

Circularity Across Cities Big and Small: Working to Manage Plastics and Biodegradable Organic Materials

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Developed by the Circularity Informatics Lab at the University of Georgia, the Circularity Assessment Protocol (CAP) is a standardized assessment protocol to inform decision-makers by collecting community-level data. Grounded in systems thinking, the CAP uses a hub-and-spoke model to holistically characterize how consumer materials come into a community, are consumed, managed or leaked into the environment. The model is comprised of seven spokes: 1) input, 2) community, 3) material and product design, 4) use, 5) collection, 6) end of cycle, and 7) leakage. At the center, the system is driven by policy, economics and governance with key influencers including non-governmental organizations, industry, and government (Figure 1). The CAP has been conducted in 56 cities in 16 countries globally. For this work, the CAP was conducted in six US cities to examine the material flows of plastic packaging for fast-moving consumer goods (FMCG) and biodegradable organic materials. (e.g., food waste). The cities' characteristics varied by population size and setting including: Minneapolis, MN; Atlanta, GA; Athens, GA; Vicksburg, MS; Cape Girardeau, MO; and Blytheville, AR. In each city, data was collected on FMCGs in stores and restaurant to-go packaging. Product packaging, organic material management, and recycling methods (including quantities, where available) were documented. Quantitative data was collected for products, packaging, use, and leakage. Stratified random sampling generates comparable results between the cities for leakage with density of litter ranging from 0.55 items/m² to 1.2 items/m². Current systems for industrial composting were documented in Minneapolis and Athens, with estimates in other cities of how much organic waste could be diverted if composting occurred. This work also included a social media analysis conducted across the United States to illustrate knowledge and sentiment to composting and compostable materials. Interest in biodegradable and compostable materials, concern over plastics, and other related materials seems to be growing on social media. While individuals participate in these interrelated conversations, nonprofits, companies, and some professionals in this space seem to be leading the discourse. Cities had various actions after conducting CAP. Two of the mayors from cities that hosted CAPs have become leaders in communicating about circularity, plastic pollution, and their city's perspective at national meetings and discussing Extended Producer Responsibility (EPR). One city was reinstating recycling with a private contractor. The CAP open data platform allows for conversations among the cities and the public, sharing of data, and tools to implement a systems change from the ground up.

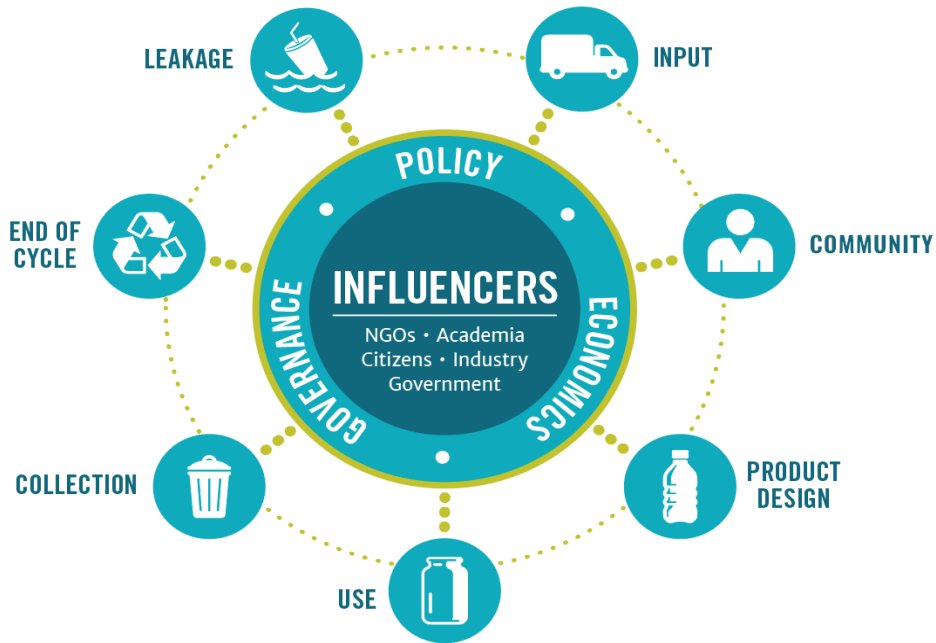


Figure 1. Hub and spoke model of the Circularity Assessment Protocol (CAP) conducted and compared across six US Cities.