
DRAFT CITIZEN'S POLICY FOR URBAN AGRICULTURE IN DELHI

[Review Copy]

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Draft Citizen's Policy for Urban Agriculture in Delhi¹

1. Background

1.1 Contemporary Delhi is a site of historic and ongoing conflicts that have shaped the city region's rapid urbanisation marked by extraordinary social and ecological destruction. Delhi exemplifies the urban transformation that megacities in India and other parts of the third world have been subjected to under centralised bureaucratic planning and more than three decades of coercion under a neoliberal policy regime. Motivated by the belief that cities have to be the engines for faster economic growth, a process that the rise of finance capital has further catalysed, rapid urban expansion has nearly consumed what used to be a thriving village society with fertile lands, water bodies, local and regional economies and relatively self-sufficient communities. Despite the development being 'planned', the planning itself has been exclusionary, undemocratic and largely ignorant of scientific knowledge. Far from being holistic and pluralistic, urban planning, and particularly the exercise of creating a master plan every 20 years, has only furthered the interest of the real estate and the urban elite at the cost of public health, welfare and the urban environment.

1.2 Delhi's planners and political elite have aspired and tried hard to brand the city as 'world-class' so that it could be taken under control by corporate investors and the economic elite for 'developing' it further. It is unnecessary to judge whether and to what extent this endeavour has been fruitful. But Delhi has undoubtedly continued to rank very high on the World Health Organization (WHO) list of cities with unhealthy levels of air pollution. Though air pollution may be the most talked-about issue associated with Delhi's urbanisation, other equally important social and ecological matters must concern

¹This is a work-in-progress draft prepared by the People's Resource Centre with support from the Working Group on Urban Agriculture Policy in Delhi. It has been shaped by the People's Resource Centre's research. It was formed through a participatory consultation process involving various stakeholders, including farmers, practitioners of new forms of urban farming, civil society groups, community groups and residents' welfare associations. The comments on this draft can be sent to: prc.india@yahoo.com.

Delhi. Foremost among those is the increasing economic inequality usually masked by official environmental and climate discourse largely agnostic to the structural differentiations of class, caste and gender. For example, the burgeoning ecological footprint of Delhi, iconised by the dying Yamuna and choking smog, is nothing but a realisation of capitalist dreams. Unless there is a radical shift in urban planning to break free from the servitude of finance capital and unless urban spaces are reimagined as parts of complex social-ecological processes, Delhi's future will be haunted by empty catchphrases bred by high modernist imagination in which ecological boundaries and social sensibilities find no place.

1.3 In this context, food and farming have been deemed a matter of *rural* policy. Therefore, the persistence of rural/peri-urban farming in Delhi and the nascent emergence of new ways of farming that utilise many kinds of urban spaces appear as a pleasant contradiction. The reason behind the existence of such contradictions is pretty straightforward. The necessity of urban farming is rooted in the genuine demand for low-cost, fresh and locally grown food, especially vegetables, milk and meat. But urban farmers and food producers are constantly threatened to be dispossessed of their lands and shelter by the more robust process that considers land a market commodity to be appropriated for maximising profit generation. As a consequence, while the wealth of Delhi's elite class has grown, the larger society has been left with very little place to "grow" food.

1.4 The annual food demand in Delhi, with its current population being almost 2.3 crores, is estimated to be 9-10 million tons. Currently, only 10% of this demand is estimated to be met by in-boundary production (agricultural production within the administrative boundary of NCT of Delhi). More specifically, 15% of vegetables, 60% of meat and 25% of milk being consumed in Delhi are sourced locally. Roughly 80% of Delhi's food supply is sourced from other states, primarily from the neighbouring Punjab, Haryana, and Uttar Pradesh regions. Apart from this, cities, including Delhi, are now flooded with packaged food, worsening the already challenging situation of solid

waste management iconised by three tall, overflowing landfills at Bhalswa, Ghazipur and Okhla.

1.5 In Delhi, significant agricultural production happens in Chilla Khadar, Nangli Khadar, Najafgarh, Bela Estate, Tikri Kalan, Tikri Khurd, Badarpur Khadar, Jaunti, Daryapur, Chandpur, Ladpur, Kutubgarh, and many other village areas. Much of this has gone unrecognised by the ministries and authorities, barring one or two occasions of exception. For example, farming of vegetables, fruits and flowers by communities living in the 'Zone-O' (the category of land use defined under the Master Plan of Delhi (MPD) 2021 to refer to the approximately 8000-hectare area in and along the Yamuna Floodplains in Delhi) has been mentioned in various reports published by the Mission for Integrated Development Horticulture, a centrally sponsored scheme under the Ministry of Agriculture and Farmers Welfare, Govt. of India. The Economic Survey of Delhi (2018-19) also recognises some parts of the farming activities, especially the food production activities in the villages of Delhi. According to the 2018-19 report, major crops in Delhi are paddy, jowar and bajra during Kharif, wheat, and mustard during Rabi seasons. The latest economic census of Delhi reports that 2% workforce in Delhi is primarily involved in agriculture and allied activities. Most of the labour force in agriculture comprises migrant farmers from neighbouring states of Uttar Pradesh, Jharkhand, Bihar, and West Bengal. In this, women are estimated to be the majority in the agriculture workforce, consistent with the global average of higher labour force participation of women in urban agriculture.

1.6 Thousands of families inhabit the Yamuna floodplains and earn their livelihood from agriculture-based occupations. These people produce seasonal vegetables throughout the year using the groundwater, leaving a minimal ecological footprint. However, they have been vilified in the media and by a large section of environmental movement under the apprehension of vegetables being toxic. Rather than understanding the social ecology of the river Yamuna, draft Master Plan of Delhi 2041 intends to promote urban greening by "redevelopment" of the floodplains under the

Yamuna Riverfront Development Plan, a bureaucratic name for the process of evicting the farmers and grabbing of land by the development authority. The *Nav Bharat Udyan*, a part of the Central Vista Redevelopment Plan, is also proposed on the 'reclaimed' floodplain land.

1.7 More recently, newer forms of urban farming can be seen taking place in farmhouses in Delhi-NCR. There is a growing trend of gardening and food production on terraces, backyards, rented farmlets in peri-urban areas, and small agri-businesses. A section of this new trend is strictly motivated by commercial reasons. However, many urban, well-to-do people motivated by ecological or health reasons are (re)turning to farm as both full-time work and a part-time hobby.

1.8 While recognising urban farming, the essential role of women farmers must be noted. According to the data obtained in the 68th round of the National Sample Survey (July 2011 – June 2012)² About 15 per cent of women over five years of age in Indian cities are involved in some farming-related activity (maintenance of vegetable and vegetable gardens, poultry, dairy, preparing jaggery, etc.) (pp 15-22). While in Delhi, around 2 per cent of women who are engaged primarily in "domestic duties" are also involved in some form of agriculture-related activity. However, the contribution of women in domestic duties for household consumption is not counted as an economic activity in national data on labour force participation and other statistical accounts. As per the Census of India 2011, about 12 per cent of the city's total workforce and 17 per cent of the female workforce depend on farming or farming-related work as a source of livelihood. Taking a closer look at workers who work only for less than six months (important to note that these workers play the biggest role in urban farming) reveals that about 37 per cent of the workers and out of the total women workers, 41% of women earn their livelihood by farming for some time in the year (for less than six months).

² National Sample Survey Office (2014). Participation of women in domestic activities as well as specified activities. Report No. 559 (68/10/3).

1.8 The Draft National Policy for Inland Fisheries (2019) prepared by the Ministry of Agriculture and Farmers Welfare recommended that fisheries management be integral to river management. Fisher settlements in Delhi can be found on both sides of the northern stretch of the river Yamuna in Jagatpur, Sonia Vihar, Gokulpuri, etc. The oldest fisher people's settlement is near Jagatpur in Burari, colloquially known as Bengali Colony, where a significant number of migrants from West Bengal have been living since the early 1980s.

1.9 Lastly, the Government of NCT of Delhi has recently announced its intentions to develop an Urban Farming Policy for the state with the scope of encouraging and empowering the practitioners. In the complex structure of planning and governance in Delhi, where farming is undermined by contestations over land ownership, lack of tenure security for tenant farmers and reluctance to recognise the diversity in agriculture, a comprehensive and democratic policy on urban agriculture is critical for safeguarding the interests of farmers and creating a food-secure, pollution-free, climate-responsive, healthy, livable and ecological Delhi.

2. Purpose

2.1 This policy aims to provide a holistic framework for supporting and promoting urban agriculture in Delhi by recognising urban agricultural practices. It aims to build synergy between various forms of farming and other policy agenda to make Delhi a food-secure, pollution-free, climate-responsive, healthy, livable and ecological urban region.

3. Definition

3.1 This draft policy takes an inclusive approach to recognise the past and the present of urban agriculture in Delhi. It defines urban agriculture as inclusive of crop cultivation and horticulture (including vegetable and grain farming- both commercial and subsistence), terrace gardening, fishing, livestock farming, dairy, poultry, beekeeping, nomadic grazing, composting, entrepreneurial agribusinesses and agro

start-ups, and any other associated agricultural production, processing, marketing and distribution in Delhi using locally available resources for the usage or consumption by inhabitants of Delhi. This is in line with the definition commonly used in international discussions on urban agriculture.

4. Vision

4.1 We envision Delhi as moving towards greater self-reliance through strengthening local and regional food systems and breaking free from the control of corporatised global food chains to address the impact of urbanisation on the environment, livelihood, food security and nutrition, and climate crisis- with particular attention to the implications for the urban poor. This policy's vision is to improve food security in Delhi and contribute to ensuring universal access to contamination-free, nutritious food grown responsibly and ecologically.

4.2 It follows from the vision that Delhi should build a climate resilient food system through community participation, safeguarding biodiversity and promoting indigenous knowledge systems. Urban agriculture should become a priority agenda in urban planning for this to become a reality.

4.3 It is hoped that this policy will address the concerns of farmers, fisherfolks and animal rearing groups, including but not limited to the issues of land ownership and usage, neglect of agriculture in city planning, water availability and groundwater management, solid waste management and access to agriculture welfare schemes and APMC markets.

4.4 This policy is guided by the aim to integrate urban agriculture with various Sustainable Development Goals (SDGs) as well as the National Food Security Act 2013 of India and develop a holistic framework incorporating the issues of waste management, public health, urban biodiversity, ecological livelihoods- with explicit recognition of the contribution of women, migrant labourers, and vendors. It envisions a future wherein there is a localisation of food production, universal food security, reduction in

transportation mileage and cost, minimising food storage and associated logistical requirements, and creating a circular economy to eliminate waste.

5. Current state of urban agriculture in Delhi and the key policy issues

5.1 Food security, sovereignty and nutrition

5.1.1 A significant proportion of the food demand of Delhi is fulfilled by locally produced food, particularly vegetables (15 per cent), milk (25 per cent) and meat (60 per cent). The official discourses continue to view the food grown in the Yamuna floodplains as containing high levels of chemical fertilisers and as unfit for consumption. While the technical report of the Central Pollution Control Board published and released online in September 2019 stated that no exceedance was observed in vegetable and fodder samples for metals and pesticides concerning FSSAI notifications, 2011 (metals) and 2018 (pesticides) as no significant level of metals were observed in groundwater which is the primary source of irrigation for the farmers.³ The report further states that soil contamination may be due to excessive use of fertiliser and can be mitigated by promoting the use of manure and natural fertilisers. This highlighted the need for better and locally produced food using agroecological and organic practices. UA remains a resource for the urban poor as a source of nutrition and can provide access to fresh food. The role of better and locally produced food was further highlighted during the COVID lockdowns.

5.2 Land ownership

5.2.1 Lack of ownership and insecurity in access to cultivable land is the predominant factor responsible for declining interest in farming and investment in new methods of agriculture. Along the Yamuna floodplains, there have been massive evictions of

³ Central Pollution Control Board. (2019). *Report on Testing of Vegetable / Edible Products, Soil & Water on the Bank of River Yamuna in Delhi*. <https://yamuna-revival.nic.in/wp-content/uploads/2020/02/CPCB-Report-on-Testing-of-Vegetable-Edible-Products-Soil-Water-on-the-Bank-of-River-Yamuna-in-Delhi.27.08.2019.pdf>

settlements, a ban on farming in Zone O, frequent demolitions of bamboo houses, and razing of fields by the Delhi Development Authority (DDA).

5.2.2 The Draft Master Plan of Delhi 2041 has proposed to divide the existing Zone 'O' into Zone O-I and Zone O-II, earmarked as the River Zone (Active Floodplains) and Riverfront (Regulated), respectively, making a distinction between the built-up and non-built-up areas. However, informal settlements like Bella Estate and Chilla Khadar, along with agriculture taking place in these areas, are placed in Zone O-I, which puts them in clear violation of the land use of this area and clears the path for legally sanctioned evictions soon. The draft MPD 2041 also mentions that specific locations might be identified for permitting agriculture on the floodplains but does not mention where and how these regions will be identified and whether these will be exclusively urban farming zones.

5.2.3 Residents of Delhi's *Lal Dora* villages face another uncertainty concerning land ownership. The land pooling policy, which was notified more than 15 years ago, remains to be implemented because the DDA could not take consent from all landowners. The village development plan promised under the MPD 2041 has not been prepared, and there is no thought to address the residents' concerns for properly integrating these areas into the Master Plan. The current land pooling policy favours a few large-scale landowners and real estate developers while being unfair towards the small and marginal landowners who mainly rely on farming as a source of income.

5.3 Water for irrigation

5.3.1 In the "urban villages" in the periphery and along the border of the NCT of Delhi, the lack of water for irrigation is a significant concern. Earlier, canals (*nehers*) that carried freshwater of the Yamuna used to go through the farms, providing sufficient irrigation. As the villages were removed from the Green Belt Area and put in Zone N (area under land pooling), these canals were blocked, and in response to that, farmers

had to install tube wells. Reportedly, even the tube wells can no longer provide water suitable for irrigation.

5.3.2 Although the Delhi Land Reforms Act 1954 has allocated the Gram Sabhas the responsibility for developing and promoting agriculture and horticulture, conflicting directives and lack of investment have discouraged the farmers.

5.4 Environment and climate change

5.4.1 The production (irrigation, use of fertilisers, etc.) and distribution phase of the food being consumed in Delhi contributes to the region's ecological footprint. By one estimate, residential per capita food demand in Delhi corresponds to nearly 0.55 tonnes of carbon dioxide emissions per year⁴. Delhi is dependent on farm production in the neighbouring states to meet its food demands resulting in food miles of 418 km per 1000 Kg⁵, drawing in food from Punjab, Haryana, Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, and Maharashtra in the descending order of volume and making the transportation of food a significant contributor to Green Housegas (GHG) emissions. The total GHG emissions of Delhi's food system are estimated to reach one crore tonnes per year.

5.4.2 Moreover, Delhi is situated in a highly water-scarce region, which is already water-stressed. One of the reasons for the lack of motivation for farming is the lack of accessible water for irrigation and the crisis of rapidly depleting groundwater table.

⁴ Boyer, D., Sarkar, J., & Ramaswami, A. (2019). Diets, Food Miles, and Environmental Sustainability of Urban Food Systems: Analysis of Nine Indian Cities. *Earth's Future*, (August), 2018EF001048. <https://doi.org/10.1029/2018EF001048>

⁵ Ramaswami, A., Rao-Ghorpade, A., Bogra, S., Bakshi, B., Cohen, E., Fang, A., ... Boyer, D. (2017). An urban systems framework to assess the transboundary food-energy-water nexus: implementation in Delhi, India. *Environmental Research Letters*, 12(2), 025008. <https://doi.org/10.1088/1748-9326/aa5556>

5.4.3 In times of flash floods and hazardous urban heat islands, urban farming must be part of urban planning and other resilience plans such as local climate action plans, heat action plans, flood management plans, etc.

5.5 Livelihood security

5.5.1 According to the Economic Survey of Delhi (2018-19), there are 0.7% agricultural workers, while the latest Census of India (2011) suggests 1% of all main workers.⁶ are working in one of these farming-related sectors- cultivation, farm labourers on plantations, livestock, forestry, fishing, hunting, and other allied activities. Migrant labourers get employment for sowing and reaping activities on paddy fields, mushroom farms, removal of weeds and picking vegetables on vegetable farms, and so on. These labourers from rural areas migrate to cities but carry their skills and knowledge of farming. Urban agriculture provides them with a more meaningful livelihood and much more valuable food security than other sectors such as construction.

5.5.2 Urban agriculture provides seasonal employment with somewhat better wages and working conditions for many others. Most farm labourers work in bands, many of whom have been working as seasonal farm workers for more than 30 years.

5.5.3 Often farmers have to suffer a tremendous loss due to unexpected weather conditions or coercive measures by authorities, but they find themselves ineligible to claim any compensation. Other infrastructural issues include a lack of electricity connections and unsubsidised and expensive agricultural inputs.

5.5.4 Authorities and courts have also had a negative attitude towards animal rearing, dairy and livestock farming, pushing them to the city's margins. In cases where there is a subsidy like farming equipment, there are several conditions regarding land size, etc.

⁶ Main Workers are those workers who had worked for the major part of the reference period, i.e. six months or more in the past year.

which often disqualifies most tenant farmers and subsistence farmers and defeats the purpose.

5.6 'Invisible' fisherfolks of Delhi

5.6.1 Fishing activities happen all along the Yamuna in Delhi but mostly in its northern stretch between Palla to Wazirabad barrage. During 2017-18, Delhi's output of the inland fisheries sector (measured in monetary terms at the 2011-12 prices) was Rs. 9.8 crore, being consistently the same in the last decade (NSSO, 2020). In the same year, fish seeds production was 20 lakhs in number and 800 tons by weight as per the Economic Survey of Delhi (2018-19)⁷. Pothia, Tengar, Baam, Kawai, Chingri, Nirankar, Singhanian, and Rohu are common varieties of fish caught in the Yamuna in Delhi. Licenses for fishing in different stretches of the Yamuna are issued by the Development Department of the Delhi Government, which also guarantees compensation to his family in case of accidental death.

5.6.2 Delhi was allocated one crore rupees in the year 2019-20 under the Government of India Neel Kranti (Blue Revolution) Mission for 'integrated development and management of fisheries which was later restructured to include all the ongoing schemes on fisheries under this umbrella mission. There also exists a Draft National Policy for Inland Fisheries (2019) of the Ministry of Agriculture and Farmers Welfare which was developed after pressure from The National Platform for Small Scale Fish Workers (Inland) [NPSSF(I)]. However, the fisher community in Delhi is presently unorganised and unable to claim welfare benefits targeted for the fishery sector, partially owing to the difficulty in getting registered as a union or association.

5.7 Waste

5.7.1 A major reason for food wastage is inadequate storage facilities for local produce and the produce imported from other states. Most waste is dumped in sewage dumping

⁷ Delhi DES. (2019). Economic Survey of Delhi 2018-19.

which contributes to the pollution of the river Yamuna. The modern sewage system follows the 'flush and forget' principle incompatible with sustainability and circular economy. Through composting and decentralised waste management practices, human and animal excreta can be managed to convert the waste into useful input for food production.

5.8 Market

5.8.1 Several land-owning farmers residing in peripheral Delhi do not sell their produce in Delhi due to the lack of a Minimum Support Price (MSP). The Delhi government does not purchase grains from them. Therefore, they do not profit and get meager prices in the formal market.

6. Policy recommendations⁸

6.1 Crop farming

6.1.1 Access to land and water

6.1.1.1 The primary reason for the decline in crop agriculture in urban and peri-urban Delhi is the insecurity associated with access to land for agricultural purposes. Due to the negative attitude towards agriculture in the city, the farmers are at constant risk of losing land to the development authority or real estate developers. Therefore, the most crucial step toward promoting urban farming is giving agriculture a formal land use planning status.

6.1.1.2 Urban farming should be considered a plural set of practices which can have multiple potential usages of a plot of urban land. These usages may include crop farming, poultry, dairy, agroforestry, pisciculture, beekeeping, emerging techniques such as hydroponics, etc.

⁸ To be linked with existing schemes wherever applicable to strengthen the case for a particular recommendation.

6.1.1.3 Land that could be made available for different farming practices should be mapped and listed according to its size, soil type, location, water availability, basic farming infrastructure, and demand for local food in the surrounding areas. This exercise can be done by forming an “Urban Farming Commission” (UFC).

6.1.1.4 As per the village records, the total cropped area in Delhi was 52% and 33.2% of the total area of Delhi () in 1990-91 and 1996-97, respectively. As Chart 1 indicates that the cropped area, which had declined to less than 20 per cent in the 20 years since the 1990s, has bounced back to mid-1990s levels. However, the net area sown has remained consistently low. The recent increase in cropping intensity owes to the rise in the share of vegetable production in overall farm output, as suggested by the Economic Survey of Delhi 2021-22. Taking this as an opportunity to increase agricultural production, it should be the aim to mark at least 50 per cent of the total land area of Delhi as deemed to be cropped and the net sown area should be brought to at least 90% of the total cropped area.

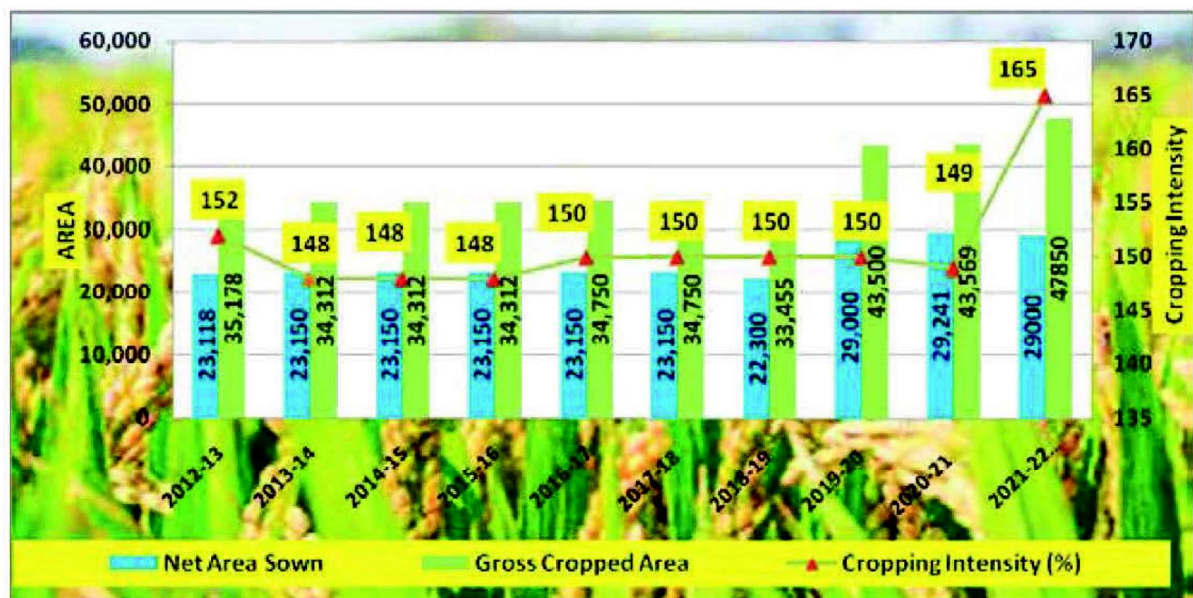


Chart 1: Changes in cropped area, area sown and cropping intensity over the last decade

6.1.1.5-A To make access to land more inclusive, a public scheme could be started to allot small plots of public lands for a limited – but long enough – tenure to individuals and citizen groups, particularly women and those from marginalised caste groups, who would apply for getting these plots and grow food.

6.1.1.5-B Areas should also be identified where the land can be commonised for agricultural activities and land trusts should be formed to manage the urban agrarian activities on these lands. This land reform and license-based system for communal land management could create opportunities for disadvantaged people to secure access to farmlands and necessary infrastructure.

6.1.1.6 Delhi Jal Board should include urban farming and water use for irrigation in their water management plans. These plans should be drawn in consultation with the people and land units registered as practitioners of urban farming.

6.1.1.7 Urban agriculture and food production need to be integrated into Delhi's other urban infrastructure development projects. Currently, most of Delhi's beautification efforts (such as green walls) focus on ornamental plants. Instead, the concept of 'edible city' should be promoted wherever possible.

6.1.1.8 Urban farming units should be encouraged to integrate beekeeping and small-scale animal rearing. This can be facilitated by making the benefits of central schemes such as National Beekeeping and Honey Mission (NBHM) available to urban farming units.

6.1.1.9 Vacant public land can be allocated to urban farmer associations. Some fiscal incentives can also encourage people to use vacant private land for agricultural use.

6.2 Fishing

6.2.1 Modern urban planning of Delhi has become a death sentence for the Yamuna. Continued dumping of untreated sewage water, construction debris and other forms of

industrial solid waste have brought the pollution in the river water to life-threatening levels and the fisherfolks of Delhi have been the ones to lose out. Fishing still happens but mainly in the stretch north of Wazirabad barrage. The Economic Survey indicates a fall of 33 per cent in fish production over the last decade. The spectacular failure of the administrative and planning system must be held accountable for the current state of the river Yamuna. Multiple government bodies, including the most recent Yamuna Monitoring Committee under the orders of the National Green Tribunal, have been formed over the years but none have been effective. One of the reasons for this continued failure is the narrow-minded approach of treating the Yamuna as a natural entity separate from the communities deeply embedded in its social ecology. Farmers and fisherfolks have not even been recognised as critical stakeholders in the sustainable management of the riverscape. This must change and the approach should shift to 'river as commons'. Following such an approach, fisherfolks and floodplain farmers should be considered legitimate stakeholders, and their interests should be included in any ongoing and future planning for the river region.

6.2.2 The process of issuing licenses for fishing in the Yamuna should become more hassle-free and streamlined. The responsibility to issue and renew licenses at regular intervals should be given to a separately created 'Urban Agriculture Division' or any relevant departments under the GNCTD. 'Urban Agriculture Division' has been described in more detail in the section on the institutional framework.

6.2.3 Various bureaucratic barriers that currently do not allow registration of a fisher cooperative or union in Delhi should be identified and removed. A list of registered fisher cooperatives and unions should be maintained and made publicly available.

6.2.4 The critical role of fisherfolks in the democratic and sustainable management of the river Yamuna and its ecology must be recognised. In that context, Neel Kranti (Blue Revolution) Mission, Draft National Policy for Inland Fisheries (2019) prepared by the

Ministry of Agriculture and Farmers Welfare, and National Water Policy, 2012⁹ These relevant policy instruments must be followed and adapted for the local policies and programmes.

6.3 Animal rearing

6.3.1 Animal rearing has received significant setbacks due to hostile urbanisation, which has reduced the area of pastureland that could be used for grazing. Therefore, the share of supplies of meat, milk and other animal-based food products from other states has increased over the years. The total livestock population in Delhi was estimated to be roughly three lacs in the year 2019, which is 20 per cent less than the numbers a decade back.

6.3.2 Promoting animal rearing should be integrated with other farming practices. Some of the material that comes out as waste from crop fields is food for animals, and the waste generated by animals can be processed to be used again as input in crop farming. Therefore, mixed-use agriculture should be promoted through land use planning and the creation of networks of urban agriculture zones.

6.3.3 Delhi has a decent animal health care infrastructure with 48 veterinary hospitals, 28 dispensaries and a few mobile clinics. The location of these services should be

⁹ National Water Policy links water use with equity and social justice for all, takes cognisance of climate change, the need for efficient irrigation methods, distributes water to support livelihoods, etc. The Draft Policy for Inland Fisheries pushes to expand this to include the right to water for fisheries and aquaculture having non-consumptive water usage. It also recommends that 'fisheries management has to be integral to river management, need for aquaculture development, and redefining the scope of land use at the state level to include fisheries and aquaculture as essential components of agriculture. The Neel Kranti Mission consists of all programmes that support fishing and aquaculture. Some focus areas are increasing fish production in marine and inland fisheries, increasing income of fishers and fish farmers, private investment, skill development, increasing capacity in fisheries and building post-harvest and cold chain infrastructure. Another scheme component was the 'National Scheme for Welfare of Fishermen', which focused on providing fishers with houses, tube well, insurance, skill development, training, etc.

reconsidered according to the planning of urban farming zones and the presence of farming units to make these services more accessible.

6.4 Residential and community-level farming (kitchen garden, terrace farming, etc.)

6.4.1 Traditionally, many urban residents of Delhi have been using some space in their dwellings (such as rooftop/terrace, backyard/front yard, balcony, vertical spaces) to grow vegetables and to keep animals at a very small scale and with the involvement of some or all family members. The main aim is to supplement their food basket, but this is also a source of rejuvenating experience amid the stressful urban life. For low-income households, especially in the 'unauthorised colonies' and slum settlements, this is an essential part of survival strategies and food security for many.

6.4.2 These practitioners need the support of a very different kind as compared to other urban farmers. Significant components that need support include access to good quality seeds and fertilisers and enhancement of knowledge and technical skills. In other states, such as Kerala, Bihar and Odisha, the government is facilitating this process by providing a start-up kit to those who are new to urban farming and gardening¹⁰. A similar scheme can be started as per the expert recommendation of the 'Urban Farming Commission' for free distribution of such kits. Each of these kits may include tools, seeds, compost, a manual for the technical know-how and a subscription to regular training workshops that could be arranged at the ward level under the guidance of 'Urban Farming Commission'. The effectiveness of such a scheme should be monitored to make necessary modifications at regular intervals.

6.4.3 At a small but relatively larger scale, farming is also being done in communities and community institutions such as schools, old age homes, resident welfare

¹⁰ The Bihar government has introduced a rooftop gardening scheme in several districts. Under this, grants will also be given to women, Scheduled Castes and Scheduled Tribes, in that order of preference. Those who choose to avail of this need to deposit Rs 25,000, and everything from the portable farming system, plants, and kits to freight and installation is provided.

(<http://horticulture.bihar.gov.in/HORTMIS/RoofTop/OnlineAppRT.aspx>)

associations, etc. These practices utilise the available open spaces or smaller pieces of unutilised land to grow vegetables and sometimes also poultry and animal husbandry.

6.4.4 For this group of collective practitioners, the scheme mentioned in section 5.4.2 can be extended with additional supports and subsidies (wherever applicable) for securing access to fertile land, the basic infrastructure of irrigation, water supply, sheds and fencing, knowledge and training on pest and weed management, etc.

6.5 Putting an end to wasting the 'waste'

6.5.1 In Delhi, thousands of tons of garbage are generated daily, either in mandis like vegetable waste, fruit peels, animal dung, etc.; in liquid form, consisting of excreta and urine of animals and humans; and straw which is collected from the soil after harvesting in the fields. GNCTD should prepare a comprehensive strategy to eliminate waste. Such a strategy should consider what is considered waste in agriculture and how it can be used to increase soil fertility and meet energy needs.

6.5.2 Agricultural waste can be a nutrient-rich compost which can increase soil fertility, improve soil structure, and provide food to earthworms. Treated wastewater can be used/repurposed for irrigation. Biomass could be integrated into the nutrient cycle through the use of organic waste and can also prevent soil contamination. Organic waste produces flammable gases, which have been used for centuries to convert waste into an energy source.

6.5.3 Vegetable gardening in residential buildings needs to be integrated with household-level waste (kitchen waste) management. Small composting technologies need to be promoted so that kitchen waste can be effectively recycled for gardening purposes. This helps to reduce waste at the source and circularisation of resources. This needs to be included in the Delhi government's training program for popularising urban rooftop farming in residential buildings.

6.5.4 Composting solid waste for growing food becomes an essential part of land resource management in government planning. Typical waste materials like tyres, sacks,

pots, and bottles are used for various purposes in farming (such as using plastic bottles for drip irrigation)

6.5.5 Necessary knowledge, technical skills and financial support should be provided to encourage the adoption of decentralised/household-level sewage management. Funds should be allocated for advertisements and campaigns to spread awareness about the effectiveness and social benefits of these alternative sewage management systems.

6.5.6 Initiatives by NGOs¹¹ can be utilised and encouraged to provide training on a neighbourhood scale and develop community initiatives of waste-to-food programmes in various informal settlements.

6.6 Formal and informal markets for distribution

6.6.1 Delhi has Agriculture Marketing Board which does certification and is supposed to be a place for bringing together the farmers and distributors. But the near defunct status of APMC mandi, lack of MSP and lack of accountability and transparency leave farmers without a place to sell their produce at a fair price. This should be ended by taking appropriate measures for democratising governance.

6.6.2 Measures should be taken to develop markets for organic farmers where buyers can get certified organic produce at affordable prices. The success of such local marketplaces will create automatic incentives for farmers to shift more confidently to organic farming and agroecological methods.

6.6.3 Efforts must be made to link farmers and consumers through initiatives such as weekly *haat* or farmers' markets. Creating accessible local markets at various places and reservations for women farmers in these spaces would make it easier for them to receive their fair share of recognition and pay in agriculture.

¹¹ <https://igsss.org/wp-content/uploads/2022/07/Creating-Zero-Waste-Societies.pdf>

6.6.4 A designated and well-equipped space for the sale of fish caught in the river Yamuna in Delhi should be set up. It should promote fisheries-based livelihood by providing the necessary infrastructure for the sale of locally caught raw and processed fish. These markets should be provided subsidies to lower their electricity, rent and maintenance costs.

6.6.5 Developing appropriate storage facilities is a must to facilitate urban farming and ensure consistent and fair income for the farmers.

6.7 Education, research and public dialogue

6.7.1 At several places in other states, including Karnataka, Tamil Nadu, Goa, Odisha and Kerala among others, have taken initiative to integrate farming into the curriculum¹². Food literacy should be a part of schooling through school-based interventions in which children partake in farming together, interact with local farmers, and learn about the food system as a whole, including its political, economic, and social aspects.

6.7.2 In schools, farming activities can be integrated with the mid-day meal schemes to make the mid-day meal programme even more effective and participatory, where children learn about the food they grow and decide how they want to consume it.

6.7.3 Public at large would also benefit from educational campaigns where local civil society groups and social movements such as 'right to food', 'right to education', 'right to clean environment', 'food sovereignty and broader 'right to the city can be brought on board for creating supportive public discourse for urban agriculture. Urban farming can also be promoted under other campaigns for public health, environment and livelihood being run by the government and non-government agencies.

¹² Some examples are reported here: <https://thelogicalindian.com/exclusive/mangalore-school-farming-curriculum>

<https://cityfarmer.info/school-gardens-for-a-healthy-and-green-future-in-bangalore-india/>

6.7.4 A city-level/state-level public forum should be created to organise regular discussions, dialogues, seminars and public events to move the agenda of urban farming forward. This forum can also become a space for the regional and global exchange of ideas, innovations, knowledge and support systems between groups of practitioners, researchers and the civil society at large.

6.7.5 Existing higher education institutions should be encouraged to conduct participatory scientific research on various aspects of urban agriculture. The state government can start application-based grant and fellowship programmes to address the key research problems in the area. There should be incentives for researchers to work with an interdisciplinary approach and by involving grassroots movements, citizen initiatives, and farmers' unions from the very beginning of the research work so that inventions and innovations resulting from these studies can effectively support the advancement of urban agriculture in the right direction.

6.8 General: Sustainability, liveability and social justice

6.8.1 The GNCTD should take appropriate measures to strengthen local food systems and increase the capacity to meet food security and nutrition needs. Urban farming can address urban poverty by providing a meaningful livelihood and minimising household expenses on food. UA helps meet food security needs and provides easy and secure access to adequate vegetables which might be expensive to buy in the market. Moreover, residential and community kitchen gardens fulfil food security needs for households across the income groups and improve their nutritional status.

6.8.2 Urban agriculture should be incorporated into programmes for inequality reduction, urban regeneration, housing schemes, support for small enterprises, skills development programmes, local area development, school education, mid-day meal, nutrition and other public health campaigns.

6.8.3 Systematising the lease arrangements, providing adequate access to the market, subsidies for agricultural inputs and giving financial incentives to cultivators for making a

shift to agroecology as has been done in other Indian states like Kerala and Odisha would make the practice of UA more economically and ecologically sustainable.

6.8.4 Urban agriculture contains the scope of contributing to urban sustainability. It can be seen as a "blank slate", with cities well placed where entropy, i.e., outputs like waste, pollution, or "unusable" energy, can be turned into compostable waste and surplus heat useful inputs.

6.8.5 Urban and peri-urban forestry practices should be promoted as they can help build resilience against the events of intense urban flooding. Urban and agroforests would contribute to efficient watershed management, safeguarding water catchment and reducing runoff and erosion in cities.

6.8.6 Necessary policy assurances should be announced and notified to allow farmers to make a confident shift to agroecology. Campaigns to promote the adoption of agroecology should build awareness about the importance of genetic diversity of crops, planting diversity, intercropping, mulching and creating habitats for flora and fauna in urban farms. By making agroecology the preferred choice of farmers, some of the significant environmental problems, such as stubble burning, can be effectively mitigated. Committees at the municipal level can be involved in providing training to farmers.

6.8.7 Rainwater harvesting in conjunction with farming should be promoted. Links should be drawn with existing central and state-level schemes/programmes.

6.8.8 As per the Participatory Guarantee System, there are currently 477 organic farming groups registered in Delhi¹³. A strategy should be planned for making agroecology and agroforestry popular among these groups.

¹³ PGS is an initiative of the [Department of Agriculture & Farmers Welfare](#), Ministry of Agriculture and Farmers Welfare under GOI. It issues certificates, conducts quality checks, registers farmers' groups, etc., all related to organic farming. As per their website PSG is a "quality assurance initiative that is locally relevant, emphasises [s] the participation of stakeholders, including producers and consumers,

6.8.9 Vertical landscaping and rooftop gardens find mentioned as building design elements in the National Building Code 2016 which acknowledges their potential role in energy conservation and cooling of buildings. Global research indicates that urban farming can minimise the effects of heat on urban microclimates by 2-3 degrees. Making non-roof and roof areas covered with tree shade and vegetation has to be supported by building codes and certifications so that it may become a vital part of any urban heat action plan.

6.9 Other incentives

6.9.1 Urban farmers in Delhi should be made eligible to receive the benefits of crop insurance schemes at the soonest.

6.9.2 Mission for Integrated Development Horticulture (GOI) provides incentives to shift to vegetable/fruits/flower production as there is a ready market in Delhi for which supply chains can be integrated and thus help reduce food miles.

6.9.3 Currently, most home food gardening in Delhi is limited to high-income groups. Low-income groups do not have the financial capability and support system to grow vegetables in their households. Special efforts need to be taken to address this disparity. The 'smart urban farming initiative' announced in the latest budget by the Delhi government aims to popularise rooftop gardening for self-consumption and as an entrepreneurial activity. ¹ The initiative looks promising. However, to make it affordable and accessible for all income groups, there should not be any stringent criteria in selecting beneficiaries (such as the requirement for a financial deposit, minimum available area, etc.).

6.9.4 Careful promotion of innovative techniques such as hydroponics should be done, as mentioned in the latest Economic Survey of Delhi (2020-21). Furthermore, the technologies and practices being disseminated should be affordable for all and

and (which) operate[s] outside the framework of third-party certification". In Delhi, around 477 organic farming groups are registered through the PGS <https://pgsindia-ncof.gov.in/LGList.aspx>

adaptable to all types of residential areas of Delhi. The distribution of ready-to-gardening units will help promote gardening practices based on new and emerging techniques.

6.9.5 Final report of the Yamuna Monitoring Committee and the technical report by the expert committee appointed by the National Green Tribunal in the case of Manoj Mishra vs Government of India & Ors. had suggested a shift to organic farming and fish pond farming on floodplains. Suitable welfare measures should support farming activities appropriate for floodplain ecology.

6.9.6 Parampara-gat Krishi Vikas Yojana and other schemes should be adapted for protecting, disseminating and promoting indigenous knowledge and knowledge systems.

7. Institutional Framework

7.1 Delhi does not have a separate agriculture department. Currently, agriculture, including fisheries and animal husbandry in Delhi, falls under the jurisdiction of the **Development Department**. GNCTD should create a separate Ministry of Agriculture which will have a responsibility to take care of urban and peri-urban farming in all its diverse forms.

7.2 Provisions under the 74th Constitutional Amendment Act (CAA) call for the formation of ward committees, but the Act is yet to be implemented. The 74th CAA must be implemented, and ward committees must be made functional in parts of Delhi. Ward committees should be mandated to identify where some or the other form of urban farming can be practised, and they should act as the most local resource centre for urban farmers. Associations of urban farmers can also be formed separately, and a representative of the association can be made an ex-officio member of the ward committee.

7.3 Though this policy envisages the GNCTD as the preeminent agency for supporting, managing and promoting urban agriculture in Delhi, municipal bodies and

the Delhi Development Authority will also have a significant role in making the policy a success. It is hoped that the responsible agency in the GNCTD will take proper measures to create a democratic, public platform for bringing all stakeholder government departments, practitioners and other state and parastate agencies, including the MCD and DDA, together while developing action plans and strategies for advancement of urban agriculture.

7.4 An 'Urban Farming Commission' should be formed with members from the scientific community, urban planners, civil society organisations, resident welfare associations and the government. The Commission will mandate to provide expert recommendations and guidance to decision-makers at both state and ward-level.

7.5 Urban agro-service centres should be created to provide continued support to the farmers. This is particularly relevant for adopting agroecological cultivation methods and popularising small-scale building-integrated production on rooftops and balconies. Such agro-service centres can act as support systems for agroecological inputs (for commercial and home-based cultivation) and technical services for space-saving cultivation in residential buildings.

8. Policy implementation and monitoring

8.1 Achieving the vision and objectives of this policy will be a challenging task and will need concerted efforts from all stakeholders for timely and fair implementation of the policy.

8.2 The GNCTD (preferably through a 'Ministry of Agriculture') will be the lead agency for implementing this policy. They will first create an 'Urban Agriculture Commission' (UAC) as described in section 6.4. Under the guidance of the UAC, a public platform will be created to represent all stakeholders and ensure fair representation of all interest groups. This public platform will be responsible for preparing an action plan under the guidance of UAC. The action plan will be detailed and aim to provide the best assistance to various activities carried out by the diverse practitioners of urban farming in Delhi.

8.3 Allocating funds and setting up a monitoring committee like Rural area committees, provisions for which already exist in the Delhi Municipal Corporation Act 1957) can make implementing this policy more effective.

8.4 Land and irrigation issues will be addressed on a priority basis. For this, public consultations should be held with all practitioners. Key discussion points can be the recognition of agriculture as separate urban land use, the introduction of a land tenure system, taxation guidelines and rental tariffs, and formulation management and monitoring tools. A transparent and secure land tenure system should be re-introduced (lease system) as an immediate measure.

Annexures

1. Draft Master Plan of Delhi 2041. A copy of the plan can be accessed at:
[https://dda.org.in/pdf/july13/Final%20MPD%202041%20-%20e%20Gazette %20English.pdf](https://dda.org.in/pdf/july13/Final%20MPD%202041%20-%20e%20Gazette%20English.pdf)
2. Draft National Policy of Inland Fisheries, 2019. A copy of the policy can be accessed at: [https://nfdb.gov.in/PDF/National Fisheries Policy 2020.pdf](https://nfdb.gov.in/PDF/National_Fisheries_Policy_2020.pdf)
3. National Water Policy, 2012. A copy of the policy can be accessed at:
http://jalshakti-dowr.gov.in/sites/default/files/NWP2012Eng6495132651_1.pdf
4. Delhi Land Reforms Act, 1954. A copy of the Act can be accessed at:
<https://www.indiacode.nic.in/bitstream/123456789/14644/1/1954delhi8.pdf>
5. Delhi Municipal Corporation Act, 1957. A copy of the Act can be accessed at:
https://www.mha.gov.in/sites/default/files/DMC-Act-1957_0.pdf
6. National Food Security Act, 2013. A copy of the Act can be accessed at:
<https://nfsa.gov.in/portal/nfsa-act#:~:text=The%20Act%20legally%20entitles%20upto,to%20receive%20highly%20subsidized%20foodgrains.>

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