	Optimizing 4	Pioneering 5
Physical Supply Chain: What is the availability and level of access to digital tools and technologies for plastic collection, disposal (landfills, recycling), segregation, and sorting?	No digital tools and technologies used in plastic waste collection, segregation, or sorting.	Digital tools and technologies for plastic collection, disposal, segregation, and sorting used by large plastic recyclers and aggregators only. Data include plastic volumes and collection location.	Digital tools and technologies for plastic collection, disposal, segregation, and sorting used by 25%–50% of the formal sector, and some coverage of plastic recyclers and aggregators in the informal sector (e.g., aggregators or plastic credit developers).	Digital tools and technologies for plastic collection, disposal, segregation, and sorting used by >50% of the formal sector and >25% of plastic recyclers and aggregators in the informal sector. Some examples of high-tech solutions include automated sensor systems and automated segregation.	Technologies include GPS; sensors used on vehicles and collection points (e.g., volumes, % full, and locations); sensors for weighing plastic waste and tools to identify types of plastic utilized; and automated tools for plastic segregation and sorting, with consideration for artificial intelligence.

GPS = global positioning system.
Source: Authors.

The assessment score for each component is generated by the weighted average of all the responses to the assessment questions. Each assessment question is weighted differently depending on its perceived importance toward the overall component. For example, the question *"What is the availability and level of access to digital tools and technology for plastic collection, disposal (landfills, recycling), segregation, and sorting?"* is given an increased weight for the overall scoring of the Physical Supply Chain component, as this is considered to be a critical factor for digital maturity.

Setting the weights on the assessment questions can be made through a consensus-based approach among practitioners conducting the assessment to achieve a balanced view on the level of importance of each assessment question. For the assessment of the digitalization of the plastics value chain in Indonesia and Viet Nam, the weights assigned to the questions ranged from 2 to 4 out of the minimum weight of 1 and maximum of 5.

The digital maturity assessment for the country is derived from the average score of all the five components of the digitalization of the plastics value chain. At the component level, the score for each component of the digitalization of the plastics value chain is calculated as the sum of the product of the weight and the respective maturity level score for each assessment question, divided by the total weight of all assessment questions, as shown in the following formula:

$$\text{Component assessment score} = \frac{\sum(\text{Assessment Question}_{\text{Weight}} * \text{Assessment Question}_{\text{Score}})}{\sum(\text{Assessment Question}_{\text{Weight}})}$$

$$\text{Digital Maturity Assessment Country Score} = \text{Average of all components' assessment scores}$$

The scoring is intended to highlight where the greatest resources are required to advance digitalization at the national level, and set the baseline upon which the road map for digitalization can be developed. Caution should be urged when using the tool to compare countries, as it is primarily intended to facilitate continued stakeholder engagement on the digitalization of the plastics value chain.

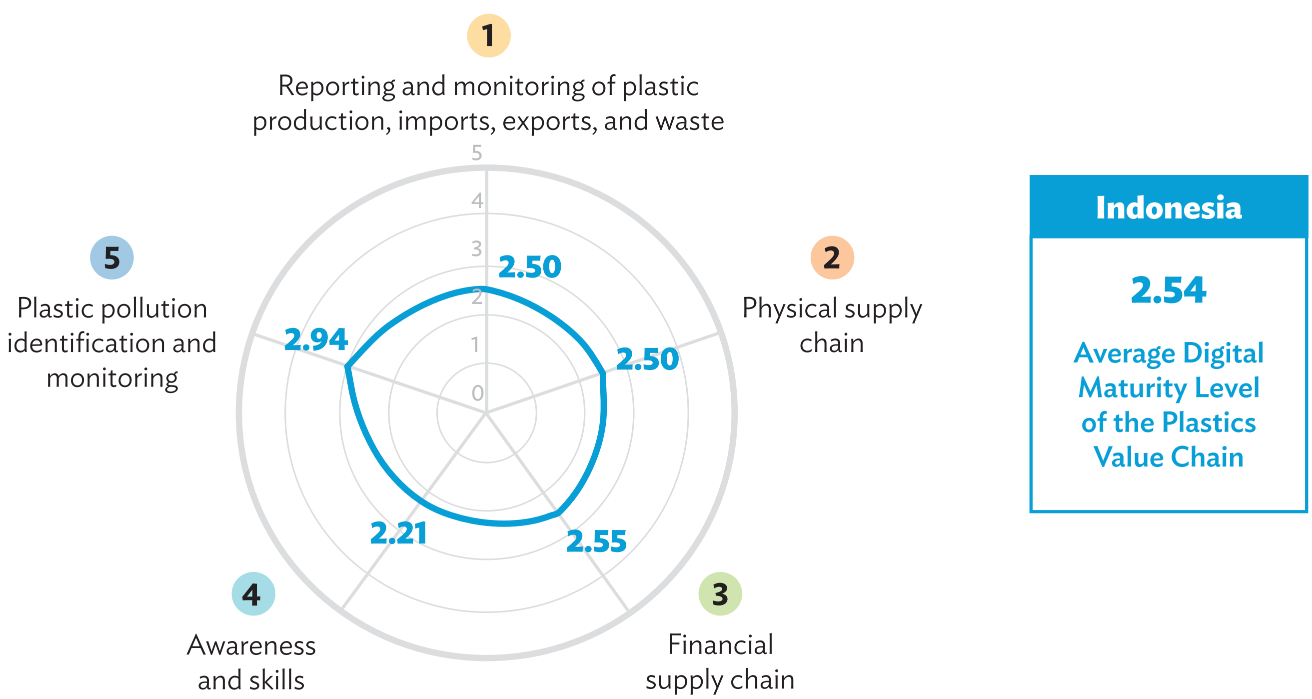
CASE STUDY 1: INDONESIA

The digital maturity of Indonesia's plastics value chain is assessed to be between level 2 (Enabling) and level 3 (Integrating), with an average maturity level of 2.54 (Figure 4). The component on awareness and skills needs urgent attention (2.21 digital maturity level), particularly because of the limited use of digital tools for plastic waste marketing. However, it is clear that digital skills are being prioritized by the government and digital maturity could therefore progress quickly. Digital tools are currently not widely adopted in the physical supply chain (2.50 digital maturity level) and financial supply chain (2.55), and solutions that do exist are mostly operational in Jakarta and Bali. A lot of training will be needed, especially working with the informal sector, to advance the digitalization of plastic waste management nationwide.

Nonetheless, there are a number of positives in Indonesia; not least is the innovation shown by tech-savvy private operations and businesses for developing digital solutions to collect, monitor, and report plastic waste. As a result, the plastic pollution identification and monitoring component scored a digital maturity level of 2.94. It is also positive to note that there is an established central database that supports the reporting and monitoring of plastics, though the accuracy and participation nationwide remains low. In the future, it is envisaged that these systems will expand their level of coverage to assist regional authorities and support a coordinated approach, which could also include targeted digital marketing campaigns.

The results from the digital maturity assessment in Indonesia helped set a platform to guide future discussions on digitalization with relevant stakeholders (e.g., local authorities, public sector, private sector, experts, and donors). Working with these stakeholders, the project team was able to identify objectives and priorities on the digitalization of the plastics value chain, capitalizing on the strengths and shortcomings noted from the assessment. Long-term ambitions and strategies were designed to improve the value chain and help Indonesia prepare for the implementation of the Global Plastics Treaty or the international legally binding instrument (ILBI) on plastic pollution.

Figure 4: Digital Maturity Assessment of the Plastics Value Chain of Indonesia



Source: Authors.

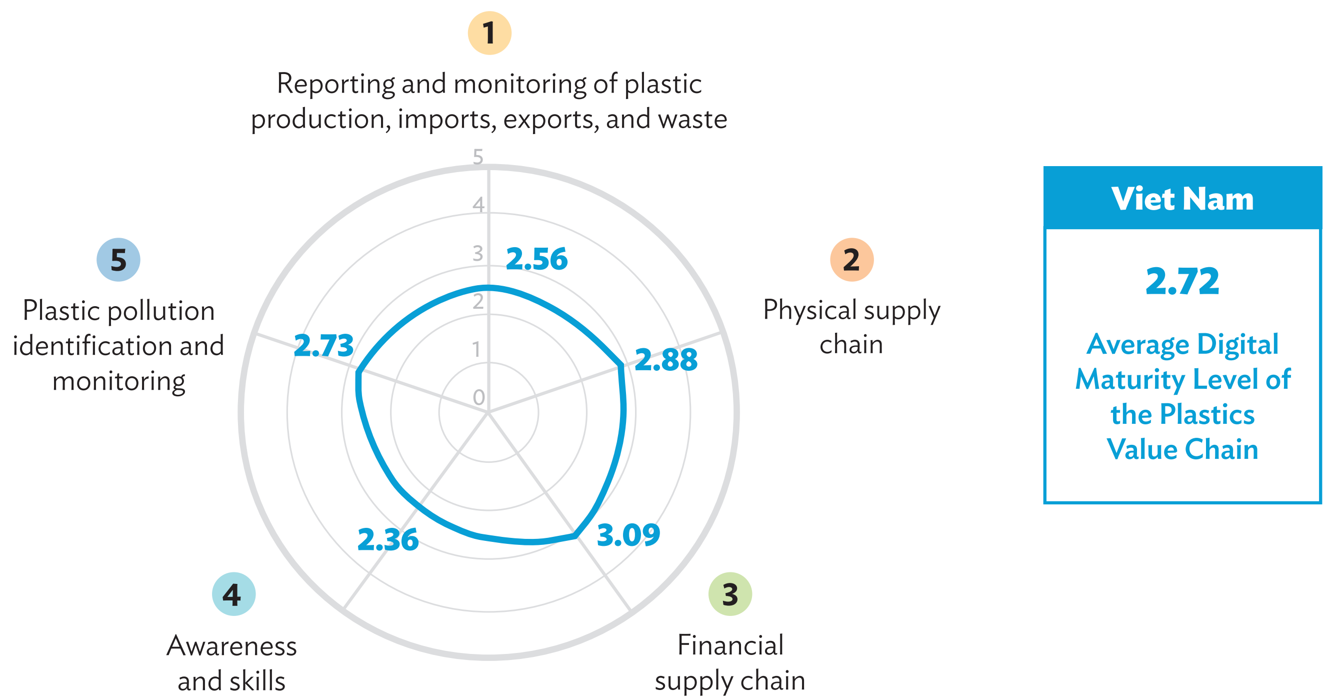
CASE STUDY 2: VIET NAM

The digital maturity of the plastics value chain in Viet Nam is assessed to be between level 2 (Enabling) and level 3 (Integrating), with an average maturity level of 2.72 (Figure 5). Components in the value chain that need the most improvement are awareness and skills (2.36 digital maturity level) and reporting and monitoring of plastic production, imports, exports, and waste (2.56). Plastic monitoring is currently limited to certain large-scale actors, but major changes are expected with the adoption of the Grac software (a sustainable waste management digital solution) at a national level, which will significantly advance the level of digital maturity once fully implemented. In addition to Grac, there are other advanced technological solutions that have been developed to support plastic pollution identification and monitoring, but these are currently not implemented at a national level.

The highest-scoring component is the financial supply chain at 3.09. Digital financial solutions are widely used and supported by the National Cyber Security Strategy, which will help the transition to digital payments for waste management at the household level. The increased level of data collection through the Grac software also offers the possibility to improve awareness of plastic waste management through targeted campaigns.

Similar to Indonesia, the baseline digital maturity assessment helped guide a consultative approach with stakeholders to align on objectives and priorities for digitalization. These discussions helped shape the recommendations and design of the digitalization road map for Viet Nam's plastics value chain. This road map, like the case of Indonesia, addressed the strategies of the national action plan on plastics and the future needs of the ILBI on plastic pollution.

Figure 5. Digital Maturity Assessment of the Plastics Value Chain of Viet Nam



Source: Authors.

RECOMMENDATIONS FOR FUTURE APPLICATIONS

The digital maturity assessment provides a comprehensive picture of the digital ecosystem and digital readiness of systems, communities, and actors in the plastics value chain. With a view to achieve plastic circularity, the assessment sets the baseline for the current level of digital maturity as part of early conversations with relevant stakeholders.

However, this assessment is only the first stage of a wider process to develop a digital road map for accelerating plastic circularity, in line with the digitalization of the national ecosystem. Decision-makers and practitioners should consult with diverse stakeholders such as plastics aggregators, recyclers, brand owners, and tech entrepreneurs in the plastics value chain. Understanding the current digital maturity level should form the basis for further discussions and consultations on the future ambitions for digitalization.

The digital maturity grid can support ambition-setting consultations by simplifying complex concepts and terminology into manageable questions. The tool presents a series of scenarios that illustrate the progression of digitalization across each component. Using the grid also ensures that a range of stakeholders (e.g., local authorities, public sector, private sector, experts, and donors) have a voice in defining digitalization goals, and highlights any disparities between the visions of different groups. It is important to note that stakeholders may have different ambition levels, and this may change as progress is made and the benefits of digitalization are realized along the passage of the road map. All things considered, with the maturity assessment performed, stakeholders would be well informed to contribute to the shaping of ambitions and strategy to enhance the plastics value chain and to be able to prepare for future needs, whether related to the national action plans on plastics or to meeting the requirements of the ILBI on plastic pollution.

Development partners should consider providing similar technical assistance and capacity building in order to support countries in preparing digital maturity assessments and bringing digitalization and digital solutions into the plastics value chain.

CONCLUSION

Conducting a digital maturity assessment highlights the strengths and weaknesses of the national enabling environment for achieving digitalization of the plastics value chain. It helps identify the gaps and opportunities within the components of the plastics value chain that can benefit from digital solutions. The digital maturity assessment tool was developed to shape the strategic actions and road map for the digitalization of the plastics value chain. This tool—the first of its kind focused specifically on supporting an accelerated path toward a circular plastics economy—was invaluable when proposing the recommendations included in the road maps for Indonesia and Viet Nam. This kind of assessment could be replicated and implemented in other countries, helping them meet the goals of their respective national action plans and achieve plastic circularity through the digitalization of the plastics value chain.

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