



Metabolic Rifts and Modernity: Single-Use Plastics, Composting Logics, and the Remaking of Urban Foodways in Yaounde

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ABSTRACT

Single-use Plastics have become undeniably the most adopted packaging option in Yaounde's urban foodways because they represent modernity. This paper diagnoses a paradox. A paradox festering within Yaounde's shiny, plastic embrace. Through a medical anthropological lens, I analyse this single-use reality. I frame the plastic bag, bottle, Styrofoam box as potent biocultural objects. Objects that are actively reshaping

perceptions with regards to hygiene, reshaping the society as a whole. My qualitative data from 88 households across the city's seven subdivisions reveals a powerful valorisation. Plastics symbolize urban modernity, a perceived hygiene, yet they simultaneously corrode the traditional food-sharing rituals and generate new forms of perpetual waste creating public health anxiety.

This linear logic co-exists with another logic, an older and persistent marginalised practice of circular composting. This

indigenous composting, systematically frames as a “backward” or “primitive” purely rural practice. This devalued framing is what crystallizes the metabolic rift in the socio-ecological fabric of the city. A rupture where competing cultural logics of disposal fractures the urban ecology. This work posits the stark co-existence. Therefore, effective policy must bridge this rift. It must move beyond the failing paradigm of surface-level solutions. It must consider indigenous knowledge of circularity, a path that is culturally resonant and offers sustainable solutions to heal the rift.

Keywords: Medical Anthropology, Single-Use Plastics, Metabolic Rift, Urban Food Systems, Composting, Cameroon, Biocultural Objects, Waste Governance.

1. Introduction

In urban centers across the Global South, the material flows of food and waste narrate a story of profound social and ecological transformation. Nowhere is this more palpable than in Yaounde, Cameroon, where the crackle of single-use plastics provides the ubiquitous soundtrack to daily sustenance. This paper interrogates the collision of two metabolic systems: the linear, disruptive logic of plastic packaging and the persistent, yet increasingly marginalized, circular practices of organic waste composting (Wamba, Fotso, Mosconi, & Chai, 2023). The ubiquitous nature of prohibited plastics, clogging drains and reshaping public spaces, exists in stark contrast to the untapped potential of organic waste, a resource largely treated as mere refuse (Doumtsop & Chiane Beng, 2025). This juxtaposition is not merely a technical failure of waste management; it is a visible symptom of a deeper “metabolic rift,” a concept adapted from Foster (2000) to describe the fundamental rupture in the sustainable exchange between a city and its ecological foundations.

The scale of this rupture is quantified by staggering metrics. Cameroon’s urban centers, expanding at over 3.5% annually, generate approximately 1.2 million tons of municipal waste yearly, with formal collection reaching only 20% and a meager 8% being recycled (Edzamba, et al., 2024). Within this stream, the materials driving the metabolic rift are clear: organic matter constitutes 58% of the total, representing a vast, untapped circular resource, while plastics make up 15%, embodying the persistent linear economy (Caroll & Foncha, 2023). Yaounde alone generates 1.310 tons of waste per day (AfricanCleanCities, 2019). The consequences are severe, with pollution from uncollected waste estimated to cost the national economy 3.5% of GDP annually in health impacts (Uhunamure, Edokpayi, & Shale, 2021; Akenji, et al., 2021). Figure 7, which illustrates the composition of Yaounde’s

waste, visually grounds this analysis, highlighting the volumetric tension between the dominant linear problem (plastics) and the marginalized circular potential (organics) in Figures 3 and 4.

An ecologically coherent urban food system would function as a circular metabolism, where materials flow in closed loops to sustain public health and long-term fertility. In this vision, organic nutrients would be composted and returned to agricultural soils, and packaging would be reusable or truly biodegradable (Folefack, 2005). The reality in Yaounde, however, presents a stark departure from this ideal, characterized by a paradoxical and dysfunctional clash of logics. The linear logic of single-use plastics dominates, creating a perpetual waste stream with direct consequences: blocked drainage systems that exacerbate catastrophic flooding (*see Figure 1*), the proliferation of disease vectors, and the atmospheric release of toxins from open burning (*see Figure 2*). Simultaneously, the circular logic of composting is systematically marginalized (Folefack, 2005). As (Castellani, Ferronato, Ragazzi, & Torretta, 2022) suggest, efforts to valorise organic waste are consistently hampered by high capital costs, fragmented governance, and a critical lack of integrated policy.



Figure 1: Flood in Avenue Kennedy, a commercial center in the heart of Yaounde I

Source: (DataCameroon, 2022)



Figure 2: Open burning of plastics in, Ngousso Yaounde IV

Source: Fieldwork, 2019

1.1. Theoretical Framework and Research Niche

To analyse Yaoundé's waste paradox, I build an integrated framework from three theoretical traditions, each operating at a distinct analytical level and each necessary to the argument I advance.

At the macro level, I draw on metabolic rift theory, originating in Marxist political ecology, to understand how capitalist modes of consumption disrupt the sustainable exchange of materials between urban societies and their ecological foundations (Foster, 2000; Schneider and McMichael, 2010). Applied to Yaoundé, this framework identifies a structural rupture: the linear flow of single-use plastics severs the nutrient cycles that composting would otherwise sustain, generating both ecological harm and a governance crisis that formal institutions have consistently failed to address.

Metabolic rift theory alone, however, does not explain why people choose plastic, what it means to carry food in a black nylon bag rather than a ngongo leaf, or how those choices are felt in the body. For this meso-level analysis, I draw on medical anthropology and the concept of biocultural objects developed by Liboiron (2021). This framework treats plastic packaging not merely as a material artefact but as an object that actively reshapes perceptions of hygiene, health, modernity, and social status. It allows me to trace how the preference for plastic is produced through embodied habit, sensory association, and aspiration, and why composting becomes culturally coded as backward in contrast to a plastic-wrapped modernity (author's analysis, drawing on material culture studies).

Neither of these frameworks adequately accounts for the gendered and spatial dimensions of waste labor in Yaoundé.

Composting knowledge is predominantly held and practiced by older women, dismissed by younger generations, and pushed to the urban periphery as the city expands. To analyze these dynamics, I draw on feminist political ecology (Rocheleau, Thomas-Slayter, and Wangari, 1996), which attends to how gender, labor, and power shape access to environmental resources and the production of ecological knowledge. In this paper, feminist political ecology operates as a corrective lens: it reveals that the marginalization of circular composting practices is not simply a cultural preference but an outcome of gendered devaluation and spatial exclusion structured by unequal power relations.

Together, these three frameworks form a nested analytical architecture. Metabolic rift theory frames the structural rupture at the city-ecology interface. Medical anthropology traces how that rupture is lived and reproduced through material culture and embodied practice. Feminist political ecology reveals the gendered labor and power relations that sustain it. This integration addresses a gap the existing literature has not closed: the absence of a framework that connects the political economy of waste, its biocultural meanings, and its gendered labor arrangements within a single coherent analysis of an African urban food system.

This framework also positions the study's contribution clearly. Previous interventions, including the 2014 ban on lightweight plastics, have relied on technical and regulatory measures while failing to address the cultural drivers of plastic demand (Wamba, Fotso, Mosconi, and Chai, 2023). Development programs promoting urban agriculture have often presented technical fixes as politically neutral, obscuring the power structures that sustain the rift, a dynamic Ferguson (1994) identified as the anti-politics machine effect. My research addresses these gaps by applying all three frameworks to the everyday material practices of vendors, households, and waste workers in Yaoundé, asking how the rift is produced, experienced, and potentially repaired from within the communities it most affects.

1.2. Objectives of the Study

The primary objective of this research is to critically analyse the co-constitution of single-use plastics and organic waste practices within Yaoundé's urban food system, examining how their interplay produces a distinct metabolic rift with specific cultural, health, and ecological consequences.

To achieve this, the study aims to:

1. Document and contrast the cultural logics, including perceptions of hygiene, modernity, and convenience, that

sustain the demand for single-use plastics despite regulatory bans.

2. Investigate the social and economic factors that marginalize traditional composting practices, even in the face of evident ecological benefits.

3. Analyse the policy landscape to identify the discursive and institutional barriers that prevent an integrated approach to managing plastic and organic waste in tandem.

The significance of this work lies in moving the discussion past short-term technical solutions and toward more meaningful systemic change. By revealing the cultural and biopolitical underpinnings of Yaounde's metabolic rift, this work provides an evidence base for policies that are not just technologically sound but are also culturally resonant. My research suggests that the most effective path forward for policy and practice to recognize, leverage and strengthen the circular logics already present in communities. This strategy of building on these existing works, rather than imposing new systems is key to achieving sustainable and equitable urban development in the Global South.

2. Literature Review

2.1. Introduction: The Urban Metabolic Rift in the Global South

The concept of metabolic rift provides a powerful lens for analysing the socio-ecological contradictions embedded within rapidly urbanizing contexts of the Global South. Originating from Marxist political ecology, the theory describes the fundamental disruption in the sustainable exchange of nutrients between human societies and their environmental bases, a rupture inherent in capitalist modes of production (Foster, 2000; Bahers & Giacchè, 2019; McClintock, 2010). However, contemporary scholarship has expanded this framework beyond its agrarian origins to analyse urban waste crises, where the linear flow of materials from production to disposal severs vital ecological cycles (Schneider & McMichael, 2010; Bahers & Giacchè, 2019). In Yaounde, Cameroon, this rift manifests vividly through the paradoxical coexistence of single-use plastics and persistent organic waste practices within the city's food system (Florence, et al., 2024). This review critically synthesizes literature across urban political ecology, waste studies, and material culture to situate Yaounde's changing foodways within global patterns of metabolic disruption, while highlighting the locally specific cultural logics that sustain this rift.

2.2. The Materiality of Modernity: Plastic's Symbolic and Ecological Dominion

The pervasive presence of single-use plastics in African urbanism represents a complex entanglement of material convenience, symbolic modernity, and ecological disruption (AU, 2015; WBG, 2023)). Despite a 2014 joint ministerial decree banning their import and sale in Cameroon, the state has proven 'incapable of enforcing the decree,' leading to continued proliferation (Wamba, Fotso, Mosconi, & Chai, 2023; Sarraf, 2023; MINEPDED, 2022). This regulatory failure points to deeper socio-cultural dynamics. Critical analysis reveals that plastic's persistence stems not merely from practical utility but from its powerful symbolic association with urban modernity (Appadurai, 1996). This association creates what can be termed a "plastic modernity", a socio-material condition where synthetic disposability becomes intertwined with conceptions of progress, hygiene, and sophistication (Liboiron, 2021; Wamba, Fotso, Mosconi, & Chai, 2023).

However, this modernity remains deeply contested and paradoxical. The very materiality that signifies cleanliness and convenience quickly transforms into an environmental hazard, clogging drainage systems and contributing to seasonal flooding, thereby undermining urban functionality and public health (Akenji, et al., 2021; Al-Khatib, Al-Sari, & Kontogianni, 2020). Research on urban governance in Yaounde has documented the consequences of this plastic proliferation but has often failed to adequately analyze the everyday cultural practices and meanings that sustain demand despite evident environmental consequences (Doumsof & Chiane Beng, 2025; Carroll & Foncha, 2023). This gap is critical; understanding the metabolic rift requires examining not just the downstream effects of plastic waste, but the upstream cultural drivers that normalize its consumption.

2.3. Circular Logics Undermined: The Marginalization of Indigenous Composting

In stark contrast to the linear metabolism of plastics, traditional agricultural practices in Cameroon have historically operated on circular principles where organic waste was recognized as a valuable resource rather than a disposal problem (Foretia, 2025). These practices embodied sophisticated "indigenous ecological knowledge" with complex systems of understanding and managing natural resources that evolved through long-term interaction with specific environments (Laure, Mbappe, Rodine, & Joel, 2024; Folefack, 2005). Contemporary research on urban agriculture in Yaounde reveals the persistent but increasingly marginalized role of these traditional composting logics.

Urban and peri-urban farmers continue to utilize organic waste as fertilizer, though they face significant constraints including land tenure insecurity and competing labour demands (Mbiba, 2019; Castellani, Ferronato, Ragazzi, & Torretta, 2022).

The scholarly literature, however, exhibits a significant gap in understanding the cultural marginalization of these practices within Yaounde's evolving urban identity. While studies have documented the technical potential for organic waste recovery, they have largely failed to examine how composting becomes symbolically associated with "backward" rural lifestyles (Akenji, et al., 2021). This symbolic economy of materials, where plastic signifies a forward-looking modernity and compost an outdated past represents a fundamental, underexplored dimension of the metabolic rift. The devaluation of circular knowledge is not merely an economic or technical issue; it is a cultural process that actively suppresses a key mechanism for healing the rift between city and soil.

2.4. Fragmented Governance and the Policy Impasse

The policy landscape surrounding waste management in Yaounde reflects the broader institutional fragmentation that characterizes urban governance in many African cities (Bank, 2021). Cameroon's 2012 framework law on environmental management established extended producer responsibility for packaging waste, yet implementation has been hampered by weak enforcement capacity and limited coordination between governing bodies (Akenji, et al., 2021). This governance failure is particularly evident for organic waste, where no comprehensive policy framework exists to promote composting at a municipal scale (Castellani, Ferronato, Ragazzi, & Torretta, 2022).

International development agencies have attempted to address these gaps through technical interventions like waste-to-energy initiatives. However, these often reproduce what Ferguson, (1994) identified as the "anti-politics machine" dynamic treating deeply political questions of resource distribution and metabolic organization as merely technical problems requiring expert solutions. The scholarly literature on Yaounde's waste governance has thoroughly documented these institutional failures but has been less attentive to the *discursive* practices through which plastic and organic waste are constructed as separate policy domains (Gille & Lepawsky, 2019). This artificial separation actively reinforces the metabolic rift by preventing integrated approaches. Furthermore, existing research has predominantly focused on formal governance institutions, paying insufficient attention to the robust informal waste economies that already process

significant portions of Yaounde's waste through grassroots networks of collectors and recyclers (Mbiba, 2019; Ndam, et al., 2023).

2.5. Synthesizing the Gaps and Concluding the Review

This review points to a major gap that connects to others: when scholars apply metabolic rift theory to African cities, they often overlook a crucial factor, the profound cultural meanings and personal connections embedded in how people consume materials. The rift is lived through daily practices and symbolic associations that remain underexplored.

Secondly, a persistent habit of separating plastic from organic waste in analysis prevents scholars from seeing the bigger picture of how they flow together and create problems within the urban ecosystem (Liboiron, 2021). This compartmentalization mirrors the policy fragmentation that prevents integrated solutions.

Consequently, the current study addresses these gaps by examining the co-constitution of single-use plastics and organic waste practices within Yaounde's food system through an integrated framework of metabolic rift and biocultural analysis. By documenting the cultural logics sustaining plastic demand, investigating the factors marginalizing composting, and analyzing the policy barriers to integrated management, this research illuminates the fundamental socio-ecological contradictions within Yaounde's transition to urban modernity. It contributes a nuanced, ground-level perspective that is essential for developing interventions that are both ecologically coherent and culturally resonant.

3. Method

3.1. Study Design and Methodological Approach

This research was conceived to examine the nuanced cultural logics underpinning single-use plastics and organic waste practices within Yaounde's urban food system. Wherefore, a qualitative study design, grounded in a phenomenological approach, to prioritize the lived experiences and subjective meanings that individuals assign to their daily material interactions was employed. The methodological framework is informed by an interpretivist philosophy, which contends that social reality is constructed through human interpretation (Mark, Philip, & Adrian, 2023; Birks & Mills, 2011). This perspective was particularly aligned with objectives, as it allowed me to move beyond quantifying behaviours to instead understand the deeply held beliefs and cultural rationalities that sustain them.

The qualitative design facilitated a multi-faceted exploration through in-depth interviews, focus group discussions, and systematic observations. By using multiple research methods, the problem was seen from different angles giving a complete and reliable picture, thereby significantly enhancing the credibility and robustness of my findings (Somekh & Lewin, 2005). Moreover, the entire research process adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) framework, ensuring methodological transparency and rigorous reporting throughout the study.

3.2. Research Setting and Timeframe

Fieldwork was conducted intermittently over a 14-month period between 2019-2022, encompassing all seven administrative subdivisions of Yaounde. This extended duration was strategic, allowing for deep immersion across different neighbourhoods and capturing seasonal variations in waste management practices. The research setting was deliberately diverse, incorporating formal and informal markets, household residences, and public spaces where the daily drama of waste generation and management unfold.

The selected sites were chosen to reflect the city's pronounced socioeconomic and cultural heterogeneity. Yaounde 1, including Etoudi and Marché Central, represents the city's bustling commercial core. Conversely, Yaounde 7, which includes Nkolbisson, is known for its peri-urban agricultural character. This deliberate sampling across the urban spectrum, from the densely commercial to the more agrarian area was essential to capture a wide panorama of perspectives and practices related to plastic consumption and organic waste management.

3.3. Participant Selection and Characteristics

3.3.1. Sampling Strategy and Recruitment

Participant selection employed a purposive sampling approach, which involved the strategic identification of information-rich cases that could provide profound insights into the phenomena under investigation (Mark, Philip, & Adrian, 2023). The sampling frame targeted adults aged 18 years and above who possessed demonstrable knowledge and experience relevant to the city's food systems and waste management practices. Individuals who could articulate the cultural dimensions of this metabolic rift, including street food vendors, market traders, household managers, urban farmers, and waste management practitioners like waste pickers were specifically sought.

Initial participants were identified in collaboration with community leaders and local associations. Subsequently,

snowball sampling proved invaluable for accessing hard-to-reach populations and fostering the necessary trust within communities. The final sample comprised 88 participants for in-depth interviews, distributed relatively equally across the seven subdivisions. Furthermore, four focus group discussions, each with 8-10 participants, were conducted to elucidate collective perspectives and social dynamics that might not emerge in individual settings.

3.3.2. Sample Size Determination and Saturation

The sample size of 88 interview participants and four focus groups was not predetermined but was guided by the principle of data saturation. Data collection and preliminary analysis occurred concurrently, allowing me to monitor when new interviews ceased to yield substantial novel information or thematic insights (Mark, Philip, & Adrian, 2023). Thematic saturation was reached at approximately interview 72, and theoretical saturation at approximately interview 80. The remaining eight interviews confirmed existing patterns and ensured representation across all seven subdivisions.

3.3.3. Participant Characteristics

The participant profile reflected Yaounde's demographic diversity, with an approximately equal gender distribution (54% female, 46% male) and an age range from 19 to 72 years. Participants represented various crucial roles within the urban food system: 32% were street food vendors or market traders, 28% were household inhabitants, 18% were engaged in small-scale urban agriculture, 12% worked in formal or informal waste collection, and 10% were local community leaders. This heterogeneity was crucial for capturing the multiple, intersecting perspectives that constitute the city's metabolic system.

3.4. Data Collection Instruments and Procedures

Multiple instruments were deployed to ensure a holistic documentation of the research phenomena. All protocols, including semi-structured interview guides, focus group discussion guides, and observational protocols, were developed through an iterative process of drafting, pilot testing, and refinement.

Data collection unfolded in a systematic sequence. It started with a two-week period of community engagement in each subdivision to build relationship and contextual understanding. In-depth interviews, lasting 45-90 minutes, were conducted first in locations chosen by participants. These conversations employed open-ended questions, allowing participants to guide the discourse towards issues they deemed most salient. Subsequently, focus group

discussions leveraged moderated dialogue around key scenarios to reveal social norms and contested practices. Concurrently, systematic observations in markets, streets, and households provided critical contextual data, enabling triangulation between reported and actual behaviours. All data collection was conducted in French, English, Pidgin or “Camfranglais” with meticulous attention to conceptual equivalence in translation.

3.5. Data Analysis Methods

Data analysis followed a systematic process of thematic analysis, utilizing both deductive and inductive approaches. The analytical process began in tandem with data collection, allowing emergent findings to inform subsequent gathering efforts. All transcripts were imported into NVivo 12 qualitative data analysis software for systematic coding.

The analysis unfolded in several phases. Initially, a deductive coding based on the primary research objectives were employed. Subsequently, an inductive coding to identify emergent themes not anticipated in my initial framework was applied. Through iterative cycles, I developed a refined coding pattern. The subsequent stage involved pattern recognition and thematic development, where I identified the central narratives and cultural models structuring participants’ understanding. Analytical memos were maintained throughout to document interpretive decisions. The final stage involved contextualizing and theorizing the identified patterns in relation to my conceptual framework of metabolic rifts, while rigorously attending to divergent cases that complicated emerging patterns.

This study maintains a deliberate distinction between emic and etic levels of analysis throughout. Emic descriptions refer to the terms, categories, and meanings that participants themselves used to describe their material world. These include references to ‘waste problems,’ ‘dirt,’ ‘bad smells,’ ‘rats,’ ‘health concerns,’ and ‘lost value,’ language that emerged organically in interviews and focus group discussions across all seven subdivisions. The concept of ‘metabolic rift’ is an etic analytical frame, drawn from Foster (2000) and adapted to Yaoundé’s urban context. Participants never used this term, nor were they asked to engage with it. Where I apply this frame to participant accounts, I signal the interpretive move explicitly, using phrases such as ‘I interpret this as,’ ‘from an analytical perspective,’ or ‘this points to what I am calling.’ This practice follows the standard in anthropological fieldwork of preserving the integrity of participant voices while subjecting them to theoretically grounded analysis, and it is consistent with the reflexive approach described in the positionality statement above.

Thematic saturation, defined as the point at which no new codes emerged across the five primary domains of inquiry, was reached at approximately interview 72 (Braun and Clarke 2006). The remaining 16 interviews (73 to 88) confirmed existing patterns without generating new codes, functioning as a confirmation sample rather than a generative one. Data collection continued beyond saturation to ensure adequate geographic and demographic representation across all seven subdivisions.

3.6. Data Integration and Visualization

To triangulate my qualitative findings and situate the metabolic rift within Yaoundé’s material reality, I integrated quantitative data visualization into my analytical process. This mixed-methods approach followed the principle of methodological complementarity, using numerical data to frame and give scale to the cultural phenomena uncovered through ethnography.

Secondary data on municipal waste streams were sourced from published studies, most notably the composition analysis by (Caroll & Foncha, 2023). Data visualization was executed using Python with the Matplotlib library to generate publication-ready figures (Rossum & Drake, 2009; Hunter, 2007). This process involved spatializing qualitative themes onto quantitative material flows and creating a three-figure analytical set to visualize waste composition, model the metabolic rift, and quantify the governance gap. These visualizations served as both analytical tools and communicative devices, grounding my theoretical framework in empirical data. Draw.io was used to map Figures 3 and 4 to show the linear plastics logic and the circular organic logic.

3.7. Ethical Considerations and Methodological Rigour

This study was built on a foundation of ethical respect for my participants. This meant getting their fully informed consent in a way that was clear and accessible, and rigorously protecting their privacy. Feedback sessions were held to share what was learned with the community, ensuring the process was a two-way conversation.

To ensure the trustworthiness of these findings, multiple strategies were employed. Methodological triangulation, prolonged engagement, peer debriefing, and member checking were central to this process. Moreover, a constant reflexivity regarding my positionality as a researcher was maintained, using regular team discussions and reflexive journaling to ensure that participant perspectives, rather than researcher presuppositions, remained paramount throughout the analytical journey.

4. Results and Discussion

This study set out to unravel the paradox of Yaounde's urban metabolism, where a linear plastic economy thrives alongside marginalized circular composting practices. I interpret these findings as evidence of a socio-ecological rift, lived and reproduced through everyday cultural logics, gendered and spatial relations, and a fragmented policy landscape. The following sections synthesize the results, weaving them into a discussion that bridges the empirical and the theoretical (Rocheleau, Thomas-Slayter, & Wangari, 1996).

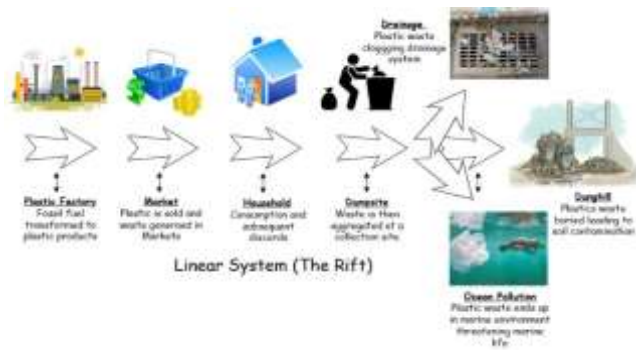


Figure 3: A linear Logic of plastic stream

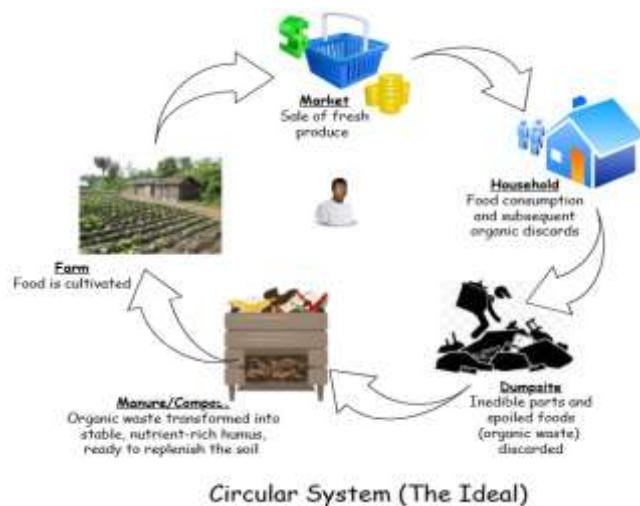


Figure 4: A circular Logical organic system

4.1. The Cultural Allure of Plastic: Signifying Modernity and Hygiene

The persistence of single-use plastics in Yaounde's food system is powerfully undergirded by a cultural logic that transcends mere economic convenience. Participants consistently articulated a symbolic association between plastic-packaged goods and notions of urban sophistication, cleanliness, and personal efficacy. A street vendor in Mokolo

market encapsulated this sentiment, stating, *"When I serve fufu and eru in a clean, black nylon, the customer sees it as modern, as professional. They're happy. A 'ngongo' leaf looks like the village."*



Figure 5: A food vendor selling "water-fufu and eru" using a plastic bag (nylon paper) to package the food

Source: Fieldwork, 2022



Figure 6: The use of "ngongo" leaves to package "corn fufu"

Source: Fieldwork, 2022

Figure 5, which shows a vendor using a plastic bag to package "water-fufu and eru," visually embodies this cultural narrative. The image tells a story of a modernity that is quick, sanitized, and disposable. This perception aligns with Appadurai (1996) concept of "mediascapes," where globalized material culture is locally re-appropriated as a marker of status (Bret & Bellamy, 2009).

The nylon is not just a container; it is a biocultural object that signifies participation in a contemporary urban identity (Liboiron, 2021).

However, this cultural preference exists in stark contrast to its documented role in a broken urban metabolism. As established in figure 7, plastics constitute 15% of Yaounde's waste stream, embodying a persistent linear economy. This quantitative profile grounds the qualitative findings: the metabolic rift is driven by a cultural system that valorizes a material accounting for a significant and damaging portion of the waste stream (Lima, 2023). The perceived "cleanliness" of the new plastic sachet or nylon paper is thus deeply ironic, given its ultimate contribution to the visibly polluted urban environment, a consequence illustrated by the open burning of waste in the neighbourhoods (See Figure 2).

"We burn plastics when they are many because they fill the stream block the passage of water. We don't have a choice. There is no one to come and help us to pick the dirt"

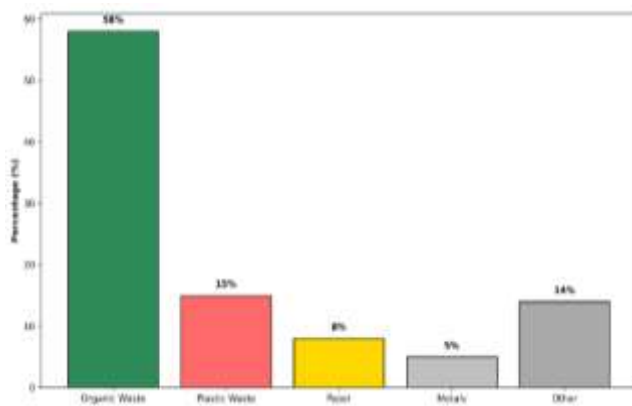


Figure 7: Municipal Solid Waste Composition in Yaounde

Source: Carroll & Foncha, 2023

4.2. The Marginalization of Circularity: Gendered Labour and Spatial Exclusion

Conversely, this research documented the systematic marginalization of traditional composting practices, which are perceived as economically unviable and socially stigmatized. A prominent theme was the gendered devaluation of this knowledge, predominantly managed by older women and dismissed by younger generations as "dirty work", "old fashioned" or "a thing of the past."

This marginalization is ecologically paradoxical. As figure 7 visualizes, organic matter constitutes 58% of Yaounde's waste, representing the single largest potential nutrient stream for urban agriculture. The devaluation of composting is

therefore not just a social issue; this amounts, in my analysis, to the active suppression of a key mechanism for healing what I call the metabolic rift, a process carried out by a socially marginalized group. Figure 6, showing the traditional use of "ngongo leaves" to package "corn fufu," represents this alternative, circular logic. It tells a story of biodegradability and a direct connection to ecological cycles, a logic that is being culturally and spatially erased.

Furthermore, Yaounde's rapid urbanization has created a spatial mismatch that physically enacts the metabolic rift. As the city expands, the agricultural lands that once received urban organic waste are converted to residential and commercial uses, severing the physical connection between food consumption and agricultural production. This spatial rift makes the practice of composting less feasible and more costly, further reinforcing its cultural marginalization.

4.3. The Metabolic Rift as a Clash of Material Flows

The core of Yaounde's metabolic rift can be understood as a clash between two opposing systems of value and material flow, conceptually modelled in figure 8 below. This diagram powerfully contrasts the circular logic of organic waste, which demonstrates significant resource retention and potential for soil fertility restoration, against the linear logic of plastics, which shows a catastrophic drop in value after a single use, culminating in waste and pollution.

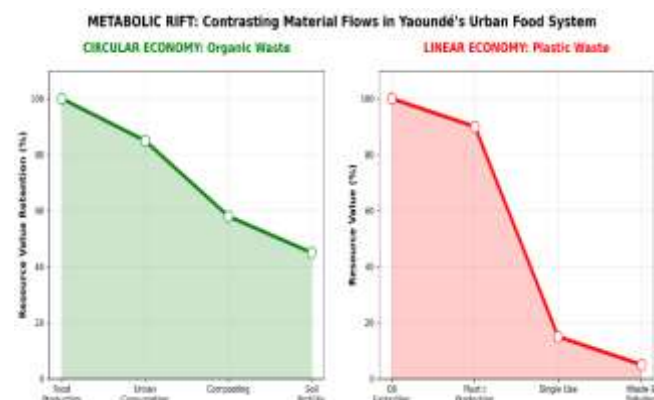


Figure 8: Metabolic Rift: Contrasting Material Flows in Yaounde's Urban Food System

This model encapsulates the lived experience of the participants: plastics offer a short-term peak of 'modern' convenience before becoming a permanent liability, thereby creating a 'rift' where value and nutrients are systematically lost. The photo of the compost heap in figure 10 provides a tangible counterpoint to this linear model. It is a material instantiation of the circular loop depicted in figure 8, showing the potential for organic waste to be transformed back into a

valuable resource, thus “healing” the rift. However, its often-informal and concealed nature reflects its marginalized status within the dominant urban milieu.

This systemic failure is quantified in figure 9 which reveals a profound governance chasm: while 100% of waste is generated, formal collection captures only 20%, and a meager 8% is recycled or composted. This performance gap directly fuels the metabolic rift. The policy landscape, analysed next, exacerbates this by treating organic waste as a disposal problem rather than a resource, thereby institutionalizing the rift that urban planning has created.

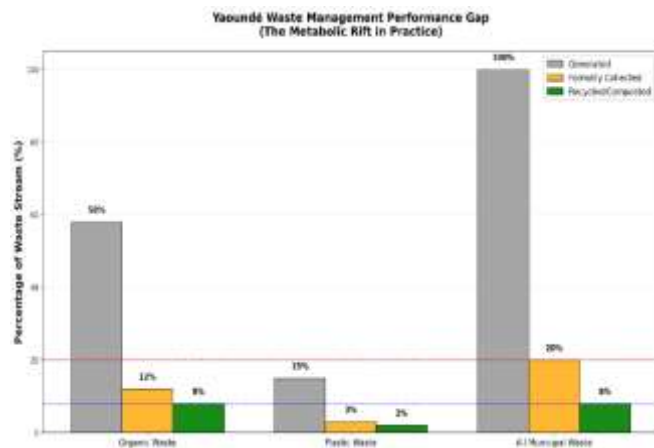


Figure 9: Yaounde Waste Management Performance Gap (The Metabolic Rift in Practice)



Figure 10: Etienne, waste picker in Simbock standing beside a compost heap after 6 months of decomposition, Yaounde VI.

Source: Fieldwork, 2020

One case illustrates this dynamic with particular clarity. Etienne is a second-year student who sustains his livelihood through work with CIPRÉ, a local environmental association in Simbock, Yaoundé VI. His practice enacts what I interpret as a micro-level metabolic repair: rather than treating mixed household waste as a disposal problem, he separates organic matter, piles, covers, and waters it across a six-month

decomposition cycle, converting it into compost that he uses to grow peppers and cooking spices (Thuriès et al., 2019). He then exchanges this produce with households in return for properly segregated organic waste, providing colour-coded bags to facilitate source separation (Ngnikam, Rousseaux, Tanawa, and Gourdon, 2012). From an analytical perspective, this informal exchange network closes the nutrient loop at the neighbourhood scale that formal governance has failed to institutionalize city-wide, enacting precisely the circular logic that the dominant urban metabolism suppresses. His labor also remains economically precarious and institutionally invisible, a condition that feminist political ecology identifies as the systematic undervaluation of circular waste work performed outside formal institutional structures. His account makes the emic logic of this repair explicit:

“People often throw everything together the food scraps, the plastics, the papers. It all becomes a problem, a wasted resource. But for me, the organic waste is the most valuable. I take it, I transform it. After six months, it becomes compost that feeds the soil, which then grows the spices I can give back to the community. It’s a way of connecting what people throw away back to what they need to live.”

4.4. Institutional Fragmentation and the Policy Impasse

The analysis of the policy landscape reveals a profound institutional fragmentation that mirrors and reinforces the material and cultural rifts observed on the ground. This fragmentation creates what Ferguson (1994) would describe as an “anti-politics machine” effect, where the deeply political nature of waste metabolism is depoliticized into separate, technical problems.

These findings challenge the prevailing literature which often cites a lack of funding or technical capacity as the primary barrier. While these are significant constraints, this research, supported by the empirical evidence in Figure 9, suggests that a fundamental impediment is “discursive”. Plastic and organic waste are constructed as separate policy domains within different ministerial portfolios, preventing the integrated approach needed to manage the city’s metabolism holistically (Gille & Lepawsky, 2019). The policy framework lacks a unifying narrative that could bridge administrative divides and leverage the potential of the informal waste sector, which already performs much of the city’s actual recycling and composting work (Ndam, et al., 2023; Mbiba, 2019).

In conclusion, I interpret Yaoundé’s metabolic rift as a multi-layered phenomenon, analytically driven by the symbolic appeal of plastic modernity, socially enforced through the gendered and spatial marginalization of circular practices,

materially manifested in opposing flows of value and waste, and institutionally cemented by a fragmented governance system. The following conclusion reflects on the implications of this integrated analysis for policy and theory.

5. Conclusion

This study set out to critically analyse the coexistence of single-use plastics and organic waste practices within Yaounde's urban food system. Through a qualitative exploration grounded in metabolic rift theory and medical anthropology, this study demonstrates that the city's waste crisis is not merely a logistical failure but a profound socio-ecological contradiction embedded in its transition to a plastic-dependent modernity. My analysis suggests that what participants experience as waste problems, health fears, and economic pressures can be understood, analytically, as a metabolic rift reproduced in markets and households across the city. It thrives on a powerful cultural logic that valorises plastics signifying modernity, and hygiene while simultaneously marginalizing traditional composting through a quiet, persistent devaluation causing its spatial exclusion to the urban peripheries.

This rift, a profound separation is cemented by a fragmented policy landscape that treats these material flows separately, as unrelated issues, thereby policies are designed for both logics exacerbating the disruption it is trying to manage. The broader significance of these findings is threefold. Theoretically, this research demonstrates the critical importance of bridging Marxian political ecology with anthropological analysis of material culture.

The metabolic rift is not an abstract economic process; it is a biocultural reality, experienced through the intimate daily choices of vendors and households, where a plastic bag, bottle or Styrofoam box becomes a symbol of modernity, a desired future and a compost heap a relic of an unwanted past. My application of this integrated framework to an African urban context provides a nuanced lens for understanding similar socio-ecological tensions across the Global South.

Concerning policy and practice, the findings reveal the limitations of the existing approach whereby each logic is handled in isolation, such as the poorly enforced 2014 ban on lightweight plastics. The persistent failure of these regulatory attempts highlights a critical truth: culture is not just a set of beliefs to be edited by policy, but an embodied reality. The "preference" for packaged goods is woven into the fabric of social aspiration, sensory habit, and a deeply felt desire for a place in the globalized world. Therefore, an effective intervention requires an integrated approach that addresses the

underlying drivers of the rift. This implies the consideration of the following:

There should be a cultural and discursive shift in public campaigns, educational initiatives or any other form of sensitization. These initiatives must work to "redefine" circular practices and framing composting and reusable packaging not as backward or primitive, but as innovative and essential for a modern, health city.

It is crucial for urban planning to formally designate and consecrate zones for urban agriculture integrated with community composting hubs. This initiative will enhance the circular economy by providing incentives for compost production and supporting informal waste recyclers to transform organic waste from a problem into a valued commodity.

Likewise, policymakers must move beyond separate approaches by crating cross-ministerial task forces on urban metabolism. This would promote integrated waste management strategies that simultaneously address single-use plastic reduction and organic valorisation, leveraging the existing indigenous knowledge and networks of the informal sector.

This study is not without its limitations. Its qualitative design, while rich in explanatory depth, limits the statistical generalizability of its findings (Braun V & V, 2006). Furthermore, while it focused on household, waste management and vendor practices, a more comprehensive mapping of the entire waste chain, including formal and informal processors and regional markets would yield an even more complete picture.

These limitations, however, point directly to valuable avenues for future research. Large-scale surveys could quantify the prevalence of the attitudes that were identified, while longitudinal studies could track the evolution of these metabolic practices. Future research should also conduct a deeper ethnographic investigation of the informal waste economy to document the innovative sites of circularity that already operate within the city's margins.

In a forward-looking perspective, this study advances the understanding of urban environmental crises by insisting on the inextricability of their material and symbolic dimensions. Repairing Yaounde's metabolic rift will require more than new technologies or policies; it will necessitate a cultural project that reimagines urban modernity itself. This entails crafting a vision of progress that can incorporate cyclical logics, value traditional knowledge, and bridge the discursive

divides that currently perpetuate an unsustainable relationship with the environment. The challenge for future research and policy is to help forge this new modernity, one that is not superficial, but is rooted in a repaired and equitable metabolism between the city and its ecological foundations.

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