

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



Galeri Wong Kito

📍 Palembang, South Sumatra, Indonesia

🏠 Fashion, Textile

🌐 www.facebook.com/p/Galeri-Wong-Kito-100041807293748/

★ Analysis period: 2019-2024

Using Gambier Waste for Sustainable Fashion

Business Spotlight

Galeri Wong Kito (GWK) specialises in handmade jumputan fabrics crafted by skilled local artisans. GWK offers eco-print batik cloth featuring unique motifs made with natural dyes extracted from gambier sap waste combined with other organic waste (banana waste, shrimp shells, coconut fibre, bark and leaves). By adding value to gambier and other waste and using them for natural fabric dyes, GWK is fostering community creativity, creating employment and livelihoods, and motivating younger generations to appreciate creativity, productivity and quality. The innovative use of waste by GWK not only reduces reliance on synthetic dyes, known to pollute the environment, it also promotes ecological sustainability by creating eco-friendly products. GWK aims to showcase sustainable fashion manufactured from fabric dyed with gambier waste while fostering 'eco-entrepreneurship' within the community.

Keywords

Local fashion, Gambier waste, Batik

Innovation

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



Context and baseline

GWK was established in 2013 as a small to medium-sized enterprise (SME) producing batik, especially *jumputan* cloth. *Jumputan* ordinarily uses silk, cotton, or rayon as the woven starting material, which is then tie-dyed, a technique for tying up fabric in patterns before applying the dyes. The company has been working to advance local fashion production in Palembang, South Sumatra. During its second year, GWK explored natural dyes for the fabric using gambier waste. The island where GWK is located accounts for 90% of national gambier production, from which catechin compounds are extracted. The tannin compounds left over from this process were considered waste and were discarded.

In 2019, with financial support from PLN Indonesia Power and technical support of Sriwijaya University, GWK launched the *Pesona Sriwijaya* programme¹, creating CINDO (Clean batik INiative for inDOnesia), which utilises gambier and other natural wastes for batik dyeing and printing for local *jumputan* fabric from Palembang. Beginning with one affiliated crafts group, by 2024 the programme had expanded to five associated producer groups involving 133 artisans, including groups of women with disabilities and women prisoners.

The ethically sourced tannin-rich gambier waste imparts unique, exclusive, trendy organic colours that chemical dyes cannot replicate. To further the innovative efforts, GWK has secured funding from Sumsel Babel Bank to acquire the tools and raw materials for creating natural *jumputan* fabrics. In addition to their partnership with Sumsel Babel Bank, Sriwijaya University together with GWK are dedicated to promoting environmental awareness among youth and advancing the global Sustainable Development Goals (SDGs). In the future, GWK aims to extend its support and education initiatives to other communities, focusing on sustainable fashion and natural fabric dyeing.

Innovation

GWK specialises in producing natural *jumputan* fabric dyed with gambier waste, a unique liquid extract that was discarded in the past, and which offers distinct colours for the fabrics. Collaborating with Sriwijaya University, GWK has initiated programs to educate local and international students about natural dyes made from gambier waste. Beyond dye production, GWK transforms these fabrics into clothing and other textile items. GWK partners with PLN Indonesia Power to run a corporate social responsibility program to train women in the government-run correction centre in Palembang in crafting gambier tie-dyed *jumputan* fabrics. GWK is committed to promoting sustainable fashion while fostering environmental awareness and creativity among the youth, and encouraging the use of natural raw materials as well. These commitments have garnered government support for expanding the use of natural fabric dyes from waste or other natural sources. The regency government collaborates with GWK to use natural dye colours for *Tanjak* fabrics and coconut fibre, improving the opportunities for local artisans to create useful products from naturally dyed fabrics.

Furthermore, GWK is also undertaking water conservation in collaboration with Muhammadiyah University Palembang through the development of a wastewater filtration device for treatment and recovery of effluents from fabric dyeing. The wastewater filtration device aims to reduce water use in *jumputan* fabric production. The Wastewater Management System uses a backwash ultrafiltration membrane with a capacity of 100 l. This system incorporates a water softener system consisting of 3 tanks to treat wastewater for the ultrafiltration backwash system. Recycling the water flow to the membrane system helps improve clean water production, which can be reused in the dyeing of *jumputan* fabrics.



1 <https://ijsrm.net/index.php/ijsrm/article/view/5460/3363>

Circular Economy impact

GWK contributes to a circular economy transition through the use of natural waste materials for batik fabric dyeing, which simultaneously substitutes a renewable alternative for non-renewable chemical dyes (resource substitution), and recovers and advantageously applies waste materials (resource circularity). Further, resource circularity is achieved on site using ultrafiltration treatment and the recovery and reuse of cleaned wastewater in fabric dyeing and processing, with anticipated water savings of 7–12 m³ per month.²

GWK developed and now exclusively applies natural dyeing by using 100% natural waste for which the use of gambier waste is critical for cotton, silk, and rayon fabrics. It is estimated the production monthly utilises 9,720 l of gambier residual liquid.³ The liquid extracted from gambier contains 9–11% tannin in shades ranging from reddish-brown to blackish-brown and provides the foundation of GWK's natural dye palette. Additional colours are achieved by mixing various other natural waste materials, particularly rotten bananas (green-blue shades), coconut fibre (light brown shades), Agarwood bark and leaves (light brown shades), Ketapang leaves (yellow shades) and shrimp shells (as colour enhancer). In 2024, this required approximately 160 kg natural waste materials monthly. Albeit just a small fraction of total locally-available wastes, the initiative is significant in terms of avoiding the use of chemical dyestuffs.⁴

Business and market impact

GWK is committed to sustainable fashion, using natural dyed fabrics to create unique jumputan fabrics, and producing fashionable garments and other textile items. Natural dyeing with gambier waste has drawn international attention to the company, particularly from Singapore, to which GWK exports about 30% of its fabrics⁵, supplying the remainder to the Indonesian market. Sales value in the first half of 2024 hovered between IDR 20–30 million monthly (EUR 1,200–1,800).

GWK has transformed the perception of natural jumputan fabric through its process of natural and distinctive gambier waste dyeing, transforming what was previously considered rubbish into a valuable resource. The Ministry of Trade classifies GWK as an SME, which collectively contribute 60% to employment and 35% to the gross domestic product in Indonesia. In 2024, GWK plans to showcase its

products at the Indonesia Trade Promotion Centre (ITPC) in Sydney, Australia, with the support of the Ministry of Trade. Through ongoing research and development, GWK continues to refine batik motifs and gambier waste-derived colours to expand their potential for sustainable fashion.

Stakeholders

GWK has established a collaborative network with various stakeholders to drive the development and commercialisation of its naturally dyed products. For the Palembang fabric suppliers, GWK collaborates with their affiliated producer groups (operating as SMEs in their own capacity), assisting them in production and marketing. Sriwijaya University partners with GWK to provide coaching programs for international students. PLN Indonesia Power collaborated with Palembang's correctional centre to support GWK in educating female inmates through coaching clinics on jumputan fabric production and dyeing, and created one of GWK's producer groups. The local government has also explored the use of gambier and other natural wastes for dyeing other fabrics like Tanjak. The significance of natural jumputan fabric dyes has led to collaborations between GWK and the government, providing jobs and creating livelihood opportunities – in 2024 over 130 artisans were working in GWK operations and supply chain. Finally, GWK has earned two certifications: the Pramakarya 2021 Award for consistent productivity improvement during pandemic period⁶, and the SMEs Palembang Award 2024.

Implementation

The Indonesian community has yet to fully embrace the circular economy including the use of gambier and other natural wastes for fabric dyeing. Outside GWK's area, competition in natural fabric dyeing remains challenging due to the limited and seasonal availability of raw materials and lack of consistency and quality of production methods and dyed-fabric products. GWK collaborates closely with gambier farmers and supports local SMEs in supplying raw materials for Kumpulan natural fabric dyes. To transform jumputan naturally dyed fabric into practical items and fashion, GWK employs graduates from vocational schools specialising in fashion design. GWK partners with Sriwijaya University to educate international students about natural dyes and eco-print techniques for marketing purposes. Additionally, with government support, GWK has been authorised to showcase their products at the ITPC in Sydney. To enhance their natural dye offerings, GWK

2 <https://prospectpublishing.id/ojs/index.php/jpm/article/download/206/127/1926> [In Indonesian]

3 <https://ijsrm.net/index.php/ijsrm/article/download/5460/3363/16057>

4 <https://ijsrm.net/index.php/ijsrm/article/view/5460/3363> and <http://www.ojs.pps.unsri.ac.id/index.php/ppsunisri/article/download/471/246>

5 The fabric has typically 3 meters in length and 1.14 meters in width.

6 <https://setkab.go.id/en/vp-maruf-amin-gives-paramakarya-award-to-productive-companies-during-pandemic/>

emphasises research and development to create unique colours with gambier waste by incorporating additional natural waste materials into the dye mixtures. Collaboration with academic institutions can play an essential role in advancing research for innovative colours derived with gambier waste, while technological advancements can expedite and standardize the dyeing process. Although GWK currently fulfils national orders mainly through personal requests, expanding the jumputan fashion to an international level creates challenges that require collaboration with the government to navigate regulatory and market barriers effectively.

Looking ahead, GWK aims to educate local communities, small industries, and youth on natural jumputan fabric dyes and eco-print techniques, promoting environmental awareness and sustainability.



Takeaways

Galeri Wong Kito (GWK) demonstrates how leveraging waste such as gambier extract for natural fabric dyeing can drive sustainable innovation. Through partnerships with local communities, educational institutions, local businesses and international markets, GWK supports economic growth, employment creation and skills development while promoting environmental stewardship. This success highlights the importance of strategic collaboration, government support, and educational outreach in advancing sustainable practices. GWK's journey serves as an inspirational example for firms and innovators, showing how creativity and community engagement can create value from overlooked resources and inspire the broader adoption of sustainable business practices.



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