

## THEME 01

# City region foodscapes

FOOD

SMART CITY

CIRCULAR ECONOMY

As we increasingly move into cities, bringing agriculture with us, the city is becoming an integrated landscape for both people and agriculture. City region food systems are coming into existence, reconnecting the city to its food sources and improving the building blocks of the food chain. With current (technological) developments, these systems will come to make up the foundation of the smart city of the future.

## Our observations

- In 2018, more people are living in urban areas (55%) than in rural areas. By 2050, this percentage will have increased to [68%](#). City dwellers are often disconnected from nature and local food production chains. However, a trend of rural activities within cities is emerging. Cities around the world are building urban farms; for instance, Singapore announced plans to build a large [indoor farm](#). Furthermore, the trend is visible in a drift to the countryside: U.S. millennials are leaving the city to move into [agrihoods](#), communities on farms, in order to live close to nature and locally produced food. As the problems of urbanization become more apparent, symbioses between the city and the countryside will increase, with food production as the primary linkage.
- As more and more agricultural activities are taking place in the city, new ties between urban dwellers and farmers are constructed. Food and agriculture are becoming reasons to go beyond the urban-rural dichotomy model in designing the city. Historically, the countryside and the city have always been connected, as Carolyn Steel shows in [Hungry City](#) (2013). She argues that food production actually belongs at the heart of society and by recognizing the central role food plays in our lives, we can use it as a design tool and thus harness its potential to build cities in a smarter way.
- The concept of the [city region food system](#) helps to think in terms of an urban-rural continuum. A city region food system bridges the urban-rural spatial divide and connects the places where food is grown to the proximate places where food is consumed. According to the [FAO](#), these systems have the potential to increase food security in the city: creating a local food economy from small-scale producers to big businesses can reduce dependence on distant supply sources and strengthen social relationships between consumer and producers, and therewith foster transparency, ownership and participatory governance of the food chain. Moreover, this can connect resource flows (e.g. by means of using urban organic waste and wastewater as resources in the urban agrofood system) and thus reduce waste and promote natural resources management. Such a regional system, for instance, is [visualized](#) by UNStudio.
- It is estimated that there will be [88 smart cities by 2025](#), harnessing technologies to improve residents' quality of life and manage resources in a smart way. In the future, food systems will be highly complex networks that will require data analytics as a backbone to organize the food chain effectively and to some extent, every urban food stakeholder will depend on access to data for decision-making. The food chain is already [digitizing](#). More and more sensors are built into the chain, from sensors in precision farming, to sensors in the supermarket tracing consumers' buying habits.



## Connecting the dots

New technologies and methods have the potential to close the urban-rural gap and support city region food systems, from production to logistics, to delivery and consumption, and methods to close the loops and make the system circular.

First, growing and producing food is no longer something that happens outside of the city. Urban farming is [rapidly growing](#). As we have written [before](#), the growing of crops within the city could come to produce 10% of the global output of vegetable crops. Furthermore, the [benefits of urban agriculture](#), such as energy savings and climate regulation, could amount to \$80-160 billion annually. Urban farming can take place in various urban locations: outside in public spaces, outside on rooftops, and indoors with artificial light (LED), or without light. Potential forms of urban farming are horticulture (vegetables and fruit), poultry farming, pig farming, mushroom growing, hydroponics (vegetables), aquaponics (fish and vegetables), and honeybee keeping. Transforming existing leftover spaces can help to increase levels of urban food production. Not only are cities integrating urban agriculture into policy plans to increase city's food security, supermarkets are also experimenting with urban farming, such as the Belgian retailer [Delhaize](#). Currently, urban agriculture is capital and energy intensive. However, it has the potential for food savings, since resources are kept within the community and provide local economic wealth and ways to increase [energy efficiency](#) by using waste streams that have yet to be exploited.

Second, improvements can be made in logistics. This means that food chains could be shorter and more efficiently designed. Bottlenecks in getting food to the end consumer are often located at the last mile, and online supermarket models (such as [Picnic](#)) and smart, sustainable last-mile services (such as [FoodLogica](#)) seek to resolve these. In Paris, the multimodal logistics center of [Chapelle International](#) (42,000 m<sup>2</sup>) was created to facilitate the mass delivery of

goods to the heart of Paris by train. Clean vehicles are then used to distribute the goods in local neighborhoods. The result is a decrease in environmental impacts such as noise, pollutants, and emissions of greenhouse gases.

The third building block of the food chain that could be organized in a smarter way is that of retail and delivery. Cities can learn from tech companies that are teaming up with supermarkets and restaurants to increase their offer and get a foothold in offline food sales, such as Amazon and Tencent. Local producers and restaurants could organize their own platform and tap into the increasing demand for fresh and local products, short-chain food delivery and transparency about the origin of food products. Online platforms for the sale and delivery of agricultural products are on the rise (a Dutch example is [Hallo Boer](#)). Meal delivery is booming, especially [among young generations](#). In terms of investment, [food delivery](#) is already second on the list of leading urban-tech sectors for 2016-2018.

Finally, creating circular systems could enable the creation of more loops within a city region food system. Almost all urban areas experience high levels of food waste — and this is increasing. It is [estimated](#) that actions to reduce food loss and waste yield high cost-benefit ratios for municipalities, households and private food companies. For every £1 invested by London boroughs to reduce household food waste, £8 were saved. Waste is no more than residual flows that are valuable. Cities such as San Francisco are attempting to turn food waste into compost. Rotterdam is building a high-tech circular [floating farm](#), using waste streams to feed its cows.

By innovating the different building blocks of the food chain, we can connect local supply and demand in the city region, thus increasing the food security of the city by making it more self-sufficient and benefiting the local economy.

## Implications

- The city-region perspective on food has implications for policy-making in domains such as transport, waste management, education, employment, social welfare, and environment. Furthermore, the above-mentioned practices will have to be re-tailored to local conditions. Often, city food councils are called into action, such as the [Toronto Food Policy Council](#)'s Food Strategy that has started initiatives such as “Healthy Corner Stores”, “Mobile Good Food Markets”, and a “Toronto Urban Agriculture Program”.
- Community food programs can reduce healthcare costs. A smaller Massachusetts study, [published in April](#), found that people receiving medically tailored meals from Community Servings had fewer visits to the emergency room and fewer hospital admissions than a control group. The result was a net 16% reduction in health care costs after meal expenses, writes [The New York Times](#). In the future, the increasingly informed consumer will demand the delivery of personalized food recommendations and meal kits in order to stay healthy. For example, [Habit](#) already offers personalized food recommendations.
- According to the [“True Cost of Food”](#) (article in Dutch), CO2 and social costs for producers in developing countries are often not included; food produced close to the city and in a fair and transparent regional system would not include these costs and thus be “cheaper”.