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Rethinking Circular Economy from Below: Informality, Material Flows, and Hybrid Institutions in Maun, Botswana

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Abstract

This paper examines how informal entrepreneurs in Maun, Botswana, practise circular economy under conditions of material scarcity, institutional hybridity and livelihood constraint. Addressing the dominance of technocentric and design-led models in circular economy research, it develops a grounded alternative based on the concept of livelihood-oriented circularity. The study draws on eleven semi-structured interviews, field observations and photographic documentation, analysed through a triangulated framework combining circular practice typology, material flow analysis and institutional perspectives. The findings identify three main forms of circular practice-reuse, functional upcycling and symbolic upcycling and show how these are sustained through hybrid institutional arrangements and translocal material networks. Circularity in this context emerges as a socially embedded system organised through frugality, improvisation and community knowledge rather than formal policy design. The paper contributes theoretically by advancing livelihood-oriented circularity as a Global South model of socially embedded and learning driven innovation. It repositions informality as a site of systemic creativity and adaptive capacity, extending circular economy theory beyond Global North assumptions. Policy implications include the need for transitional licensing mechanisms, shared workshop spaces and the recognition of peer-based coordination to foster inclusive and transformative innovation systems

Keywords: Livelihood oriented circularity, Informal economy, Circular Economy, Institutional hybridity, Translocal material flows, Botswana

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1. Introduction

1.1 Circular economy in the Global South

The circular economy has been widely promoted as a sustainability paradigm and an alternative to linear production and consumption models (Geissdoerfer et al., 2017; Ellen MacArthur Foundation, 2013). Yet dominant circular economy narratives are anchored in Global North contexts, privileging eco-design, industrial symbiosis and technocentric solutions embedded in EU policy frameworks (Korhonen et al., 2018). These models often marginalise the necessity-driven and socially embedded practices that sustain circularity across much of the Global South (Korsunova et al., 2022).

In many peri-urban towns in southern Africa, circularity is rarely achieved through eco-design or industrial symbiosis but through adaptive practices shaped by material scarcity, livelihood imperatives and local systems of knowledge (Schröder et al., 2019; Wilson et al., 2006; Gutberlet, 2016). Such practices reveal alternative logics of circularity that operate outside formal infrastructures and regulatory frameworks. In this article, reuse refers to the continued use or resale of objects with minimal or no modification, typically motivated by utility and frugality, while upcycling denotes the transformation of discarded materials into products with enhanced functional, aesthetic or symbolic value (Bridgens et al., 2018; Montana-Hoyos & Scharoun, 2015; Sung, 2023). These activities are rarely driven by ecological ideals; rather, they reflect improvisation, livelihood adaptation and meaning-making in everyday life (Korsunova et al., 2022).

While research on circularity in the Global South is expanding, it largely remains concentrated on waste economies in large cities or on specific aspects such as reuse, upcycling or institutional factors. This thematic and spatial focus limits our understanding of how circularity is sustained through the interplay of social, material and institutional dynamics (Wilson et al., 2006; Gutberlet, 2016; Kirchherr et al., 2017; Zisopoulos et al., 2023; Muheirwe et al., 2023).

This study presents an in-depth case study of Maun, a town in north-western Botswana. Maun offers a particularly revealing context for examining circular practices in the Global South because it embodies a convergence of formal, informal and customary systems within a semi-urban tourism economy. Located at the edge of the Okavango Delta, Maun, is often described as the country's tourism capital and main gateway to the Delta (Botswana Tourism Organisation, 2021). It sustains a dual economy in which formal tourism enterprises coexist with a large informal sector. Informal entrepreneurs such as hawkers³ and street vendors are key actors in local trade, yet they work within an institutional environment shaped by both statutory rules and everyday practice. Licensing categories and eligibility requirements are outlined in the *Hawking and Street-Vending (Model) Byelaws* (Republic of Botswana, 2001). However, research on roadside vending in Gaborone shows that enforcement is uneven and infrastructure inadequate, shaping how traders manage their daily activities (Helming, 2023). The tension between regulation and lived practice produces hybrid institutional arrangements

³ In the *Hawking and Street-Vending (Model) Byelaws*, a “hawker” means a person, being otherwise unemployed, who carries on the business of selling his goods from place to place within Botswana, which business has an average monthly turnover of no more than P500 per month. A “street-vendor” means a person, being otherwise unemployed, who carries on the business of selling goods from a pitch at which he stations himself. The pitch normally locates either in a convenient public place or upon land which he has no right to control. The business has an average monthly turnover of no more than P500 per month.

that entrepreneurs must continuously navigate (North, 1990; Helmke & Levitsky, 2004; Cleaver, 2012).

Maun therefore provides an important case for studying how these dynamics take shape in a setting characterised by both urban and rural conditions. Customary, bureaucratic and informal systems overlap to create a layered regulatory environment. Within this context, informal entrepreneurs engage in material recovery by collecting discarded or surplus items and transforming them into crafts, tools and wearable goods that circulate among residents and tourists. Although often absent from policy and business debates, these practices are locally embedded systems of innovation, adaptation and redistribution (Gregson et al., 2015; Hobson, 2020; Schröder et al., 2019). They are sustained through the interaction of formal and informal institutions, producing forms of institutional hybridity that merit closer examination (North, 1990; Helmke & Levitsky, 2004; Cleaver, 2012).

1.2 Aim and research questions

The aim of this article is to identify the types of practices enacted by informal entrepreneurs in Maun, by focusing on a typology of reuse/upcycling, and to understand how material flows (collecting, processing, redistributing) and institutional factors (formal and informal) shape these practices. The article is therefore guided by the following research questions:

RQ1. What forms of circular practice (reuse/or upcycling) are used by informal entrepreneurs in Maun, Botswana?

RQ2. How are materials sourced, processed and redistributed?

RQ3. How do formal and informal factors enable or constrain these practices?

Together, these questions aim to support a context-sensitive understanding of circularity in informal economies and contribute to theoretical debates on inclusive innovation, material flows and institutional hybridity in African peri-urban contexts.

1.3 Structure of the article

Chapter 2 reviews existing literature on circular practices, material flows, and institutional dynamics (both formal and informal). Chapter 3 outlines the theoretical framework, introducing a triangulated analytical framework that integrates these strands. Chapter 4 describes the method, while Chapter 5 presents the empirical findings. Chapter 6 develops the discussion, and Chapters 7 and 8 set out the conclusion and data availability, respectively.

2. Literature Review

2.1 Circular practices in the Global South

Across the Global South, circularity has long preceded contemporary circular economy frameworks. Informal entrepreneurs - including waste pickers, hawkers and artisans - have been widely documented to collect, repurpose and redistribute materials to sustain livelihoods and generate income (Wilson et al., 2006; Gutberlet, 2016; Schröder et al., 2019). Recent scholarship emphasises that these activities are not residual “survival strategies” but repertoires

of adaptation, innovation and meaning-making in contexts of scarcity and weak infrastructure (Korsunova et al., 2022; Hobson, 2020).

These practices are still marginal within mainstream circular economy frameworks, which continue to privilege technocentric and policy-driven approaches rooted in the Global North. Scholars increasingly argue that recognising such practices is essential for broadening circular economy theory and fostering inclusive sustainability transitions (Valenzuela 2017; Awino & Apitz, 2023). Yet empirical research stays concentrated on metropolitan waste economies (e.g. Nairobi, Accra, Cape Town), while smaller, tourism-driven towns such as Maun, Botswana, are largely absent (Simone, 2014; Gutberlet et al., 2022)

2.2 Material flows beyond formal systems

Dominant circular economy narratives, particularly within the EU and other Global North contexts, foreground engineered recycling loops and institutionalised infrastructures (Korhonen et al., 2018; Ghisellini et al., 2016). In contrast, research on informal economies highlights relational and adaptive flows - materials acquired through kinship exchange, barter or salvage; processed in domestic or roadside workshops; and redistributed through vending, hawking or mobile trade (Wilson et al., 2006; Gutberlet, 2016; Zisopoulos et al., 2023).

Emerging studies demonstrate how digital platforms such as WhatsApp and Facebook Marketplace extend these networks, embedding local circulation within translocal circuits (Godinho Filho et al., 2024). These flows are typically low-tech, seasonally adaptive, and efficient despite infrastructural gaps. They reveal forms of micro-logistics and social coordination that challenge linear value-chain models and call for the adaptation of material flow frameworks to informal contexts (Gregson et al., 2015; Muheirwe et al., 2024; Frigo et al., 2025).

2.3 Institutions, informality and institutional hybridity

African urban-rural settings are characterised by a disjuncture between statutory rules and everyday practice. Licensing regimes, zoning laws and bureaucratic barriers often exclude informal entrepreneurs, while informal institutions - peer regulation, tacit coordination and mutual recognition - enable continuity and resilience (Helmke & Levitsky, 2004; Cleaver, 2012; Meagher, 2010)

Rather than viewing informality as a deficit to be eliminated, recent scholarship conceptualises it as a space of institutional innovation that sustains livelihoods and circular practices under weak enforcement (Schröder et al., 2019; Loots & Ntsala, 2024). Cleaver's (2012) concept of institutional bricolage highlights how entrepreneurs combine customary, bureaucratic and informal arrangements to secure access to space, materials and markets. These hybrids institutional arrangement's structure both inclusion and exclusion in local economies (Lindell et al., 2019).

2.4 Research gap

This review shows that scholarship on the circular economy is still fragmented across three strands: circular practices, material flows and institutions. Studies often examine these dimensions in isolation and with a strong metropolitan focus. Semi-urban, tourism-driven towns

such as Maun remain underexplored, as do the roles of citizenship, migration and gender in shaping access to space, licensing and materials.

Moreover, while EU and other Global North circular economy policy frameworks are increasingly exported globally, little research examines how these imaginaries intersect with the hybrid institutional arrangements that shape circular practices in African contexts. This study addresses these gaps by integrating practices, flows and institutions within a triangulated analytical framework, advancing a more situated theorisation of *livelihood-oriented circularity*.

3. Theoretical and Analytical Framework

To analyse how circular practices unfold in informal economic contexts, we employ a triangulated framework (see Figure 1) that captures practices, material flows, and institutional conditions as interdependent dimensions.

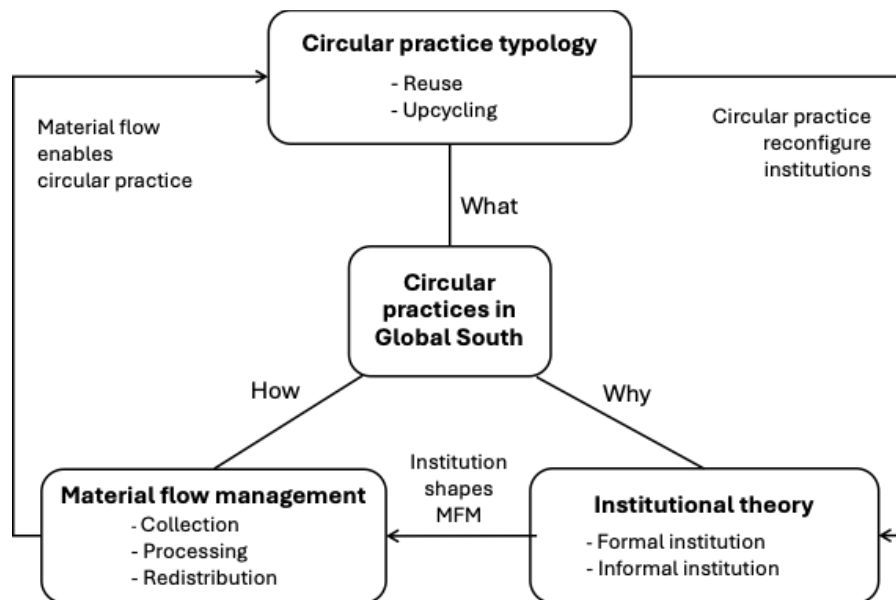


Figure 1. The triangulated analytical framework for understanding circular practices in the context of Global South

3.1 Circular practice typology: reuse and upcycling (**what**)

Building on Section 2.1, we operationalise reuse and upcycling as core categories. Reuse refers to continued use or resale with minimal modification, typically driven by utility and frugality. Upcycling entails the creative transformation of discarded materials into new products with enhanced functional, aesthetic, or symbolic value (Bridgens et al., 2018; Sung, 2023). Within this study, these categories are further refined into *functional* and *symbolic* upcycling to capture variation in practices.

3.2 Material Flow Management (MFM): sourcing, processing, redistributing (**how**)

While practice typology shows what activities emerge, MFM traces how materials circulate. We adapt Material Flow Analysis (Brunner & Rechberger, 2003), originally designed for

industrial systems, into a Material Flow Management (MFM) approach suited to informal contexts.

MFM distinguishes three stages:

Sourcing: acquisition of materials no longer in primary use, embedded in local networks, seasonal rhythms and reciprocity.

Processing: preparation or transformation of materials in decentralised workshops or markets using rudimentary tools and adaptive techniques.

Redistributing: reintegration of materials into circulation through resale, barter, donation or crafting into new artefacts, enabled by trust-based exchange.

Table 1. Summary of Material Flow Stages

Stage	Action	Features in Informal Context	Goal
Sourcing	Gathering used materials	Social networks, improvisation, seasonal dynamics	Prevent disposal, enable reuse
Processing	Preparing materials for reuse	Local methods, adaptive practices, small workshops	Enhance utility and value of materials
Redistributing	Returning materials to use	Markets, exchanges, trust-based transactions	Keep materials circulating

This adaptation captures micro-logistics processes, spatial improvisation and trust-based coordination central to material circulation in low-infrastructure settings (Gregson et al., 2015; Korhonen et al., 2018).

3.3 Institutional theory: formal and informal factors (why)

Institutional theory explains why circular practices persist or adapt under specific conditions. Drawing on North (1990), institutions are the “rules of the game” that structure human interaction. Formal institutions include laws, regulations and licensing regimes: informal institutions include socially shared norms and tacit coordination (Helmke & Levitsky, 2004) In Maun, interactions between these systems produce institutional hybridity, where informal arrangements fill gaps left by misaligned or weak formal systems (Cleaver, 2012; Meagher, 2010). This aligns with the idea of *institutional bricolage*, where actors creatively combine rule systems to sustain livelihoods.

3.4 Synthesising practice, flow and institutions: a triangulated framework

Integrating these three lenses yields a triangulated analytical framework (see Figure 1). *Practice typology* shows *what* circular activities emerge. *MFM* explains *how* materials circulate through informal systems. *Institutional theory* clarifies *why* these practices persist under hybrid conditions.

Each lens alone is partial. Together, they reveal livelihood-oriented circularity: survival-based, adaptive, and socially embedded circularity from below. This framework challenges Global North-centric imaginaries by showing how circularity is sustained under scarcity and institutional hybridity, particularly in semi-urban African towns.

4. Method

4.1 Research design

We employed an in-depth case study approach to capture the lived experiences of informal entrepreneurs in Maun as they enact circular practices amid material scarcity, institutional hybridity and regulatory ambiguity (Stake, 1995). The goal was analytical depth rather than statistical generalisation, consistent with case-based inference (Flyvbjerg, 2006).

Maun was selected for its dual character as a tourism hub and a centre of informal entrepreneurship, coupled with a regulatory environment shaped by spatial improvisation and incomplete legal frameworks. Fieldwork was conducted between January and May 2025, enabling immersion, iterative reflection and contextual understanding.

4.2 Sample and respondent profile

Eleven informal entrepreneurs engaged in reuse or upcycling were found through purposive sampling to maximise relevance to the analytical framework (Patton, 2015). Sample sufficiency followed the principle of information power, given the focused aim, theoretical grounding, and case specificity (Malterud et al., 2015). Access was eased through prolonged residence in Maun and existing local relationships.

Respondents were approached in public marketplaces and residential zones (New Mall, Old Mall, Airport Junction, Boronyane) and voluntarily consented to participate. The sample included nine men and three women, reflecting the gendered organisation of informal circular labour in Maun. Six participants identified as non-citizens, working without formal trading licences. This diversity in gender and citizenship status was important for analysing how access to material resources and institutional legitimacy shapes circular practices in the discussion that follows.

Table 2. Respondent overview by practice orientation and operational mode

Respondent	Practice orientation	Operational mode
R1	Fabrication artisan	Boronyane (residential yard, stationary)
R2	Informal trader	New Mall (mobile hawker)
R3	Handicraft artisan	New Mall (street-stall vendor)
R4	Hybrid artisan	New Mall (residential yard, stationary)
R5	Handicraft artisan	Boronyane (residential yard, mobile hawker)
R6	Hybrid artisan	New Mall (street-stall vendor)
R7	Handicraft artisan	Airport Junction (shared stall with R8)
R8	Handicraft artisan	Airport Junction (shared stall with R7)
R9	Informal trader	New Mall (street-stall vendor)
R10	Informal trader	Old Mall (street-stall vendor)
R11	Informal trader	Old Mall (street-stall vendor)

Note: “Practice orientation” refers to the observed operating mode and does not imply formal licensing.

4.3 Data collection

Interviews. Eleven semi-structured interviews (20–50 minutes) were conducted in English across the four field sites. Interviews were audio-recorded with verbal consent and fully transcribed. The interview guide covered motivations and practices, material flows (sourcing, processing, redistribution), institutional factors and future aspirations (Brinkmann & Kvale, 2014). Follow-up conversations were occasionally used to clarify emerging themes, enhancing data depth and accuracy.

Observations. Unstructured observations were undertaken in the same areas (plus the Mall of Maun), focusing on workspace arrangements, sorting and display of salvaged materials, informal collaborations and spatial improvisation. Discretion was exercised in sensitive contexts (e.g., near unlicensed vendors).

Photographic documentation. Selected photographs were taken with verbal consent to document tools, materials and workspaces. Visual records supported spatial and material analysis and were managed with attention to visual ethics and anonymity (Pink, 2013).

Triangulation. Triangulation across interviews, observations and photographs enabled comparison of reported, observed and material evidence (Denzin, 1978). This multi-source approach strengthened construct validity and contextual reliability.

4.4 Data analysis

Data were analysed thematically (Braun & Clarke, 2006), combining inductive coding with deductive checks against the analytical framework. Coding was conducted in MAXQDA; all interpretive decisions were researcher-led and iteratively refined through memo writing.

Steps included:

- (i) initial coding of practices, material use and institutional references.
- (ii) grouping of codes into broader themes.
- (iii) mapping of themes onto the framework: practice typology (reuse, functional upcycling, symbolic upcycling), material flows (sourcing, processing, redistribution) and institutional hybridity (formal/informal).

Coding reliability was enhanced through repeated reading of transcripts and memo comparison across coding rounds to ensure internal consistency and reflexive transparency.

4.5 Ethical considerations and research quality

All participants provided verbal informed consent to be interviewed, audio-recorded and to allow anonymised excerpts to be used in publication. Identities were safeguarded through anonymisation and secure storage of recordings and transcripts.

Given that some participants self-identified as non-citizens, nationalities were not linked to individual cases to minimise re-identification risks. The term non-citizen is used throughout to describe participants who were primarily migrants from Zimbabwe, focusing on the institutional and governance-related dynamics of access and legitimacy rather than national identity, in line with ethical considerations to avoid reproducing stigma. Visual materials were

collected and reproduced only with explicit consent and in ways that ensured non-identification (Pink, 2013).

Reflexivity was kept throughout, acknowledging the researcher's positionality as a Swedish academic based in Botswana (Finlay, 2002).

Research quality was enhanced through triangulation of interviews, observations and photographs, combined with prolonged engagement in the field. Credibility, dependability and confirmability were ensured through systematic coding and iterative comparison across data sources, while transferability was strengthened by rich contextual description of settings, actors and practices (Lincoln & Guba, 1985).

Data collection continued until sufficient information power was achieved across the eleven cases, with diversity in practice type, gender and citizenship status supporting analytical breadth (Malterud et al., 2016). A cross-case synthesis compared practice type, spatial modality and institutional factors across cases, enhancing analytical generalisation.

5. Case findings

Drawing on eleven interviews, site observations, and photographs (Section 4.3), we organise the results by circular practices (5.1), material flows (5.2), and institutional factors (5.3). A cross-case synthesis concludes (5.4).

5.1 Circular practices of informal entrepreneurs (RQ1)

Table 3. Classification of respondents by circular practice theme

Respondent	Business type	Circular practice theme	Empirical basis for classification
R1	Fabrication artisan	Functional upcycling	Metal fabrication from scrap (braziers, stoves); welding in residential yard
R2	Informal trader	Reuse	Mobile resale of crafts; second-hand items sourced locally
R3	Handicraft artisan	Symbolic upcycling	Tourist-oriented crafts from bottle caps, vinyl, wire
R4	Hybrid artisan	Hybrid upcycling	Combined metalwork and basketry; mixed symbolic and functional outputs
R5	Handicraft artisan	Symbolic upcycling	Cultural accessories from upcycled materials; informal design learning
R6	Hybrid artisan	Hybrid upcycling	Alternates between furniture and small crafts based on material availability
R7	Handicraft artisan	Symbolic upcycling	Decorative crafts for tourist market; shared stall
R8	Handicraft artisan	Symbolic upcycling	Shared production with R7; similar product range
R9	Informal trader	Reuse	Resale of crafts and curios via local networks
R10	Informal trader	Reuse	Second-hand clothing resale; bale-sourced stock
R11	Informal trader	Reuse	Second-hand clothing resale; bale-sourced stock

Four main types of circular practice were found: *reuse*, *functional upcycling*, *symbolic upcycling* and *hybrid practices* that combine the two.

Reuse of second-hand goods. Four respondents (three women and one man) engaged primarily in the resale of clothing, footwear, and crafts in Old Mall and New Mall, running from semi-permanent or temporary stalls (see Figures 2 and 3), or as mobile hawkers. Field observations showed that women mainly operated from permanent and temporary stalls, while men more

often worked as mobile hawkers in the second-hand trade. Motivations centred on income generation - “I was unemployed, so I decided to make something for myself” (R11) - whereas profitability depended on bale quality - “We wait for the good bales; if it is Grade A, we sell fast” (R10). Reuse thus functioned as a gendered livelihood strategy embedded in transnational supply chains and constrained by licensing barriers.



Figure 2. Second-hand clothing resale in a semi-permanent stall.



Figure 3. Second-hand clothing resale in a temporary stall.

Functional upcycling. Two male respondents fabricated utilitarian items from discarded appliances, gas cylinders, and scrap (e.g., braziers, benches, stoves) in residential yards or roadside workshops (see Figures 4 and 5). Skills were informally acquired, and production adapted to material availability and demand. “I turn a geyser into a fireplace; I just cut it, weld it and paint it” (R1). Safety risks were managed with basic protective equipment: “It’s dangerous if you don’t wear the mask... you are going to have a problem with the lungs” (R4).



Figure 4. Welded metal frames and salvaged wood turned into utilitarian products.



Figure 5. A metal brazier fabricated from a discarded geyser.



Figure 6. Hand-painted souvenirs made from repurposed bottle caps and wood.



Figure 7. Toy vehicles made of upcycled locally available materials



Figure 8. Bags made from repurposed vinyl and textiles.

Symbolic upcycling. Three artisans (all male) transformed bottle caps, vinyl records, textiles, beads, and wire into decorative items for tourists and lodges (see Figures 6–8), combining cultural storytelling with aesthetic transformation. “My uncle and my grandfather were wood carvers; I was the one who was putting the colours” (R5). Peer price coordination helped to keep market stability - “We must sell this thing at the same price to avoid killing the business” (R3)

Hybrid practices. Two respondents alternated between functional and symbolic outputs depending on material availability and demand. “When metal is expensive, I focus on small pieces such as keyrings and bead animals, so I do not lose customers” (R6).

Answer to RQ1. Informal entrepreneurs in Maun enact four practice types - reuse, functional upcycling, symbolic upcycling and hybrid forms - which are selected and adapted according to material access, skill sets and market conditions.

5.2 Material flows (RQ2)

Sourcing. Clothing bales arrived via Zambia, South Africa and the United Kingdom, while craft inputs moved through Zimbabwe, Malawi and Namibia, alongside local salvage (metal, bottles, tins and textile offcuts). Seasonality shaped material availability, and some artisans employed youth collectors: “I pay some youth collectors to go and collect them for me; then they bring them to me” (R7). These diverse inflows of materials sustain informal circularity through both transnational and local recovery systems (See figures 9-11).



Figure 9. Scrap metal recovered from waste- and left over material.



Figure 10. Discarded car body repurposed for parts and materials.

Processing. Activities occurred in residential yards, roadside workshops, and vendor stalls; homes doubled as workshops and storage. Welders used to cut and welding equipment, while others relied on hand tools. The production was made through order, and tacit skill transmission occurred through kinship and peer networks.



Figure 11. Handcrafting of wire products using locally adapted methods and workspaces.



Figure 12. Residential yard used as workshop with mixed salvaged materials and simple tools.

Redistributing. Goods circulated through fixed stalls, residential compounds, mobile vending, business-to-business exchanges with lodges and camps, and increasingly through WhatsApp and Facebook groups. Sales cycles followed tourist seasons, while some entrepreneurs travelled to peripheral towns to extend markets (See figure 13-14). Lodge procurement was largely ad hoc and trust-based.

Answer to RQ2. Material flows are decentralised, seasonal and relational, sourced through translocal networks, processed in informal spaces using adaptive techniques and redistributed via hybrid offline–online channels tied to tourism cycles.



Figure 13. Redistribution of upcycled goods in roadside environments.



Figure 14. Fixed stalls displaying crafts and furniture for local and tourist buyers.

5.3 Institutional factors (RQ3)

Licensing. Requirements were recurrent, low-cost and procedurally rigid; late penalties and unpredictable inspections were common. “They give like 30 pula for 30 days... If your papers expired, you will be in a big problem” (R1). Non-citizens faced categorical exclusion from trading licences - “As a foreigner, you are not allowed to get a worker’s licence... they are protecting the [citizens]” (R2). Licence categories often mismatched actual activities, prompting strategic declarations on applications.

Spatial regulation and market access. Central retail areas enforced “no hawkers” rules (see Figure 15 as an example), while peripheral zones were more permissive. “We are not allowed to sell there... Sometimes they can even call the police” (R2). A metalworker contrasted the town centre and outskirts: “In town hawkers are everywhere, but here on the outskirts you can have your own premises” (R1).



Figure 15. Regulation and exclusion from formal retail zones

Inspection and enforcement. Routines were uneven and discretionary; “operations” occurred periodically, and displacement took place in prohibited zones. Enforcement varied by location and officer discretion, creating uncertainty for traders.

Peer coordination and learning. Price coordination, resource sharing and informal apprenticeships sustained production and collective learning. “If you are free, you can come, then I will teach you” (R1). Such practices reinforced community-based knowledge exchange and the circulation of local skills.

Nationality and legal status. Non-citizens experienced heightened scrutiny and exclusion from formal retail spaces despite community acceptance. Citizenship status also influenced access to space, finance and protection from inspection.

Institutional support and finance. Respondents reported minimal public or NGO support; banking regulations limited access to formal finance. “As for now, we don’t have anybody supporting us... everything we have here is by our little budget” (R7–R8). Holding a hawker’s licence reduced harassment but did not enable broader help or formal credit.

Income patterns and reception. Income varied by season, product and location; tourism cycles and spatial permissions were decisive. “It’s seasonal – from March up to September” (R3). Non-citizens noted community support despite official restrictions: “The local community... they are very supportive” (R2)

Answer to RQ3. Formal licensing and spatial rules, together with informal norms, co-produce institutional hybridity that both enables and constrains circular practices. Citizenship status is still a key axis of exclusion.

5.4 Cross-case synthesis

Informal circular entrepreneurship in Maun is characterised by adaptive strategies that integrate reuse and upcycling within flexible operational modes. Gendered labour patterns place women predominantly in resale activities and men in fabrication and upcycling. Licensing exclusions

and regulatory inconsistencies are navigated through partnerships, tacit knowledge and peer coordination.

Translocal and local flows are reinforced by informal networks and adaptive substitutions tied to seasonality. Emergent cooperative practices, such as price coordination and shared learning, reveal hybrid institutional arrangements within semi-tolerant urban markets.

Overall, entrepreneurs combine resourcefulness, technical skill and social networks to sustain livelihoods and generate value through circular practices. These empirical patterns illustrate how circularity in Maun works through intertwined social, material and institutional dimensions, providing the foundation for the discussion that follows.

6. Discussion: Rethinking Circularity from Below

Building on the empirical patterns summarised in Section 5, this section interprets how circular practices, material flows and institutional arrangements interact to produce *livelihood-oriented circularity*. It advances a conception of the circular economy as a socially embedded, adaptive and negotiated system rather than a technocratic model imposed from above.

This study examined the circular practices of informal entrepreneurs in Maun, Botswana, through a triangulated framework that combines practice typology, material flows and institutional factors. The findings reveal a form of circularity that is fundamentally distinct from the technocentric and policy-driven models dominant in Global North narratives.

We propose the concept of livelihood-oriented circularity as a Global South grounded alternative to design-led circular economy frameworks. Rather than viewing circularity as a prescriptive model, we conceptualise it as a situated, negotiated and structurally contingent practice emerging from livelihood adaptation, improvisation and community-embedded knowledge enacted under constraint. This approach diverges from mainstream circular economy paradigms that privilege eco-design, consumer responsibility and industrial optimisation (Geissdoerfer et al., 2017; Kirchherr et al., 2017; Korhonen et al., 2018). It aligns with calls to pluralise CE theory (Hobson, 2020; Valenzuela & Böhm, 2017) and to decolonise sustainability by foregrounding informal systems of value, knowledge and adaptation.

The discussion distils six analytical themes from the data and crystallises them into three core propositions. Together, these propositions demonstrate how circularity in Maun is organised through everyday practices of survival, gendered access to infrastructure, hybrid institutional arrangements and translocal flows that link formal and informal domains.

6.1 Livelihood-oriented circularity and situated sustainability

Circular practices in Maun, including reuse, functional upcycling and symbolic upcycling, originate in scarcity but generate innovative outcomes. *Reuse* involves continued use or resale with minimal modification, while *upcycling* transforms materials to add new functional or symbolic value. These practices are not by-products of environmental awareness but adaptive responses to necessity. Grounded in local skill, improvisation and cultural meaning, they produce hybrid results that challenge standardised circular typologies focused on eco-design and industrial loops (Bocken et al., 2016).

This dynamic resonates with Martínez-Alier's (2002) concept of environmentalism of the poor, where sustainability is embedded in everyday reproduction rather than institutional design. Unlike the Ellen MacArthur Foundation's design-driven paradigm (n, d.), circularity in Maun emerges from improvisation rather than foresight, from necessity rather than intention. It therefore challenges the assumption that sustainability must be engineered from above.

The ingenuity underpinning these adaptive practices also entails exposure to material and occupational risks. Activities such as welding discarded gas cylinders or burning coated metals illustrate how creativity and vulnerability intersect.

These realities call for context-sensitive safety interventions that protect workers and the environment while preserving local innovation.

Proposition 1: Livelihood-oriented circularity. Circular practices in the Global South arise primarily as livelihood strategies under scarcity, not as consumer choices or design-led initiatives. Circular economy theory must therefore recognise frugality, improvisation and social embeddedness as core analytical components.

6.2 Gendered logics and divergent material access

The organisation of circular labour in Maun is distinctly gendered. Women dominate the resale and sorting of second-hand goods, whereas men predominate in fabrication and upcycling. This pattern reflects not cultural essentialism but structural inequalities in access to tools, workspace and capital. Female entrepreneurs often operate from temporary stalls or open spaces, exposed to weather and eviction, while male fabricators more frequently work in workshops or shared yards.

Policies that promote circularity must therefore address the material infrastructures of inclusion, such as shared workshops, subsidised tools and secure trading zones, rather than focusing solely on training or entrepreneurship support. Without such measures, CE policies risk reproducing existing social exclusions (Gregson et al., 2015; Korsunova et al., 2022). Gendered segmentation of circular labour reflects the institutional mediation of spatial and financial access. Genuine inclusivity requires redistributing both infrastructural resources and spatial rights.

6.3 Institutional bricolage and graduated enforcement

Maun's regulatory landscape is marked by institutional hybridity (Cleaver, 2012; Helmke & Levitsky, 2004). Formal restrictions such as licensing regimes and zoning laws coexist with informal institutions including peer mentoring, pricing norms and social codes of cooperation. These informal rules do not merely compensate for weak state capacity; they actively coordinate and legitimise circular practices by mediating access, managing competition and resolving disputes.

Spatial regulation produces a graduated regime of enforcement. Semi-tolerant zones like Old and New Mall contrast with strictly exclusionary enclosed malls. Entrepreneurs navigate these differentiated spaces through calibrated visibility, negotiating legitimacy with officials, landowners and community leaders. Such interactions exemplify institutional bricolage, where actors combine fragments of formal and informal rules to sustain everyday coordination.

Proposition 2: Institutional bricolage. In fragmented regulatory environments, informal institutions sustain circularity through coordination, adaptation and negotiated legitimacy. Hybridity is not a transitional phase but a system-sustaining institutional configuration within the informal circular economy.

6.4 Conditional inclusion and the paradox of citizenship

A central yet marginalised role is played by non-citizens in Maun's circular economy. Migrant entrepreneurs, particularly from Zimbabwe, are vital actors in repair, metalwork and translocal material flows, yet they face systematic exclusion from licences and protections. This produces a paradox of citizenship: the circular economy depends on their participation while formally denying legitimacy.

Circular systems are more resilient when non-citizens are integrated through regulated pathways such as time-bound permits, vetted partnerships and micro-certification. Regionally, restrictive immigration and trade regimes undermine such adaptive systems.

Translocal flows along the North–South and Trans-Kalahari corridors illustrate this contradiction. While formal frameworks streamline logistics for industrial trade, informal circular networks enable the movement of second-hand goods, scrap metal and artisan inputs. Although second-hand imports are often criticised as “waste colonialism”, they sustain employment, micro-enterprise and skill circulation. Aligning trade and environmental regulation with livelihood protection is essential to ensure that circularity remains both ecologically responsible and socially inclusive.

Proposition 3: Conditional inclusion. Circular economies are more resilient and innovative when non-citizens are conditionally included through regulated pathways. Exclusion weakens the translocal material and knowledge flows that sustain these systems.

6.5 Translocality as social and material infrastructure

The material flows underpinning Maun's circularity are inherently translocal. Inputs circulate through regional networks spanning Zambia, Zimbabwe, Malawi, Namibia and South Africa, supplemented by local salvage. These flows depend less on formal logistics than on social infrastructure based on trust, reciprocity and tacit knowledge. Digital platforms such as WhatsApp increasingly facilitate coordination, yet linkages with the formal tourism economy remain ad hoc and asymmetric.

Stabilising these value chains requires structured but flexible mechanisms that build on existing relational infrastructures. Examples include procurement memoranda of understanding (MOUs) between lodges and local entrepreneurs or organised collection schemes for specific waste materials. Such measures recognise circularity as both material and relational, blurring the boundary between economy and community.

6.6 Theoretical contribution: Beyond Global North and EU-centric assumptions

The findings confirm that Global North and EU-centric CE models overemphasise high-tech recycling while underestimating livelihood practices, digital micro-channels and institutional

bricolage. By integrating practices, flows and institutions into a unified analytical framework, this study offers a holistic, context-sensitive theorisation of circularity.

The framework shows how circularity is organised under material constraint and hybrid institutional arrangements in semi-urban African contexts. Building on this, we advance livelihood-oriented circularity as a theoretical alternative to design-led frameworks, redefining circularity as a socially embedded, life-sustaining system that evolves through adaptation, frugality and negotiated legitimacy. This repositions the Global South not as a passive recipient but as a generator of contextually grounded sustainability models, a critical step towards a decolonised circular economy paradigm.

Theoretically, this extends material-flow management (MFM) to fragmented, socially negotiated flows and contributes to institutional theory by demonstrating how informal institutions constitute alternative regulatory modes.

6.7 Policy implications: Local and regional pathways to inclusive circularity

At the local level, particularly within Maun's municipal governance context, policy measures should aim to recognise and strengthen the adaptive systems already sustaining circularity from below. Introducing zoning-light frameworks for semi-tolerant trading areas could reduce harassment and spatial precarity for informal entrepreneurs, enabling them to operate with greater predictability and dignity. Establishing shared workshops and tool libraries would help address gendered disparities in access to productive infrastructure, allowing women and youth to participate more fully in fabrication, repair, and craft-based upcycling. Moreover, flexible licensing arrangements for micro-fabricators and repairers in public spaces could legitimise existing livelihood practices while maintaining essential oversight. These interventions should be accompanied by context-sensitive safety protocols that safeguard workers without constraining the creativity and improvisation that underpin informal innovation.

At the regional level, spanning Botswana and the wider Southern African Development Community (SADC), more coordinated frameworks could enhance both economic inclusion and environmental outcomes. Simplifying micro-trade customs procedures would facilitate cross-border circulation of repair materials and second-hand inputs that are vital to informal circular economies. Simultaneously, procurement partnerships between tourism operators and informal recyclers could stabilise material flows and create shared value chains linking sustainability and livelihoods. Beyond sectoral initiatives, integrating livelihood-oriented circularity into regional trade and climate policies would acknowledge its dual role as an environmental strategy and a mechanism for social inclusion and resilience-building.

Collectively, these measures translate the study's analytical propositions into actionable pathways for building inclusive circular systems that value adaptive capacity and local knowledge alongside technological innovation. Recognising informal actors as system-builders, rather than peripheral participants, is essential for achieving sustainability transitions that are both equitable and contextually grounded.

6.8 Limitations and future research

As a qualitative single-case study, findings from Maun are not statistically generalisable but offer analytical transferability to comparable semi-urban contexts. Furthermore, as observations were centred in central trading zones, the study may under-represent home-based production.

Future research should: 1) Compare semi-urban tourism hubs across different countries to identify shared patterns and local variations; 2) conduct deeper ethnographic studies on formal–informal hybrid arrangements in waste and repair sectors; 3) design and evaluate pilot projects that test supportive interventions, such as circular business ecosystems linked to tourism value chains; and 4) comparative analysis along the North–South and Trans-Kalahari trade corridors could reveal how livelihood-oriented circularity adapts to different institutional and ecological contexts. Such work would elevate livelihood-oriented circularity from a local adaptation to an emergent regional development logic, positioning the Global South as a site of conceptual innovation in sustainability scholarship.

7. Conclusion

This paper has employed a triangulated analytical framework to examine how informal entrepreneurs in Maun, Botswana, enact circular economy practices through reuse and upcycling. The findings demonstrate that circularity in this semi-urban context is fundamentally a form of livelihood-oriented circularity which is a socially embedded and adaptive system sustained through institutional bricolage and translocal material flows. Rather than a policy blueprint engineered from above, circularity appears as a socially embedded and negotiated system that evolves under constraint, combining frugality, improvisation and community knowledge. This reality stands in stark contrast to the technocentric, policy-driven models that dominate mainstream circular economy discourse. By analysing the interplay of practices, flows, and institutions, this research contributes to a pluralised understanding of circular economy by theorising from the ground up, revealing how circularity is organised from below under conditions of scarcity and regulatory hybridity.

The study addressed its research questions by revealing that: 1) Informal entrepreneurs enact four practice types—reuse, functional upcycling, symbolic upcycling and hybrid forms—selected strategically according to material access, skills and market conditions; 2) Material flows are decentralised and relational, sourced through translocal networks and local recovery, processed in informal spaces with adaptive techniques, and redistributed via hybrid offline-online channels tied to tourism cycles, and 3) Persistence rests on institutional hybridity. Formal rules (licensing, zoning) and informal coordination (peer pricing, mentoring) co-produce opportunities and exclusions, especially along lines of gender and citizenship.

The findings suggest that effective policy must work with, not against, the grain of these existing informal systems. Prescriptive formalisation or the direct importation of Global North models is likely to undermine the very adaptations that make this circular economy resilient. Instead, we propose a shift towards an enabling governance approach. This begins with policy recognising informal entrepreneurs as active agents of circularity and co-designing transitional licensing mechanisms, such as time-bound permits and micro-certifications, that offer a pathway to legitimacy without imposing prohibitive costs or complexity. Concurrently, policy must invest in material and spatial enablers by establishing shared workshop spaces with key tools and designating secure trading zones. This would directly address the gendered barriers to circular work, supporting the upcycling activities dominated by men and securing the vending livelihoods of women.

Furthermore, a sophisticated policy framework would seek to formalise the informal through hybrid governance. This involves acknowledging and building upon the existing institutional bricolage by, for example, integrating successful informal institutions like peer price coordination into public support programs and developing flexible zoning regulations that

formally permit circular activities in currently semi-tolerant zones. Finally, fostering translocal and sectoral integration is vital for strengthening the system. This can be achieved by facilitating regional cooperation to simplify customs procedures for the micro-trade of second-hand goods and by creating structured market linkages, such as procurement agreements, between informal entrepreneurs and the formal tourism sector.

The core theoretical contribution of this paper is to formalise the concept of livelihood-oriented circularity and to demonstrate, through its integrated framework, that circular economy in informal contexts cannot be understood by examining practices, flows, or institutions in isolation. Its resilience is derived from their interplay. By theorising circularity as a life-sustaining system organised from below, the paper reframes informality as a foundation for inclusive and transformative innovation systems. This reconceptualization also advances debates on inclusive and transformative innovation systems by revealing how informality functions as an adaptive institutional architecture for sustainability transitions. Recognising and strategically amplifying livelihood-oriented circularity is essential if the global circular economy agenda is to be both socially just and materially effective.

In conclusion, this study argues that a truly global and inclusive circular economy must make space for the knowledge, practices, and institutional arrangements that already sustain circularity in the Global South. The future of circular economy lies not only in high-tech innovation but also in recognising, learning from, and strategically supporting the resourceful and deeply embedded circularity being practiced every day in places like Maun.

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