

# Environmentally Responsive Traditional Packaging Practice: 'Peni Mula'

**ARIYATHILAKE P.B.S.D.**<sup>1\*</sup> and **SAMARAWICKRAMA S.**<sup>2</sup>

<sup>1,2</sup>Department of Integrated Design, Faculty of Architecture, University of Moratuwa, Sri Lanka  
[deshaniariyathilake@gmail.com](mailto:deshaniariyathilake@gmail.com), [sumanthesis@uom.lk](mailto:sumanthesis@uom.lk)

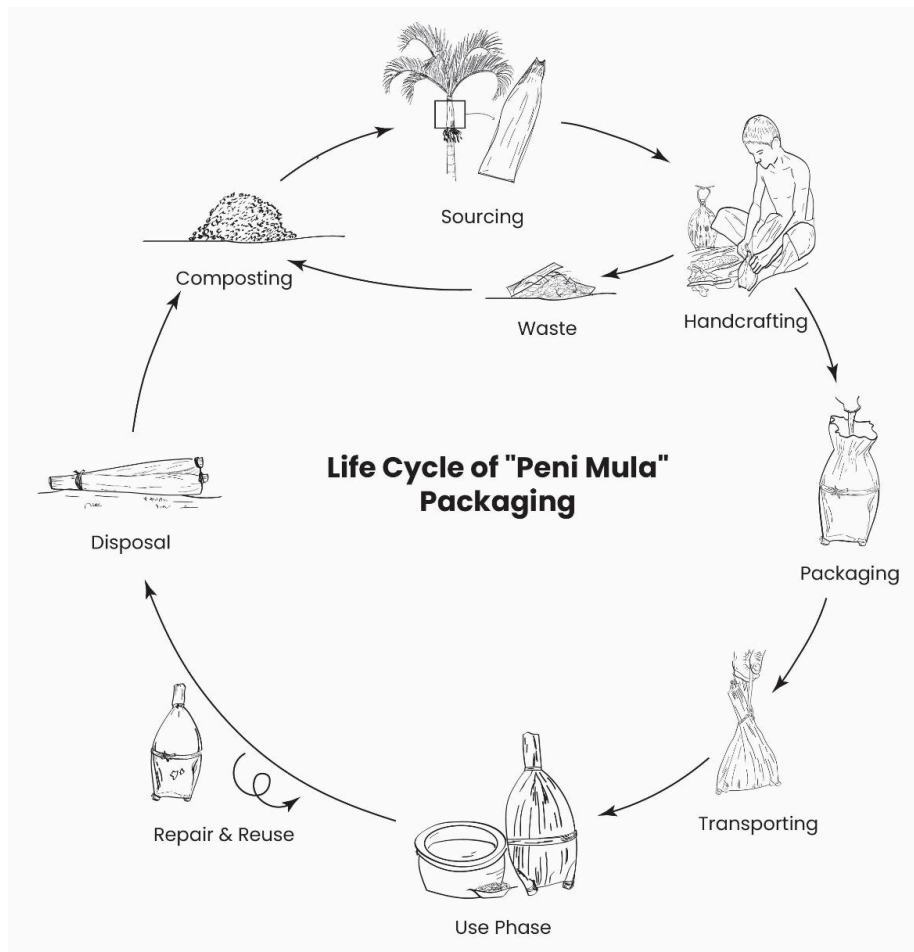
---

**Abstract** – Traditional packaging practices combine cultural heritage with environmental responsibility, offering sustainable solutions to modern packaging challenges. The over-reliance on synthetic materials, particularly plastics, has caused severe environmental damage, making eco-friendly alternatives essential. The growing concern over plastic pollution and its environmental impact emphasises the need for packaging solutions that reduce waste. Sri Lanka's traditional packaging methods, deeply rooted in its ecological and cultural heritage, utilise biodegradable materials that align with modern sustainability principles. Among these, the "Peni Mula" stands out for its unique ability to store liquid products, particularly the "Kithul" treacle, often referred to as "Honey", in an environmentally friendly manner. The "Peni Mula" is crafted from the Areca palm leaf sheath, a fibrous, biodegradable material used to store "Kithul" treacle. Once filled, the "Peni Mula" was traditionally hung over household chimneys for months or years, allowing the treacle to crystallise into "Veli Hakuru" (sand jaggery), a natural sweetener used before sugar became widely available. This process illustrates how traditional packaging methods serve both functional purposes and help preserve local agricultural products and food practices. Beyond its functionality, the "Peni Mula" holds significant cultural value in Sri Lanka. It was used in Buddhist rituals, offerings to deities, and ceremonies such as the "Kiri Maduwa". It was also often gifted during visits to relatives, symbolising the importance of sharing and community life. The cultural significance of the "Peni Mula" further underscores its role as a symbol of sustainability, reflecting the community's deep connection to both their environment and spiritual values. Despite its cultural and practical importance, the "Peni Mula" is now rare, confined mainly to the "Kithul" industry. The decline in its use reflects the broader shift from traditional to industrial packaging methods, which are mass-produced and less sustainable. This decline emphasises the need to preserve traditional packaging practices that offer valuable lessons in both cultural heritage and modern sustainability efforts. However, such methods are poorly documented, with only a few references, such as Doreen Alles's "Traditional Forms of Packaging and Vending(1982)". This lack of documentation jeopardises the survival of these techniques, which face increasing competition from industrial packaging. This research focuses on the "Peni Mula" as a case study that bridges traditional knowledge with modern packaging needs. It documents the lifecycle of the "Peni Mula", from sourcing the Areca palm leaf sheath to crafting, filling, sealing, and transporting the treacle. This process demonstrates the packaging's efficiency, adaptability, and ability to meet practical

requirements while supporting environmental sustainability. Additionally, the study highlights the Peni Mula's biodegradability and zero-waste properties, positioning it as a closed-loop solution with minimal environmental impact. Peni Mula's design is a model of efficiency, leveraging the properties of the Areca palm sheath to create a flexible, sturdy, and biodegradable structure. This packaging ensures that the "Kithul" treacle remains safe from leakage, contamination, and spoilage during storage and transit, offering excellent barrier properties that preserve product integrity. These natural materials, combined with eco-friendly construction methods, make the "Peni Mula" a valuable model for sustainable packaging solutions in contemporary contexts. Its design could inspire new packaging technologies that combine traditional materials with modern practices to reduce synthetic packaging use. By studying the "Peni Mula", this academic research not only preserves Sri Lanka's cultural heritage but also uncovers innovative, sustainable packaging solutions. The lessons learned can inspire new, resource-efficient designs that reduce waste and environmental impact. As we strive for a sustainable future, traditional practices like the "Peni Mula" offer valuable insights into solving modern environmental challenges.

**Keywords:** Sustainable packaging, natural material, Sri Lankan traditional packaging practice, "Peni Mula" traditional packaging, environmental sustainability

**Figure 1**  
Life-cycle of the Pani Mula



## Reference

- Agustianto, M., & Santoso, A. S. (2023). Development of traditional packaging design innovations in the present context using technology for packaging (Case Study: CV. XYZ). *Qeios*.  
<https://doi.org/10.32388/dmusdp>
- Dutt, D., Tyagi, C. H., Malik, R. S., Upadhyaya, J. S., & Kumar, D. (2003). Development of specialty papers is an art: Padding paper from indigenous raw materials - Part VIII. *Journal of Scientific & Industrial Research*, 62(10), 694–698.  
<http://nopr.niscair.res.in/bitstream/123456789/17624/1/JSIR%2062%2810%29%20996-1000.pdf>
- Commercial advantage of sustainable packaging – Amerplast. (2021, August 9). Amerplast.  
<https://amerplast.com/blog/commercial-advantage-of-sustainable-packaging/>
- Das, S. (2021, May 21). Properties of arecanut leaf sheath fiber. *Fibre2Fashion*.  
<https://www.fibre2fashion.com/industry-article/9032/properties-of-arecanut-leaf-sheath-fibre>
- De Silva, C. K., Damayanthi, M. M. N., De Silva, R., Dickinson, M., De Silva, N., & Udagama, P. (2015). Molecular and scanning electron microscopic proof of phytoplasma associated with Areca palm yellow leaf disease in Sri Lanka. *Plant Disease*, 99(11), 1641.  
<https://doi.org/10.1094/pdis-01-15-0072-pdn>
- Hettiarachchi, A. (2008). Study on Kitul products (treacle and jaggery on a commercial scale).
- Mohanty, D. P., R, A. C. A., Viswanathan, K., Mann, J. B., Trumble, K. P., & Chandrasekar, S. (2021). Mechanical behaviour and high formability of palm leaf materials. *Advanced Energy and Sustainability Research*, 2(4).  
<https://doi.org/10.1002/aesr.202000080>
- Mustafa, Muhizam & Nagalingam, Sumetha & Tye, Jason & Hardy, A & Dh, Jas. (2012). LOOKING BACK TO THE PAST: REVIVAL OF TRADITIONAL FOOD PACKAGING.