Kembali[1] – Return and Transformation. Spotlighting Design Solutions for Indonesia's Plastic Pollution Crisis[2]

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Abstract *This article discusses Indonesian efforts to harmonise global ecological concerns with economic growth and local environmental stewardship. It highlights environmental threats to Indonesia's diverse ecosystems from industrialisation, urbanisation, and plastic pollution. Designers, NGOs, and entrepreneurs play an important role in the creation of sustainable products and design strategies involving waste management and recycling innovations. This study spotlights six exemplary ventures: Sungai Watch (plastic pollution prevention), Eco Bali (waste management), Indosole (sustainable, upcycled footwear), Space Available as well as paste_lab (two circular design initiatives addressing plastic waste), and Terra Water Indonesia (water filter system). While acknowledging these initiatives' positive impacts, I initiate a critical discussion raising questions about long-term sustainability, circularity and (un)affordability for local Indonesian communities. Nevertheless, these endeavours in sustainable design offer important insights into the global relationship between SDGs and design practices. Importantly, we must avoid 'sustainable design colonialism', which could undermine equitable global transformations.*

Author keywords *sustainable design of the Global South; sustainable design in Indonesia; design for the anthropocene; SDGs and design practices; colonialism and design*

1. Introduction – Harmonising Global Futures with Ecological Stewardship

Indonesia consists of an archipelago of approximately 17,000 islands, celebrated for their biodiversity and cultural wealth, and the fourth largest population on the planet. The country is currently at a critical point in its environmental sustainability

1 Indonesian word for "return", also used in the context of recycling.

2 This article reports on the early stages of this research project.

endeavours. Its diverse ecosystems (e.g., rainforests, extensive coral reefs, and multifaceted marine resources) are under threat from rapid global industrialisation, urbanisation and international resource demands (Wicaksana & Santoso, 2023). Plastic pollution is an especially severe environmental problem in Indonesia, the world's second-largest plastic polluter after China (Pada, 2023). This "plastic crisis" (cf. Simon, 2023; Kwon, 2023; Law & Schegg, 2023) implicates the global economy of resources and consumerism; it is also directly linked to Indonesia's national waste management and recycling processes. Indonesian waste management comprises formal and informal systems. Informal waste pickers significantly contribute to the collection of recyclables (Sasaki et al., 2020); however, informal waste management also regularly involves the noxious burning of trash in private households (Mayang, 2020). In this context, Indonesia's challenges in achieving SDGs include infrastructure issues, dependence on open landfill sites, and waste being discarded into rivers. Conquering these formidable obstacles requires a comprehensive approach that fuses scientific and design expertise, cultural subtleties, and farsighted economic strategies.

Indonesia's sustainability policies are of paramount significance and have the potential to decisively shape the nation's future trajectory. The nation's steadfast commitment to the United Nations Sustainable Development Goals (SDGs), its active participation in international environmental agreements (United Nations, n.d.), and its endeavours to promote responsible resource management underscore an awareness of environmental preservation. However, these efforts still largely depend on private sector and non-profit initiatives. In particular, heterogeneous design professionals assume a pivotal role in combatting environmental crises. A growing number of Indonesia-based designers, NGOs, and entrepreneurs are working on sustainable products and design strategies. They are uniquely poised to create products that infuse the principles of circular economy, renewability, and energy efficiency to resonate both locally and on the global stage. They seek ways to meaningfully reduce the country's environmental footprint while also fostering economic growth.

This paper presents snapshots of six such initiatives, each revolving around issues of plastic pollution and waste management, from a design anthropology perspective. These cases allude to a possible course for Indonesia to foster sustainable and regenerative practices, while also cementing a legacy of responsible development in the Global South. I celebrate these positive developments but also pose critical questions relevant to the wider challenges and opportunities of transformational design.

2. Discussion – Navigating the Path to a Sustainable Future

Eight years have passed since the UN declared the 17 SDGs for a more sustainable world. Indonesia has made some successful strides toward these goals. For instance, it has reduced poverty rates and improved education accessibility in rural and remote regions; renewable energy promotion and the fight against deforestation have also yielded some positive outcomes. Nevertheless, several challenges remain: air pollution, marine conservation, and access to fundamental services like waste management lag. More extensive policies are needed to ensure rural and marginalised communities can benefit from the SDGs (Ministry of National Development Planning, 2019).

Despite a legally established Green Party for Indonesia[3], policies encouraging environmental protection and sustainability are still underpromoted. Additionally, Indonesia must engage in the persistent balancing act of guaranteeing sustainable economic growth while safeguarding distinct biodiversity and natural resources. This has resulted in rather slow movement toward sustainable futures from Indonesian authorities. Nevertheless, a fast-growing heterogeneous group of entrepreneurs, designers, and activists are pursuing their own SDG missions, many of them specifically around plastic pollution and recycling[4].

The first spotlighted venture is *Sungai Watch*, a Bali-based environmental organisation founded by three Generation Z activists in late 2020. The name "Sungai" is derived from the Indonesian word for river. *Sungai Watch*'s mission is to safeguard and rehabilitate Indonesia's rivers using simple technologies that prevent plastic pollution from entering the ocean. The NGO installs river barriers as an optimal, budget-friendly strategy for eradicating plastic pollution. They claim this can also stimulate community involvement (see Figure 1) and cultivate a sense of ownership and accountability for preserving unsullied waterways over time.

Sungai Watch has been successful in Bali; it has positioned 180 barriers and collected over 1.4 million kilograms of plastic waste (Sungai Watch, 2023). The floating waste barriers are simple devices designed to physically intercept river waste. They are constructed in-house and were re-developed after the rainy seasons resulted in new lessons learned. *Sungai Watch's* 2022[5] annual report states that the NGO hopes to become a zero-waste venture soon. It now also upcycles the non-recyclable plas-

3 Partai Hijau Indonesia (PHI), founded in 2012.

4 In this context, the main SDGs targeted are: SDG 6 (clean water and sanitation), SDG 12 (responsible consumption and production) and SDG 14 (life below water).

5 Available at: https://www.canva.com/design/DAFaHIwBG80/2xd9fWx65Myt3K2EooEcRw/view?utm_content=DAFaHIwBG80&utm_campaign=designshare&utm_medium=link&utm_source=viewer

tic it collects using an in-house shredding and pressing procedure and is seeking innovative processing methods for this 'new' material.

Figure 1: A former illegal landfill in Bali was cleaned and transformed into a garden by Sungai Watch, in collaboration with the regenerative farming project Astungkara Way. Photo: Flavia Mameli (2023).

While its local impact is undoubtedly immense, questions exist about *Sungai Watch*'s long-term impacts. If households stop throwing their waste into rehabilitated rivers, might they start burning more trash? How sustainable is the practice of cleaning rivers when systematic and affordable solutions for waste management have not yet been fully established?

Another venture operating in this context, *Eco Bali* (see Figure 2), was founded in 2006 by an Italian-Indonesian couple with a mission to address the pressing

environmental issues caused by waste in Bali. The organisation has helped reduce the amount of waste sent to landfills and raised awareness about the importance of responsible waste management among the local population. *Eco Bali* operates a network of waste collection points where residents and businesses can drop off their (separated) recyclables and non-recyclables; it also runs a pickup service in selected urban areas. *Eco Bali* also educates the local community about waste reduction, recycling, and responsible disposal through workshops, seminars, and awareness campaigns. The combination of education, recycling, and community involvement makes *Eco Bali* a model for sustainable waste management initiatives in other Global South contexts facing similar environmental challenges.

Figure 2: Eco Bali waste collection point in Canggu, Bali. Photo: Flavia Mameli (2023).

The regular waste disposal organised by local municipalities is quite affordable for the middle-class Indonesian population. However, this waste is not separated and hardly ever recycled—just taken to the nearest waste dump. *Eco Bali's* prices are relatively high, depending on the volume of waste and frequency of collection, so we can assume that most Balinese will continue to use the municipal waste disposal, if any (but further research is pending).

Numerous environmental ventures highlighted in this article come from the realm of product design. For example, *Indosole* is a sustainable footwear enter-

prise renowned for its ecologically friendly and socially responsible approach to manufacturing footwear. The company aims to increase awareness about the environmental consequences of tire waste while advocating ethical, sustainable fashion choices. They specialise in producing sandals from upcycled and recycled materials, particularly repurposed discarded tires (see Figure 3).

Figure 3: Indosole children's shoes. Photo: Flavia Mameli (2023).

The tires are extracted from landfills and recovered into the soles of footwear. This upcycling process reduces waste and creates a durable, long-lasting sole material. *Indosole* footwear is handmade in Indonesia, supporting local craftsmanship and job creation. The brand reduces its environmental impact by using low-impact manufacturing practices and sustainable packaging materials. *Indosole* provides fair wages and a safe working environment to create a positive social impact in the communities where its products are made. Despite these multiple measures, there are two aspects that counteract the overall effort towards sustainability: Firstly, the retail price of *Indosole* products in boutiques or online is very high compared to similar footwear and certainly not aimed at the average Indonesian citizen. By way of comparison, the average monthly income in Indonesia in 2022 was US$192 (CEIC, n.d.). This is an increase from the previous figure of US$170 for 2021. An average *Indosole* flip-flop costs between US$45 and US$60. In addition to the high selling price of the products, a look at the actual material composition of the shoes is also revealing (Indosole Indonesia, n.d.): while the sole is made of 100% recycled tire material, the

footbed consists of 30% natural rubber, 30% recycled EVA and 40% EVA. EVA stands for ethylene vinyl acetate, a modified and more complex version of plastic that is usually difficult to recycle as it requires a special recycling process.

Figure 4: The Space Available Museum façade in Canggu, Bali. Photo: Flavia Mameli (2023).

The second exemplary upcycled product venture is *Space Available*, an organisation devoted to circular design. *Space Available* converted a Bali building into a 'museum' and laboratory in collaboration with Indonesian architects *Sidarta and Sandjaja*[6] (see Figure 4). The building's façade was crafted from 200,000 recycled plastic bottles to highlight the plastic waste problem in Indonesia. *Space Available* serves as an exhibition space, recycling hub, and 'upcycling bar.' It is an experimental institution that aims to become a repository of anthropogenic design. It conducts diverse workshops on developments in plastic recycling, biomaterials, and circular living. *Space Available* also sells fashion and interior design products and collaborates with various international designers and artists to market sustainable design in 'cool' upscale products. Seeing the brand's emphasis on being fashionable, a critical reflection in terms of sustainability could argue that circularity is merely promoted as a

6 https://sidartaandsandjaja.id

style and as part of the brand, rather than incorporating all associated implications. This aspect is visible especially in comparison with *paste_lab*[7], another Indonesian start-up venture, located in Yogyakarta on the island of Java.

Visiting *paste_lab's* workshop in October 2023 seemed like the 'messy version' of *Space Available,* with plastic shredding, melting, and pressing happening all at once in a noisy, smelly, and crowded garage (see fig. 5). I was surprised by the similarity of upcycled products being developed here and was lucky to have a short informal conversation with one of the two start-up founders. He revealed that although all sorts of styles, colors and patterns of upcycled plastic would be possible, the almost 'iconic' look of sprinkled material is the most requested one from customers. Furthermore, I learned that the founders managed to establish several B2B-cooperations with local businesses like hotels and restaurants to pick up their plastic waste, to manually clean it, and to shred it into their raw material as a truly circular business model.

Figure 5: paste_lab workshop in Yogyakarta, Java. Photo: Flavia Mameli (2023).

What I also learnt in this context is that, unlike the experience a visitor might have in the clean and cool museum of *Space Available*, this kind of upcycling is a rather dirty business— with workers exposed to the constant smell of melting plastic and the micro-plastic dust that is inevitably released into the air when sanding

7 https://www.instagram.com/paste_lab/

the newly formed and cured upcycled plastic panels. Acknowledging such circumstances underlines that circularity does not necessarily mean sustainability, as Blum et al. (2020), among others, have argued.

Another eye-opening example of Indonesian eco-entrepreneurs deliberately targeting an upscale consumer group is *Terra Water Indonesia*, a company operating in the realm of SDGs 6 and 12. Its flagship product, a Bali-made water filtration system made entirely from natural materials such as clay and ceramics, is a cleverly designed product that addresses the urgent need for clean water among the majority of Indonesia's population. Most Indonesians rely on buying water by the gallon, with the most popular brand being *Aqua*, owned by the *Danone* group. Against this backdrop, and addressing another pernicious aspect of the Global South's entanglement with Western corporations, a project like *Terra Water Indonesia* must undoubtedly be highlighted as a much-needed initiative in Indonesia's efforts to provide clean water. Once again: The so-called *Terra Ceramic Filter* is a high-priced water filter that remains out of reach for most Indonesian citizens. What's more, the way it's marketed on the company's website suggests it's more of a design object for well-being than a useful tool for drinking safe well water. Interestingly, however, *Terra Water Indonesia* has developed its own solution to bridge this gap between a wealthy elite of consumers and comparatively low-income Indonesians: As a second, low-cost version of its filtration system, the company sells a different product called *Terra Lite Filter*, equally safe and consisting mainly of a plastic bucket, for customers with little money to spend. Tellingly, some of the visual marketing of this 'second product' is quite different from the first. Instead of a sleek object placed in a well-designed (but devoid of any human trace) tropical kitchen, we see a supposedly Indonesian man posing happily next to his plastic *Terra Water Indonesia* filter system in a sunny local setting[8]. Could there be a two-tier society of sustainable products that needs to be investigated?

3. Conclusion

Social and sustainable product design enterprises do beneficial work that addresses Indonesia's environmental challenges. However, questions remain about their ostensible sustainability and their responsibility on the consumer side. *Indosole's* footwear and *Space Available's* design items are comparatively expensive and not affordable for most Indonesians. While these items are mainly (or even exclusively) sold in Indonesia, both brands are marketed to and favoured by Western consumers who value socially responsible and eco-friendly product design. These customers

8 This statement is based on an analysis of *Terra Water Indonesia's* product photos to be found online in October 2023.

are willing to spend considerable amounts on a luxurious and comfortable sustainable lifestyle only a few can afford. In this context, the statement made in a recorded workshop meeting of *Space Available* founder Daniel Mitchell with the renown Djane Peggy Gou and two other participants, "Recycling is not a compromise, it is an upgrade" (Space Available, 2021) is not without a certain irony.

Furthermore, five of the six ventures spotlighted here were (co-)founded by Westerners residing in Indonesia. It should be noted that numerous companies founded by Indonesians focusing on recycling and upcycling plastic waste as well as on many other aspects of SDGs do exist, like the highlighted venture *paste_lab*, but they are excluded here due to the limitations of space. The selection of examples is a deliberate choice, intended to stimulate critical discourse at this early stage of the research. It seems clear that companies founded by Westerners know how to market themselves to achieve more outreach – an (international) visibility that is necessary for the long-term success and growth of these companies.

As the global design community grapples with pressing anthropogenic environmental challenges, Indonesia's sustainable design landscape could become paradigmatic for design professions in the Global South. Many promising local endeavours are infusing design with an ethos of sustainability, encouraging cross-sectoral collaboration, fostering local initiatives and embracing robust policy frameworks. Sustainable design is in itself a social task with the potential to create social advantages and disadvantages. We need to be wary of the hidden pitfalls of a potential 'sustainable design colonialism' that cannot coexist with long-term and equitable global transformation. I use the term sustainable design colonialism to describe and critique products and practices that stylise sustainability and create 'eco-luxury' rather than a truly circular and socially as well as environmentally beneficial product or innovation. While long-established terms and buzzwords such as 'ecological colonialism' or 'green colonialism' have been widely discussed in multidisciplinary contexts, circulating around global sustainability relations and describing intensified power imbalances from the Global North to the Global South under the guise of environmental protection (Crowe & Shryer, 1995; Grove, 1995), the term sustainable design colonialism refers to more local spheres of action, as some of the spotlights described aim to highlight.

In the context of the conference track *Crises, Literacies and Practices*, a critical reflection on such underlying dynamics that could undermine equitable global transformations needs to be taken into account when assessing the actual impact of sustainable design practices. In this regard, at this early stage of the research, I can summarise that there is no shortage of Indonesia-based design professionals, entrepreneurs, and activists who are putting numerous literacies into practice; however, it is also clear that sustainable design practices in and from the Global South can never be fully understood without taking into account their global contexts.

Statement on compliance with ethical standards:

The work strictly adheres to established ethical guidelines, including informed consent, confidentiality, and the responsible handling of sensitive data.

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