

Research Article

Linguistic Landscapes and Public Engagement with the Circular Economy in Selected Zambian Urban Centers

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Abstract

This study investigates the role of linguistic landscapes (LL) in shaping public understanding and engagement with the circular economy (CE) in Zambian cities. As urban centers grapple with waste management challenges and seek sustainable models, public signage serves as a primary interface for disseminating information. This research employs a multimodal discourse analysis of over 350 signs collected from commercial and residential areas in Lusaka and Kabwe. It examines how the principles of "reduce, reuse, and recycle" are linguistically and semiotically constructed for the public. The findings reveal a stark dichotomy: a top-down LL dominated by English and technical jargon that often alienates the broader populace, and a bottom-up LL, articulated in local languages and through culturally resonant practices, that embodies circularity pragmatically. The study identifies this disconnect as a critical barrier to inclusive participation. It concludes by arguing for a strategic, co-designed approach to environmental communication that bridges this semiotic gap. By leveraging local linguistic resources and culturally familiar symbols, policymakers can foster a more profound, widespread, and effective public engagement with the CE, thereby accelerating Zambia's socio-economic transformation towards sustainability.

Keywords: Linguistic Landscape; Circular Economy; Public Discourse; Semiotics; Sustainability; Zambia; Multimodality; Waste Management

Introduction

The linear economic model, characterized by a "take-make-dispose" paradigm, is increasingly recognized as unsustainable, contributing significantly to resource depletion, environmental degradation, and the global climate crisis [Ellen MacArthur Foundation, 2015]. In response, the concept of a Circular Economy (CE) has gained prominence as a viable alternative. The CE aims to redefine growth, focusing on positive society-wide benefits by gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system [Geissdoerfer et al., 2017]. Its core principles, often encapsulated in the "3Rs" of reduce, reuse, and recycle promote a closed-loop system where materials retain their value for as long as possible.

For rapidly urbanizing nations in the Global South, like Zambia, the transition to a CE is not merely an environmental imperative but a socio-economic necessity. Cities like Lusaka face immense pressure from population growth, escalating volumes of solid waste, and strained public services [Norsworthy, 2020]. While national policies, such as the Zambian National Climate Change Policy, acknowledge the need for sustainable waste management, the successful implementation of these policies hinges on a critical, yet often overlooked, factor: robust public understanding and active participation [Kirchherr et al., 2017]. The public must not only be aware of the CE but must also be motivated and empowered to adopt new practices.

This is where the concept of the Linguistic Landscape (LL) becomes critically important. Defined by Landry and Bourhis [1997: 23] as "the language of public road signs, advertising billboards, street names, place names, commercial shop signs, and public signs on government buildings," the LL constitutes a pervasive and powerful channel of public communication. It is more than a passive backdrop; it is an active agent in shaping the socio-cultural environment, constructing public discourse, and influencing behavior [Shohamy & Gorter, 2009]. In a multilingual context like Zambia, where over 70 local languages coexist with the official English, the LL is a contested space where power relations, identity, and access to information are constantly negotiated.

Preliminary observations in Zambian urban centers suggest a significant disconnect. Formal signage related to waste management and sustainability is often rendered in complex English and adorned with abstract, internationally recognized symbols like the Mobius loop recycling symbol. Conversely, informal sectors and communities demonstrate a deep, practical understanding of reuse and recycling, communicated through local languages and ad-hoc signs. This semiotic

schism poses a fundamental question: How does the linguistic landscape in selected Zambian urban centers facilitate or hinder public understanding and engagement with the circular economy?

This study seeks to answer this question by critically analyzing the LL of two Zambian cities, Lusaka and Kabwe. It posits that the current top-down environmental communication strategy, embedded in the LL, is largely ineffective because it fails to connect with the linguistic competences and cultural models of its intended audience. By employing a multimodal social semiotic framework, this study will deconstruct public signs to reveal how their linguistic and visual elements either enable or obstruct meaningful public engagement with the CE. The ultimate aim is to provide evidence-based recommendations for crafting more inclusive, resonant, and effective environmental communication strategies that can bridge the gap between policy and practice, thereby contributing to a more sustainable and equitable urban future for Zambia.

Literature Review (2015-2025)

This research is situated at the intersection of two dynamic fields of study: Linguistic Landscapes and the Circular Economy. A review of recent literature (2015-2025) reveals the evolving trajectories of these fields and identifies the niche this study aims to fill.

Evolution of Linguistic Landscape Research

Since the foundational work of Landry and Bourhis (1997), LL research has evolved from a quantitative enumeration of language visibility to a qualitative, critical inquiry into how signs function as social practice. Early studies focused on ethnolinguistic vitality, but the field has since expanded to explore the LL's role in constructing space, identity, and power dynamics [Shohamy & Gorter, 2009; Blommaert, 2013].

Between 2015 and 2025, several key trends have emerged. Firstly, multimodality. There has been a pronounced shift towards analyzing the full semiotic assemblage of signs. Kress and van Leeuwen's (2001) work on multimodal discourse has been instrumental, prompting researchers to examine how color, typography, materiality, and images interact with text to produce meaning [Jewitt, 2016]. A sign is no longer just its words; its power lies in the synthesis of all its communicative modes.

Secondly, LL and Social Justice. LL studies have increasingly been used to investigate issues of marginalization, migration, and social inclusion. For example, studies have examined how LLs can render certain groups invisible or how minority communities use signs to assert their presence and rights in the public sphere [Leeman & Modan, 2010].

Thirdly, LL in the Global South. While early LL research was concentrated in the Global North and East Asia, there is a growing body of work focusing on African contexts. Peck and Banda (2019), in a study of South Africa and Wales, demonstrated how LLs are used to construct "green" suburban identities. In Zambia, Spitulnik (2020) has explored the LL in relation to popular culture and political discourse. However, the application of LL as a lens to examine environmental communication and policy dissemination remains severely under-explored in the African context.

Circular Economy: From Technology to Social Engagement

The literature on the CE has experienced exponential growth, moving from conceptual outlines to empirical studies. Ghisellini et al. (2016) provided a comprehensive review, highlighting the focus on technological innovation, industrial symbiosis, and business models. Much of this early work was techno-centric and situated in developed economies.

From 2015 onwards, a critical strand of literature has begun to emphasize the "soft" dimensions of the CE. Scholars have argued that a purely technological focus is insufficient [Murray et al., 2017]. Kirchherr et al. (2017), in a seminal paper, identified cultural barriers and a lack of consumer awareness and interest as among the most significant impediments to the CE transition. This has spurred interest in public perception, consumer behavior, and communication strategies.

In the Zambian and broader sub-Saharan African context, CE research is still in its infancy. Existing studies often focus on: waste management systems, policy frameworks and the informal sector. Waste management systems involve analyzing the challenges and opportunities in formal and informal waste collection and recycling [Phiri, 2022; Norsworthy, 2020]. Policy frameworks require reviewing the alignment of national policies with CE principles. While the informal sector: Acknowledging the critical role of informal waste pickers and recyclers, who are de facto key actors in the urban CE [Godfrey & Oelofse, 2017].

However, a glaring gap exists. There is a paucity of research that critically examines how CE concepts are communicated to the public. How is the complex idea of a "circular economy" translated into public-facing messages? What languages and symbols are used, and what assumptions do they make about the audience's knowledge and values? This study directly addresses this gap. It posits that the LL is the tangible manifestation of this communication process and that analyzing it is essential for understanding and overcoming the "cultural barrier" identified by Kirchherr et al. (2017).

Theoretical or Conceptual Framework

This study is underpinned by an integrated theoretical framework combining Multimodal Social Semiotics (Kress & van Leeuwen, 2001) with Linguistic Landscape theory [Landry & Bourhis, 1997; Shohamy & Gorter, 2009]. This combination provides a robust lens for analyzing not just what is communicated about the CE in public spaces, but how it is communicated, and with what potential social consequences.

Multimodal Social Semiotics

Kress and van Leeuwen (2001) argue that in contemporary society, communication is inherently multimodal. Meaning is rarely made through language alone; it is constructed through the interplay of various semiotic modes, including writing, images, typography, color, spatial layout, and materiality. Each mode has its own affordances and potentials for meaning-making. For instance, an image can show a process instantly, while language can explain its causes and effects.

A core tenet of social semiotics is that these meanings are not neutral; they are shaped by social context, power relations, and cultural conventions. The choice to use English over Bemba on a government poster, or to use a Western recycling symbol instead of a locally recognizable image, is a social act. It reflects the interests, ideologies, and imagined audience of the sign's creator. This framework allows us to analyze public signs as complex rhetorical devices, asking: What is the design of this sign trying to achieve such as inform, command, persuade? What modes are used, and how do they interact? What social and cultural knowledge is assumed of the viewer? Who has the power to place this sign in this space, and what voices are excluded?

Linguistic Landscape Theory

LL theory provides the specific object of study and the macro-level context. It treats public signs as empirical data for understanding language policy, urban sociology, and symbolic power. Landry and Bourhis (1997) identified two primary functions of LL, namely, informational and symbolic functions. Informational function requires providing information and orienting people in a space. On the other hand, symbolic function signals the relative power and status of languages and their communities.

This study focuses on the LL's informational function in disseminating CE concepts, while also critically examining its symbolic function, what does the dominance of English in environmental messaging symbolically communicate about who belongs in the conversation about sustainability?

Integrated Framework

The integrated conceptual framework for this study is visualized in Figure 1. It illustrates the LL as the central channel or mediator through which top-down CE policies and bottom-up practices engage with the public.

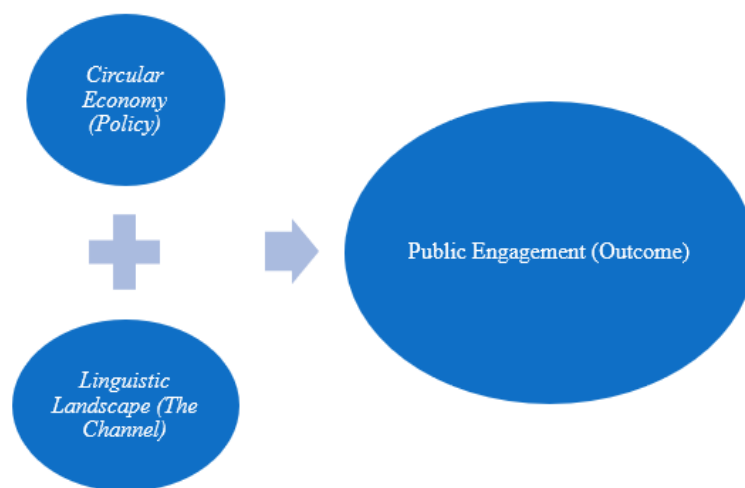


Figure 1: Integrated Framework for Analyzing CE Engagement

The model in Figure 1 shows that the nature of the LL, specifically, the balance between facilitating and barrier-creating features directly determines the level and quality of public engagement. A landscape rich in local languages, culturally resonant symbols, and clear visuals facilitates understanding and adoption. In contrast, a landscape dominated by technical jargon, foreign languages, and abstract icons creates barriers, leading to alienation, misunderstanding, or disengagement.

Methodology

This study adopted a qualitative, multiple case-study design to conduct an in-depth, contextual analysis of the LL in relation to the CE [Yin, 2018]. The cases were two Zambian urban centers: Lusaka, the capital and largest city, representing a major metropolitan center, and Kabwe, a provincial capital with a history of lead mining and industrial activity, representing a secondary city facing significant environmental and waste management challenges.

Data Collection

Data collection was conducted through a systematic photographic survey between June and August 2024. A purposive sampling strategy was used to select sites within each city that represented a cross-section of socio-economic activities and public interaction. Data were collected from the central business districts (CBDs) along Cairo Road in Lusaka and Freedom Way in Kabwe; the high-density residential areas in Mtendere in Lusaka and Makululu in Kabwe; low-density residential areas that included Avondale in Lusaka and Helen Kaunda in Kabwe; markets, that is, Soweto Market in Lusaka and Kabwe Main Market as well as the civic spaces in areas around City Council buildings and public libraries.

The unit of analysis was any static public sign that explicitly or implicitly referenced CE principles. This included government Signs collected from Municipal notices, public awareness posters; Corporate signs in advertisements, corporate social responsibility (CSR) plaques, branding on waste bins; NGO/International Agency Signs on campaign posters, and informational boards as well as community/informal signs that were collected from hand-painted shop signs, informal notices, advertisements for repair services or second-hand goods.

During data collection, a total of 358 signs were photographed and analysed. Field notes were taken for each sign, documenting its precise location, estimated audience, and immediate physical context.

Data Analysis

The collected data was analyzed using qualitative multimodal discourse analysis [Jewitt, 2016]. This involved a systematic process of coding and interpretation. The first step was familiarization and categorization where all photographs were cataloged and initially categorized by location and sign actor such as Government-CBD, and the Informal-Market. The second step was development of a coding scheme in which a coding scheme was developed based on the theoretical framework, focusing on the following dimensions: linguistic code, semiotic modes, message framing, actor and authority, and intertextuality. Linguistic code was used to check for the language(s) used, such as the presence of technical jargon, and code-mixing. Semiotic modes involved imagery (photographs, drawings, icons), color symbolism, typography, materiality such as polished metal vs. weathered wood). Message framing dealt with how the CE action was framed such as a civic duty, "Keep Lusaka Clean"; a health imperative, "Fight Cholera"; and an economic opportunity, "We Buy Old Plastics". The actor and authority analyzed the entity behind the sign and the perceived authority it commands. Finally, intertextuality dealt with references to other texts, campaigns, or global symbols, for instance, UN Sustainable Development Goals logos.

The study used thematic Analysis. The coded data was analyzed to identify recurring themes and patterns related to accessibility, inclusivity, and the construction of CE knowledge. This involved comparing and contrasting top-down and bottom-up signs to identify points of convergence and divergence.

Ethical considerations were adhered to by avoiding photographs of identifiable individuals and focusing solely on publicly accessible signage.

Results and Discussion

The analysis of the linguistic landscape revealed a profound and telling dichotomy between the official narrative of the circular economy, as projected by state and corporate actors, and the vernacular circularity practiced and communicated by local communities and informal enterprises. This section presents the key findings, supported by detailed analyses of representative examples.

The Top-Down LL: A Landscape of Bureaucratic Abstraction

Signs originating from government bodies, international NGOs, and large corporations constituted a significant portion of the formal LL. These signs were characterized by a consistent set of features that, while professionally produced, often created distance between the message and its intended audience.

The data shows that the public space has linguistic elitism and uses technical jargon. Approximately 85% of these signs were exclusively in English. This reliance on the official language systematically excluded a large segment of the population with limited English proficiency. The problem was compounded by the use of technical terminology without translation or explanation as can be seen in Figure 2 below:



Figure 2: Lusaka City Council Awareness Poster

The poster in Figure 2 is a classic example of well-intentioned but ineffective communication. Firstly, the poster has language barrier. The key messages "enhancing sustainable solid waste management" and "segregate" are inaccessible to a Nyanja or Bemba speaker with basic literacy. The term biodegradable is highly technical. Secondly, the landscape has semiotic incoherence. The central image contradicts the message. It shows a family disposing of mixed waste into a single bin, while the text instructs them to segregate. This visual-textual dissonance can confuse viewers. Thirdly, the poster expresses cultural distance. The use of a stock photo of a "model" family and a clean, central bin bears little resemblance to the lived reality of waste disposal in many parts of Lusaka, where communal skips or informal dumping are common. The recycling symbol is a global icon but may hold no inherent meaning for someone unfamiliar with international environmental branding. Fourthly, in terms of framing, the message is framed as a top-down directive "Your partnership...is vital" rather than a collaborative or empowering call to action. Fifthly, the poster shows corporate "Greenwashing" and semiotic contradiction. Several corporate advertisements, particularly for single-use products, were found to employ the visual lexicon of sustainability while promoting consumption.

Another example of the collected data is a large billboard for a popular brand of bottled water which depicts a pristine mountain landscape and the slogan "PURE NATURE, PURE REFRESHMENT. COMMITTED TO SUSTAINABILITY." The brand's logo is green, and the overall aesthetic was "natural" as shown in Figure 3:



Figure 3: A Billboard for a Popular Brand of Bottled Water

The sign in Figure 3 engages in a form of semiotic appropriation. It uses the cultural value associated with "nature" and "purity" (green color, mountain imagery) to build a positive brand image. However, the core product, single-use plastic bottles, is fundamentally at odds with the "reduce" principle of the CE. This creates a contradictory message that can dilute public understanding of genuine sustainability, conflating it with corporate branding and eco-friendly aesthetics rather than substantive behavioral change.

The Bottom-Up LL: A Landscape of Vernacular Circularity

In stark contrast to the formal landscape, signs in markets, informal settlements, and along secondary roads demonstrated a pragmatic, culturally-grounded, and highly effective communication of CE principles, particularly "reuse" and "recycle" (Phiri, 2022; Norsworthy, 2020).

The study shows that the signs had linguistic inclusivity and functional clarity. These signs were almost exclusively in local languages or a mix of English and local languages (code-mixing). The language was direct, imperative, and focused on immediate action or transaction. This situation is illustrated in Figure 4:



Figure 4: "FyeBo" Recyclers Sign in Makululu Market, Kabwe, Zambia

The sign in Figure 4 is a masterclass in effective, context-specific communication. The signage shows linguistic access. The message, "We buy old things. Anything and everything!" is in Bemba, the dominant language in Kabwe. It is immediately understandable to the target audience. Secondly, the sign shows semiotic precision. The hand-drawn images are not abstract symbols; they are literal representations of the desired items. This eliminates any ambiguity. A viewer does not need to be literate to understand the sign's offer. Thirdly, the poster has economic framing. In this case, the CE principle of "recycle" is framed not as an environmental duty but as a direct economic opportunity. This aligns with the immediate needs and motivations of the community, making compliance likely and sustainable. Furthermore, the signage contains embodied knowledge. The sign reflects a deep, practical knowledge of the local waste stream and economy, specifying items like "Chibuku Scud" packs that are ubiquitous in the community.

Finally, the poster uses the LL of Repair and Reuse. The poster shows that beyond recycling, a vibrant LL promoted the "reuse" principle through advertisements for repair services. Hand-painted signs for "TV Repair," "Shoe Mending," "Tailoring & Alterations," and "Phone Fixing" were commonplace. These signs, often in local languages, point to a thriving repair economy that pre-dates and perfectly embodies the CE ideal of extending product lifespans (Phiri, 2022; Norsworthy, 2020). This vernacular landscape receives no support or recognition in formal CE strategies, yet it is a cornerstone of urban resilience and sustainability.

Table 1 below summarises by comparing the great schism of the two worlds:

Table 1: Great schism: Language use in the two worlds LL

Feature	Top-Down LL (Formal)	Bottom-Up LL (Informal)
Language	English & Jargon	Local Languages
Semiotics	Abstract, Global	Literal, Local
Framing	Civic Duty	Economic Opportunity
Authority	Government/Corporate	Community/Entrepreneur
Engagement	Low / Inaccessible	High / Effective

The table above shows the core problem regarding a semiotic schism. A semiotic schism is a situation where official communication fails to connect with the populace it needs to engage [Yin, 2018; Spitulnik, 2020].

Discussion: Bridging the Semiotic Schism

The analysis reveals a fundamental semiotic schism in the Zambian urban LL. On one side is a top-down, English-dominant, abstract, and often contradictory discourse about the CE principles (Phiri, 2022; Norsworthy, 2020). On the other is a bottom-up, vernacular, linguistically inclusive, and pragmatically clear discourse that actively enacts circularity [Yin, 2018; Spitulnik, 2020].

This schism has critical implications for public engagement. The first implication is reinforcement of knowledge hierarchies. The dominance of English in formal environmental communication reinforces existing social hierarchies [Kress & van Leeuwen, 2001]. It positions CE knowledge as the domain of the educated, English-speaking elite, thereby disenfranchising a majority of the urban population and stifling the potential for a genuinely inclusive movement [Landry & Bourhis, 1997; Shohamy & Gorter, 2009].

The second implication is inefficiency of public spending. Resources invested in creating and disseminating English-language awareness materials are likely yielding a very low return on investment. The message fails to connect, and behavioral change remains limited.

The third implication is undervaluing indigenous innovation. The formal sector's failure to recognize, learn from, and integrate the communicative strategies and practical models of the informal sector represents a massive lost opportunity. The "FyeBo" sign is arguably more effective at driving recycling behavior than the City Council poster, yet it operates in the shadows of policy.

The findings strongly suggest that the cultural barrier to the CE is, in part, a communicative and semiotic barrier erected by the very entities promoting the transition (Kirchherr et al., 2017). The pathway to overcoming this barrier lies not in more sophisticated English-language campaigns, but in a humble and strategic engagement with the existing linguistic and cultural resources of the urban populace.

Conclusion

This study has demonstrated that the linguistic landscapes of Lusaka and Kabwe are not merely reflective of the challenges facing the circular economy transition in Zambia; they are active participants in shaping its outcomes. The research reveals a clear and problematic divide: a formal, top-down linguistic landscape that speaks in a language of bureaucratic abstraction and technical jargon, and an informal, bottom-up landscape that articulates the principles of the circular economy with clarity, cultural resonance, and pragmatic force.

The central conclusion is that the current top-down approach to environmental communication is inadvertently hindering broad-based public engagement. By prioritizing English and international symbols over local languages and culturally specific imagery, official CE discourse alienates the very communities whose participation is most crucial for success. Meanwhile, the vibrant, innovative, and effective communicative practices of the informal sector remain largely untapped as a resource for public policy and education.

Therefore, for the circular economy to move from a policy ideal to a lived reality in Zambian cities, a fundamental recalibration of public communication is required. This entails a shift from a dissemination model, where information is simply sent out from the center, to a dialogic and co-creative model, where communication strategies are developed in partnership with communities. The goal must be to create a new, hybrid linguistic landscape that merges the systematic vision of the formal sector with the communicative intelligence and practical wisdom of the informal sector. By doing so, Zambia can build a circular economy that is not only environmentally sustainable but also socially inclusive and culturally grounded.

Based on the empirical findings of this study, the following actionable recommendations are proposed for policymakers, municipal authorities, NGOs, and communication specialists:

- i. Mandate Translanguaging in Public Campaigns: Environmental awareness campaigns should strategically employ translanguaging, the flexible use of an individual's full linguistic repertoire. This could involve:
 - Creating bilingual posters where headlines and key instructions are in a dominant local language (e.g., Nyanja in Lusaka, Bemba in Kabwe), with supporting details or technical terms in English.
 - Developing radio and television jingles in local languages that use popular music styles and local proverbs to frame environmental stewardship.
- ii. Co-design semiotic resources with local artists: Move beyond the universal recycling symbol. Municipalities should commission local artists and sign-writers to develop a suite of culturally resonant icons and visuals for waste segregation and recycling. These icons should be tested within communities for immediate comprehension and cultural acceptance before being rolled out city-wide.
- iii. Formalize and scale the informal: Instead of ignoring or competing with the informal recycling sector, city councils should seek to integrate it. This could involve:

- Providing informal recyclers with standardized, co-designed signage that legitimizes their operations while maintaining their communicative effectiveness.
 - Creating designated "Reuse and Recycling Zones" in markets that feature this new, hybrid LL, combining municipal authority with vernacular communication styles.
- iv. Implement a "CE LL Audit": As a matter of policy, all new public signage related to sustainability and waste should be pre-tested through a simple LL audit. This audit would involve presenting draft designs to focus groups from diverse linguistic and educational backgrounds to assess clarity, accessibility, and motivational impact before public funds are spent on production and installation.

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