Digitalization of the Plastic Value Chain in Southeast Asia

Session 1 Track 3

PROMOTING ACTION ON PLASTICS POLLUTION FROM SOURCE TO SEA IN SOUTHEAST ASIA AND PACIFIC

SUBPROJECT 2: PRIORITIZING AND IMPLEMENTING ACTIONS TO REDUCE MARINE PLASTIC POLLUTION

TA-6669 REG

17th June 2025

In Consortium with

DT Global

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Digitalization of the Plastics Value Chain
Session 1 – Track 3

1 The Digital Component of the TA Project

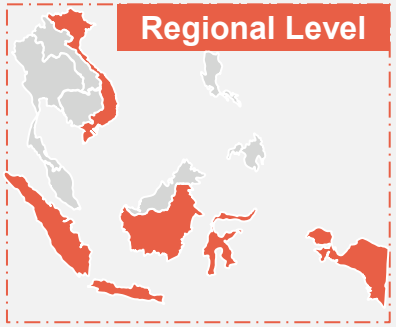
2 Digital Maturity Assessment

3 Objectives and Ambition Setting

4 Recommendations for the Digital Roadmap

1. Digital Component of the TA Project

Approach to Obtaining a Baseline, Exploring Digital Solutions, Setting Objectives & Ambitions for a Digitalization Roadmap



Extended stakeholders consultations

Activity 1 - Digital Roadmap

- **A. Digital Maturity Levels Assessment**
- **B. Objectives Definition, Regional & Country Levels**
- **C. Digital Roadmap**
  - **Budgeted initiatives**
    Solutions to prioritise

Activity 2 - Screening of Digital Solutions

- Global consultations and screening of PWM digital solutions
- Regional consultations and screening of PWM digital solutions

Activity 3 - Testing Digital solutions

- Digital solutions selection
- Piloting and testing of several solutions

Activity 4 - Data governance & PWM Open Data platform

- Digital and Data Governance
- Open Data Platform Proof of Concept

Activity 5 - Knowledge Products

- Varying knowledge products formats

5 Activities

1. Digital Roadmap
2. Screening of Digital Solutions in ASEAN Region
3. Testing Digital Solutions in Indonesia
4. Data Governance & PWM Open Data Platform
5. Knowledge Products

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2 Digital Maturity Assessment

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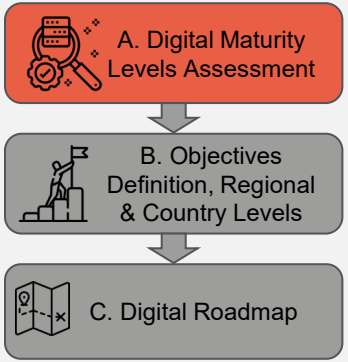
Purpose of the Digital Maturity Assessment

- Baseline assessment – Understanding current situation
- Understanding technical solutions that could be applied
- Plastic focus, but assessment needs broader view – enabling factors
- Understand how digital solutions can accelerate plastics circularity in an equitable manner

Assessing National level Enablers



The digital maturity assessment toward plastic waste management will highlight digital maturity of Vietnam and Indonesia based on:

1. **Digital intensity** → level of use of digital technologies in the selected activities
2. **Digital literacy** → level of understanding and use of digital technology within the relevant stakeholders

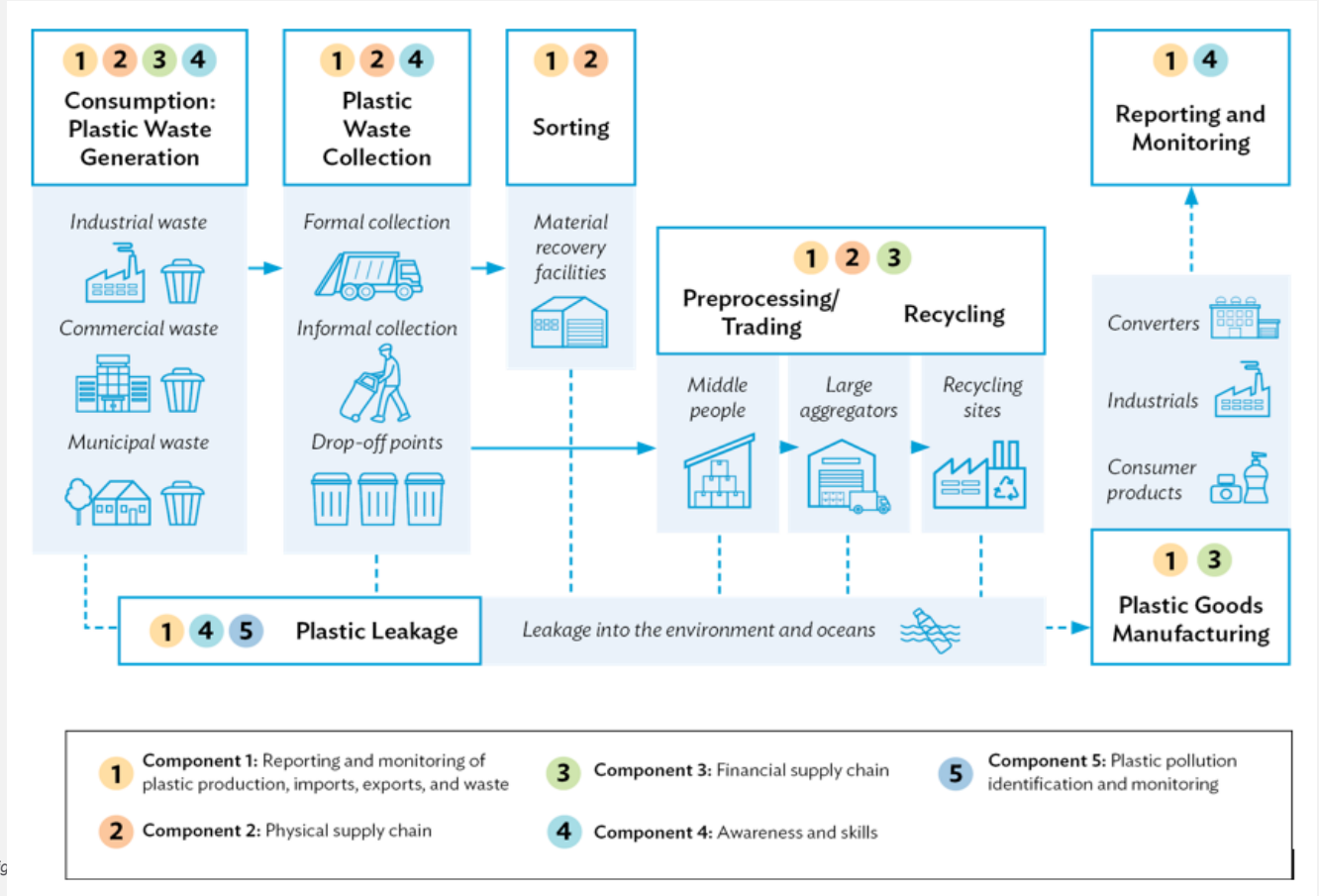
Governance and stakeholders: understand the role of the "plastics stakeholders" and the current governance related to digital technology

Policies & regulations: assess existing laws and regulations related to digital technology, data governance and cybersecurity

Digital infrastructure & connectivity: assess the existing digital technology field, infrastructure and equipment available

Social survey: understand current access to digital technology of individuals and the informal sector

Assessing components in the plastic value chain



Digital Maturity Assessment Grid

To quantify the current situation in the plastic waste value chain, a method has been developed that focuses on five key components. Each component is analysed through a series of questions aimed at gaining insights into the processes involved. Scenarios are then created to gauge responses, aligning with different levels of advancement in "Digital Maturity." This information is presented in a grid format, allowing for a clear visualization of the data and facilitating strategic decision-making within the plastic waste management sector.

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

a. *Extent and coverage of plastic reporting systems*
b. *Data recording and collection*
c. *Private digital solutions*
d. *Data monitoring and complexity of systems*
e. *Access to digital tools for reporting and monitoring*

2. Physical supply chain

a. *Limited value provided by digital tools for the formal waste management sector*
b. *Private digital solution use*
c. *Financial sustainability and market penetration*
d. *Data protection and governance*
e. *Potential of smart city infrastructure*

3. Financial supply chain

a. *Retribution fees and payments*
b. *Availability and usage of digital financial solutions*
c. *Accessibility of digital financial solutions*
d. *Data protection and governance*

4. Awareness and skills

a. *Plastic value awareness campaigns*
b. *Private digital solutions on awareness*
c. *Availability and usage of digital marketing tools*

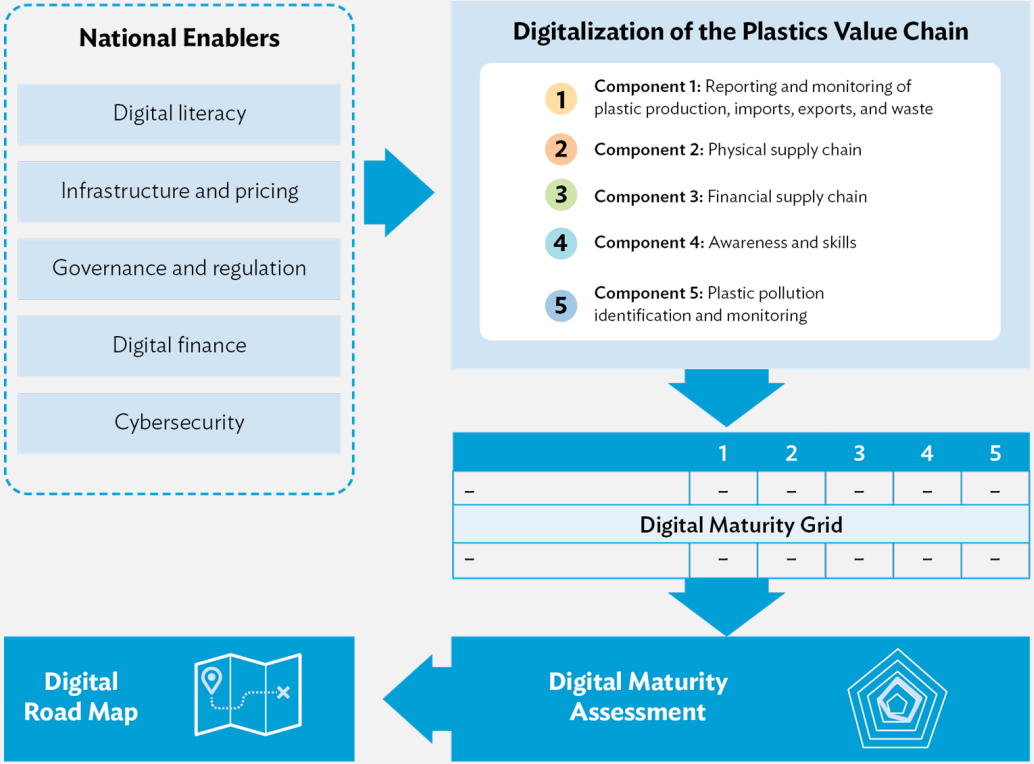
5. Plastic pollution identification and monitoring

a. *Plastic pollution identification systems*
b. *Plastic waste pollution data usage*
c. *Accessibility and usage of pollution identification systems*

Digital Maturity Levels

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.

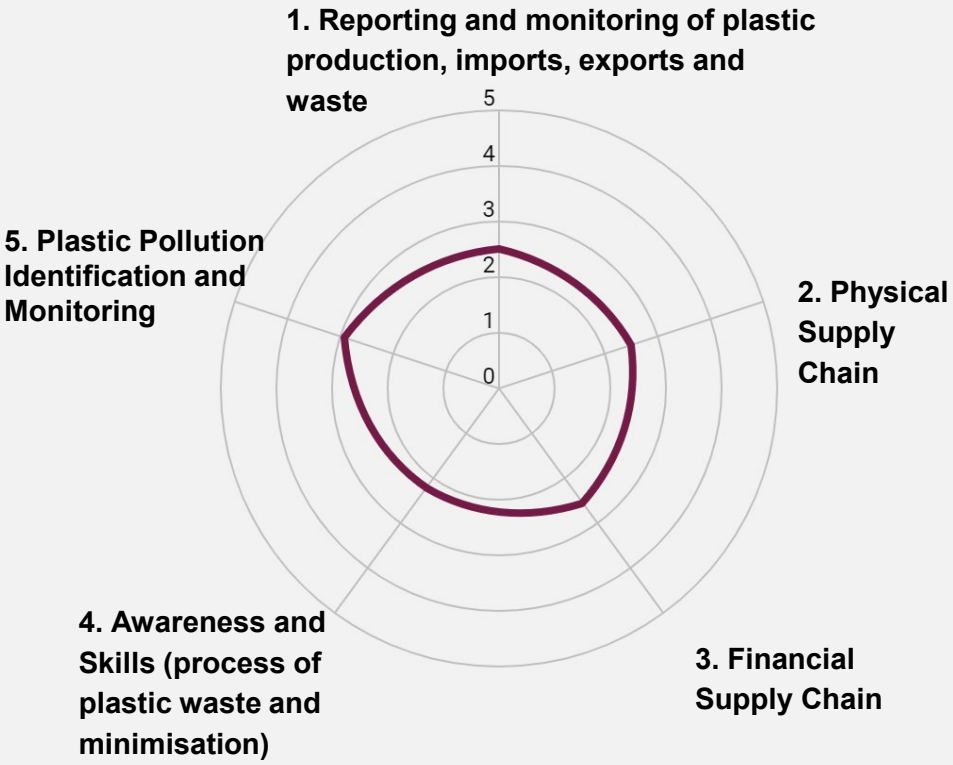
Flow of the Digital Maturity Assessment



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

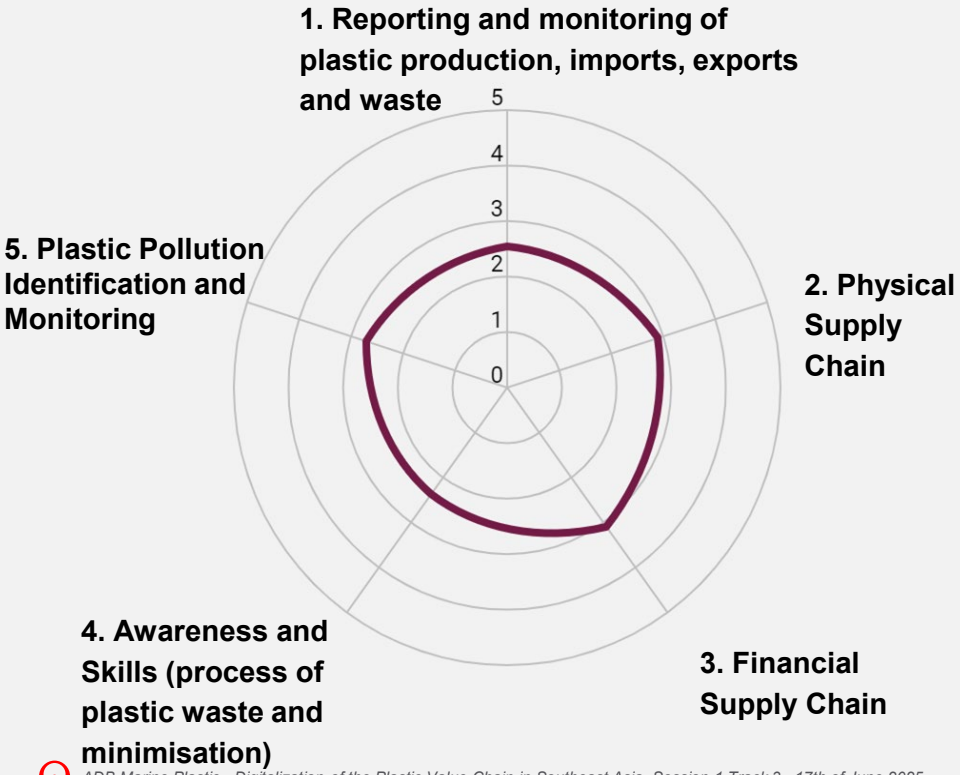
Digital Maturity Assessment Country Score = **Average of all components' assessment scores**

Digital Maturity Assessment
Results of Indonesia Study



Component	Digital Maturity Level
1. Reporting and monitoring of plastic production, imports, exports and waste	2.50
2. Physical supply chain	2.50
3. Financial supply chain	2.55
4. Awareness and Skills (process of plastic waste and minimisation)	2.21
5. Plastic pollution identification and monitoring	2.94
Average Digital Maturity Level of the Plastic Waste Value Chain	**2.54**

Digital Maturity Assessment
Results of Viet Nam Study



Component	Digital Maturity Level
1. Reporting and monitoring of plastic production, imports, exports and waste	2.56
2. Physical supply chain	2.88
3. Financial supply chain	3.09
4. Awareness and Skills (process of plastic waste and minimisation)	2.36
5. Plastic pollution identification and monitoring	2.73
Average Digital Maturity Level of the Plastic Waste Value Chain	**2.72**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3 Objectives & Ambition Setting
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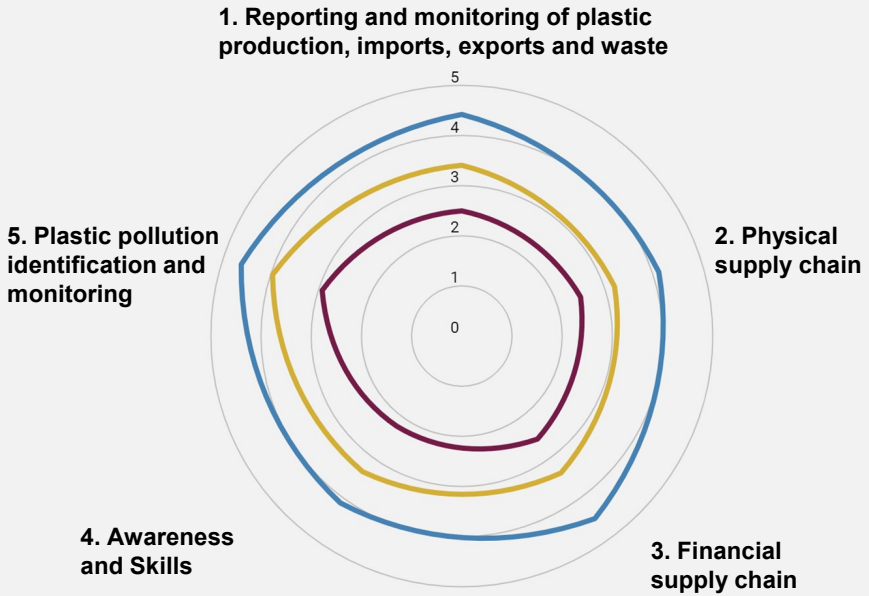
Objectives & Ambitions
Setting targets for the Digital Roadmap

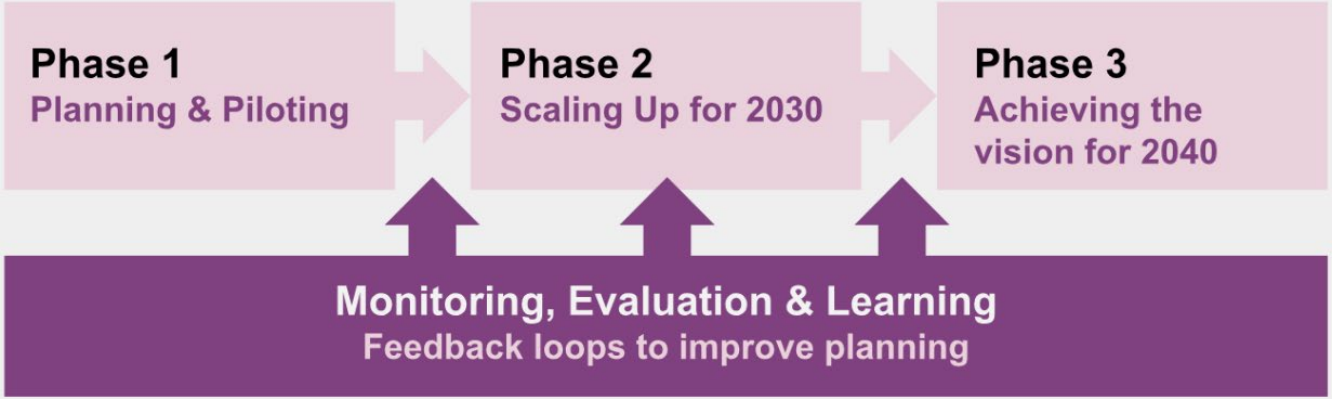
1. Receive Feedback & Consultations with various stakeholders – Set a balanced Target & Ambition for the digital roadmap
2. Develop Recommendations for the Digital Roadmap
3. Setting Objectives & Ambitions for the development of the Plastic Waste Management Digital Roadmap

Component of Maturity Grid	Target objectives for 2030 Roadmap for Digitalisation
Reporting and monitoring of plastic production, imports, exports and waste	Centralize waste data into one database and ensure interoperability of waste platforms, expand increase data quality
	…
Physical supply chain	Actively engage at least informal waste workers to adopt digital waste solutions
	…
…	…



Recommendations

Roadmap for Digitalization of Plastic Waste Management



Phase 1: Planning & Piloting

Phase 1 integrates findings from Activities 3 and 4, building on Activity 2's digital solutions database. It includes assessing central waste data options, developing KPIs for monitoring, and exploring digital solutions for the supply chain and education.

Phase 2: Scaling Up for 2030

Phase 2 focuses on scaling digital solutions for plastic waste management . It includes integrating waste data systems, implementing data-driven planning, and engaging informal workers. The phase emphasizes digitalizing supply chains, enhancing cybersecurity, improving public awareness, and expanding pollution monitoring technologies through digital platforms.

Phase 3: Achieving the vision for 2040

Phase 3, starting in 2030, builds on Phase 2 achievements for an advanced digital economy in plastic waste management. It focuses on automation, IoT sensors, and AI integration. Key areas include real-time data transmission, automated analytics, advanced pollution detection, and smart waste management for optimized service delivery.

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4 Recommendations for the Digital Roadmap

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Opportunities and Recommendations

Actionable recommendations were developed for the short, medium and longer terms – forming the roadmap for digitalization

Enhance the integration of circular economy practices in the formal and informal sectors

Support improved plastic waste tracking and monitoring, and data-driven decision-making

Reduce plastic waste leakage into the environment by improving collection infrastructure

Promote the development of digital innovation in waste management technologies

Raise public awareness and engagement on the environmental impact of plastic waste


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Q&A
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DISCUSSION AT TABLES

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DISCUSSION AT TABLES

1. How can the informal sector be engaged in the journey of digitalization of the plastic value chain digitalization?

2. What are the priority areas to begin the process of plastic value chain digitalization?

3. What areas of support in capacity building will be required to realize digitalization of the plastic value chain in our region?

4. How can municipalities apply digital solutions to improve plastic waste segregation and collection at the household level?