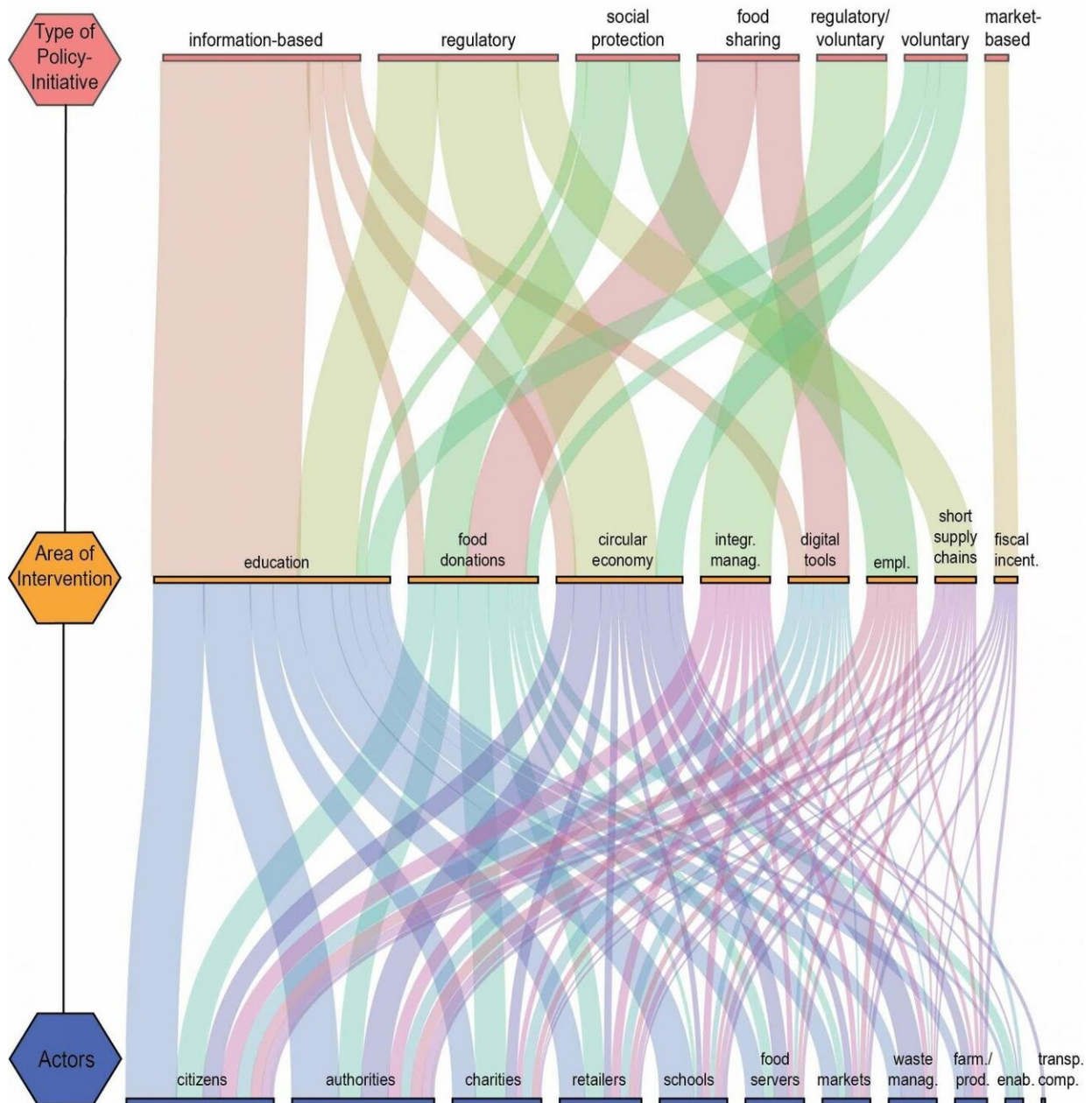


# Food waste: Cities can make the difference

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Application of the framework to the analysis of the 40 European leading cities in urban food waste initiatives. The three horizontal axes represent the three pillars of the framework and the ribbons represent the link between specific elements of the different pillars. The width of each ribbon reflects the occurrence of the link between two categories belonging to different pillars within the sample of 40 cities (abbreviations: integr. manag. = integrated management; empl. = employment; fiscal incent. = fiscal incentives; waste manag. = waste management; farm./prod. = farmers-producers; enab. = enablers; trasp. comp. = transportation company). Credit: This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

Food waste is one of the most important issues of current food systems: Food and Agriculture Organization (FAO) has estimated that more than one third of food is either lost or wasted along the entire food supply chain causing significant economic, social and environmental impacts.

From an environmental point of view, [food waste](#) represents between 8% and 10% of [global greenhouse gas emissions](#), and the annual water footprint of the agricultural phase of [food waste](#) is about 250 km<sup>3</sup>, five times the volume of Lake Garda and higher than any national food consumption water footprint. The IPCC Special Report Climate Change and Land (2018) estimates that 37% of total greenhouse gas (GHG) emissions are attributable to the food system considering its complete cycle, from agriculture and land use, storage, transport, packaging, processing, retail, consumption and waste. In the European Union (EU), 88 million tons of food waste are generated each year (i.e., 173 kg per capita) with significant economic, environmental and social impacts. It has been estimated that 15-16% of the total environmental impact of the food supply chain in Europe can be attributed to food waste.

Cities have emerged as crucial actors in the global food security

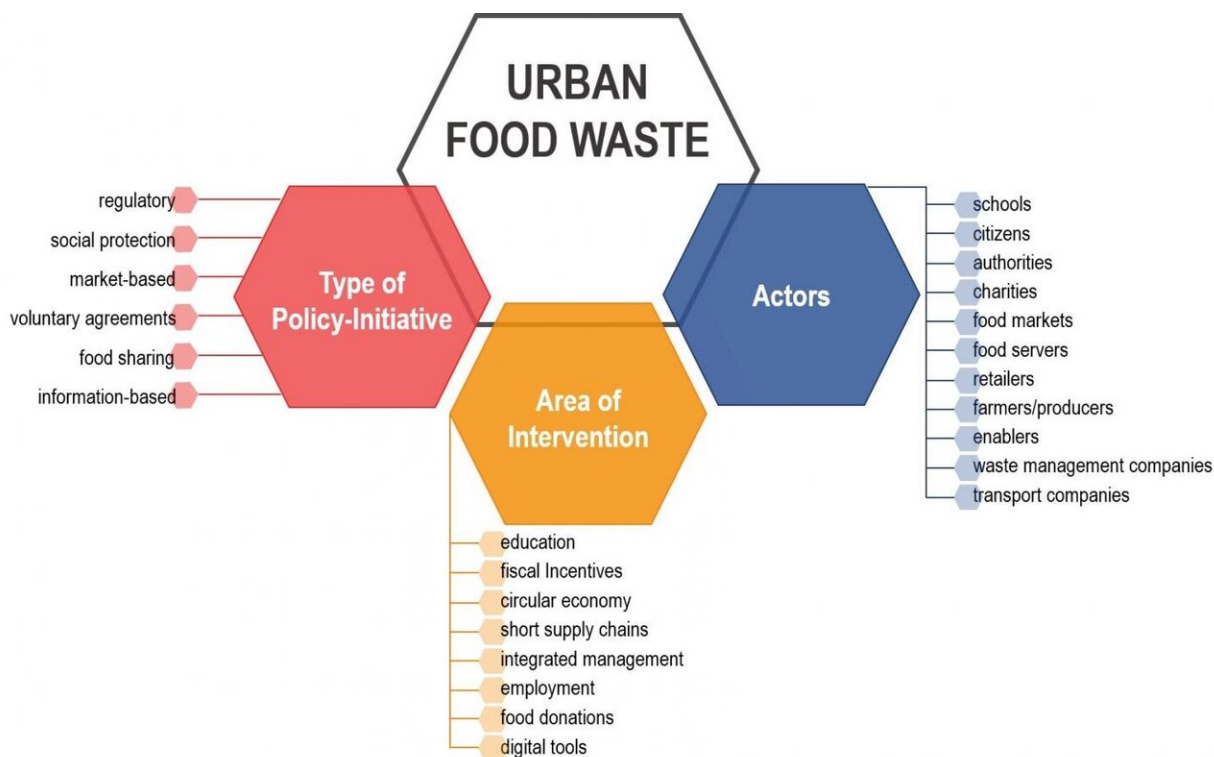
geography: today they occupy approximately only 3% of the total land, but the number of people living in [urban areas](#) surpassed for the first time the number of people living in rural areas, and urban contexts are therefore the biggest source of post-consumption food waste, using between 70% and 80% of world's food.

However, cities have proved to be crucial actors in tackling food waste, launching effective policies and initiatives to address it.

By looking at 40 cities across 16 European countries, a study recently published on *Resources*—Special issue Food Loss and Waste: The Challenge of a Sustainable Management through a Circular Economy Perspective presented a new framework for assessing urban food waste policies and initiatives.

"Food loss and waste is recognized as one of the most challenging distortion of current food system," explains Marta Antonelli, senior scientist at the CMCC Foundation and Head of Research at Barilla Foundation. "We talk about distortion because we produce tons of edible food waste every year. Food loss occurs from farm up to and excluding retail, whilst food waste occurs at retail, food service and household level. Causes range from poor handling, inadequate transport or storage, lack of cold chain capacity, extreme weather conditions to cosmetic standards, and a lack of planning and cooking skills among consumers. This year we have witnessed an increase in food loss and waste as a result of movement and transport restrictions due to the pandemic. COVID-19 aside, each year about 14% of the world's food is lost before even reaching the market."

Reducing food lost or wasted means more food for all, less greenhouse gas emissions, less pressure on environment, especially on water and land resources, increased productivity and economic growth, and more sustainable societies.



Assessment framework for urban food waste policies (Source: devised by the authors). Credit: © 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

"Food waste management is a very complex challenge," explains Marta Antonelli, "since it requires diversified but integrated actions that involve many public local authorities, such as cities, regions, metropolitan areas and provinces, and other actors including retailers, school canteens, hospitals, food markets, citizens and non-governmental organizations. All these actors and levels of governance need to work in a synergic way to ensure effective urban food waste policies.

Cities can have a crucial role acting on different sectors and levels of the urban food system. The City of Milan, for example, approved a waste tax deduction for actors that contribute to reducing food waste through donations. In particular, the City of Milan has explicitly declared its ambition to halve food waste by 2030 and its intention to adopt a food supply chain approach, in order to reduce food waste across all tiers of the chain from food production to final consumption. The authors started from a review of the most recent literature on food waste policy assessment frameworks and on urban food waste initiatives to capture the specificities of urban contexts and identify the most interesting urban initiatives and policies implemented. Finally, they identified direct and indirect links with the Sustainable Development Goals (SDGs), showing the role that cities can play in achieving the targets of the UN 2030 Agenda. The framework proposed identifies and sheds light on the links between the different types of policies launched (information based, market based, regulatory, nudging initiatives, etc), the main areas of interventions addressed, as well as the different actors intervening in urban food waste management.

The analysis highlighted that several urban food waste policies or initiatives (e.g. in Bari, Bologna, Milan, Turin, Genoa, Venice and Cremona, with public as well as and private initiatives) proved to be effective in tackling poverty and socio-economic exclusion through food donations and, also, through the creation of new job opportunities for some marginalized groups of the population.

"Tackling food waste can be a key component of wider initiatives based on integrated management of the urban challenges and that promote the collaboration and coordination of the urban ecosystem," Marta Antonelli adds. "If we look at urban food waste interventions, we have very few cases of integrated, multi-sectorial and multi-actorial management of food waste. Cities are currently promoting new models of governance, for instance launching new institutional settings like the Food Policy

Councils, creating regional and global networks of mayors advocating for more sustainable food systems, and coordinating initiatives to address food waste-related challenges in an integrated manner, from food production to food distribution."

The study undermines the importance of providing city officials with effective tools to collect data on urban food waste levels, to understand the scope of the problem and design action. Gap in metrics and data are still many. Concrete metrics and publicly available quantification tools developed at city level are currently still missing.

"Moreover, it is essential that urban food waste policies and interventions are fully aligned with the targets of the Agenda 2030," Dr. Marta Antonelli concludes. "Only in four cases (Cremona, Liège, Milan and Montpellier), food waste interventions were explicitly put in relation with the SDGs. The research showed that cities seldom use the SDGs as a policy framework, thus limiting the evaluation of the impact of these interventions on the sustainability agenda.

Therefore, it is important to raise more awareness among local policy makers, public officials, the private sector, and citizens to fully monitor the link and the impact of food waste on the SDGs. Cities are implementing many urban food waste initiatives, but what it's still rare is an integrated vision in addressing these issues In this sense, the recently adopted "Farm to Fork" Strategy, part of the broader objective of making the EU food system the global standard for sustainability, represents the first step of the European Commission to address food system-related challenges in an integrated manner, for example putting human health and sustainability on the same level."

The analysis could be easily expanded and replicated to other contexts, and in the future, the same framework could be valuable for other non-European cities that are starting to tackle food waste and are addressing

similar challenges.

**More information:** Daniele Fattibene et al, Urban Food Waste: A Framework to Analyse Policies and Initiatives, *Resources* (2020). [DOI: 10.3390/resources9090099](https://doi.org/10.3390/resources9090099)

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