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INDIAN INSTITUTE FOR
HUMAN SETTLEMENTS

AN ACTION AGENDA FOR URBAN AGRICULTURE IN INDIA

iKheti - an urban farming social enterprise in Mumbai



Photo Credit: Swarnika Sharma



Livelihoods and green jobs

- Promote entrepreneurship and enterprises around urban agriculture and allied activities
- Enlist urban agriculture as a potential source of green jobs



Waste management

- Compost wet waste to reduce landfill burden
- Scale-up circularity achieved through urban food growing and composting



Nutrition and environmental curriculum in schools

- Give students hands-on training on growing food which will improve environmental awareness
- Harness nutritional supplement potential of school kitchen gardens



Urban planning and building design

- Mandate growing on terraces and include building codes that support it.
- Use incentives, like public awards and subsidies, to encourage and scale urban agriculture
- Use available open spaces in public parks, schools, anganwadis, healthcare centres and government offices for urban agriculture

ACTIONS

Stakeholder Consultation on Urban Agriculture in Bengaluru, held at IIHS, Bengaluru City Campus



Dr. Ashwathnarayan C.N.

Minister of Higher Education, Minister of Electronics, Information Technology & Biotechnology, and Science & Technology, Minister of Skill Development Entrepreneurship and Livelihood, Government of Karnataka

'..We need to shoulder more responsibility, bring more awareness and show many models in the direction of urban and peri-urban farming. Investing and promoting green infrastructures is indeed a way forward. I am impressed with green jobs, i.e., getting more people involved in green jobs is a great concept and we should pursue it..'

'..In the state of Karnataka, we have been promoting urban agriculture in a very big way, especially in schools as 'kaithota' . Growing vegetables within school premises is being encouraged, so that they can use their own vegetables in their kitchen for cooking. We need more awareness in this direction, we need people to start respecting natural resources, even amidst the educated many don't see the value and respect it..'

Prof. Nitya Rao

Professor of Gender & Development, School of International Development, University of East Anglia, United Kingdom; Principal Investigator of the UPAGrl project

'..Over the last decade, the speed of urbanisation within Indian and African cities has increased, creating long lasting effects on social life and agriculture. Open and green spaces are decreasing. Increasing pollution and temperature are having adverse effects on human health. To maintain the environment and human wellbeing, it is imperative for cities to take initiatives and support activities like urban farming, in the form of terrace gardens and community farms. Such green spaces will control the ambient temperatures and provide fresh food. In India several cities are taking many more initiatives, such as conservation of butterflies and honeybees. Municipal corporations, like Pune, have made policy changes for promoting urban farming activities which are gaining support from various organizations..'

Smt. Tejaswini Ananthkumar

Chairperson and Co-founder of Adamyta Chetana Foundation, Bengaluru

'..In the coming days, community gardens and terrace gardens will be critical for the environmental balance of any neighborhood. Keeping this in mind, we, Adamyta Chetana Foundation, initiated 'Green Sunday' activity. In Bengaluru, every Sunday, environment lovers come together and plant trees in places where forestation is needed. We also take responsibility for the conservation of these trees. In bigger bungalows and societies, cultivation of vegetables has been increasing along with fruit bearing trees and ornamental plants. We have also created a 'Green Army' consisting of rural and urban school children with an aim to increase awareness about nature conservation amidst young children. The same kids will contribute to the development of sustainable villages and sustainable cities..'

Dr. Amir Bazaz

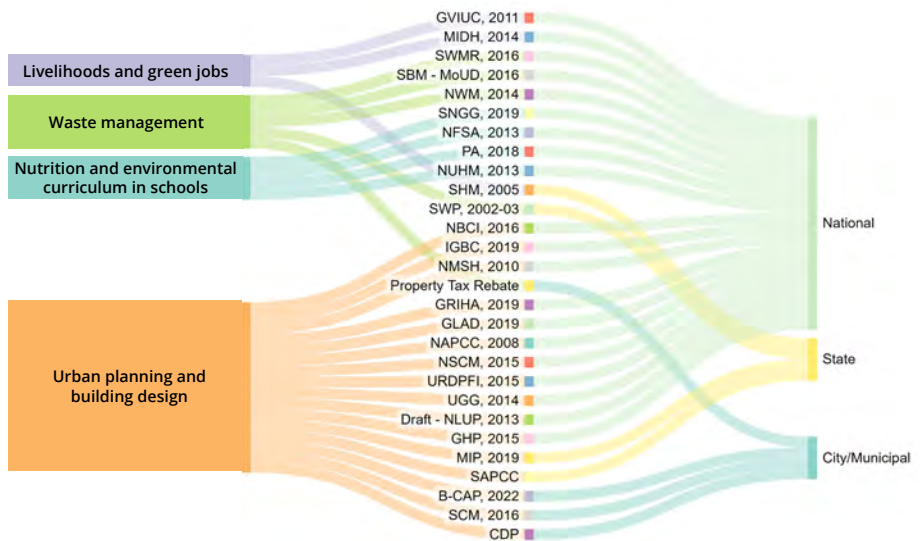
Associate Dean, School of Environment and Sustainability, IIHS, Bengaluru

'..In times where Indian cities are battling with unplanned urbanization, urban agriculture in its multiple forms offers an opportunity to create more green spaces, reduce the pressure on urban food supply chains and boost the wellbeing of a city. For this to happen, two things are important. One is the recognition of urban agriculture and its benefits. Second is systematic integration of urban agriculture into urban policy making. Successful examples of government initiatives like the kitchen gardens in Karnataka or the work by Adamyta Chetana Foundation will only help gain momentum in this direction..'

INTRODUCTION

Ongoing urbanisation offers opportunities to reimagine how cities can restore and strengthen human-nature relationships. Focusing on activities around growing food as a key space to examine solutions, the 'Urban and Peri-urban Agriculture as Green Infrastructure' ([UP-AGri](#)) project explores the impacts of gardening and farming in and around Indian cities on human well-being and urban sustainability. Proactive urban planning should leverage urban and peri-urban agriculture to address the food-energy-water-health-livelihoods-nexus by:

- Using urban agriculture as an avenue for generating 'Green Jobs' in cities
- Closing the loop between wet waste segregation, composting, and food-growing to reduce waste landfills around the cities
- Strengthening School Kitchen Gardens to improve child nutrition
- Including urban agriculture in the school curriculum of primary and secondary schools for environmental sensitisation
- Deliberate urban plans and building design that make space for and incentivise sustainable practices such as waste recycling and food-growing



Urban agriculture can be mainstreamed in various existing national, state, and municipal policies and schemes. As the figure shows, there are several sectoral opportunities at all governance levels that could result in double or triple wins. This would include achieving the objectives of the policy or programmes while also making progress on sustainable development, inclusive cities, and climate action. Expanded names of policies and schemes are in the annexure at the end of the document.

Livelihoods and Green jobs

Recognise the potential of urban agriculture for green jobs and develop relevant skills

Urban agriculture should be recognised and listed as a source of green jobs by the Skill Council for Green Jobs. Knowledge and skills for operating, maintaining and managing urban farms are critical. Thematic training and certification courses on kitchen/terrace gardening, composting, soil management, and technology-driven practices like hydroponics and vermicomposting can be conducted in collaboration with government universities and research centres. At institutional and ward-level, urban agriculture should be integrated within the National Skill India Mission to allow more people to take up courses.

Create new green jobs

Promoting entrepreneurship and enterprises around urban agriculture and allied activities can create more livelihood opportunities, ensuring more jobs within the urban agriculture supply chain. Enterprise or livelihood-based groups should be encouraged to start and sustain kitchen gardens, generating more opportunities within allied activities like composting, rainwater harvesting, seed saving, and beekeeping.

*A mali working in iKheti.
A social enterprise in Mumbai*

Photo Credit: Swarnika Sharma

WE ASKED

How can urban agriculture contribute to livelihoods and green jobs?

YOU TOLD US

We should clearly distinguish between urban food production and large-scale agriculture. Accordingly, we should build skills.

*An agricultural scientist,
Bengaluru*

Job creation throughout the supply chain should be ensured. Currently, Skill Council for Green jobs does not recognise urban agriculture, there needs to be a push in this direction.

*An urban farming entrepreneur,
Bengaluru*

WE ASKED

How can citizens play a bigger role in waste management?

YOU TOLD US

Many apartments are doing well in waste management and maintenance. We should aim to conduct pilot training in such apartments to demonstrate the benefits of composting and solid waste management.

A Bruhat Bengaluru Mahanagara Palike (BBMP) official, Bengaluru

Garbage collectors have the skills of both gardening and composting, we should upscale their skills and give them respect for the work they are doing.

Civil society representative, Bengaluru

Waste management

Hand-in-hand wet waste segregation and composting

Promote composting at a larger scale, e.g., clusters of houses or commercial establishments that generate bulk waste. More pilot models on wet waste recycling should be set up across the city targeting practitioners across the full cycle of composting such as wet waste collection, segregation and composting. One such model is *Swachagraha Kalika Kendra* (Composting Learning Center) in Bengaluru, which is a citizen-led initiative that demonstrates different composting units for various levels of waste input.

Create compost circles

A few pilot models of composting should be scaled up to demonstrate their connection with growing food in urban and peri-urban areas, thereby reducing pressure on landfills around the city. A few working examples that link composters with farmers that can be scaled are Horticultural Producers' Cooperative Marketing and Processing Society (HOPCOMS) vermicompost model and Compost Connect.



Aerobic composting stall at Oota From Your Thota festival (OFYT), Bengaluru

Photo Credit: OFYT Group

Nutrition and environmental curriculum in schools

Integrate urban agriculture into school curriculum

Modules on urban agriculture, including waste segregation, composting, kitchen gardening, and pest management can meet learning outcomes on environmental studies, give students hands-on experience of growing food, and improve environmental awareness, thereby meeting goals of the revised National Education Policy (2020). Pilot examples include Ahilyadevi High School for Girls, Pune, and The Ragi Project, Bengaluru, where urban farming and gardening projects have been included in the school curriculum.

Enhance nutritional security in schools

Food produced from kitchen gardens can supplement nutrition and augment existing food under the Midday Meal Scheme. For example, leafy greens and fruiting trees can be grown on school premises. Night schools, initiated to close the learning gap, are currently not covered by the Midday Meal Scheme, and additional food from kitchen gardens can provide supplementary food for night school students. The National School Nutrition (Kitchen) Garden Guidelines (2019) provide an entry point for scaling food production and nutritional security in schools.

Students gardening at Ahilyadevi High School, Pune



Photo Credit: Shubhada Rajguru

WE ASKED

How can we introduce urban farming in school programmes and curriculum?

YOU TOLD US

We could have a Saturday harvest session, where children can reap the benefits of their hard work. We could have a day where one class could harvest crops from their garden and cook a meal for the class/school.

An urban farmer, Bengaluru

We can introduce butterfly kits and hybrid vegetable kits into the school curriculum where children can take home projects to practise urban agriculture in their homes.

Environmental researcher, Bengaluru

WE ASKED

How can urban planning and design help scaling up urban agriculture?

YOU TOLD US

Spaces under flyovers, empty plots within residential areas can be used for food growing. Roadside plantations should not be just for the aesthetic purpose, trees like soap nuts can be planted which can be used as a detergent.

An urban farmer, Bengaluru

Topsoil removed during the construction of buildings can be reused on terrace farms.

An urban farming entrepreneur, Pune

Urban planning and building design

Design buildings that can support urban agriculture

New building designs, especially residential ones, should consider ways to integrate food growing in the building. Design to maximise sunlight, construct inbuilt planters, appropriate waterproofing, energy-efficient, compact in-built spaces for composting, and terraces that support gardening gardening should be popularised and encouraged. Existing building codes and bylaws should be enhanced to support urban agriculture, by mandating a minimum space for growing food on terraces, waste recycling and composting, and wastewater treatment and reuse in food gardens.

Incentivise green practices in the built environment

Promoting incentives like property tax rebates for adopting urban agriculture and allied practices like composting or rainwater harvesting motivate the uptake of urban agriculture by individuals and communities. Public recognitions and awards, like the Swachta Puraskar initiated by Pune Municipal Corporation for best urban agriculture practices, coupled with subsidies for gardening inputs like seeds, saplings, and manure, will encourage people and communities to scale up their urban farming practices.

Urban planning interventions

At the city and regional level, planning interventions such as making vacant land temporarily available for community food gardens can encourage urban agriculture and ensure multiple sustainability benefits. Public and privately-maintained open spaces, parks and gardens can be partially used as demonstration sites for growing food and composting. At the ward level, part of the vacant lands within public schools and anganwadis, hospitals and primary healthcare centres, and other government offices should be used to promote urban agriculture practices. Some prominent examples include community farming at Jakkur Lake in Bengaluru and terrace gardening within ward-level offices of Pune Municipal Corporation.

The UPAGrI project set out to understand the impacts of urban agriculture on sustainability and human well-being. To do so, we examined different types of UA practices by talking to diverse stakeholders across several Indian cities through interviews, city visits, thematic case studies and workshops.

2

Cities - in-depth exploration

2

Multi-stakeholder consultations

29

multi-scale practitioner case studies from 10 cities

4

in-depth thematic case studies

72

in-depth interviews with stakeholders from different backgrounds

448

households from 23 cities surveyed from middle income & low income settlements

The data has helped us map how urban agriculture is practiced and the outcomes and challenges practitioners face. We convened multiple rounds of consultations with representatives of different city government officials, practitioners, teachers, housing societies, academicians and civil society actors from 2020—2022. These conversations have been central to the creation of this agenda.

Acronym used	Policy/Guidelines
B-CAP, 2022	Bengaluru Climate Action Plan (Draft), 2022
CDP	City Development Plans
Draft - NLUP, 2013	National Land Utilization Policy (Draft), 2013
GHP, 2015	Green Highways Policy, 2015
GRIHA, 2019	Green Rating for Integrated Habitat Assessment (GRIHA) Manual Volume 1 - Introduction to National Rating System, 2019
Guidelines and benchmarks for GLAD, 2019	Guidelines and Benchmarks for Green Large Area Development, 2019
GVIUC, 2011	Guidelines for Vegetable Initiatives for Urban Clusters, 2011
IGBC, 2019	IGBC Green Homes Rating System - Version 3.0 For Multi-dwelling Residential Units, 2019
MIDh, 2014	Mission for Integrated Development of Horticulture , 2014
MIP, 2019	Maharashtra Industrial Policy, 2019
NAPCC, 2008	National Action Plan for Climate Change, 2008
NBCI, 2016	National Building Code of India, 2016
NFSA, 2013	National Food Security Act, 2013
NMSH, 2010	National Mission for Sustainable Habitats, 2010
NSCM, 2015	National Smart Cities Mission - Statement and Guidelines, 2015
NUHM, 2013	National Urban Health Mission, 2013
NWM, 2014	Guidelines For Improving Water Use Efficiency in Irrigation, Domestic & Industrial Sectors, 2014
PA, 2018	Poshan Abhiyaan, 2018
Property Tax Rebate, 2007	Property Tax Rebate for Rainwater Harvesting, 2007
SAPCC	State Action Plan for Climate Change
SBM - MoUD, 2014	Swachh Bharat Mission - Municipal Solid Waste Management Manual, 2016
SCM, 2015	Smart City Mission, 2015
SHM, 2005	State Horticulture Missions (Maharashtra, Karnataka, Tamil Nadu), 2005
SNGG, 2019	School Nutrition (Kitchen) Gardens Guidelines, 2019
SWMR, 2016	Solid Waste Management Rules, 2016
SWP, 2002-03	State Water Policy (2002/2003)
UGG, 2014	Urban Greening Guidelines, 2014
URDPFI, 2015	Urban and Regional Development Plans Formulation and Implementation Guidelines, 2015



*Vegetable farming at Pune Municipality
Ward-level office on Ghole Road*

Photo Credit: Gayatri Naik



Urban Farming at Ahilyadevi Girls High School, Pune

Photo Credit: Gayatri Naik





Urban and Peri-urban Agriculture as Green Infrastructure (UP-AGri) project examined the implications of urban agriculture on human well-being and urban sustainability.

Project objectives include:

- To examine the impacts of urban and peri-urban agriculture (UPA) on built infrastructure, ecosystem services, land and water use, using geospatial and forecasting techniques.
- To explore how UPA is socially differentiated and privileges/marginalises certain people/groups with varied human well-being outcomes.
- To co-develop and test strategies that allow UPA to contribute to urban sustainability and human well-being.

For more details on the project, please visit www.upagri.net or write to climatechange@iihs.ac.in

To access the online exhibition, visit exhibition.upagri.net



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