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SUSTAINABLE URBAN AND PERI-URBAN AGRICULTURE

Key challenges and potential solutions for transitioning to sustainable urban food systems in India

Credit: PC- Nabin Baral - IWMI

THE CHALLENGE: THE CASE FOR URBAN FOOD SYSTEMS AND URBAN AND PERI-URBAN AGRICULTURE (UPA) IN INDIA

- **Increasing urban food demand** is evident as 22% of India's total migration[1] is characterized as rural-urban migration and 40% of its total population[2] is projected to be urban by 2036.
- **Prevalence of both undernutrition and overnutrition:** 30% children in urban areas are stunted and 20% men and 54% women are anemic while 30-33% of adults are overweight or obese across genders[3].
- **Vulnerability of marginalized communities** showing a lack of diversity in their diets, particularly regarding fruits and vegetables, which was further aggravated during COVID-19 pandemic[4].
- **High amounts of food loss and waste** due to long supply chains, particularly in the case of horticultural crops, specifically fruits (3.08 - 9.96%) and vegetables (4.58-12.44%), which contributes to about 4.67 ± 0.2 million tons carbon dioxide equivalent (Mt CO2eq) GHG emissions[5].
- **Presence of sub-national initiatives around UPA in India** include Arka Vertical Garden scheme and Vegetable Development Programme (Kerala), Do it Yourself Kit Programme (Tamil Nadu), Vegetable Growing in Urban Areas (Telangana), Horticultural Producers' Cooperative Processing and Marketing Society Limited (Karnataka), initiatives under State of Maharashtra's Agribusiness and Rural Transformation Project (Maharashtra), E-cool Mandi (Odisha), East Kolkata Wetland fishery (West Bengal), Rooftop Gardening Scheme (Bihar), and Smart Urban Farming Initiative (Delhi)*.

** based on information available on respective government websites and platforms.*

THE SOLUTION: POTENTIAL BENEFITS OF INCLUDING URBAN AND PERI-URBAN AGRICULTURE IN URBAN FOOD SYSTEMS IN INDIA

Strengthening UPA[6] areas with sustainable farming practices can offer a solution to the challenge of high urban food demand, malnutrition, and reduce pressure on land-based agro-ecosystem in rural areas. UPA can restore the functionality of agro-ecosystems and prevent future land degradation.

A growing momentum for food systems transformation and agricultural sustainability is evident at both global and national levels. Recent global fora such as the United Nations Food Systems Summit (UNFSS) hold particular relevance for promoting sustainable UPA in India, aiming to create an enabling environment for developing a resilient, equitable, and inclusive food system through multi-stakeholder engagement and catalyzing implementation. At the national level, India's G20 presidency has a vested focus on prioritizing food and nutrition security amidst celebrating international year of millets and to put forth people-centric success stories around resilient and equitable food systems. Additionally, with ongoing initiatives such as National Mission on Natural Farming by the Government of India, action on UPA is well timed in the country.

Sustainable UPA can provide an alternative to build resilient food systems with shorter supply chains, reducing food miles as well as food losses. [7] It can potentially help in achieving a degree of food self-sufficiency in urban environments and addressing the adverse environmental, social and health externalities associated with the current patterns of production and consumption (Figure 1).[8]

Credit: PC- Urban Kyari

Credit: Joshua Lanzarini – Unsplash

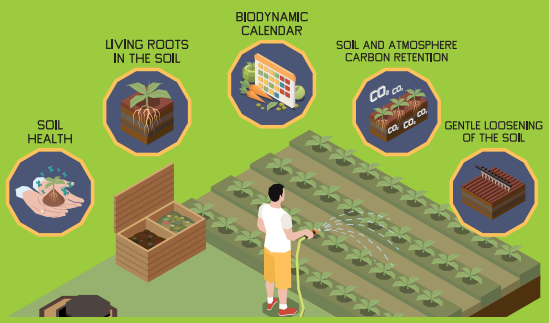
Figure 1: Potential benefits offered by sustainable urban and peri-urban agriculture in India

Provides the opportunity to access locally produced, safe and nutritious food and improve dietary diversity

Can contribute to the achievement of the Sustainable Development Goals

Supports shorter food supply chains, thus providing avenues for reducing postharvest food losses

Generates livelihoods opportunities for low-income households and unskilled migrants



Provides ecosystem services such as regulation of microclimates and support to urban biodiversity

KEY INSIGHTS: SEVEN DISCOURSES THAT CAN PAVE A WAY FORWARD FOR SUSTAINABLE URBAN AND PERI-URBAN AGRICULTURE IN INDIA

DISCOURSES	CHALLENGES	SOLUTIONS
1. FOOD SYSTEM DISCOURSE Looking at topics across the entire food cycle from its production to disposal	• Intensive farm production systems and policy disincentives	• Production (urban and peri-urban agriculture) • Community supported agriculture • Zones mapping based on nutritional status within the city for needs-based planning • Incentives for adoption of alternative sustainable production systems in urban and peri-urban areas • Promotion of contract farming on under-utilised and unutilised lands to address space availability issues • Ensuring adequacy and quality of recycled water
	• Bottlenecks/gaps in post-harvest supply chains • Food loss and waste across the supply chain • Lack of food diversity	• Creation of market platforms to link peri-urban production centres to urban consumption areas • Establishing processing centres in peri-urban areas
2. POLICY DISCOURSE Focusing on current policy environment and the support required to create an enabling environment for UPA	• Lack of overarching policy guidance • Limited policy acknowledgement of existing sustainable UPA initiatives • Unintended negative incentives through Solid Waste Management Rules, 2016 • Equity and inclusion gaps	• Mainstreaming UPA in policy guidance at local level following a bottom-up approach • Identifying a suitable dedicated implementing agency • Addressing unintended negative policy incentives • Making policy incentives more inclusive
3. RESILIENCE DISCOURSE Discussing vulnerability and resilience of food supply chains	• Long supply chains • Resource intensive food production	• Shorter and economically viable supply chains • Cultivation of climate resilient crops
4. CIRCULARITY AND SUSTAINABILITY DISCOURSE Exploring resource use efficiency considerations across the food system and how supply chain loops can be closed	• Untapped opportunity to utilize organic waste • Concerns about adequacy and quality of recycled water	• Incentivizing resource circularity • Innovation in building design • Adopting alternative ways of resource recycling
5. NUTRITION DISCOURSE Focusing on socio-economic considerations related to nutrition	• Dissonance of consumer preferences and needs with agronomic realities • Food-safety concerns	• Diversifying food production and consumption through UPA • Improving access to nutritious food through mid-day meals, and public distribution systems • Bringing consumer closer to food production through localized production
6. ECONOMICS DISCOURSE Looking at factors of production, availability and economic viability	• Issue of availability, access, and efficient utilization of land • Unaffordability of alternative cultivation methods (example, organic farming, crop rotation, regenerative farming, integrated pest management) • Changing dynamics of employment and labour in peri-urban areas	• Making alternative farming systems affordable and addressing inclusion concerns • Creating livelihoods and employment opportunities through UPA
7. CROSS CUTTING DISCOURSES Looking at monitoring and information dissemination related considerations	• Lack of awareness around sustainable UPA • Lack /insufficient data and research gaps	• Evidence based research initiatives • Initiatives for awareness creation

KEY POLICY RECOMMENDATIONS

Including UPA fruits and vegetables in the Public Distribution System under the National Food Security Act (2013): Fresh food from nutri-garden in schools, Anganwadi centers, and Integrated Child Development Services centers should be mandated to be part of the mid-day meal scheme, securing a stable local supply of freshly harvested produce.

Assuring safe and adequate recycled water for UPA under National Water Policy (2012): To address concerns about the inadequacy and safety of treated wastewater for horticulture irrigation, several measures should be taken, such as increasing the parameters tested before declaring the water fit for use, maximizing installed capacity, and exploring alternate wastewater treatment methods such as phytoremediation.

Making the Solid Waste Management Act (2016) more effective and contributing to sustainable UPA: Replace the "tipping fee" provision with a "processing fee" where the payments are made based on the weight of recycled resources (for example, compost generation) and the non-recyclable part of it, encouraging resource circularity and waste reduction.

Developing Urban Employment Guarantee Schemes to support asset creation under UPA: Currently, urban employment guarantee schemes are active in some states (Kerala, Madhya Pradesh, Odisha, Jharkhand, Himachal Pradesh, Rajasthan, and Tamil Nadu) while a Bill for a national-level urban employment guarantee scheme is under consideration.

Extending the National Mission on Agricultural Extension and Technology to support UPA: Expanding extension services to include agriculture through alternate production systems in urban and peri-urban areas.

Including the production component in urban food policies to support scaling up UPA: Changing traditional food policymaking patterns where production policies are rural-centric, while urban areas policies focus on value chain development, transportation, storage, and processing (Operation Greens, PM Kisan Sampada Yojana, Mega food parks scheme).

ENDNOTES

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