Textile-to-textile Recycling for Plastic Reduction in the Textile Sector

Yorkie Sutaryo – GGGI Indonesia

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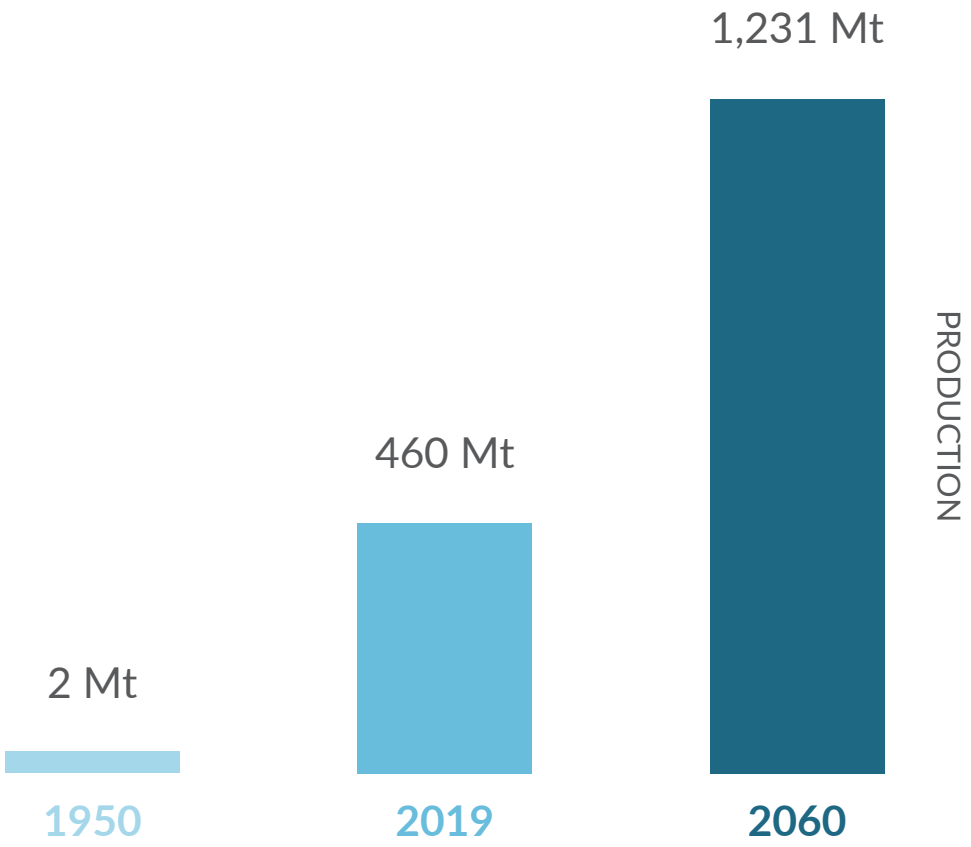
Global Plastics Overview

Global Plastic Overview

Plastic's versatility as a key driver of its diverse application, causing rapid production since 1950, with **460 million tons in 2019 alone**

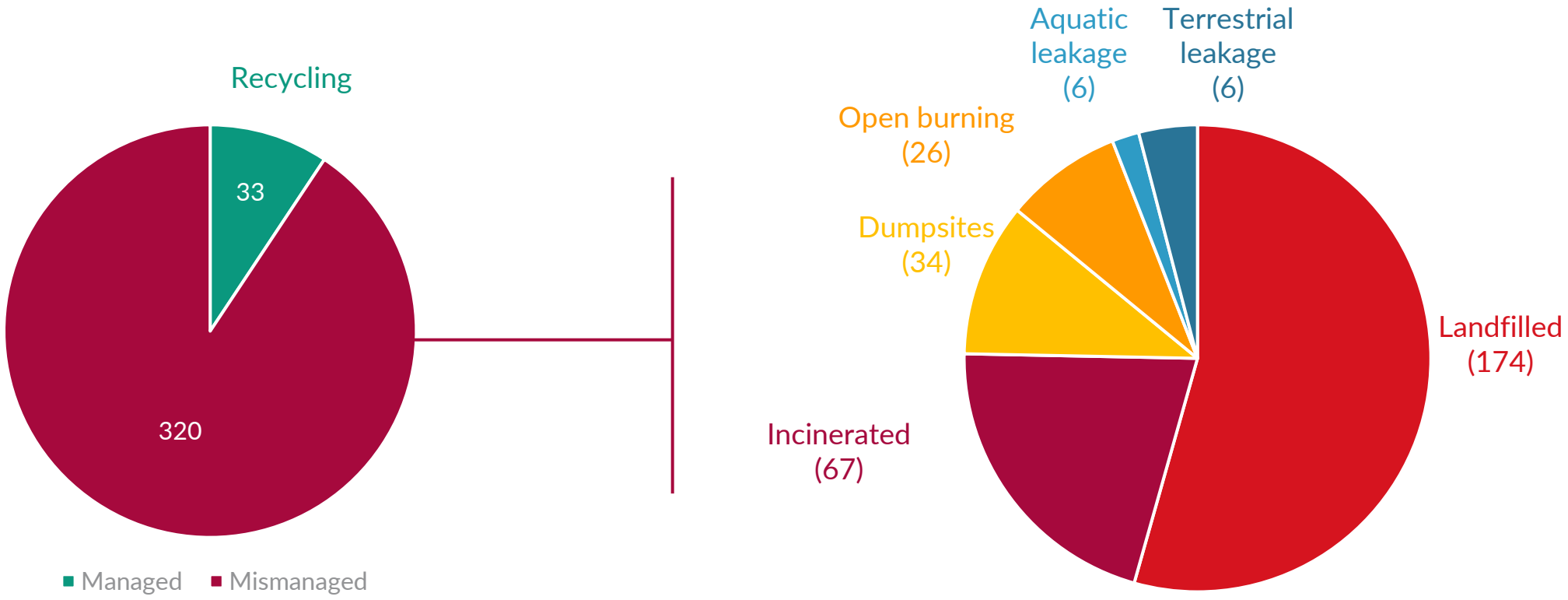


EXAMPLES OF APPLICATION IN 2019

- Food packaging (31%)
- Automotive parts (12%)
- Textiles (10%)
- Electronics (4%)

Global Plastic Pollution

Approximately 353 Mt out of 460 Mt (76.7%) of total plastic used in 2019 became waste, of which **320 Mt was mismanaged, highlighting the urgent need for solutions**



Source: OECD. (2022). *Global Plastics Outlook: Policy Scenarios to 2060*. Link here

Examples of Initiatives

INTERNATIONAL AGREEMENT

International Legally Binding Instrument (ILBI) on Plastic Pollution, including in the Marine Environment

GLOBAL COOPERATION

Global Plastic Action Partnership and in-country Plastic Action Partnerships

REGIONAL ACTION PLANS

ASEAN Regional Action Plan for Combating Marine Debris in the ASEAN Member States (2021 – 2025)

SECTORAL INITIATIVE

Plastic-to-textile initiative as a means to divert from landfills, reduce environmental leakage, and diversify textile materials

FINANCING

Financing sources available to increase circularity in the plastics sector and reduce plastic waste (e.g., Circulate Capital, etc.)

Plastic-to-textile Initiatives

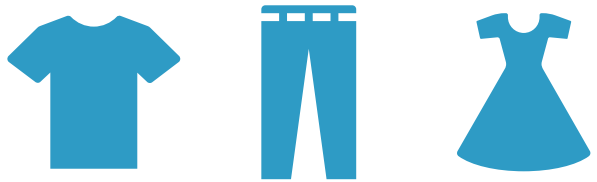
Plastic-to-textile Initiatives

Plastic-to-textile activities is seen as a promising shift towards a more circular approach in the textile sector, **substituting virgin polyester that represents 54% of the overall 2022 global fiber production**

PET Bottle
Majority of the raw material for plastic-to-textile recycling

Plastic Packaging
Post-consumer plastic packaging can also be used as raw material, although minor in volume

Mechanical Recycling



Recycled Fibers
Fibers are then turned into yarn, to be utilized into textile products

Drawbacks of Plastics in Textiles

Oil Use

Low production costs of the oil-based polyester contributes to GHG emissions (143 MtCO2e in 2019)

Plastic Production

Using plastic-based material for textiles encourages further production and use of plastics

Water Usage

High water use for cooling purposes for polyester production process and potential water contamination discharge

Toxic Chemicals

The dyeing process of polyester fabric requires toxic chemicals, endangering human and environmental health

Non-biodegradable

Polyester fabric requires up to 200 years to degrade, hence risking environmental and human health if mismanaged

Microplastic Discharge

Up to 500,000 tons of microplastics from textiles pollute the global marine environment annually

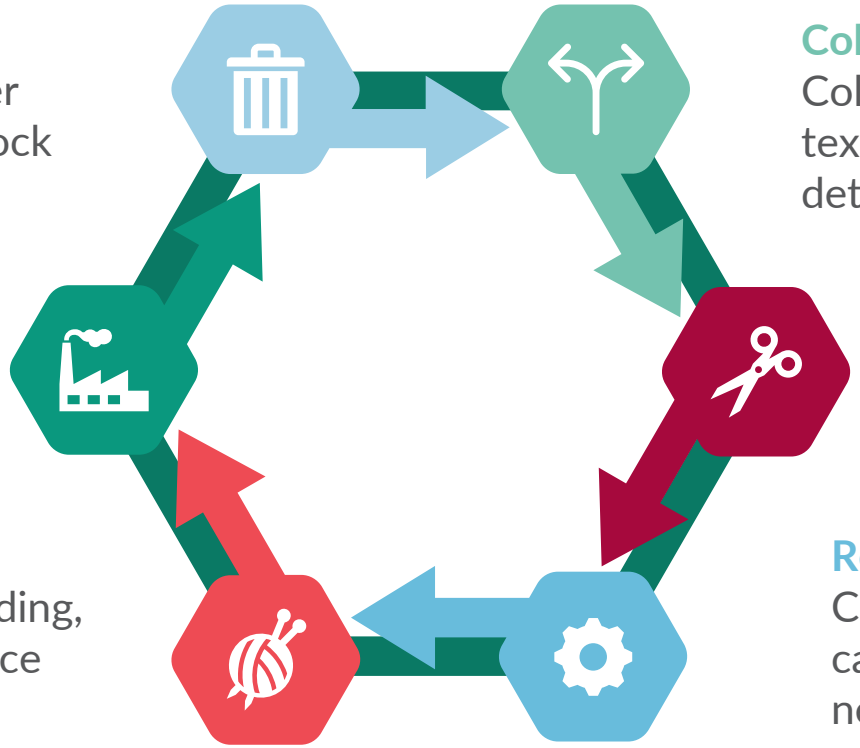
Textile-to-textile Recycling

Textile-to-textile Recycling as an Alternative

Ensuring circularity in the textile sector by **utilizing textile waste for fiber production** to create new textile products

Consumption
Pre- and post-consumer textile waste as feedstock for textile manufacture

Collection and Sorting
Collection and sorting of textile waste by pre-determined categories



Material Uptake
Yarns are used to create garment and non-garment products

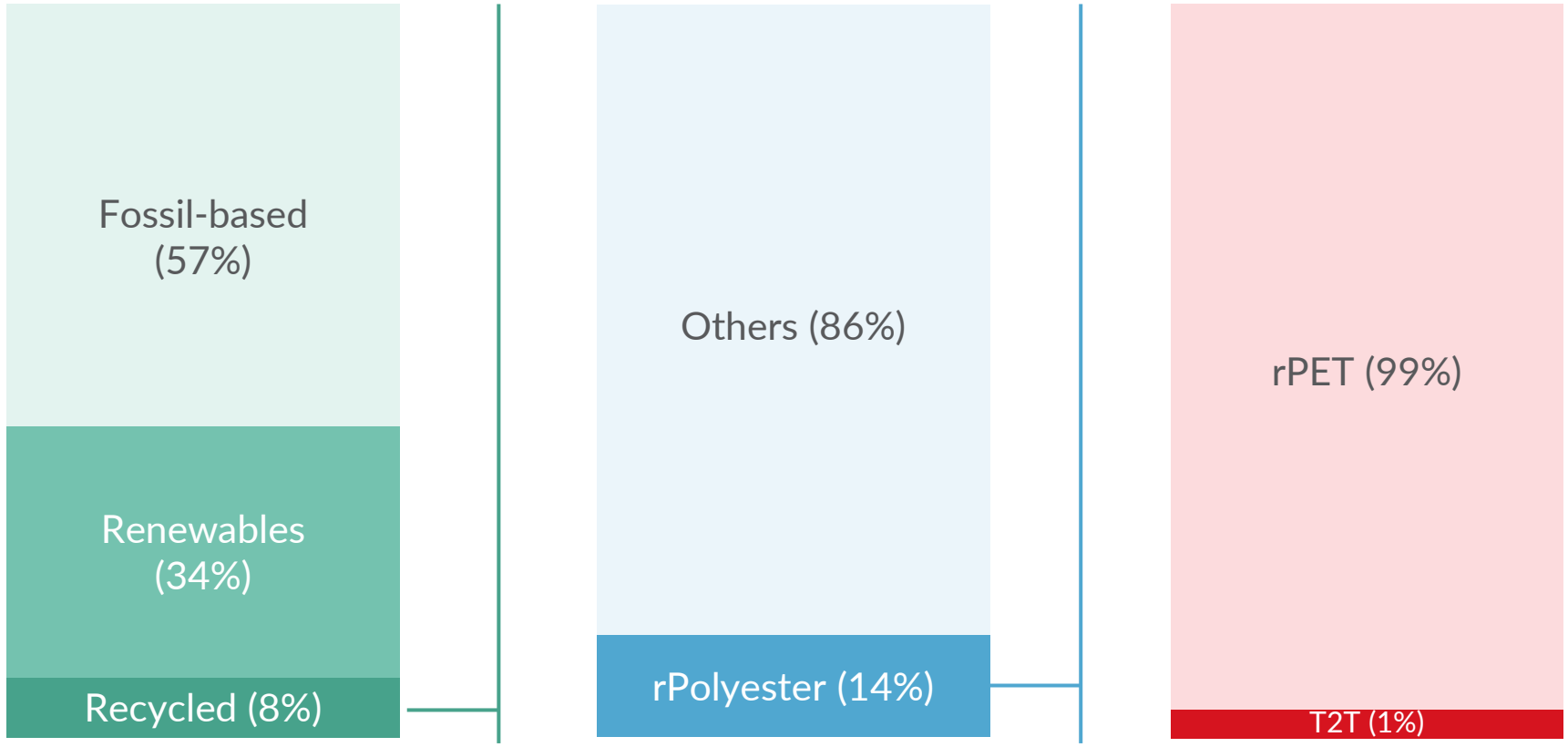
Pre-recycling Process
Non-textile materials such us zipper and buttons are dismantled

Spinning Process
Covers (blending), carding, and spinning to produce new yarns

Recycling Process
Covers tearing, wetting and carding stages to produce new fibers

Global Trend of Recycled Fibers

Global fiber production in 2022 reached 116 Mt, with **recycled fibers representing 7.9%** of the total production



Factors Driving the Global Recycled Textiles Market

Nonetheless, **regulatory, technical, market, and personal factors** could possibly drive the development of the global recycled textiles market

Regional and country-level regulatory enablers are increasingly being developed (e.g., EU Ecodesign for Sustainable Products Regulation, textile sorting policies, etc.)

International standards developed to push for responsible practices and ensure co-benefit delivery (e.g., Global Recycled Standard, Recycled Claim Standard, etc.)

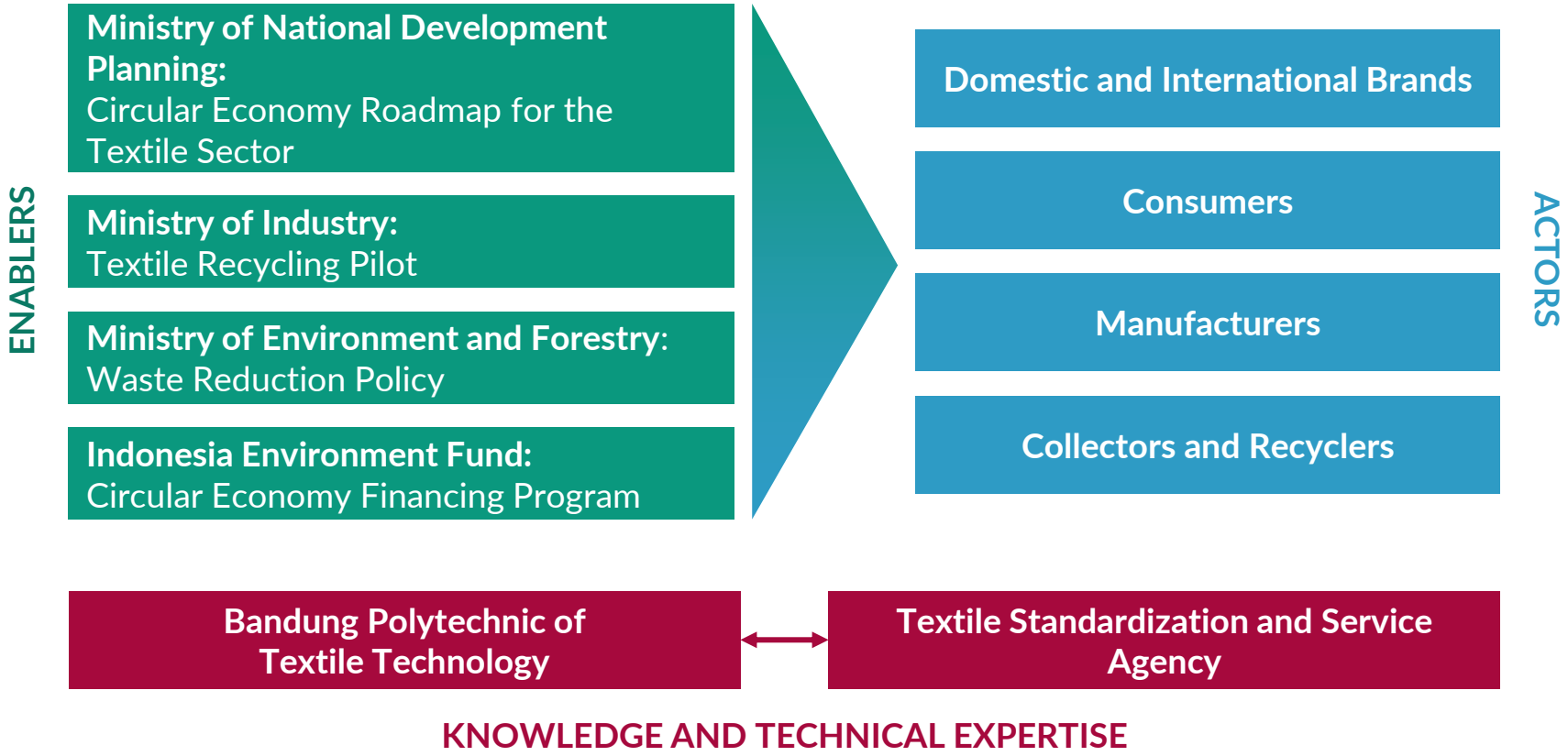
International and domestic brands are mandating responsible material sourcing (e.g., H&M Group Material Categorization, Fast Retailing's Responsible Procurement, etc.)

Increased public awareness on responsible consumption and shift in lifestyles (e.g., zero-waste stores, thrifting, used clothes dropboxes, etc.)

Case Study: Indonesia

Indonesia's Recycled Textiles Ecosystem

Circular principles adoption to increase competitiveness of the textile sector, with **recycled textiles as a national priority**



Pable's Textile-to-textile Recycling

Proven business model
The first textile-to-textile recycling company in Indonesia, focusing on post-consumer textile waste, with proven business model of almost 4 years

Solution for market demands for recycled textile material
Pable produces 100% recycled fabrics, responding to demands from individuals and brands

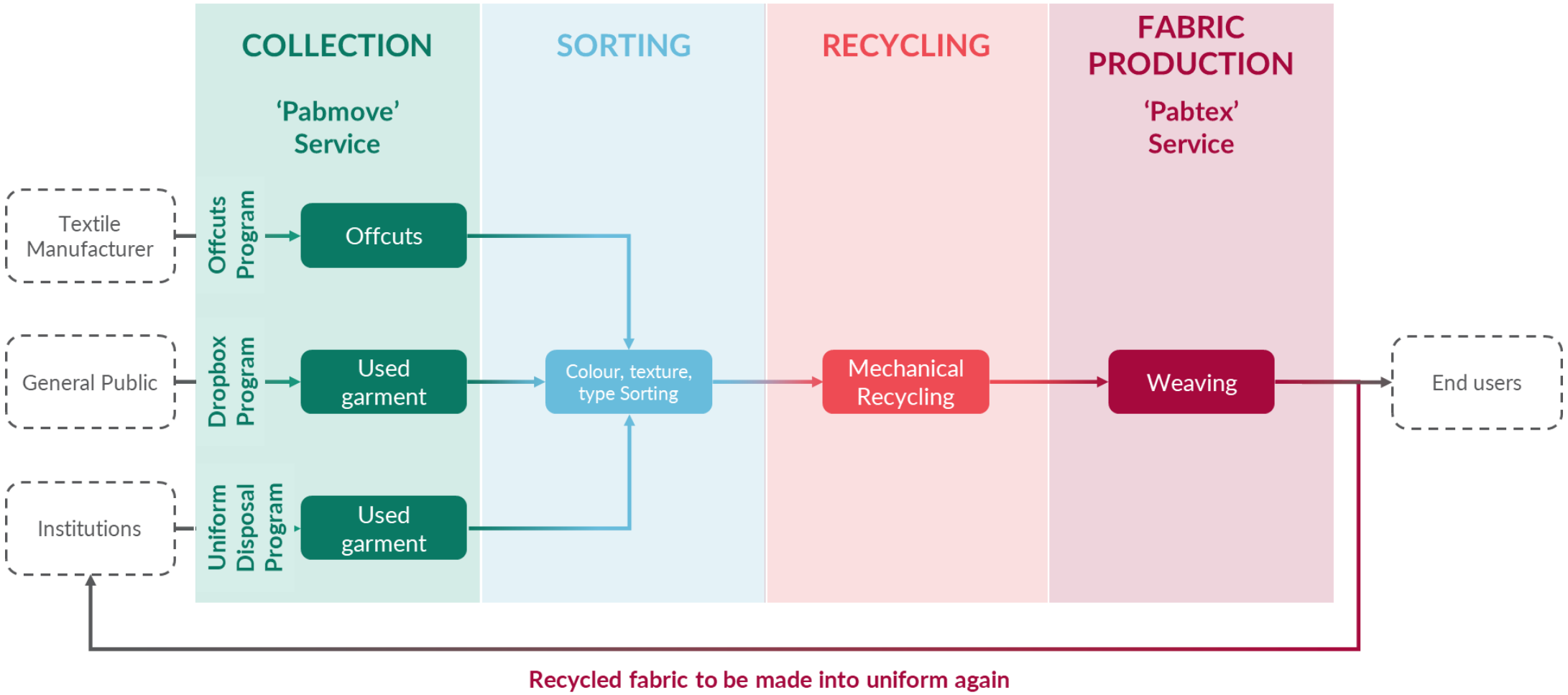
Textile waste diversion from landfills
Tapping into textile waste minimizes annual generation, which could rise to 3.9 million tons per annum by 2030

Alignment with government priorities
Contributing to the transition to the CE in the textile sector, recycled textile ecosystem development, and waste reduction strategy contribution

Scalability and replicability
In line with market demands and local needs, the project can gradually be scaled up or even scaled down to cater to the needs of municipalities in addressing waste generation.

The project has the possibility to be replicated for other areas (subject to scale and local conditions)

Pable's Business Model



Challenges in Indonesia

COLLECTION HUBS

Unestablished collection points due to lack of awareness on textile waste and low incentive

WASTE SORTING

Lack of guidance on how to sort textile waste at source, particularly post-consumer ones

TECHNOLOGY COST

Recycling technology, especially chemical recycling, is still capital extensive.

MATERIAL DURABILITY

Mechanical recycling can reduce fiber durability, hence the need for virgin blending

PRODUCT UPTAKE

Low awareness of recycled textiles lead to low sale, hindering market development

OFFTAKER MAPPING

Potential offtakers are not mapped, leading to slow growth of recycled textiles market

Opportunities in Indonesia

FEEDSTOCK SECURITY

Develop textile waste management guidelines for municipal governments

Utilize existing waste banks and zero-waste stores as collection points

MARKET GROWTH

Mandate public procurement of recycled textile materials and products

Mandate recycled textile materials and products uptake by local brands and manufacturers

INCENTIVES & FINANCING

Formulate performance-based payment scheme for alternative financing avenue

Develop fiscal incentives for the adoption of relevant technologies (e.g., sorting, recycling, etc.)

National Recycled Textiles Ecosystem

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References

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