

Local food action: does it matter what cities do?



Food is among the top three contributors of cities' environmental impact. However, cities are not the only ones responsible for acting upon their food system. Indeed, a lot what needs doing falls beyond their jurisdiction. In this context, does it matter what cities do? Are cities the right actor to tackle such issues?

The question was the starting point of Dana Boyer's PhD work at the University of Minnesota (Unites States), whose results were published in a series of papers in 2017. She developed a method to assess the impact that food-related policies at the city-scale have on three environmental outcomes: energy/greenhouse gas emissions (GHG), water, and land. And, for the first time, researchers applied this method not only to local actions, but also to actions that can be taken outside of cities' jurisdiction. This enabled them to compare the impact of local and non-local actions.

How much of the answer lies in cities' hands?

The researchers took the city of Delhi (India) as a case study because it benefits from a great volume of available data on its food system. They then selected food-related actions that are representative of what a city in India could do. These were:

- Changes in diets, namely shifting rice consumption to other staples such as wheat, sorghum, millet.
- An increase in urban agriculture, either through a doubling of existing soil-based production or a shift to vertical farming.
- A shift from existing dirty cooking fuels (i.e. firewood, cow dung, charcoal), which are very polluting and bad for health, to a clean alternative (liquefied petroleum gas).
- An improvement of city waste management (by sending all household organic waste to composting or to anaerobic digestion).

They compared them to an action that cannot be taken at the local level but is widely discussed in India: a decrease of food waste in supply chain before it reaches the final consumer. The researchers imagined that food waste could significantly decrease, in line with international best practice, from 35% now to 13%.

Their results show that **local action, on an individual basis, can compete with the non-local action, though no one action is able to compete across all three environmental outcomes.** Particularly the improvement of organic waste management within the city's premises, that scores about the same as action on food waste at the first stages of the supply chain as far as greenhouse gas emissions (GHG) are concerned. **Further, taken together, benefits from local actions add up, and can be equivalent to action implemented by actors outside of the city.** What cities do matters.



City actions matter, but what should they do?

This methodology does not only help understand the impact of action taken by city stakeholders. It can also be used by cities to reflect upon which specific actions they can implement. It does so in three useful ways:

- **Understanding trade-offs between energy/GHG, land and water impacts.** The methodology does not only focus on greenhouse gas emissions, it therefore helps widen the perspective. For example, results show that shifting rice consumption to millet would reduce GHG emissions but increase land and water needs, as it has lower yields.
- **Exploring where the impacts take place: in the city itself or outside its boundaries.** In a context in which city natural resources such as water, land and energy are scarce, this is particularly useful to avoid straining them. For instance, the research showed that doubling urban agriculture production (if no changes are made to existing production methods) would have very little overall benefits on the food system in terms of reducing environmental impacts, but it would lead to an important increase in needs for water (+20%) and land (+49%) within the city itself. Maybe not a good idea in a context of increasing water scarcity in the city...
- **Assessing the environmental impact of all food-related actions.** Food policy does not only have environmental aims, it also deals with social and economic challenges. In India, for instance, food insecurity is a great issue for lower income households. For this reason, the researchers also looked at what greater equity in households' food consumption would entail from an environmental point of view. The analysis shows that ensuring that the lowest socio-economic categories of the population consume enough calories and proteins would increase overall environmental impacts, but, more importantly, that this could easily be offset by implementing, at the same time, other policies to reduce the environmental impacts of the food system.

From assessing impacts to allocating responsibility for action

This methodology can also help cities better understand what they can be accountable for, and what should be done by other actors. This will help define which partnerships should be developed.

Since they publish the academic article in 2017, the researchers have applied their methodology to other cities in India and in the United States. According to Dana Boyer, any city can use this methodology provided it has enough data. It will help cities define policy priorities. **Which action shows the greatest potential? What can my city's natural resources really accommodate? Is my city putting its efforts on the potentially most impactful policies?** Such questions can really make a difference in choosing the right actions to implement. Indeed, this research shows that acting on diet changes has the greater potential. However, this is the policy area where solutions are the least developed at the moment.

Do not hesitate to contact Dana Boyer if you want your city to use this methodology!

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NB: the author would like to thank [Dana Boyer](#) for her inputs and comments.

Source:

[Boyer, D., Ramaswami, A., 2017, "What Is the Contribution of City-Scale Actions to the Overall Food System's Environmental Impacts? Assessing Water, Greenhouse Gas, and Land Impacts of Future Urban Food Scenarios", *Environmental Science & Technology* Vol. 51, pp. 12035-12045](#)

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