

## **TECHNICAL REPORT - FARMERS OF ZONE O**

### **Introduction: Farming and the Yamuna**

Over the past seventy years, Delhi has grown from a compact urban core to encompass and transform its agrarian hinterland into variously planned, semi-planned, and unplanned neighbourhoods. As a result, the city has witnessed drastic reduction in farmlands along its expanding periphery due to urbanization and a shift in occupational patterns. Reducing at a rate of 1.8% per annum, the total cropped area has fallen from 52,817 Ha in 2000-01 to 33,455 Ha in 2018-19 (Economic Survey of Delhi, 2019-20). Nonetheless, these farmlands contribute significantly to Delhi's food production: 19,220 hectares of this total cropped land produces over 82,000 tonnes of wheat while about another 6,000 hectares produces 25,240 tonnes of paddy (Economic Survey of Delhi, 2019-20).

Along with such peri-urban farming, Delhi also has a rich history of large scale agricultural activity on the floodplains of the River Yamuna. Floodplains in the Delhi region have been conceptualised multifariously over the past hundred years under various planning regimes. Over a hundred years ago, during British times, the Yamuna's banks were considered dangerous for public health as breeding grounds of malarial mosquitoes. British planners sought to aesthetically reimagine them as zones of recreation, inaugurating a strong trend in the city's planning imagination which continues to inform our notions of what the floodplains should look like. Given shifting tenures, ownerships, and planning visions, farming has had a chequered history in this area.

In the urban segment of the Yamuna, south of Wazirabad, the earliest written accounts attesting the presence of large-scale, organised farming date from 1949. At that time, the Delhi Peasants' Cooperative Multipurpose Society (DPCMS) was given short term leases of five years by the erstwhile Delhi Improvement Trust (DIT)<sup>1</sup>, precursor to today's Delhi Development Authority (DDA), for cattle-grazing, grass-cutting, and cultivation of some edible crops (Pradhan, Lal 2019).<sup>2</sup> These leases were for four revenue — nazul — estates<sup>3</sup> on both banks of the river, in areas which eventually came to be incorporated under the planning division now known as Zone O. Even as Delhi grew around and farther from the Yamuna, farming in this region created a green buffer between the river and the city and provided fresh, locally-grown produce to generations of citizens.

### **Development plans and contestations on land use**

The lease of land to DPCMS was periodically renewed from 1949 to 1966. However, upon its expiry in 1966, the DDA decided to terminate it altogether. This decision of *transfer of farm land*

---

<sup>1</sup> Delhi Improvement Trust was a special body set up with statutory authority for planning and executing the proposal for decongestion of Delhi along with the administration of public lands (Priya, 2016).

<sup>2</sup> As the nodal land owning and development agency in Delhi, DDA inherited maintenance and administration of all developed land entrusted to the DIT, including revenue estates being farmed under the aegis of DPCMS (Pradhan, Lal 2019).

<sup>3</sup> Nazul in this context is land belonging to the erstwhile Mughal state; nazul land, in current terminology, refers to land owned by local municipal authorities for development purposes. The land was subdivided into four main revenue estates, namely Bela, Inderpat, Chiragah (north), and Chiragah (south).

*back to DDA* was never communicated to the farmers by DPCMS. Subsequently DPCMS continued to allot plots and collect ground rent from the farmers. DDA, despite termination, also continued to accept ground rent and other fees from DPCMS till December 1994, 28 years after the first lease termination. Its revenue officers continued to conduct site inspections and maintain detailed khasra girdawaris. Though DDA began to serve eviction notices and commenced legal proceedings against the farmers in February 1991, rent collection by DPCMS was seen as state sanction for continuing farming on the floodplain. The farming settlements also went through “various stages of legalization, receiving political and cultural sanctions under populist waves of electoral promises in exchange for votes—such as water and electricity connections—though legally they remained unauthorized” (Pradhan, Lal 2019).

The *Master Plan of 2001* envisioned channelization of the Yamuna all through its length in the NCT and subsequent development of extensive green spaces to attract migratory birds and special recreational areas on the pattern of a Disneyland kind of amusement park (MPD 01, 1990) . With subsequent development plans and delineation of Zone O in MPD 2021<sup>4</sup>, DDA’s approach to farming has become unsympathetic. The existing farming communities and migrants on the floodplains are ensnared in long-drawn contestations over land use and tenancy (Pradhan, Lal). Unlike previous Master Plans of 1962 and 2001, MPD 2021 looks at the floodplains as empty land, a tabula rasa, to be redesigned at will. This policy revision has happened within a context wherein the Yamuna and its floodplains have become “valued ecological landscape and prized real estate” (Baviskar 2011), one that DDA no longer wishes to ignore nor the judicial gaze wishes to leave unwarranted.

Consequently, the Yamuna Riverfront Development (YRFD) Plan, released in 2008, proposed large scale cleansing and beautification of the Yamuna. DDA intends to create recreational parks, wetlands, cycling tracks, and a forested buffer area in an area spanning 500 acres between the Old Railway Bridge and ITO Bridge. The first phase of YRFD included creation of the Golden Jubilee Park in the erstwhile Yamuna Pushta as a green buffer zone. While YRFD promotes integration of the river and its biodiversity with public recreation spaces, it does not take into account the claims, needs, and potential of stakeholders on ground in rejuvenating the Yamuna and its floodplains.

As a result, farming communities began facing forced evictions in early 2011. Furthermore, in 2015 the NGT pronounced strict prohibition on cultivation of edible crops in this region in lieu of environmental pollution in the Yamuna. However, the judgment equated agricultural activity with vegetable cropping “prohibiting the production and sale of vegetables from this area with immediate effect” (NGT 2015). This ambiguity, the prohibition of cultivation of edible crops but not explicitly of horticulture, was interpreted by farmers as an implicit allowance to continue agricultural activity as long as edible crops are not grown.

---

<sup>4</sup> The NCT of Delhi under the MPD 21, divided into 15 Zones from A to H and J to P, of which 8 Zones are in the urban area, one in Riverbed and remaining 6 in the rural area. As a result, the Zonal Plan for Zone ‘O’ was finalized within a year from the date of notification of the MPD-2021.

## Forced evictions: multiple perspectives

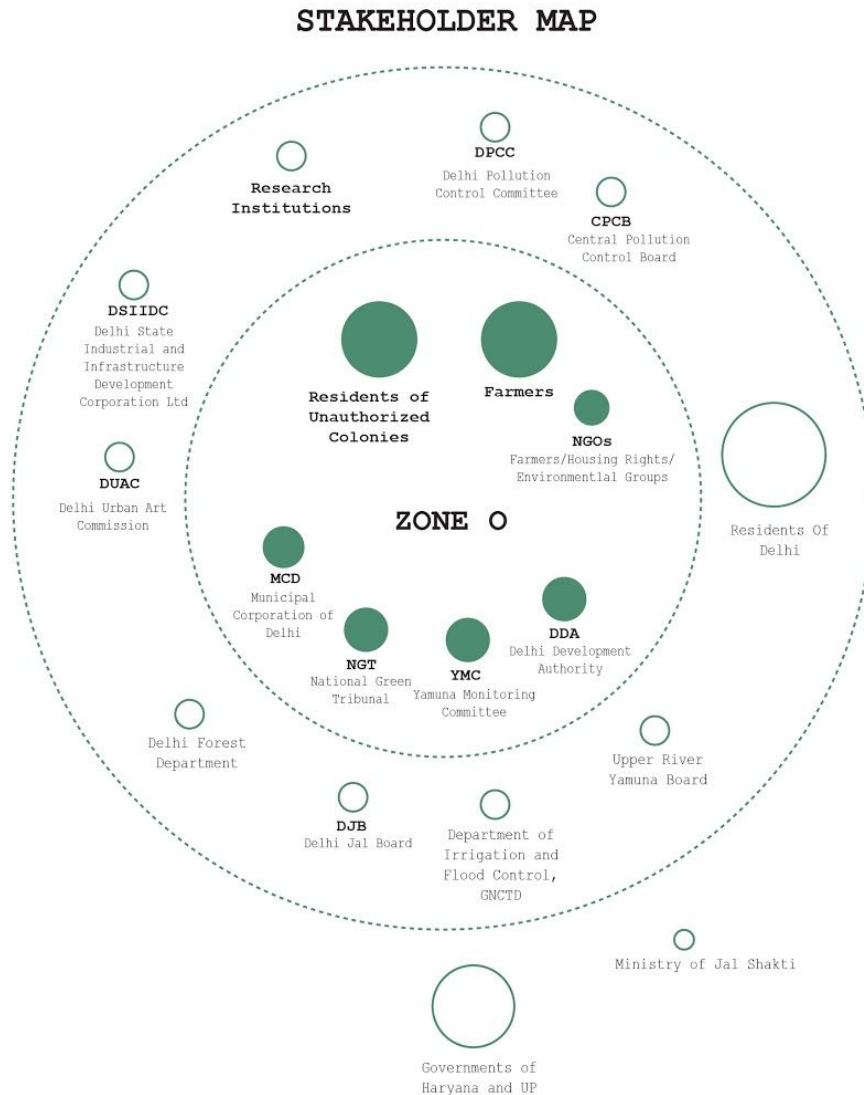


Image: Stakeholder map for Zone O, Delhi`

The historically symbiotic and mutually beneficial relationship between DDA and farmers in the Yamuna's floodplains has gradually become antagonistic due to:

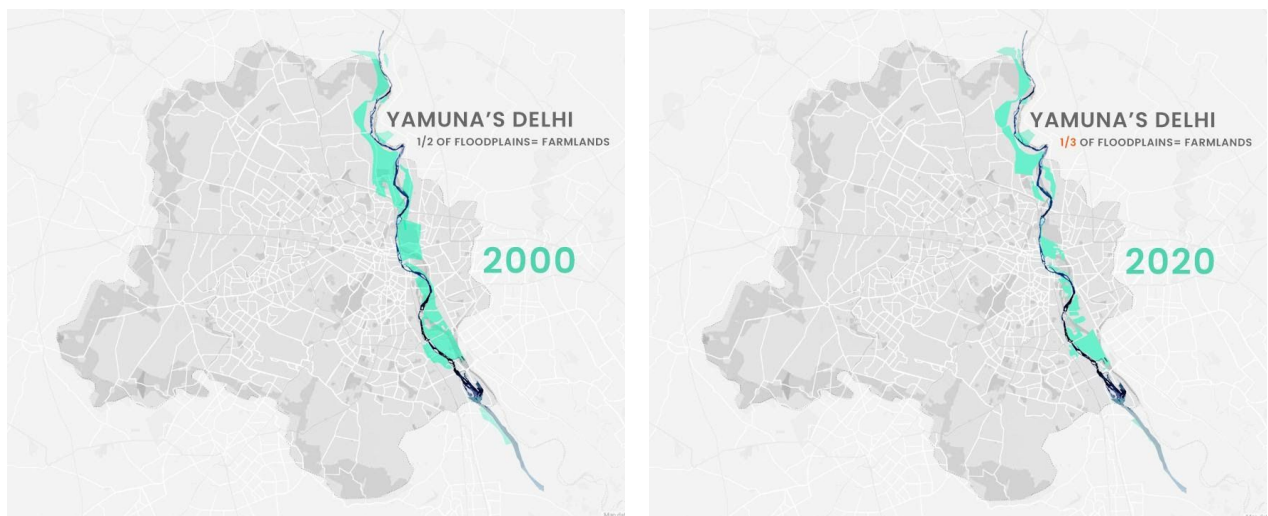
*a. Changing urban aspirations and aesthetics:*

The state began to see the Yamuna's floodplains as a revenue-generating civic asset which will contribute to repackaging Delhi's reputation within a global network of world-class cities. Despite prevalent pre-existing agrarian practices, planning agencies have consistently chosen to prescribe primarily recreation, public utilities and biodiversity as land uses for this region. Farming seems to have no space in the state's imaginations of Delhi and its future.

*b. Rising concerns on environmental pollution:*

Due to unchecked discharge of industrial and domestic sewage in the Yamuna, the river's water has become unfit for any kind of consumption. Like all other residents of Delhi, farmers are also the victims of the state's inability to curb this pollution despite massive expenditure of public money. Attempts to portray farmers as polluters are misplaced and misinformed, diagnosing effect as cause. Even though public sector agencies like CPCB have found vegetable produce from this region to have permissible limits of metals, farmers have been stigmatised as polluters for no fault of theirs.

Riverine floodplains are environmentally sensitive areas and must be protected for their ecological and social benefits to neighbouring settlements. In mega-cities such as Delhi, floodplains also perform vital cultural purposes and must be integrated with the lives, requirements, and concerns of citizens. Balancing these perspectives must be central to any planning vision for the Yamuna's floodplains in Delhi: the city must have not just open spaces which are green but which are also safe and sustainable. Though farmers have acted as guardians of the Yamuna by preventing rampant concretisation of the floodplains, over the past two decades the extent of farmland in this region has fallen from 4850 Ha to 3330 Ha. As many as 30 demolition drives have been undertaken by the DDA in over a decade against the farmers of Zone O. Such forced evictions are accompanied by bulldozing of standing crops, undermining not just right to shelter but also livelihood.



Maps: Extent of farmlands on Yamuna floodplains in Delhi in 2000 (left) and 2020 (right)  
Source: Social Design Collaborative

## Food Security and Livelihood

Delhi's annual demand for food—residential, commercial, and industrial—was estimated to be 9 million tonnes in 2011. Only 10% of this is met locally, mostly in the form of meat and milk products. As much as 80% of the demand is met from neighbouring states like Punjab, Haryana, and Uttar Pradesh (Ramaswami et al, 2017). Not only does this dependence on other states put excessive strain on their natural resources, transporting perishable products over long distances aggravates greenhouse gas emissions of the agro-commercial ecosystem (Boyer et al, 2019).

Despite relying on a massive hinterland to meet its demand for food, Delhi is unable to ensure equitable physical and economic access to food to all its citizens. The top 5% of the population consumes more fruits and vegetables, specifically 2.5 times the quantity of food than the lowest 5%, and is responsible for 17% of the GHG impact (Boyer & Ramaswami, 2017). On the other hand, the lowest 5% accounts for just 6% of GHG footprint. Nutrition status for the bottom 50% of this population can be improved not only by implementing in-boundary food waste management but also promoting urban and peri-urban farming.

Significantly, the Right to Food is also recognized in international law as a basic human tenet under the ESCR 1999. Signatory states are obliged to ensure availability, adequacy, and accessibility to food and to respect, protect, and fulfill their citizens' requirements for food. While the Constitution of India does not explicitly recognize the Right to Food as a fundamental right, judicial and policy precedents allow for it to be seen as an extension of the inherent dignity of all Indian citizens and as essential to the fulfillment of their other basic rights. The Sustainable Development Goals 2 (Zero Hunger), 11 (Sustainable Cities and Communities), 12 (Responsible Consumption and Production), and 13 (Climate Change) may also be read in concord as deeply supportive of urban farming to create inclusive and liveable cities for all.

Food security must also be understood in light of climate change and sudden, systemic shocks like the ongoing Covid-19 pandemic. Resilience is key to mitigating the impact of such disturbances, which are likely to become more frequent and acute in the future. Regularising and incentivising urban farming in mega-cities like Delhi will not only strengthen local food security but also provide gainful employment to the urban poor, particularly women. In Delhi, the sixty-eight NSSO Survey revealed that 15% of women respondents were engaged in agricultural activities of some kind, such as maintenance of kitchen garden, work in household poultry, dairy, etc., including free collection of agricultural products for household consumption (NSS, Report 559, pp 15-22). This indicates that there is substantial potential for equitably scaling up agricultural activity in Delhi to bolster the city's food security and build its resilience and simultaneously strengthen its citizens' access to sustainable forms of livelihood.

## Learning from Best Practices

### 1. Kolkata's wetlands

Kolkata is well known for its wetlands, which act as an outstanding co-recycling ecosystem where treated wastewater is used for irrigating the garbage substrate. Its 'garbage farms' provide 40-50% of the green vegetables for the city. East Kolkata Wetlands cover 12,500 Ha, out of which around [40% is overall agricultural area](#) and productive garbage farming covers 5%. From as early as the 1900s, vegetable farming has been taking place in cultivable lands formed out of the old solid waste dumping grounds in the city.

This technique utilises the vegetable farms and paddy fields that sustain on the garbage and effluent emanating from the waste water fed fisheries as manure and water for irrigation. Large numbers of coconut and betel nut trees and many varieties of vegetables are farmed here, including cauliflower, eggplant, pumpkin, sunflower and sacred basil. Tracts of land are dedicated to paddy cultivation as well. Around [150 metric tonnes of vegetables](#) per day are harvested from small scale plots irrigated with wastewater and 15,000 metric tonnes of paddy, annually.

### 2. Agro parks in Kerala

Kerala has [Agro Parks](#) in Thrissur, Piravom and Chelakkara, which are incubation centres for agro-food processing based small scale industries functioning since 2013. These are public platforms for entrepreneurship development including technology training, packaging, licensing, loan systems testing, and so on, both for farmers and entrepreneurs. Future plans envisage teaching ultra modern and scientific farming methods of specific crops, direct purchase and storage of agri products from farmers, and facilities to develop subsidiary products.

### 3. Sustainable Agriculture on Ganga Floodplains

The National Rejuvenation, Protection and Management of River Ganga Council (National Ganga Council) was formed in 2016 and is constituted by the Chief Ministers of the five river basin states of Uttarakhand, Bihar, Uttar Pradesh, Jharkhand, and West Bengal. [The Council](#) seeks to improve farming practices in the Ganga floodplains for managing water resources and pollution. Its larger agenda is to promote sustainable agriculture in the Indo-Gangetic plains by promoting organic clusters in a 5km stretch on both sides of the Ganga basin in the five states (ibid). At the same time, it ensures both natural and human resources are of prime importance and that agricultural practice remains environmentally sustainable, i.e. the productivity increases sufficiently and survives without degrading the physical resources of the river Ganga.

### 4. Urban Farming in Cuba

Urban agriculture in Cuba occupies [3.4% of urban land across the island and produces 90% of its fruits and vegetables](#), making the country self-sufficient in terms of its food production. A system which started in Cuba by what were called [Guerilla gardeners](#) to overcome starvation in the 90s led to **organoponics**, a system of urban agriculture using organic gardens. This further led to people incorporating biological pest control strategies, crop rotations, intercropping and

soil conservation within their practice to increase yield without reliance on artificial fertilizers and chemical inputs.

In 1992, the state owned 75% of the country's farmland whereas now, as a result of the piecemeal development of the new urban farming network outside of state management, mostly all of it is managed locally by co-operatives. Not only do these co-ops decide what they want to grow, they are able to negotiate with the government about how much they contribute to the state. Their significant contribution to the country's economy and improvement to farmers' annual income (who earn up to double the national wage) is an exemplar to sustainable farming.

## **5. Mound Plan, Netherlands**

This case offers a nuanced understanding of creating protected land for farming along the floodplain and at the same time protecting the city against floods. The spatial plan proposes a flexible concept of river widening through the construction of 'dikes'. The dikes combine agriculture and water overflow regions, allowing farmers to remain there in the future. Some portion of the land along the dike is designed for the construction of homesteads, stables, and sheds for the farmers managing these farms.

### **Way forward**

Any planning vision for the Yamuna and its floodplains in Delhi must consider and reconcile the concerns and interests of all stakeholders, public as well as private. In 2014, an Expert Committee appointed on directions of the NGT also found farming to be suitable land use for the Yamuna's floodplains in Delhi and suggested regulation of agricultural activity in Zone O (Expert Committee, 2014). International best practices, independent research, and policy precedents, all of these also indicate that farming is a suitable and sustainable land use for riverine floodplains. Farming communities are rich repositories of local and contextual knowledge on land, water, and seasons. The farmers of Zone O have been responsible for maintaining the Yamuna's floodplains as a green hub of agricultural activity connected closely with Delhi. Their sustained presence has not only prevented rampant concretisation of this region but has also acted as a bulwark against crime and social degeneration of the floodplains. Instead of being seen as encroachers and polluters, farmers in this region must be recognised as community custodians of the Yamuna who not only provide food to the city but can also go on to take care of parks and biodiversity reserves coming up in this region.

To balance principles of intergenerational environmental equity with socio-economic justice for vulnerable sections of the population, it is necessary to reimagine the Yamuna's floodplains as an urban asset and inclusively integrate farming with riverfront development. We propose that:

**1. Riverfront development be integrated with farming:**

The current developmental dichotomy between parks and farms is an artificial one. Along with forests and/or marshes, farms are also ecologically beneficial uses of floodplains. With their skills and knowledge, farmers can also be easily trained to become effective guardians of parks and biodiversity spheres. These should coexist alongside farmlands, so that the citizens of Delhi have healthy access to all three kinds of ecologically and socially sound uses of the floodplains.

**2. Agriculture be notified as a dedicated land use:**

Despite thriving pre-existing agrarian practices and communities, successive Master Plans for Delhi have chosen to notify this region only as a zone for recreation and leisure. We must reimagine Zone O as an urban asset in terms of not just riverine ecology but also riverine agriculture. The first step in regularising farming as a community-driven, sustainable urban livelihood will be to recognize long-standing ground realities and notify agriculture as an additional land use for Zone O.

**3. Farmers be reskilled in organic and sustainable practices:**

To mitigate inadvertent ill effects of riverine pollution, farmers must be reskilled to follow organic and sustainable practices. Reports by CPCB and NEERI have already given encouraging results on the quality of vegetable produce from this region. Soil and water quality must be mapped more consistently and consensually across Zone O to determine localised, contextual interventions by agricultural scientists, environmentalists, and planners.

**4. Farmers of Zone O be given access to welfare schemes:**

Peri-urban farmers in the NCT of Delhi are eligible for various benefits, subsidies, and insurance as per relevant policies of GoI and GNCTD, such as SBM Gramin, Paramparagat Krishi Vikas Yojana, Mukhyamantri Kisan Mitra Yojana, etc. Farmers in the urban segment of Zone O must also be given access to these welfare schemes so that they have the proper incentives and skills to pursue their vocations sustainably.

**5. Innovative solutions for housing problems:**

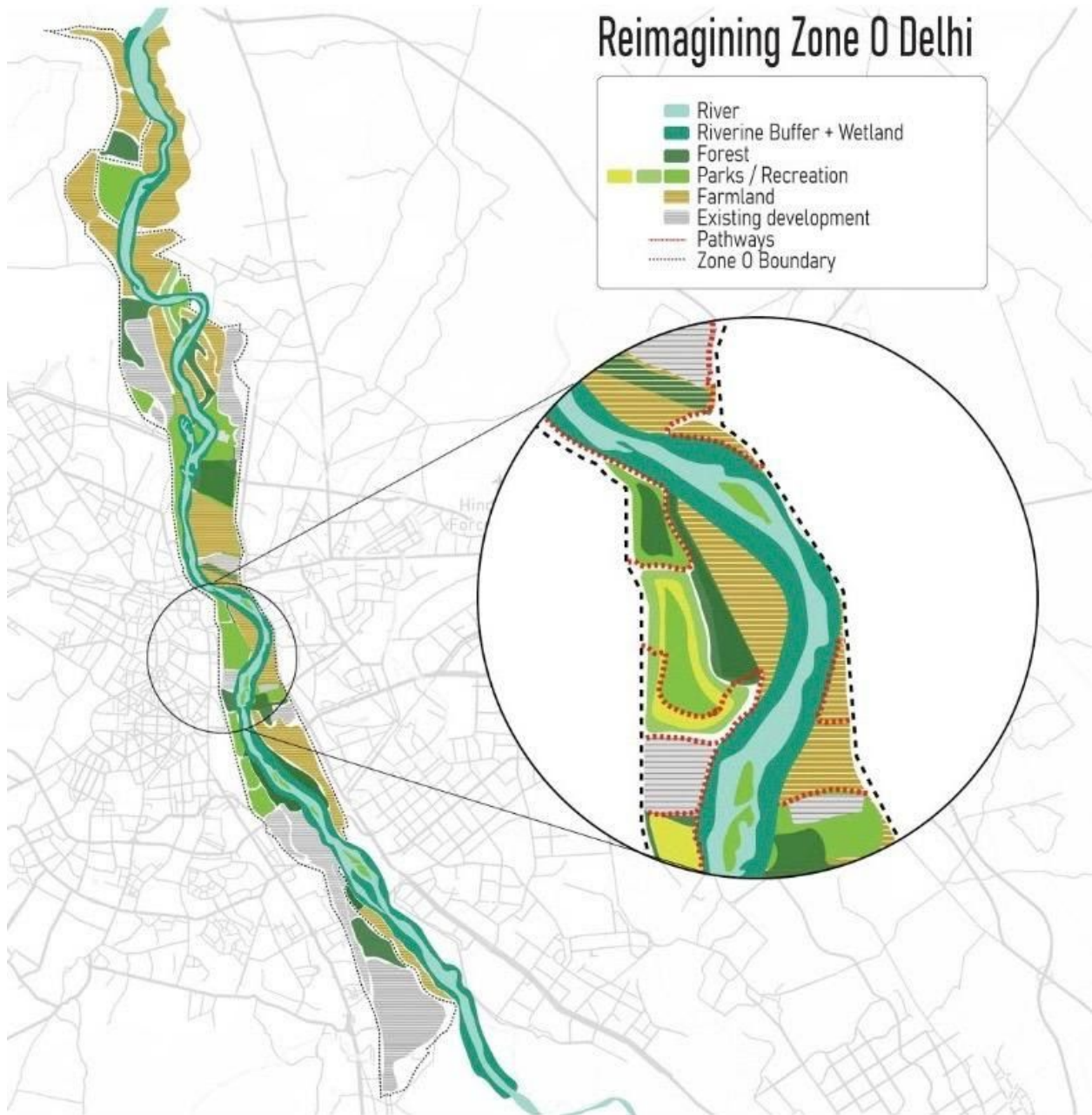
Delhi can learn from best practices from other flood-prone cities in the world to innovatively design resilient housing for farming communities settled in the Yamuna's floodplains. Working with communities to understand their needs and creating cost-effective solutions with sustainable material will allow us to also come closer to actualizing our commitment to the SDGs.

**6. Eviction and resettlement must be last resorts:**

Demolition drives have been consistently conducted all through Zone O over the past decade. These have not abated even during the ongoing Covid-19 pandemic, endangering communities' life and livelihood. In keeping with established tenets and precedents of law, resettlement must be a last resort when all other viable alternatives have been explored and exhausted. Any eviction for any public purpose must be carried



out as per DUSIB Policy and Protocol as clarified by the Delhi High Court in *Ajay Maken v. Union of India* (2019). In such cases, rehabilitation and compensation must be extended to the farmers of Zone O as they have been made available to the public at large elsewhere in Delhi.



Conceptual illustration of an alternative Zone O plan integrating farming with parks, wetlands and public spaces (Representational image only). Source: Social Design Collaborative with Kushal Lachhwani



Artistic visualisation illustrating farmlands integrated with public spaces

Source: Social Design Collaborative with Kushal Lachhwani in consultation with farmer groups

## References

Baviskar A (2003) Between violence and desire: space, power, and identity in the making of metropolitan Delhi. *International Social Science Journal*.

Bhandari, S (2014) Planning And Development Laws, DDA <<http://spa.ac.in/writereaddata/Day3DDA.pdf>> [Accessed 14 November, 2020].

Boyer, Dana & Ramaswami, Anu. (2017). What Is the Contribution of City-Scale Actions to the Overall Food System's Environmental Impacts?: Assessing Water, Greenhouse Gas, and Land Impacts of Future Urban Food Scenarios. *Environ. Sci. Technol.* 51, 12035-12045.

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*, 7. <https://doi.org/10.1029/2018EF001048>

Economic Survey of Delhi (2019, 2020)

Expert Committee (2014), *Restoration and Beautification of River Yamuna in NCT of Delhi*. Ministry of Environment and Forests, Delhi.

Delhi Development Authority (1962), Master Plan for Delhi, DDA, Delhi

Delhi Development Authority (2001), Master Plan for Delhi, DDA, Delhi

Delhi Development Authority (2021), Master Plan for Delhi, DDA, Delhi

Lal, N; Pradhan, A (2019) Kheti and Khadar: Land and rights on an agrarian floodplain. *Interdisciplinary Unsettling of Place and Space: Conversations, Investigations, and Research*. Ed. Sarah Pinto, Bernadette Walker-Gibbs, and Emma Charlton. Springer: 2019.

Lübken, U (2012) Rivers and risk in the city: The urban floodplain as a contested space. *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America*. Ed. Stéphane Castonguay, Matthew Evenden. University of Pittsburgh Press: 2012.

Mishra, Dheeraj and Kabir Agarwal (2020). Only Six Delhi Farmers Have Benefited From AAP's Much-Touted Plan to Increase MSP. *The Wire* <https://thewire.in/agriculture/aap-msp-promise-farmers-delhi-failure>

National Green Tribunal. (2015) *Manoj Misra v. Union of India (2012) Original Application No. 6 & M.A. Nos. 967/2013 & 275/2014*. National Green Tribunal, Delhi.

National Sample Survey Office. (2014). Participation of Women in Specified Activities along with Domestic Duties. Report no. 559 (68/10/3). [http://mospi.nic.in/sites/default/files/publication\\_reports/nss\\_report\\_559\\_10oct14.pdf](http://mospi.nic.in/sites/default/files/publication_reports/nss_report_559_10oct14.pdf)

Ramaswami, Anu et al. (2017). *An urban systems framework to assess the transboundary food-energy-water nexus: implementation in Delhi, India*. Environ. Res. Lett. 12 025008

Sharan, A (2014) A River and the Riverfront: Delhi's Yamuna as an in-between space. Centre for the Study of Developing Societies

Singh V (2015) Delhi Development Authority v. Smt. Sharda Devi W/O Sh. Om Prakash & Delhi Peasant Co-operative Multipurpose Society Ltd (EV/TN-2(63)2011/259/D/56A/BelaEstate/1690). Delhi Development Authority, Delhi

Sinha M (2014) RIGHT TO FOOD: International and National Perspectives. Journal of the Indian Law Institute.



Supported by Centre for Policy Research, People's Resource Centre, Social Design Collaborative, Basti Suraksha Manch

We would like to thank Naresh Pal, Dev Pal and Chetan as representatives of the concerned farming communities for their inputs in the formulation of the report.