

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



Lao Textile Museum

- 📍 Vientiane, Lao PDR
- ✂️ Sustainable Tourism / Artisanal Textiles & Handicrafts
- 🌐 laotextilemuseum2003.weebly.com
- ★ Analysis period: 2003-2025

Resource Efficiency in Natural Textile Dyeing and Waste Fabric Repurposing

Business Spotlight

The Lao Textile Museum, established in 2003 as a private museum in Vientiane, Lao PDR, preserves and promotes the Lao textile heritage through exhibitions, traditional weaving demonstrations, educational programmes, and sustainable cultural tourism. Visitors learn the journey of traditional Lao textiles, from silk fibres and natural dye materials to weaving and finished handmade textile products.

Building on its educational mission, the museum has implemented a circular approach within both textile production and the tourism value chain. The main innovation combines three practices: supporting the cultivation of native and locally used natural dye plants, including *Hom* and *Khram*; maintaining long-term biological indigo fermentation vats; and transforming textile fabric offcuts into value-added products. This approach has reduced textile waste while it promotes the efficient use of natural resources through low water-consuming dyeing practices, creates additional income through workshops and repurposed textile products, and supports local artisans and farmers. This demonstrates how traditional knowledge and cultural heritage can become a practical and economically sustainable circular economy solution.

 Keywords

Fabric offcut recovery, Indigo dyeing, Water efficiency, Artisanal textiles

 Innovation

Product/service design, Manufacturing, Resource circularity, Resource efficiency, Resource substitution



Analysis of Lao Textile Museum (and associated Kanchana Boutique)

Context and baseline

Traditional textiles are an important part of Lao PDR's cultural heritage and local economy. However, evolving consumer behaviour patterns, the increasing use of synthetic materials and dyes, and a gradual decline of traditional textile knowledge have created challenges for preserving traditional craftsmanship and promoting sustainable textile practices. In addition, textile production generates fabric offcuts that are often discarded or under-utilised despite their potential value.

Recognising these challenges, the Lao Textile Museum sought ways to integrate circular economy principles into its educational activities, workshop programmes, and textile-related operations. Rather than viewing textile offcuts as waste, the museum has identified opportunities to recover and reuse materials, strengthen the use of traditional natural dye knowledge, and demonstrate sustainable textile practices through visitor experiences. These efforts laid the foundation for practical circular solutions that reduce waste, use local resources more efficiently, support local artisans and communities, and contribute to the long-term preservation of Lao's textile heritage.

Innovation

The Lao Textile Museum has transformed traditional textile knowledge into circular practices by integrating heritage preservation, education, product development, and sustainable tourism. Traditional textile knowledge is shared through exhibitions and live demonstrations, experienced through hands-on workshops, and applied in the creation of products made with natural dyes and recovered textile offcuts. In this way, cultural heritage has become part of a living circular value chain rather than being preserved only as a museum collection.

Living heritage education

The museum promotes the continued cultivation and use of native and locally-used natural dye plants, including *Hom* and *Khram*, and preserves traditional natural dyeing techniques through educational programmes, hands-on workshops, and demonstrations.

Circular indigo dyeing system

A notable innovation at the Lao Textile Museum is that biological indigo fermentation vats are maintained to remain active for many years. This traditional dyeing method uses a low water-consuming process and natural materials, helping reduce resource consumption while preserving indigenous dyeing

knowledge.

Circular product design using textile offcuts

Textile offcuts generated during production are recovered and transformed into new value-added products, giving these previously unused textile materials a sale value, reducing waste disposal, and creating additional employment and revenue opportunities.

Circular Economy impact

The Lao Textile Museum applies circular economy principles to improve the circularity and efficiency of materials and water use, and substitute non-renewable materials with renewable alternatives. These practices reduce textile waste and promote the responsible use of natural materials throughout the museum's textile and tourism activities.

Material circularity

Textile offcuts generated during the production of handmade textiles are recovered and repurposed into value-added products, including pouches and T-shirts and other handmade accessories. By creating a valuable use for offcut textile materials, the museum reduces material waste and maximises the value of every piece of fabric.

Water conservation and efficiency

The museum maintains long-term biological indigo fermentation vats that remain active for many years. Instead of preparing a new dye bath for each production cycle, the fermentation system is carefully monitored and replenished when needed. This practice reduces the need to prepare new dye baths frequently, thus supporting the more efficient use of water and dye materials while preserving traditional indigo dyeing knowledge.

Nature-based materials and chemical substitution

The museum supports the continued use of native dye plants, including *Hom* and *Khram*, while promoting traditional natural dyeing techniques. Natural ingredients, including indigo, wood ash, water, and iron, are used where appropriate, reducing reliance on synthetic dyes and chemical mordants. This approach helps reduce reliance on synthetic dyes and chemical mordants and supports more environmentally responsible textile dyeing practices.

Business and market impact

The Lao Textile Museum has strengthened its business model by combining cultural heritage, education, and circular economy practices. The museum welcomes approximately 6,000 visitors annually and generates income through museum admission, guided tours, traditional weaving and natural dye workshops, and the sale of handmade textile products and products created from repurposed textile offcuts. This diversified income structure reduces dependence on a single revenue source while creating additional value from existing materials.

As part of its circular economy initiative, the museum created 250 textile products from repurposed textile offcuts, of which 83 products were sold between January and April 2026. This demonstrates the commercial potential of products created from offcut materials that would otherwise end up as textile waste. The museum's circular products as well as hands-on learning experiences attract both domestic and international visitors seeking authentic cultural and sustainable tourism experiences. At the same time, repurposing textile offcuts creates employment for local artisans, supports local farmers who cultivate native dye plants, and contributes to the museum's long-term financial sustainability.

Stakeholders

The Lao Textile Museum collaborates with a diverse network of stakeholders to strengthen its circular textile activities and ensure the long-term preservation of the Lao textile heritage.

Artisans and museum staff

Local weavers, natural dyers, tailors, and museum staff preserve traditional textile knowledge through demonstrations, workshops, and product development. By transforming textile offcuts into new products, waste is reduced while additional income is generated.

Local communities and farmers

The museum works with local communities to promote the continued cultivation and use of native dye plants, including *Hom* and *Khram*. This collaboration helps preserve traditional natural dye knowledge, strengthens local supply chains, and creates additional livelihood opportunities for local communities.

Educational and tourism partners

Schools, universities, researchers, tour operators, and visitors participate as partners in educational programmes, workshops, and cultural exchange

activities. These partnerships increase public awareness of sustainable textile practices, support cultural tourism, and expand the market for traditional and circular textile products.

Implementation

Implementing a circular textile initiative within a museum requires balancing heritage conservation, visitor engagement, and daily operations. Textile offcuts vary in size and shape, making it difficult to standardise the design and tailoring of repurposed products. Maintaining biological indigo fermentation vats also requires continuous care, regular monitoring, and experienced natural dyers to ensure consistent dye quality using traditional methods.

Addressing the challenges

The museum has developed practical procedures to integrate circular economy practices into its daily textile activities. Natural dye plants and locally sourced materials are used in traditional dyeing, while long-term indigo fermentation vats are maintained and replenished rather than being replaced following each dyeing cycle. Textile offcuts generated during production are collected and sorted by size, colour, and fabric type before being repurposed and sewn into new products. These products are then sold in the museum shop, while the same practices are shared with visitors through demonstrations and hands-on workshops. Continuous staff training and daily practice help preserve traditional knowledge and maintain product quality.

Opportunities for scaling up

The museum believes that circular economy initiatives with diversified revenue streams can be adapted by other weaving communities, museums, and cultural organisations across Lao PDR. Through collaboration with artisans, local communities, educational institutions, and tourism partners, the approach can encourage wider adoption of natural dyeing, textile repurposing, and circular economy practices while creating sustainable livelihood opportunities.



Takeaways

The Lao Textile Museum demonstrates that circular economy solutions can be built by combining cultural heritage, traditional knowledge, and local resources. Rather than relying on advanced or imported technology with large investments, the museum is showing how education, community participation, and practical resource management can reduce waste, create new economic opportunities, and preserve traditional skills. The experience of the Lao Textile Museum demonstrates that cultural heritage is not only something to preserve, it can also become a driver for circular innovation, sustainable livelihoods, and responsible tourism.



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Disclaimer

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