

## CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



## Pan Brothers

Tangerang, Indonesia

Garments, fashion

[www.panbrotherstbk.com](http://www.panbrotherstbk.com)

Analysis period: 2019-2023

## Operationalising Circularity Towards Net Zero Garment-making

### Business Spotlight

PT Pan Brothers Tbk is one of the largest garment manufacturers in Indonesia, and it has committed to working towards net zero emissions. As independently validated by the Science-Based Target Initiative (SBTi), the company has plans in place to reduce its absolute scope 1 and 2 greenhouse gas (GHG) emissions by 50%, and its absolute scope 3 emissions by 30% by 2032 relative to 2022.

Innovation and adoption of best practices and techniques are central for achieving these ambitions, including in areas like energy-efficient lighting, motors and forklifts, fabric use optimisation, collaboration for upcycling of fabric waste, and use of renewables, through solar PV and skylights. These

measures are also putting the company on track for halving the amount of waste generated for all waste types, via recycling, upcycling or downcycling at least 75% of all non-hazardous waste generated.

### Keywords

Circular fashion, Energy efficiency, Net zero, waste minimisation

### Innovation

Manufacturing, End-of-life management, Resource efficiency, Resource circularity, Resource substitution

## Analysis of Pan Brothers

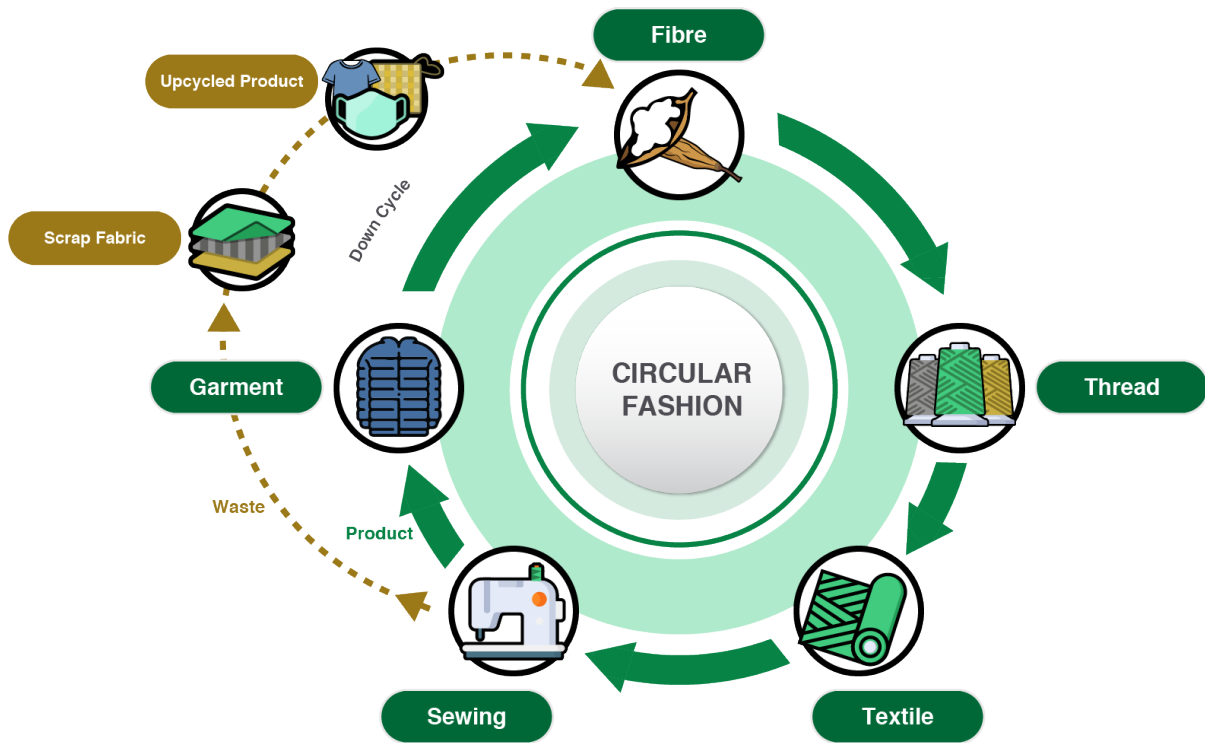
### Context and baseline

Established in 1980, PT Pan Brothers Tbk (Pan Brothers) is one of Indonesia's largest garment manufacturers. It produces various kinds of clothing, ranging from woven garments to sports and high-performance wear. As an export-oriented garment

manufacturer and a public-listed corporation, Pan Brothers has to comply with international environmental, health and safety standards, as well as meet buyers' requirements and consumers expectations.

Pan Brothers has formed a group-wide Sustainable Development Programme. Structured around the well-established triple bottom line dimensions of People, Planet, and Profit. This is centred around eight of the globally agreed Sustainable Development Goals and ten of its targets. Concerning the circular economy, Pan Brothers focuses on SDG7 (Affordable and Clean Energy), SDG12 (Responsible Consumption and Production), SDG13 (Climate Action) and SDG9 (Industry, Innovation and Infrastructure).

Pan Brothers strives to put closed-loop, circular economy practices into practice through a three-pronged approach. First, it sources more sustainable fibres, fabric, and other materials locally by implementing the Organic Content Standard (OCS) through PT Ocean Asia Industry. Second, it implements innovative technology for efficiency and better productivity, along with waste minimisation and management. Finally, it targets waste utilisation through recycling and up-cycling as a contribution to responsible consumption and production.



## Innovation

Pan Brothers approaches Circular Economy under the umbrella of its Net Zero Roadmap. To validate its initiatives, Pan Brothers joined the Science-Based Target initiative (SBTi): the leading global initiative that validates member company's short- and long-term targets and strategies that are aligned with the need to halve global greenhouse gas (GHG) emissions by 2030 and reach net zero by 2050.<sup>1</sup> Pan Brothers has met the SBTi criteria in setting short- and long-term targets using reliable and measurable data. The validation by SBTi confirmed a reduction in absolute greenhouse gas emissions involving scopes 1 and 2, by 50.4% in 2032 with a baseline of 2022. The company has also received validation for its commitment to reduce scope 3 emissions by 30% in the same period.

Pan Brothers' strategy is based on embracing innovation and adopting best practices in all aspects of its manufacturing operations, covering production technology, facilities, and management practices to improve productivity, quality, and efficiency.

Examples of innovations in production technology include: (1) changing from clutch to servo motors on sewing machines, thus saving 32% in electricity costs of sewing machines, and (2) using the Intellocut algorithmic fabric cutting system that minimises the generation of cutting-room fabric waste.



<sup>1</sup> A joint initiative of Carbon Disclosure Project (CDP), United Nations Global Compact (UNGC), World Resources Institute (WRI) and World Wide Fund for Nature (WWF), under the We Mean Business Coalition, see: <https://sciencebasedtargets.org/>

Production facilities have been improved through the installation of lamp auto sensor, installation of skylights in production areas with net energy savings of 1.01%, replacement of 36-watt fluorescent lamps with 16-watt LED lights with net energy savings of 2.02 %, use of efficient electric forklifts to reduce emissions and use of diesel fuel, and installation of 1.8 MWp capacity solar panels on non-production areas, with savings of 18% of grid power consumption equalling over 2.06 million kWh in 2023.

Management practices have been improved in diverse areas, such as socialisation of the use of 21–23 °C as the set point for air conditioners, elimination of single-use plastic bottles for drinking water, and ongoing domestic waste minimisation and management programmes.

Pan Brothers has expanded innovation for the minimisation and upcycling of waste materials to reduce waste generation by 50% in 2030 (compared to 2020) and achieve 75% recycling or upcycling for the remaining non-hazardous waste. Scrap textile fabric is the company's largest non-hazardous waste stream, and comprehensive efforts are underway for its upcycling. Pan Brothers collaborates with specialist yarn producers (PT Duniatex Group, PT Panjimas and PT Mitra Saruta) for the mechanical recovery of fabric waste and production of different varieties of recycled yarn and fabric. This recycled fabric was used to produce upcycled uniforms for Pan Brothers staff and associates. Fabric waste has also been supplied to SMEs for producing patchwork textiles and garments, as well as carpet rugs with recycled fabric woven in. Sludge from wastewater treatment contributes largely to hazardous waste and has been significantly reduced through the upgrading and optimising of the effluent treatment plants.

These innovations in operational technology are further supported by the company's proactive use of digital technologies and transition to Industry 4.0. In February 2024 PT Pancaprima Ekabrothers, a subsidiary of Pan Brothers, was designated as the second Industry 4.0 lighthouse in the Indonesian textile and garment industry sector.

Through PT Ocean Asia Industry and Continent 8, Pan Brothers has been experimenting with the use of organic kapok fibre to produce textile products. Kapok fibre is a naturally versatile fibre for textiles, which may be spun into the thinnest yarn counts, and blended to create a wide range of fabrics and insulation materials. Kapok fibre is a non-food fruit crop that is picked from the tree on which it grows, leaving the tree to grow and prosper. Kapok trees need no irrigation, no pesticides, and no fertilisers, and grow in a bio-diverse environment on hills and land which is not suitable for agricultural purposes,

with positive effects on the environment. Pan Brothers works together with local kapok farms in Indonesia – outside the Java region – to source this material, for which it is also in the process of obtaining organic certification.

Through PT Eco Laundry Hijau Indonesia, the company is also developing products using natural dyes deriving from leaves, roots, bark, berries, and nuts. The extraction is carried out with water and is an environmentally friendly practice, as the waste can be used as fertiliser or biofuel. All sourced natural dyes are certified GOTS (Global Organic Textile Standard) by Control Union.



## Circular Economy impact

The initiatives taken by Pan Brothers cover all key circular economy strategies, first by improving the efficiency of the use of energy, materials, and water, next by circulating waste back into further use cycles, and finally by substituting non-renewables with renewable energy and/or materials.

Investments in water and energy conservation have significantly improved resource efficiency, as evidenced by a 5.3% reduction in the energy intensity of production (GJ/USD) and a 44.7% reduction in the water intensity of production (ML/USD) from 2016 to 2022. Moreover, the optimisation of fabric cutting and the 'say-no-to-plastics' campaign have significantly reduced non-hazardous waste generation, which in turn has improved materials productivity.

Resource circularity is principally achieved by upcycling fabric waste in collaboration with various business partners. The industrial collaboration for mechanical upcycling to thread has already upcycled over 10 metric tonnes of fabric waste. Moreover, fabric waste is also directly repurposed into patchwork textiles and recycled fabric carpet rugs, through collaboration with several SMEs under the Thread for Hope initiative to create incomes and livelihoods. Furthermore, the recovery of food waste (food scraps and vegetables), currently being piloted at PT Pancaprima Ekabrothers Tangerang, adds to resource recovery by developing compost and worm farming.

In addition to installing solar panels, the company also directly makes use of solar light through the installation of skylights. These renewable and energy efficiency initiatives collectively reduced GHG intensity by 59.6% and energy intensity by 41.3 % during 2017–2022. Overall – and validated through SBTi calculation, from a 2022 baseline – Pan Brothers is committed to reducing absolute Scope 1 and 2 emissions by 50.4% by 2032, and Scope 3 emissions by 30% by 2032.

## Business and market impact

Pan Brothers Group’s investment in renewable energy resources targets the use of at least 31% renewable energy by 2030. Currently, Pan Brothers has been able to create water savings of 18%, emissions reductions of 50%, and energy savings of 52%, which has allowed Pan Brothers to reach Platinum Standard Results in efficiency as ascertained by Greenship certification.

In 2022 Pan Brothers implemented the ‘Say-No-to-Plastic’ initiative to minimise plastic use throughout its offices and production facilities. The company provides employees with free reusable drinking tumblers to eliminate single-use plastic bottles. It plans to expand this initiative to all of its production facilities as well as implement more comprehensive programmes to minimise other types of plastic waste generated over the coming years. The monetary investment is considered low, but the effort for educating all employees is considered high because it requires continuous reinforcement to ensure that employees use reusable containers when buying food, and avoid plastic bags.

## Stakeholders

Pan Brothers partner with relevant stakeholders for sustainable and local material sourcing of fibres, fabric, and other materials, and they apply waste management to minimise over-exploitation and pollution of environmental habitats and ecosystems. Through these initiatives, the company hopes to maximise its role in addressing the environmental risks that increasingly endanger the Earth’s climate, environmental habitats, and species caused by irresponsible and unsustainable consumption and production.

Pan Brothers currently works with two corporate partners in developing recycled raw materials from scrap fabrics, PT Duniatex and PT Panjimas. Cooperation with these partners has resulted in processing approximately 10 metric tonnes of cloth scraps from the company. From this collaboration, more than 150,000 yards of cloth to be used as uniforms for Pan Brothers’ employees and affiliates has been produced.

As mentioned above, Pan Brother cooperates with PT Mitra Saruta to process remaining scraps of cloth into more valuable products such as gloves, cloth, rope, and more. In addition, the company has also collaborated with SMEs such as Pable, Lurik Rachmad, Kreasi Nusa Persada, Moral Studio, and others under the collaboration of Thread For Hope (T4H) in raising funds for the those in need.

## Implementation

The main challenge was being able to bounce back after the COVID-19 pandemic, a period during which Pan Brothers faced a variety of obstacles and problems. On the positive side, the ‘idle’ time caused by the pandemic was used to develop a Sustainability Action Plan. By reaching out to various stakeholders, Pan Brothers were able to continue moving forward in preparing for better production and performing as a responsible company.

In the next few years, Pan Brothers would like to be able to replicate the achievements of the global Industry 4.0 Lighthouse in the Indonesian textile and garment industry sector in its other subsidiaries. Moreover, it plans to expand its ‘Say-No-to-Plastic’ initiative to all of its production facilities and implement more comprehensive programmes to minimise other types of plastic waste generated in the coming years.

## Takeaways

Other companies can follow the success of a large industry in surviving a crisis by developing a Sustainability Action Plan. By having such a plan, companies can focus where they can have an influence in the achievement of specific Sustainable Development Goals.

In addition, efforts in collaboration from sourcing materials and the reuse of non-hazardous waste have helped in fostering closed-loop circular solutions.





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## Disclaimer

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