EVALUATING THE CIRCULAR ECONOMY: AN INVENTORY AND COMPARISON WITH THE CIRCULARITY ASSESSMENT PROTOCOL

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Abstract

Implementation of circular economy strategies requires accounting for the practicalities of local management of material flows, waste, and emissions, yet existing assessment tools often fail to capture the complexity of community-scale circular systems. The circular economy's potential to advance and strengthen community resilience across sectors requires the evaluation of approaches that match this complexity. With increasing interest in the adoption of circular strategies in cities, comprehensive evaluation tools are needed that bridge technical metrics, such as material recovery rates, waste diversion, and carbon footprint reductions, with other considerations such as growth and urban planning, economic opportunities, and community development. Numerous circularity assessment approaches exist, and their accessibility, scope, and community engagement vary significantly. We will report on findings from an inventory of 33 circular economy and waste assessment frameworks focusing on building materials and plastics, characterizing the existing tools across key dimensions such as the scale of application, logistical and cost requirements, stakeholder outreach, and deliverables of each approach.

We found that just over half of the established tools explicitly focus on circular economy principles, with only a handful targeting city-scale implementation. Accessibility of tools varies widely, with only about half offering free access, several requiring specific training or certified assessors, and most engaging only professional, industry-based stakeholders. Critical gaps include limited integration of environmental emissions, particularly mismanaged and unaccounted for waste, and minimal community-based participatory frameworks. To address some of these gaps and as a part of the National Science Foundation Convergence Accelerator Track I project, we further developed and expanded the Circularity Assessment Protocol (CAP). The CAP addresses these limitations through its holistic approach that explores upstream product and material inputs, how materials are used and disposed of in communities, what materials are lost to the environment through litter and illegal dumping, and what stakeholder perceptions are across these considerations. Further, we showcase an interactive open-access data portal in development for the CAP that provides insight for applications across more than 50 cities, and describe ongoing strategies for co-creation under development with local stakeholders in participating CAP cities, including an example of how the CAP addresses gaps with a case study city. Taken together, this inventory establishes CAP as a significant advancement in circular economy assessment, addressing critical gaps in community engagement, environmental impacts, and accessibility that are essential for circular economy implementation in both resource-rich and resource-burdened communities.

Introduction and Motivation

Current global trends of population growth and economic development mean that over 2 billion metric tons of waste are generated globally every year, costing 361 billion USD annually in waste management, environmental pollution, and public health (1). The circular economy (CE) is frequently touted as a strategy for waste reduction through innovative product formats and design, efficient supply chains, while also encouraging material recovery expansions of reuse and recycling, and landfill diversion. However, there is often a mismatch between ambitious conceptual visions of the CE and practical implementation in real life. Despite global reliance on international producers and manufacturers of goods, consumption happens at the hyperlocal scale, positioning cities and communities at the frontlines of waste management. Implementing CE at the local scale requires attending to local technical considerations such as material flows, waste streams, and environmental impacts while bridging dimensions such as planning and growth, economic development, and community resilience. There has been a proliferation of tools designed to assess circularity across sectors, yet accessibility, scope, and community engagement vary. This paper presents findings from an inventory of CE and waste assessment frameworks focused on building materials and plastics, characterizing existing tools across key dimensions, including scale of application, stakeholder engagement, and deliverables. We identify critical gaps in current approaches and demonstrate how an established, but expanding tool, the Circularity Assessment Protocol (CAP), addresses these limitations through its holistic, collaborative methodology.

Review of Related Work

The circular economy concept

While there is no single definition of the CE (2, 3), it is framed as an alternative to the traditional linear take-make-dispose' economic model, aiming to close material and energy loops and decouple economic growth from resource consumption (4). The concept itself has multiple intellectual origins and is closely connected with theories such as industrial ecology, systems theory, ecological economics, performance economy, and regenerative design (5, 6). Korhonen, et al. (7) extend this view by defining CE as a production-consumption system that maximizes the service derived from material and energy flows, relying on renewable sources and cyclical processes to support all three pillars of sustainable development: economic, environmental, and social. Similarly, Kirchherr, et al. (2) highlight the multi-scale framing (micro, meso, and macro) that aligns CE with sustainable development objectives, emphasizing innovation and responsible consumption as enablers of the transition.

Though conceptualizations of the CE vary, its applications are broad. From a policy perspective, the CE framework has been institutionalized in various regions through regulatory and economic instruments that encourage the minimization of waste and the optimization of resource use. A prominent example is China, where the CE has been implemented as a national strategy since the early 2000s, supported by legislative measures such as the Circular Economy Promotion Law (8). These policies aim to integrate the Reduce, Reuse, Recycle ("3Rs") principles into industrial and social systems, fostering resource efficiency and economic reform (5). At the industrial level, CE applications are visible in eco-industrial parks and industrial symbiosis networks. The Kalundborg Eco-Industrial Park in Denmark, for example, is often cited as a pioneering model where industries share resources such as energy, water, and materials to reduce environmental impact and operational costs. This model has inspired similar initiatives worldwide, including in China, the Netherlands, and Thailand, where the integration of top-down policy support with bottom-up community engagement has been identified as a key factor for success (5).

Assessing the circular economy

CE principles are increasingly being adopted across sectors such as plastics, metals, agriculture, and construction and demolition (C&D) to reduce waste generation and improve resource efficiency. However, measuring the CE is a complex task characterized by a wide variety of metrics and the absence of a single, universally accepted framework (9). According to Corona, et al. (4) current proposed circularity metrics found in the literature can be categorized into two groups Circularity Indices, provided by a single score, often from 0-100%, to quantify how circular a product or system is; and Assessment Tools and Frameworks, by using broader methodologies to analyze the environmental, economic, and social impacts of circular strategies through Life Cycle Assessment (LCA), Material Flow Analysis (MFA), and Input-Output (IO) analysis. Both need to meet requirements to be considered valid, such as reducing resources – especially scarce ones. Pollutants, material losses, and waste increase the input of renewable and recycled resources and maximize the durability of the product (4, 10).

In the C&D sector, a core focus is diverting C&D waste from landfills through efficient design and material selection for new buildings, refurbishing and repair, and deconstruction and material salvaging when buildings reach their end of life. This entails recycling materials like concrete and masonry to produce recycled aggregates (RA) for use in new products and as base materials for highways (11). Building Information Modelling (BIM) is a critical tool used during the design phase to track materials for future reuse, quantify waste, and prevent errors that lead to waste (11). Other widely adopted applications for CE in the C&D sector include building certification systems such as the US Green Building Council's Leadership in Energy and Environmental Design (LEED), Building Research Establishment

Environmental Assessment Method (BREEAM), and Comprehensive Assessment System for Built Environment Efficiency (CASBEE). The aforementioned incorporate indicators related to material reuse, recycling, and waste reduction. At a broader scale, national-level instruments, such as the National Circularity Assessment Framework for Buildings, provide standardized metrics to measure circularity performance, guiding policymakers and industry stakeholders in advancing CE principles within the construction sector. Together, these frameworks foster a systematic transition toward circular and low-waste building practices.

Technology Approach

Description of the review process

Though the concept of the CE is of growing interest to scholars (3), it is often a practitioner-dominant concept (12). As such, we employed an exploratory approach to identify relevant CE frameworks specific to the plastic consumer goods and building materials context, many of which originate from gray literature emerging from consultancies, industry organizations, and policy institutions (13). We focused our review on CE frameworks relevant to plastic consumer goods and building materials because the CAP methodology originated in the plastics context and is currently being expanded to C&D materials. Specifically, we conducted targeted web searches for CE frameworks, drawing on our familiarity with key organizations (e.g., Ellen MacArthur Foundation) and established initiatives (e.g., LEED certification) relevant to the CE space to guide initial sampling. Where possible, we also identified additional sources within citations to expand our search coverage, resulting in a sample size of N =33 (Table 1)

For each identified tool, we reviewed framework documentation, sample applications where available, and organized tools based on key operational and logistical characteristics including: analytical scale (micro/meso/macro), cost and accessibility (free, paid, certification required), stakeholder engagement approach, and primary outputs (certifications, assessments, metrics). Given the exploratory nature of this inventory, we prioritized breadth of coverage across tools over in-depth methodological comparison of individual frameworks. This approach allowed us to identify broader trends and gaps across the CE assessment landscape relevant to community-scale implementation.

Trends and gaps among circular economy tools

Globally adopted tools concentrated at micro-analytical scale

The tools we investigated span a wide range of analytical scales and contexts, and several tools allowed for expansion across scales. Most tools were developed for application among individual projects, facilities, or buildings, representing the 'micro' level scale of CE assessment (Figure 1). For example, the Plastic Footprint Network (PFN) methodology is designed for organizational or product-level projects but can be scaled to community-level assessments. Similarly, certification-based green building assessments like LEED, BREEAM, DGNB, EDGE, Living Building Challenge, Green Mark, and CASBEE provide frameworks for evaluating single buildings or facilities. In the context of plastics, the Hotel Waste Measurement Methodology (HWMM) and the TRUE Zero Waste certification are applied to individual facilities to assess waste generation, diversion rates, and circularity performance. Beyond the project and facility scale, some tools targeted neighborhoods/districts or city-wide assessments. Most tools experience global adoption (e.g., LEED, ENERGY STAR, BREEAM), while a few have been developed for specific places or geographies. For example, CASBEE was developed by the Japanese Sustainable Building Consortium and is operated at the national scale specifically for Japan. Similarly, the Plastic Waste-Free Island tool is geographically restricted for island contexts in the Caribbean and Pacific regions. Notably, many tools, even those with a wide international reach, emerged from high-income economies and regions. For example, the DGNB System, HQE Certification, and Reference Framework for Sustainable Cities came from European contexts, and several tools emerged from the US context (e.g., Energy Star, WARM, Model Recycling Program Toolkit), US Green Building Council (LEED, WELL, TRUE). While the specific range of applications is beyond the scope of this work, future research might examine global rates of adoption of these tools.

Table 1. Summary of tools by organization. L1 = Consult : Stakeholders can provide feedback or comments, but decision-making authority remains centralized. L2 = Collaborate: Stakeholders actively participate through trainings, workshops, partnerships, pilot projects, or advisory roles that shape implementation. L3 = Co-design: Shared ownership: Stakeholders are embedded in planning, design, and implementation, often across long time horizons. Power, responsibility, or ownership is shared.

Organization/group	**Name of tool**	**Abbreviation/ short name**	**Cost**	**Training required**	**Stakeholder engagement**	**Tool output**
Associate for the Advancement of Sustainability in Higher Education	Sustainability Tracking Assessment & Rating System	STARS	No	Optional	L2	Rating
Association pour la Haute Qualité Environnementale	Haute Qualite Environmentale Certification	HQE	-	Optional	L2	Certification
Building Research Establishment	Building Research Establishment Environmental Assessment Method	BREEAM	Yes	Yes	L2	Certification
C40 Cities Climate Leadership Group	C40 Cities	-	No	Optional	L3	Benchmarking
Ellen MacArthur Foundation	Circulytics	-	No	No	L1	Score
Ellen MacArthur Foundation/Arup	Circular Buildings Toolkit	-	No	No	L2	Guidance
European Commission	Methodology for implementation of CE at local and regional scale	-	No	Yes	L2	Framework
European Environment Agency	European Reference Model for MSW Management	-	No	Yes	L1	Modeling
European Union	Reference Framework for Sustainable Cities	-	No	No	L1	Assessment
German Sustainable Building Council	Deutsche Gesellschaft für Nachhaltiges Bauen	DGNB System	Yes	Yes	L2	Certification
Global Real Estate Sustainability Benchmark Foundation	Green Star	-	Yes	Optional	L2	Certification
Green Building Certification Inc	Total Resource Use and Efficiency	TRUE	Yes	No	L1	Certification
Green Building Initiative	Green Globes	-	Yes	Yes	L2	Certification
IFC/World Bank/UK Govt	Excellence in Design for Greater Efficiencies	EDGE	Yes	Yes	L2	Certification
International Living Future Institute	Living Building Challenge	-	Yes	Yes	L2	Certification
International Union for Conservation of Nature	Plastic Waste-Free Island	-	No	No	L3	Program
International Well Being Institute	WELL Building Standard	WELL	Yes	Yes	L2	Certification
Intl. Solid Waste Association	Wasteaware Benchmark Indicators	WABI	No	No	L2	Benchmarking
Japan Sustainable Building Consortium & Inst. for Building Environment & Energy Conservation	Comprehensive Assessment System for Built Environment Efficiency	CASBEE	-	Yes	L1	Score
One Planet Network	National Circularity Assessment Framework for Buildings	-	No	No	L3	Assessment
Org. of Economic and Cooperative Development	The circular economy in cities and regions.	-	No	Yes	L3	Framework
Planetary Health Report Card	Planetary Health Report Card	-	No	No	L2	Scorecard
Plastic Footprint Network	Plastic Footprint Network	PFN	No	Yes	L2	Footprint
Recycling Partnership & Re-TRAC	Municipal Measurement Program	-	No	No	L2	Inventory
Singapore Building and Construction Authority	Green Mark	-	Yes	Yes	L1	Certification
UN Habitat	Waste Wise Cities	-	Yes	Yes	L3	Monitoring
US Environmental Protection Agency	Energy Star for Buildings	Energy Star	No	No	L1	Quantification
	Waste Reduction Model	WARM	No	No	L1	Guidance
	Model Recycling Program Toolkit	-	No	No	L2	Score
US Green Building Council	Leadership in Energy and Environmental Design	LEED	Yes	No	L2	Certification
World Wildlife Foundation	Green Key Hotel Waste Measurement Methodology	Green Key	No	No	L3	Program
	Plastic Smart Cities Initiative	-	No	No	L2	Measurement
Zero Waste International Alliance	Zero Waste Certification	-	Yes	No	L2	Certification

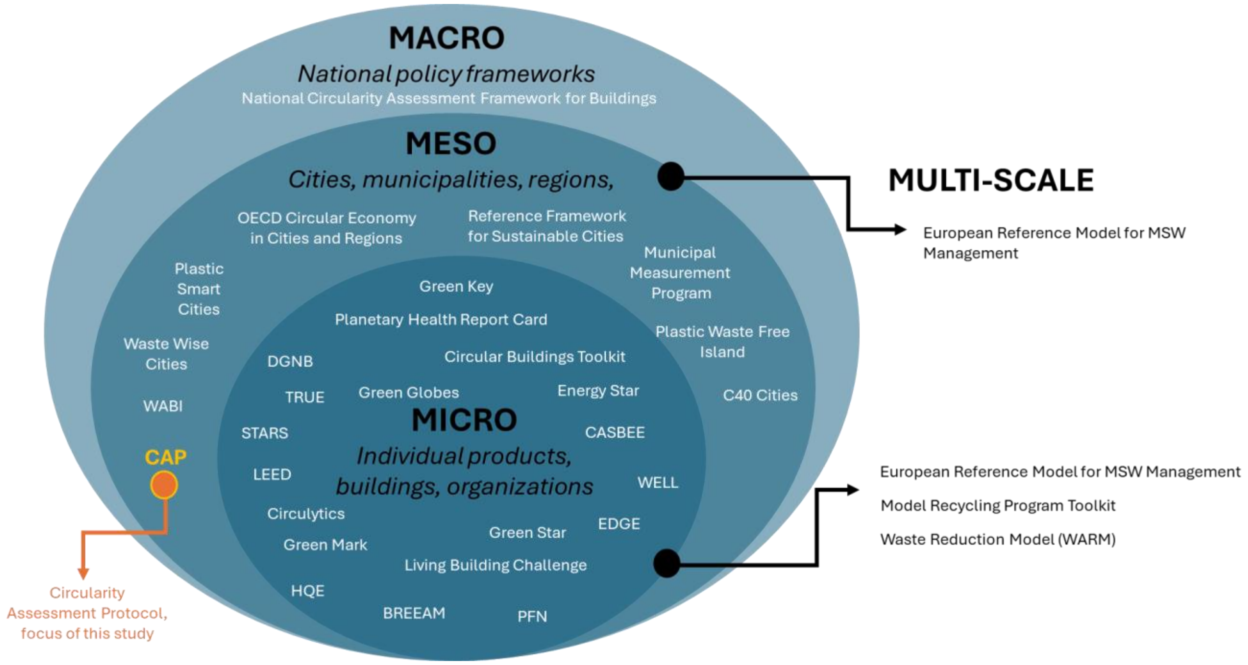


Figure 1. Analytical scale of tools in this review. Abbreviations provided in Table 1.

Open and accessible tools needing professional expertise to implement

Most tools were described as open access or free of cost, with many organizations providing their frameworks or assessment guides freely, and noting that there may be indirect costs to implement the assessment tool. In contrast, many of the formal building certification frameworks like DGNB, LEED, BREEAM, Green Star, etc. require users to engage with certified or specially trained assessors (e.g., DGNB Auditors/Consultants, Licensed BREEAM Assessors, LEED AP credentials, TRUE Advisor certificates, third-party Green Globes Assessors, and HQE verified professionals. Other tools that may not require certified assessors provide training for users, such as courses, events, and user guides. For example, the National Circularity Assessment Framework for Buildings is designed to be accessible regardless of specialized certification and provide a user guide and reporting template for users. Additionally, tools applied in the building sector largely result in certifications, scores, and rating systems, which offer creating competitive frameworks with standardized metrics that can be revisited over time and support measures for environmental compliance. In contrast, plastic-focused tools tend to emphasize baseline assessments (e.g., hotspot identification" and action planning.

Discussion

Gap assessment

Considering their analytical scale, most tools are intended for industrial or corporate applications (e.g., LEED, BREEAM, CASBEE, Circulytics, Energy Star, EDGE, etc.), which is unsurprising given the nature of our review based in gray literature. However, because of this scale, most of these frameworks rely on data structures and standards optimized for individual buildings or firms rather than for larger systems like cities or communities, risking the omission of socio-economic dynamics and contextual factors that influence whether materials are effectively retained within local economies. From the material flow perspective, only the Circular Urban Metabolism Framework, Circular Cities and Regions Initiative (CCRI), and Plastic Waste-Free Island explicitly evaluate materials lists, recycling rates, and facility controls, underscoring the limited integration of core CE principles in existing instruments. Moreover, very few tools, such as the Plastic Footprint Network (PFN), Plastic Smart Cities Initiative, and Plastic Waste-Free Island, explicitly model leakage pathways, such as littering, illegal dumping, or material losses through informal recycling systems, which can ultimately lead to incorrect counting of circularity indices. Finally, only eight tools provide interactive dashboards or visualization capabilities (e.g., C40 Cities, CCRI, HQE, Green Globes, National

Circularity Assessment Framework for Buildings), while most produce static reports. This may limit their usefulness for dynamic policy design, scenario testing, and public communication. Another significant gap is the limited inclusion of co-creation and participatory assessment. Certification-oriented systems such as LEED, BREEAM, and DGNB System largely depend on expert assessors and documentation, with minimal stakeholder engagement once in use. Reviews of CE frameworks highlight that stakeholder participation remains underrepresented, weakening local legitimacy and excluding crucial qualitative insights that directly affect implementation success. Additionally, accessibility remains a barrier: 22 tools require specialized training, and 19 are not freely available, creating cost and capacity constraints for under-resourced municipalities. Overall, existing tools remain fragmented, often technically robust but socially and operationally narrow.

Filling the gap: The Circularity Assessment Protocol

While the reviewed CE assessment tools provide a wide range of analytical applications and outputs, many gravitate toward top-down, expert-driven tools. While such tools are an important component of advancing CE, reductionist or quantitative assessments can risk reinforcing existing systems rather than driving innovative or transformative change (14), and recent literature has called for increased community engagement and multi-scale assessments (15). Here, we compare these broader trends to an established and expanding assessment tool called the Circularity Assessment Protocol (CAP). Specifically, the CAP is a collaborative, system-based tool for cities and communities that was developed as a hub-and-spoke model that integrates seven interconnected city-scale CE components: Input, Community, Product Design, Use, Collection, End-of-Cycle, and Leakage, which are anchored together by policy, economics, and governance. Originally developed for assessing plastic consumer goods, the CAP is currently being adapted for assessing CE of the building materials in cities. While procedural details and applications of the CAP have been published previously (16-22), our discussion focuses on how the CAP broadly compares with existing CE assessment tools and fills analytical gaps.

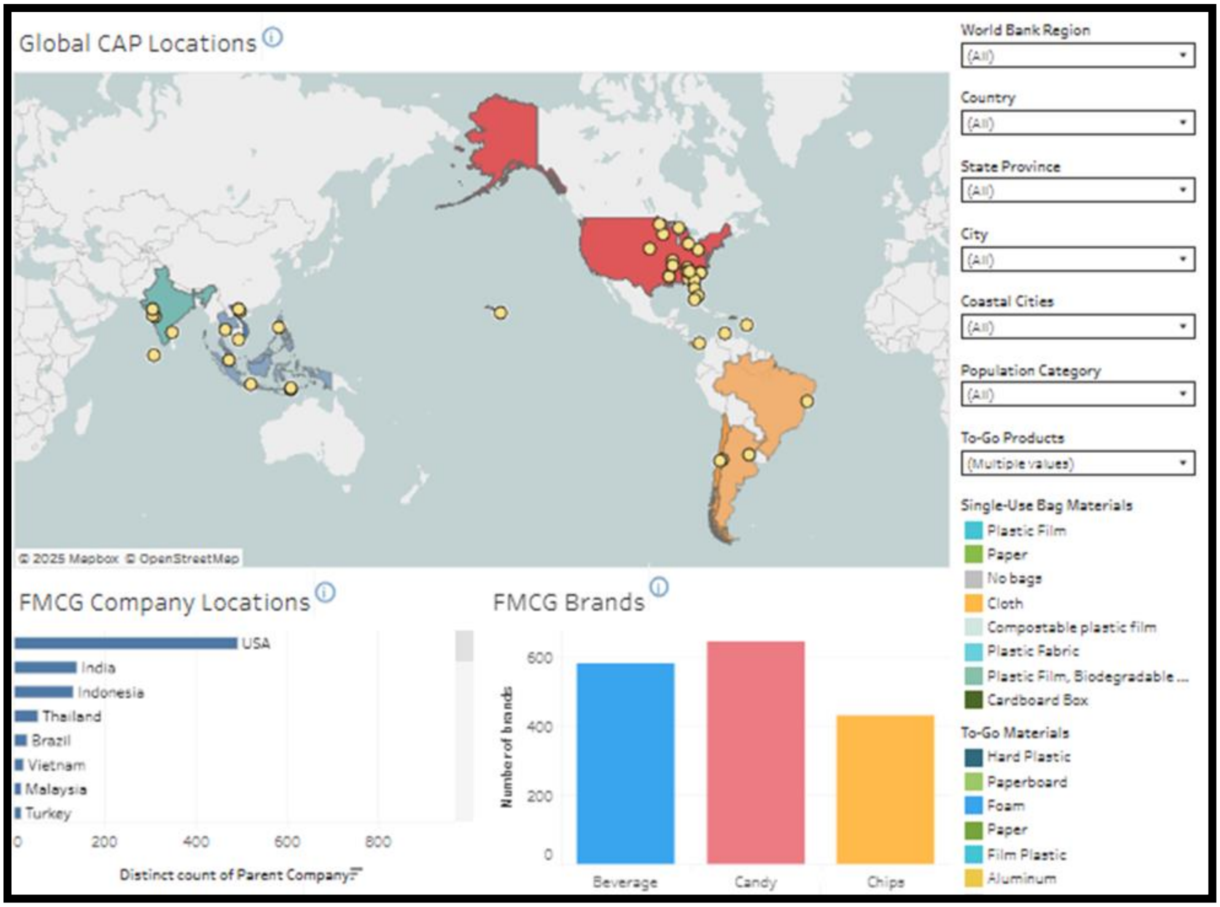
First, the CAP is designed for the community/city scale rather than individual buildings or products, making it a distinctly meso-scale CE assessment tool that focuses on evaluating local CE in the places where policies are enacted and enforced and where materials are extracted, consumed, and disposed of (Figure 1). This framing means it operates similarly to other waste-focused tools we reviewed, such as frameworks from Waste Wise Cities, Plastic Smart Cities, and the Municipal Measurement Program, which similarly collect city and regional waste data. However, the CAP expands upon waste metrics to include a wider, holistic diagnosis based on mixed methods that include considerations around products entering the city, community attitudes and perceptions, and environmental impacts. Additionally, the CAP has been applied broadly across more than 50 cities throughout the world, with no geographical limitations, and is able to be applied to resource-limited contexts and diverse geographies. This adaptability has led to comparative multi-city assessments such as a CAP study across in six cities spanning Asia and Latin America by Maddalene, et al. (19) and an application of the CAP across ten communities in India and Bangladesh located along the Ganges River basin by Youngblood, et al. (22).

Second, the CAP was initiated from a desire to engage communities throughout the full assessment program. Many of the gray literature tools adopted stakeholder interviews, largely through the lens of consultation, wherein certified experts collect data at the given application scale and deliver corresponding reports. The underlying definition of waste and resources is dynamic and always changing is defined culturally, socially, geographically, and these influence how we relatively govern and manage absolute waste generation and management (23). As a mixed method, holistic tool, the CAP combines desktop research, stakeholder interviews and surveys, and field observations, such as litter transects and site visits to key waste infrastructure and facilities. Notably, the CAP closely involves local implementation partners (LIPs) to both lead, collaborate, and/or participate in various components of the project. Recent expansion of the CAP has also allowed for LIPs or broader interested parties can apply to conduct a do-it-yourself 'DIY' CAP which is an online asynchronous and autonomous training course (with live Q&A as needed). Additionally, from a data standpoint, the CAP provides free and open access to cleaned data and reporting through the Circularity Informatics Lab website (https://circularityinformatics.org/), where both LIPs and the public can access data and findings related to CAP projects, including multi-city comparisons. CAP deliverables historically comprised lengthy technical reports, but with recent input from project partners and community representatives, the CAP developers have built an online data portal that illustrates metadata from all the CAP cities, which can be filtered by city, state, nation, World Bank regions, coastal communities and other city characteristics (Figure 2). These data and charts are open and able to be downloaded for further analysis and use. Additionally, a large language model (LLM) containing all the information from 30+ previous CAP cities has been developed for rapid synthesis and finding specific information.

Third, the CAP scope includes dimensions of circularity that conventional assessment tools often overlook. Shifting to the CE does not inherently prevent primary production or pollution (24). To address this gap, the CAP emerged from efforts to quantify and monitor material losses to the environment through the Leakage spoke, which involves litter surveys and inventorying prevention strategies. Adapting the CAP to building materials has recently expanded the Leakage spoke to include material losses to the environment via illegal dumping, abandoned properties, material degradation, and natural disasters, all of which are largely absent from building certification assessments (17). Importantly, the CAP harnesses such ground level leakage data to inform upstream solutions. Brooks et al. 2025 (18) recently leveraged findings from CAP litter transects to inform product-specific upstream strategies for priority litter items in a mid-size US city: cigarette butts, plastic food wrappers, and plastic film. The framework also incorporates social and governmental considerations often absent from technical assessments, providing examination of local issues like informal waste workers' roles, gender equity in waste management, and community education levels where highly present to local partners. Jambeck, et al. (16), for example, documented informal waste workers' roles through interviews and identified gender equity as a community workshop priority, ultimately recommending policies that consider differential impacts on women and disadvantaged groups.

Similarly, the CAP attends to the upstream end of the waste hierarchy and CE loop, by exploring product and material inputs in communities. The Product Design spoke (referred to as the Building Materials & Design spoke in the C&D context) examines attributes of products entering the community including packaging types, brands, and manufacturing locations, encouraging connections between design decisions made elsewhere and local waste management burdens. For example, through a product audit with retailers and vendors as part of the CAP applied across ten communities along the Ganges River, Youngblood, et al. (22) found that while most plastic products (e.g., beverages, food wrappers, tobacco, etc.) were manufactured locally, about 40% of brands were owned by international companies, highlighting substantial physical, economic, regulatory, and cultural gaps between corporate design decisions and community-level consequences. Green building design systems like LEED or BREEAM assess material selection within a project but do not necessarily trace supply chain origins or examine how building design and material/product selection decisions shape end-of-life options at the community scale. By connecting these upstream and downstream elements, the CAP uncovers systemic barriers and opportunities that may otherwise be invisible at other scales or with narrower sectoral focus. The ongoing adaptation of CAP to C&D materials demonstrates its potential to bridge the gap between building-scale certifications and city-scale material metabolism.

While the CAP addresses critical community-scale gaps, it is not without limitations. For one, it cannot replace technical methodologies like Life Cycle Assessment or Material Flow Analysis that quantify material intensity and environmental tradeoffs. Additionally, CAP's reliance on publicly available data and observational methods may miss informal or undocumented material flows, particularly in contexts with limited reporting systems. Further, unlike many CE tools reviewed here, the CAP does not employ a formal grading system or certification framework, though this is under investigation for future iterations to enable standardized benchmarking and progress tracking. Combining CAP's community-engaged, systems-based approach with quantitative technical assessments and/or formalized metrics could provide more comprehensive evaluation of CE implementation at the city scale. Future work should integrate CAP with systems-based methods, develop longitudinal tracking with standardized metrics, and strengthen data protocols for cities with limited reporting infrastructure.



World Bank Region: (All)
Country: (All)
State Province: (All)
City: (All)
Coastal Cities: (All)
Population Category: (All)
To-Go Products: (Multiple values)

Figure 2. Example of Circularity Assessment Protocol data portal (FMCG = Fast-moving consumer goods)

Conclusion & Recommendations

Taken together, the CAP is a methodologically distinct approach that fills critical gaps in the CE assessment landscape. Where many existing tools excel at evaluating individual projects at the micro scale, the CAP operates at the meso scale where policies are implemented and material flows are managed as part of a complex system. To better account for the complexity of the city or community scale, the CAP centers community knowledge and participatory approaches, informing system-wide material metabolisms from product and material input to environmental pollution. This inventory and gap analysis uncover two primary opportunities for advancing CE assessment and implementation:

1) **Bridge technical rigor with systemic evaluation:** Micro scale assessments have been adopted broadly, particularly in the building certification context. While these offer clear benefits to businesses and investors, they may leave out critical systemic evaluations of broader community CE needs and potential environmental impacts or tradeoffs. CE assessments should integrate broader community needs and explore the full lifecycle of materials, including supply chain origins and environmental leakage pathways that are typically excluded from circularity calculations.
2) **Improve accessibility through open data and participatory methods:** Though many tools are accessible and free of costs, they often require professional expertise and training that can limit adoption of the assessment. While technical evaluations may understandably require specific education or expertise, findings should be made publicly available and in digestible formats for community members to engage with. Additionally, embedding community members into the full process such as selecting assessments, gathering information, and providing input on decisions can strengthen and democratize local CE transitions.

Looking forward, the developers and adopters of the CAP will continue to iteratively advance and expand the tool. For one, as technology advances, tools like trained LLMs and the interactive, open data portal in development for the

CAP can enable rapid synthesis across CAP contexts, uncover emerging trends, provide transferable (rather than solely generalizable) best practices, promote information exchange, and provide benchmarking opportunities for cities to track progress over time. Additionally, by leveraging co-design and community knowledge, the CAP is customizable and may be adapted for application in other material contexts such as organics and textiles, sub-components of cities such as campuses and neighborhoods, or sectors such as healthcare and agriculture. Ultimately, CE assessment tools must connect common technical metrics related to waste, design, and infrastructure with social and environmental considerations to support a just transition to the circular economy.

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