

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



Thai Sin Dee Trading

- Samut Sakhon Province, Thailand
- Textile and garments
- www.ttpinnovative.com/th
- Analysis period: 2019-2024

Using Recycled PET for Fabric Production

Business Spotlight

As a result of regional competition and high production costs in the Thai garment industry, Thai Sin Dee Trading Co., Ltd. has evolved from selling yarn and fabric to specialised international tailors and retail stores into supplying fabric and yarn to ready-made garment factories in Thailand. The previous marketing strategies of the exporting business have shifted to a domestic corporate market of garment factories. The company has started to supply yarn and fabric made with recycled PET (rPET), which is supplied to the company by the plastic bottle recycling facility of Indorama Polyester Industries Public Company. The company offers a variety of raw yarn and fabric materials for customers according to their seasonal requirements. Thai Sin Dee Trading can produce different qualities of yarn from diverse raw materials, including rPET obtained from plastic bottles. rPET has a lower carbon footprint as validated by its supplier, Indorama Polyester Industries Public Company. The high quality of rPET ensures it can substitute virgin PET (vPET) without changing equipment, through minor technical adjustments of the knitting machines. Through its marketing Thai Sin Dee Trading encourages its customers to use rPET instead of virgin PET, which the company can offer at material specifications and

prices that are acceptable for customers. In 2023 the company used about 6,725 kg of rPET, which represented about 10% of its raw materials use. Using rPET as a raw material has become profitable in particular for larger batches.

The company faces slow growth for rPET fabric due to passive marketing with long-standing customers. Thus, the company is seeking how to expand their market with more business customers for workwear and uniforms. In addition, rPET is relatively expensive, so it is not attractive to all market segments.

Keywords

Circular fabric, Circular apparel, Recycled polyethylene terephthalate (rPET), PET

Innovation

Product/service design, Manufacturing, Resource circularity

Analysis of Thai Sin Dee Trading

Context and baseline

Even though the Thai garment sector faces regional competition from production hubs with lower production costs, such as Vietnam and Bangladesh, the Thai textile and garment sector remains important for job generation, employing some 850,000 workers, of which 70% are female, many of them migrants from neighbouring countries (Myanmar, Cambodia, and Lao PDR). The Thai garment industry has good infrastructure, logistics and supply chain linkages. In addition, this industry has maintained a niche in certain higher-value product categories such as the advanced synthetics used in sportswear. About USD 6 billion worth of textiles and clothing were exported from Thailand in 2023, accounting for 2.45% of the country's total exports.

Thai Sin Dee Trading Co., Ltd. has evolved from sales of yarn and fabric to specialised tailor and retail stores, becoming a fabric and yarn supplier for ready-made garment factories in Thailand that manufacture to order for brands and (international) buyers. In 2019 Indorama Polyester Industries Public Company approached the company to be a yarn and fabric manufacturer using its recycled PET (rPET) to supply customers interested in rPET fabrics. The company had extensive experience with a variety of fabrics including the upcycling of cotton residues (top dye yarn) with virgin cotton for the Thai Parfun Company from 2013 to 2020. The company could meet the requirement of Indorama Polyester Industries Public Company and produce to the satisfaction of its customers. Indorama Polyester Industries Public Company has built its partnership with Thai Sin Dee Trading on producing sustainable apparel, and has recommended several other corporations to the company on basis of their trust in the company's ethics, technical capabilities, and punctual delivery.

Innovation

In 2019 the company started producing fabric mixing in some rPET fibre (made from recycling of PET bottles), which was new to the industry at the time. In 2023, Thai Sin Dee Trading used virgin and recycled polyester (total 70% of raw material) and cotton (remaining 30% of raw material)

The company offers a variety of fabric materials for customers and responds to their seasonal requirements. The company can produce different yarns and fabrics with various textile raw materials to customers requirements. Thai Sin Dee products include polyester fibres that are either virgin PET, or rPET or a mixture of the two. The company encourages its customers to consider the option of

100% rPET in line with its sustainability commitment. Without sale agents and middleman, the company can offer rPET material specifications and prices that are acceptable to buyers.

The company guarantees the percentage of rPET in the fabric; these data are supplied by Indorama Polyester Industries Public Company, the specialised PET recycling company supplying rPET to Thai Sin Dee Trading. This helps to guarantee the company's recycling claims and maintain their reputation.

During the first six months of 2019, the company carried out minor technical upgrades of the knitting machines for efficient processing of both virgin PET and rPET fibres. At present, the company has three main types of modified knitting processes to produce fabric for clothing, hats, and bags. The company has also adjusted and re-optimised the dyeing process for rPET fabric to meet customers' needs.

Indorama Polyester processes its rPET for quick drying and breathability in tropical climates, which is comfortable for the wearer and energy-saving in terms of laundering, and the fabric produces a cooling effect with a better release of body heat. The company also adds a absorbency chemical treatment during the finishing process. This innovation protects the skin, is comfortable and is long-lasting. The fabric is durable with an extended garment lifetime allowing multiple washings.

The company produces a variety of fabrics and finished apparel, and diverse products such as golf, basketball, volleyball, tennis and cycling sportswear, casual wear (including leggings), dress shirts, undershirts, work wear, and intimate apparel.

The company practices material efficiency by reducing and reusing the packaging bags for packaging.

Circular Economy impact

The switch to using rPET instead of virgin PET as its material source exemplifies the circular use of materials and natural resources, or resource circularity, as a key contribution towards the circular economy transition.

About 10% of the PET used by the company comes from rPET made from the recycling of bottles supplied by Indorama Polyester Industries Public Company; these amounted to 6,725 kg in 2023. The company made about 20,000 shirts with this rPET.

Indorama Polyester Public Company is certifying greenhouse gas emissions reductions from 2.895 kg

CO_{2eq}/kg for virgin PET to 2.570 kg CO_{2eq}/kg for rPET, each including scope 1, 2 and 3 emissions. Based on 6,725 kg of rPET fibre used in 2023, and assuming the fibre was 100% recycled, the GHG emission reduction from the switch to rPET would equate to a maximum of approximately 2.2 tonnes of CO_{2eq}.

Business and market impact

Using rPET as a raw material for textiles is profitable in the case of corporations with large purchase volumes of yarn, fabric and finished products. For example, in 2024, Sansiri Public Company (real estate company), and PLUS Company ordered 8,000 uniform sets which used approximately 2,200–2,400 kg of recycled material. Thai Sin Dee Trading can process recycled yarn with their normal processing methods used for virgin material, with just minor adjustment of operational setting so no costs are incurred for changing production technology. The figure below shows the marketing content of the company to potential customers.

The historic practice of marketing and sales for export to clothing shops has changed to marketing to domestic ready-made garment manufacturers and buyers of finished garments, bags, and hats. In addition, Thai Sin Dee Trading also offers the designs and customised cloth material to customers. The company works with retail customers and corporations with large volume of purchase.

Thai Sin Dee Trading has built the supply chain of yarn to fabric to finished production collaborating within the group of family-owned textile and garment factories, while exercising rigid quality control. To avoid high-cost investment, the company outsources dyeing and finishing to specialised textile processing houses. Furthermore, tailoring and sewing of garments and other final products is outsourced if required. The company provides training and coaching to outsourcing factories to achieve the desired high quality and reliability.

PRODUCT BENEFITS

- Reusing wastes and post-consumer recycling
- Plastic bottle waste in Thailand
- Green product
- Reducing greenhouse emissions
- 1 shirt = approximately 12-25 bottles (600 ml), depending on the fabric used



Stakeholders

Thai Sin Dee Trading maintains a close partnership with Indorama Polyester Public Company, which has supplied rPET fibres since 2019. The increased use of rPET fabric has been driven by companies buying from Thai Sin Dee Trading in larger volume; these include Sansiri Public Company (a real estate company), Land & House Company, Red Bull, and PLUS Companies, which have a long-term relationship with Thai Sin Dee and trust the company products.

Business and research associations such as Cotton Incorporated, based in the USA, provide global, updated, and independent business analysis and recommendations.

Outsourcing factories for dyeing and garmenting and sewing processes help the company to provide a one-stop service to its customers.

Implementation

Even though the company's business with rPET fibre has achieved only slow growth, Thai Sin Dee Trading believes it is the right thing to continue pursuing the use of rPET. Unfortunately, the company is experiencing fluctuations in customer demand as a result of the economic and business situation, resulting in underutilisation of the company's full capacity. Thai Sin Dee Trading has relatively passive marketing and relies on personal referrals as it prefers to continue serving mainly its group of established and long-term customers. However, the company does see the need to expand its market reach, and to this end it has targeted business customers for workwear and uniforms.

Raw rPET is relatively expensive, so it is not attractive to expand in all market segments. After 6 year of business collaboration, the company is in negotiations with Indorama Polyester to find more affordable prices for their high purchase volumes.

Takeaways

The lessons learnt by the Thai Sin Dee Trading company are that to expand the market of circular economy products, the trust of producers is essential to build product traceability. Likewise, customer understanding and awareness of circular economy products is necessary to increase their purchasing of a circular products.

To provide technical support, Thai Sin Dee Trading suggests reaching out to a variety of customers by promoting social awareness on recycled products, undertaking business mapping and matchmaking with new customers and suppliers, building

capacity, and sharing knowledge in each sector, as for example the dyeing and fabric specifications of major suppliers like the Indorama Polyester Industries Public Company.

From its experience, Thai Sin Dee Trading strongly suggests developing an inventory of producers and disseminating it to potential customers; establishing traceability for customers and the public; and indicators/metrics for circular economy reporting. Moreover, firms that require upscaling and technology modernisation may need assistance in order to access the investments that are necessary to make the transition to using recycled materials.



Acknowledgements

This business case study was prepared within the framework of the Technical Advisory project: Mobilising Business Action for Circular Economy in the ASEAN countries under the EU SWITCH-Asia Policy Support Component for the sole purpose of documenting and analysing business experiences with the circular economy. The case study was produced by Chuthatip Maneepong (national expert, Thailand) and reviewed by Rene Van Berkel and Thomas Thomas (regional experts) on the basis of information provided and validated by Thai Sin Dee Trading Co. Ltd., Thailand.

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