

Priority investments for innovation in urban and peri-urban agriculture (UPA) and food systems in the Global South



Harvesting chard on the outskirts of Lima, Peru (Photo: Gordon Prain)

A double burden of under- and overnutrition is widespread in the urban Global South, resulting from inequitable food access, unhealthy consumption practices and food waste. Unregulated urban growth erodes food safety and worsens the effects of climate change and pandemics in cities. A CoSAI-commissioned study shows how innovations in agri-food systems can help reverse these trends.

Actions needed

- **Innovations in land use policy through land use and food mapping, introducing zoning, incentives and allocation of public plots for farming**, can protect and boost agricultural spaces around and within cities.
- **Innovations in the safe reuse of solid and liquid wastes in UPA and provision of other ecosystem services** can support climate change mitigation and adaptation and the transition to an urban circular bioeconomy.
- **Innovations in the repositioning and diversification of local food markets, vendor enterprises and institutional markets** can increase the density of short value chains with local food producers, promote healthier food consumption and generate decent employment.
- **Innovations in institutional management** of food production, marketing and consumption across city regions, working through stakeholder consultations, participatory planning and national food policy frameworks, can strengthen the resilience of city region food systems.
- **Innovations in cross-sectoral engagement and building of partnerships and support networks**, including engagement of 'development brokers', can strengthen horizontal and vertical integration of efforts to make food policy and UPA central to sustainable urban development.

The double nutrition burden, rapid urbanization and climate change make cities unsustainable

Perhaps 300 million people living in cities are still underfed, while changing urban behavior and eating habits contribute to obesity and ill health. Meanwhile, one-third of all fresh food is lost, most of it in urban supply chains. Unregulated urban development contributes to increased pollution, including contamination of food in urban supply chains.

The scale of urbanization exacerbates the urban food crisis. Two-thirds of the Global South population will be urban by 2050, especially occupying small and medium cities. Slums now account for most urban growth, with just over a billion people living in slums in 2018. Urbanization is the major threat to productive green spaces in and around cities.

Since 1980, cities have been suffering temperature increases of nearly 1°C a decade and a quadrupling of flooding events, affecting living conditions, food supply and food losses. Loss of productive green spaces intensifies these effects of climate change.

Food is central to urban sustainability but rarely recognized in urban policies – it is everybody's business and nobody's business. Urban and peri-urban food production on productive green spaces is vulnerable to unfavorable policy bias, informal land markets and loss of access to safe water. Informal food marketing on which the poor depend is vulnerable to health risks and lack of policy support. Correcting these policy distortions can contribute substantially to meeting current urban challenges.

Protect and boost urban agriculture through innovations in land policies and technology support

Addressing the policy gap in urban treatment of food and food production, according to [CoSAI's study](#), requires changing how decision makers perceive and then prioritize food. Mapping of food production and food consumption hotspots ('urban food deserts')

brings the food system to life for local stakeholders. It also alerts stakeholders to climate change adaptation and mitigation benefits of productive green spaces. A key investment is building capacity of local officials in geographical information systems (GIS).

Changed perceptions and prioritization of local food production need consolidation through policy change. Agriculture at the peri-urban interface can be protected through land-use zoning. Within cities, allotment-style agricultural plots on public land can be allocated to residents. For peri-urban zoning, business incubation approaches combine protection and profit-boosting to make urban agriculture a viable part of local economies. 'Incubator agricultural zones' require incentives, including innovative finance access, tax guarantees and extension services for both crops and livestock. Non-agricultural zones such as commerce and residential may also need finance and tax incentives to reduce their encroachment.

Technical innovations should include a focus on [controlled environment agriculture \(CEA\)](#), such as in polytunnels and greenhouses, to provide year-round vegetable production in many locations – testing micronutrient-rich, adapted crop varieties to contribute to urban nutrition and supporting sustainable intensification of livestock production. To increase the safety of agriculture near dense human populations, effective bio-controls and biofertilizers should be scaled.

Contribute to circular bioeconomies through innovations in resource reuse and other ecosystem services

Cities have the chance to respond to climate change by moving from a traditionally linear mode of *resource input – waste output* to a circular mode of *resource input – resource recovery – re-use*, combined with an overall reduction in consumption and waste. [CoSAI's study](#) shows that UPA can contribute to achieving this transformation through innovative delivery of ecosystem services, especially resource recovery and reuse.

An abundant, easily recoverable urban resource is wastewater. Nearly 40 million hectares of irrigated urban cropland already uses wastewater, but use is largely informal and often a health risk. Two groups of innovations for reducing health risks can be scaled, one through simple sedimentation or filtering treatment, the other through safer application techniques.

Expanding safe use can be achieved through enabling policies and regulations, through providing incentives for uptake of innovations, and/or through labelling of safe products and provision of dedicated marketing outlets.

Use of food wastes as feedstock for pigs or insect-rearing, and the recycling of organic wastes as soil conditioner and compost for horticulture, are innovative ways to reuse or recycle municipal solid waste.

UPA provides several additional ecosystem services such as flood mitigation, protection of water sources, heat reduction and enhanced urban biodiversity. A value should be put on these services in the new circular bioeconomy accounting, and the value factored into incentive schemes.

Incentivize short value chains, healthy consumption, and decent employment through local food market repositioning

Agriculture in and around cities is integral to urban food systems. Many local producers sell food products in markets or on streets and most urban poor buy their fresh food from local wet markets.

Making food markets work better for producers, vendors and consumers, especially women, involves investing in innovative repositioning of local wet markets through: decentralization of crowded wholesale or retail markets in congested city centers to satellite locations in other parts of the city, based on full consultation with stakeholders diversification of markets through facilitating alternative market outlets, especially green markets for sale of local food, food hubs to integrate local production, sales and food sovereignty, and local sourcing of food supplies for institutional markets (schools, hospitals, prisons) upgrading of existing markets to improve access, hygiene, food safety and nutrition knowledge dissemination, through provision of clean water, toilets (especially for women), efficient waste recovery and promotion, and information dissemination on nutritious foods.

A key area for innovative investment is in the enterprise capacities and conditions of the millions of workers in informal food producing and vending in urban areas. Building the enterprise capacity of producers

and vendors will be achieved through adapting an established business and enterprise training tool – **Farmer Business School** – which should also include modules on nutrition, hygiene and food safety. Other important areas of innovation include the establishment of a cellphone-based digital network linking producers and vendors to enhance profitability and reduce waste, and low-cost food storage options for markets.

Strengthen city region food systems through innovations in planning and institutional management

Local government organizations and external investors have a responsibility to highlight and support institutional as well as technical innovation to address the major environmental, health and nutritional challenges facing cities, **CoSAI's study** argues. Central here is the need to invest in agri-food systems planning and governance within cities and their surrounding regions, where much of the fresh food marketed and consumed in cities is produced.

Successful experiences from **Ecuador, Argentina and Brazil** demonstrate that planning and decision making need to be consultative, participatory and cross-sectoral. Multi-stakeholder planning should involve the voices and opinions of the health sector as well as the economics sector; food producers and vendors as well as administrators; consumers as well as producers; and women as well as men. Participatory approaches also help to ensure that capacity building and adaptation measures are the preferred options to address risk, rather than prohibition. Participatory planning and budgeting is increasingly being mainstreamed in different local governments in the Global South, **including in relation to food planning**.

Experience also indicates that the formulation of national food policy frameworks can catalyze actions on food systems planning and governance at urban and city region levels, so investing in these frameworks can have high payoffs.

Strengthen horizontal and vertical urban food system integration through innovative partnerships

Taking a cross-sectoral, multistakeholder approach to urban agri-food systems planning also requires innovative partnerships. Horizontal partnerships link administrative jurisdictions across city regions where food is produced and marketed, involving metropolitan centers, smaller urban centers and villages. Multiple sectors such as food production, nutrition and health, food marketing, employment, environment and even education are involved in food systems, and building sectoral capacity across regions is one function of these partnerships. A second function is supporting cross-sectoral collaboration, for example between nutrition and marketing to help markets reposition as knowledge centers for nutrition and food consumption.

Vertical partnerships help coordinate food system actions between local, metropolitan, regional and national agencies and authorities. This facilitates, for example, the application of national food systems frameworks at local level, or the coordination of policies on greenbelts between local and provincial authorities within the city region. More generally, these partnerships enable cross-learning between different levels of government.

Another type of innovative partnership detailed in [CoSAI's study](#) involves investing in external 'development brokers'. These are agencies external to the city region planning environment, such as international organizations like [FAO](#), [RUAF](#) or [CGIAR](#), or national universities or private sector entities. They can facilitate the scaling down of national food policy frameworks to local stakeholders, or their scaling up to national-level innovations in food systems and UPA through municipalities and their partners.

Conclusions

With most of the world's population now living in large and small urban centers, cities are at the forefront of addressing two intersecting crises: fragile food systems and climate change. Urban and peri-urban agriculture can be part of the solution, with the right kinds of investment support. Cities need to embrace the agri-food system as a crucial part of their mandate and a pathway to address rampant over- and under-nutrition and growing threats from the changing climate as part of overall sustainability and resilience strategies.

Opportunities for investing in innovations will vary between different-sized cities, but some key principles apply widely. Innovative policies to protect green spaces and boost their capacity to produce healthy food will be a major plus for human and environmental health of cities.

UPA offers multiple innovations to help cities make the environmentally urgent shift to circular bioeconomies. Innovations contribute to resource recovery, reuse, recycling and the provision of multiple ecosystem services. Innovative repositioning of urban markets can help them better integrate with local food production to be drivers of improved nutrition and providers of better employment for vendors. All cities will be able to grasp these opportunities if there is also investment in innovative planning and governance involving participatory decision-making and finance to support food system transformation.



Youth-run vegetable farming in Nairobi, Kenya (Photo: Gordon Prain)

For more information, see the full report at: <https://hdl.handle.net/10568/119438>



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