

## CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



## Pable

- East Java, Indonesia
- Textile
- pable.id
- Analysis period: 2020-2024

## Recycling Textile Waste into Circular Fashion

### Business Spotlight

Pable practices circularity by recovering thread from pre-consumption textile waste and engages micro and small weavers in producing customised recycled fabric in Indonesia. The company can potentially recycle monthly up to around 2000 metric tonnes of pre-consumer textile waste from manufacturers which reduces the reliance on virgin textile materials and prevents greenhouse gas and other emissions associated with textile production and waste incineration. It also minimises the use of chemicals and water in fabric production.

Pable also contributes to social welfare by outsourcing fabric production to micro and small scale weaving enterprises in Karangrejo Village, East Java. Initially, the company only sold its recycled fabric in retail market; now, it collaborates with fashion designers and manufacturers to develop high-valued fashion products using its recycled fabrics. These partnerships broaden Pable's reach and amplify the principles of circularity throughout the industry, fostering both environmental and social advantages.

### Keywords

Textile recycling, Recycled fabric, Circular fashion

### Innovation

Design, Manufacturing, End-of-life management, Resource circularity



## Context and baseline

In 2021 Indonesia generated 2.3 million metric tonnes of textile waste<sup>1</sup>, which is commonly incinerated or put into landfill, exacerbating pollution and greenhouse gas and other emissions. Textile waste generation is forecasted to further increase to 3.9 million metric tonnes in 2030.<sup>2</sup> A large fraction of this textile waste is generated by the country's extensive textile and garment sectors, mostly in the form of fabric offcuts from tailoring and stitching. This pre-consumption textile waste is homogenous in material composition, quality and colour, free from zippers, buttons and other accessories, and unused and unsoiled, which makes it a prime target for textile waste recycling.

Karangrejo Village, East Java, an agricultural community which initially began to transform into a weaving village in the 1960s as the farmers sought side activities alongside farming, has gradually transitioned into full-time weaving with both hand and machine looms in households converted into micro-enterprises.<sup>3</sup> Over time the weavers witnessed increased competition from large-scale domestic and international weavers and became increasingly unable to cater to the scale of garment and textile industries, resulting in the decline of weaving activity in the village.

In 2020, alarmed by skyrocketing textile waste statistics, Aryenda Atma established Pable to establish pre-consumer mechanical textile waste recycling and rejuvenate the local weaving community to produce recycled fabric for niche products and markets.

## Innovation

Established in 2020, Pable pioneers a circular production model, creating recycled fabric from pre-consumer textile waste sourced from local garment and textile industries. Pable sources mainly cotton-based pre-consumption textile waste. Some post-consumer waste is also accepted, namely cotton, viscose and bamboo materials. Pable assumes the mechanical recycling of textile waste, which transforms textile fabric back into fibres. This mechanical recycling process starts with shredding the fabric, followed by carding to extract the fibres from the shredded fabric. The extracted fibres are sorted by colour and then spun into recycled thread, which can then be woven and processed similar to virgin fabric

production. Pable focuses only on fibre extraction, recovery and colour sorting, and collaborates with third-party manufacturers for subsequent fabric production to minimise its own investment costs.<sup>4</sup> Pable specifically outsources the weaving of recycled fabric from these recycled threads to the micro- and small-community weavers in Karangrejo Village, East Java.

By recovering fabric fibre and converting it into secondary textile materials, Pable reduces virgin material consumption. The textile waste is sorted by material and colour and processed into fibre without any dyes being used. By not including a redyeing process, no chemicals or water are required in the recycling process. Once sorted, the coloured fibres are mixed to create different colours of recycled yarn, which does limit the achievable colour range of the recycled fabric being produced.

Collaborations with fashion designers and brands further transform Pable's sustainable fabrics into diverse fashion products. Most recently, Pable has started to expand into recycling used uniforms into brand-new fabrics (collaborating with e.g. Mandiri Singapore, BCA and Cargill Cocoa & Chocolate) as well as post-consumer fashion (e.g. in-store collections by UniQlo). In addition, Pable and Pertamina, an Indonesian national energy company, collaborate closely to advance renewable energy and materials.

## Circular Economy impact

Pable's initiatives centre on implementing resource circularity, transforming the linear 'take-make-use-waste' value chain into a circular 'take-make-use-recover' value chain.

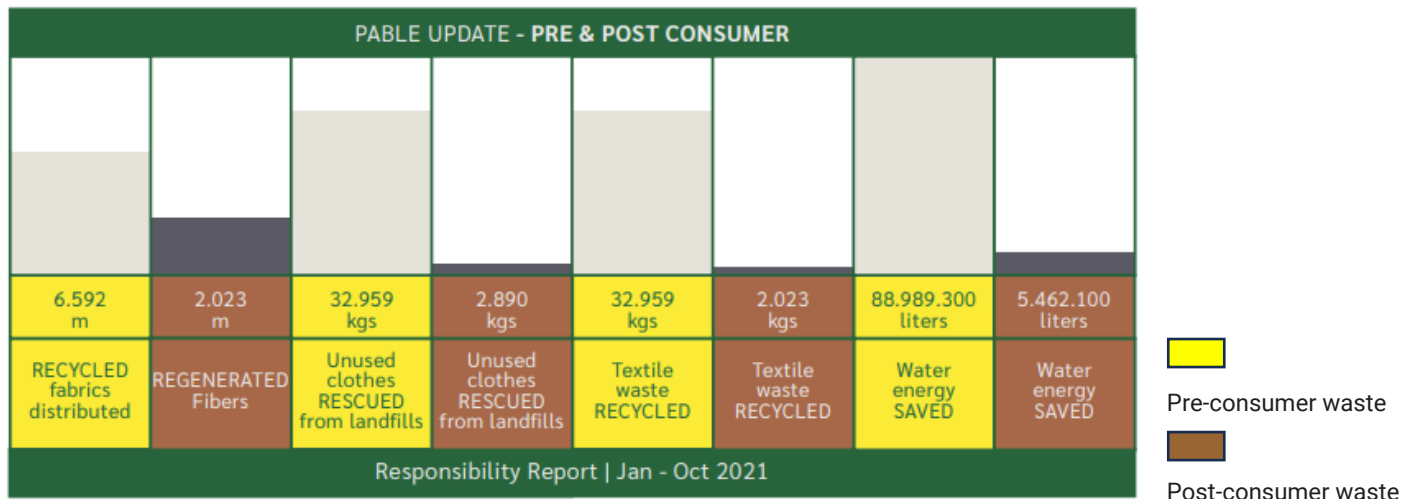
The direct circular economy impact is the recovery of textile waste, which stood by mid 2004 at approximately 2000 metric tons per month, sufficient to produce some 10 million metres of recycled fabric. Indirectly, this textile waste recovery action diverts the waste from landfill or incineration and thus prevents associated pollution and GHG and other emissions, while simultaneously eliminating the need for producing an equivalent amount of virgin fabric and thus avoiding the chemicals, energy and water that would otherwise be used during virgin fabric production along with the resultant emissions that would have been produced. In 2024, Pable had a installed capacity to recycle monthly 6,000 metric tonnes of textile waste. However, they cannot reach full capacity due to low domestic demand for

1 <https://gggi.org/new-partnership-on-textile-circularity-in-indonesia-opens-new-doors-for-green-growth-in-indonesia/>

2 <https://www.thejakartapost.com/business/2023/05/10/roadmap-to-2050-exploring-circular-textiles-in-indonesia-and-beyond.html>

3 [http://spel2.upm.edu.my/webupm/upload/dokumen/20240630133206Chapter\\_3-june\\_24.pdf](http://spel2.upm.edu.my/webupm/upload/dokumen/20240630133206Chapter_3-june_24.pdf)

4 <https://theses.uibn.ru.nl/bitstreams/3cb20b29-3d56-42b1-81f5-d4e8f178ab32/download>



recycled fabric. From 2020 to first quarter of 2024, Pable processed 90,000 kg fabric off-cuts, 2,026 kg clothes, and 17,289 kg uniforms. By avoiding production of virgin textile, the company saved 1,470 million liters of water within the same time frame. Moreover, Pable estimates that the use of recycled materials and lower waste disposal at landfill resulted in an emission reduction of 5,450 ton of CO<sub>2</sub> during 4 years of its operation.

### Business and market impact

Pable accepts pre-consumer textile waste from garment companies and has placed drop-off boxes to acquire post-consumer waste for recycling. Pable collaborates with textile manufacturers to share yarn production capacity and significantly lower initial investment. Pable brands its recycled fabric as Pabtex, which sells in a range of USD 5/m for plain fabrics to USD 25/m for dobby fabrics. Pable also offers textile waste management and uniform disposal services for corporate clients to recycle their old workwear waste into new products. Pable employs micro- and small-business community weavers, empowering skilled and experienced older weavers in local villages and using their craftsmanship to custom design and create specifically designed fabrics. In mid 2024 Pable engaged 29 local weavers, thus fostering income generation and employment in the community.

Beyond offering a solution for domestic waste problems, Pable's recycling initiatives appeal to global markets, as evidenced by the increasing exports of their recycled textile products. Recognising that both regulatorion and buyer preferences in markets like the EU are shifting in favour of recycled content fabrics further bolsters the demand for Pable's products. While currently still largely focused on pre-consumer textile waste, Pable has started to expand into post-consumer textile waste recycling through initiatives like a textile drop box programme (e.g. UniQlo) and recuperation of uniforms (e.g. Mandiri, BCA,

Cargill and Pertamina). Scaling operations include refurbishing old weaving machines to increase productivity and thereby augmenting local economic opportunities. Moreover, Pable is collaborating with fashion designers and manufacturers to craft high-value products such as shirts, suits and footwear from its recycled fabrics, thus broadening its business scope and market potential.

### Stakeholders

Pable firmly believes in the efficacy of a circular economy through collaborative efforts with supply chains, customers and other stakeholders. To source recyclable material, Pable partners with garment manufacturers to collect their production waste. The fabric production process is deeply rooted in the community, particularly with the weaving community in Karangrejo Village, East Java, renowned for its community-weaving tradition dating back to the 1960s. Recognising a decline in demand for community-woven products in recent years, Pable initiated collaborations with these local weavers in 2020, aiming to revitalise the economic activity within their community. The company provides essential support, including business guidance, production assistance, raw materials and equipment.

To maximise the value of its recycled fabric, Pable collaborates with esteemed fashion designers and tailors like Toton The Label, Sejauh Mata Memandang, Lekat and Brillington to create a range of high-quality fashion items including shirts, suits, outerwear, trousers, and accessories. The company has also partnered with Indosole to innovate sandals made from a blend of recycled tires and Pable recycled fabric.

Pable Indonesia received the Environmental, Social, and Governance (ESG) Award 2023 from the KEHATI Foundation (the Indonesian biodiversity foundation). This recognition followed rigorous assessment,

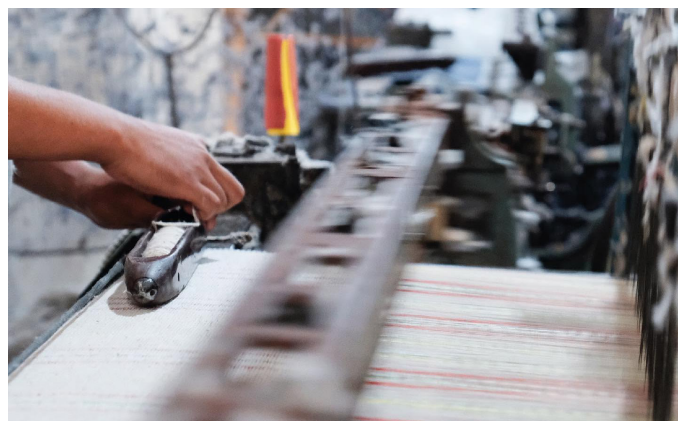
during which award recipients were selected based on the best performance across ESG criteria, representing their respective industry sectors with a strong commitment to sustainable ESG-based investments. Pable received the award in the Impact Investment sector under the Impact Entrepreneur category.

## Implementation

Pable still focuses primarily on recycling pre-consumer textile waste because of the relative simplicity compared to recycling post-consumer waste. Pre-consumer waste from textile and garment manufacturers presents more homogeneity in material and colour, is free of zippers, buttons and other accessories, and is still unsoiled and undamaged, simplifying the sorting process and reducing processing residues to just 1%. In contrast, post-consumer waste is more complex, presenting varied materials and colours and resulting in higher waste residues (10%–20%) and requiring more intricate processing technologies. Pable plans to invest in further research and development to expand capacity in handling post-consumer textile waste. Pable faces challenges in a market where domestic demand for recycled textiles remains low, largely due to limited consumer and business awareness of recycled products in Indonesia. As a result, the company continues to operate in 2024 at one-third of its maximum capacity (operating at 2000 metric tonnes per month). To improve this situation, Pable actively collaborates with stakeholders to broaden awareness and expand market reach. Internationally, however, there is greater appreciation for recycled products, and thus significant growth opportunities for Pable.

## Takeaways

Pable is demonstrating how implementing circular economy practices in the textile industry can effectively address waste issues while creating economic opportunities for local communities. By involving weaving communities and collaborating with fashion industry leaders, the value of Pable products is enhanced. It is to be noted that increased government support and higher consumer awareness will nevertheless be essential to scale up and facilitate the company's wider impact.



## Acknowledgements

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## Disclaimer

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