

Vertical Kitchen Gardens in the Dadu Majra Rehabilitation Colony

Vertical Kitchen Gardens in the Dadu Majra Rehabilitation Colony, Chandigarh
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Opposite: blank end walls of a double-block with circulation space in-between



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SOLID WASTE
PROCESSING PLANT

SECTOR 38 WEST

LANDFILL

DADDU MAJRA VILLAGE



Standard floor plan for one-family unit
according to the Small Flats Scheme



Site plan of the Dadu Majra Rehabilitation Colony

The Dadu Majra Rehabilitation Colony is located on the edge of the planned city of Chandigarh between sector 38 West and the village of Dadu Majra, and between a large landfill and the city's sewage treatment plant.

It is part of the Small Flats Scheme intended to make Chandigarh slum-free by shifting more than 25.000 families (approximately 15% of the city's total population) who live - or used to live - in slum across the city to five new colonies located on the periphery of the city.

The Dadu Majra Rehabilitation Colony is one of the smallest of these colonies, which are all based on the same design principles.

A "small flat" constitute the living unit of one family. It consists of one open room and an enclosed bathroom, in total 22.6 m², and a narrow balcony.

Up to 12 people may occupy one unit!

32 units are placed in a four-storey block and two blocks are placed on either side of a common circulation space forming a double-block accommodating 64 families.

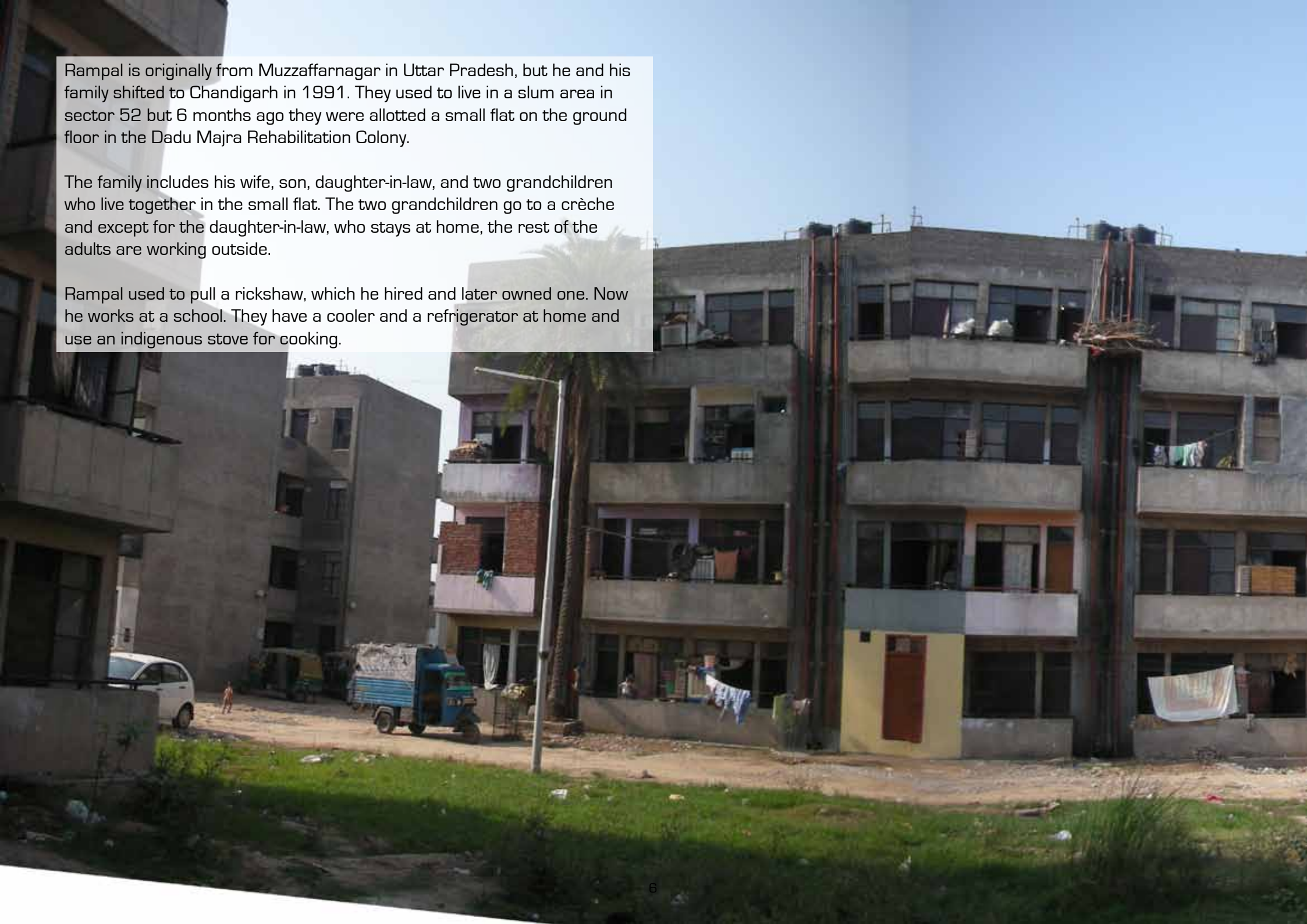
These double-blocks are placed closely together to optimize land-use and create high population densities of more than 100.000 people per km².

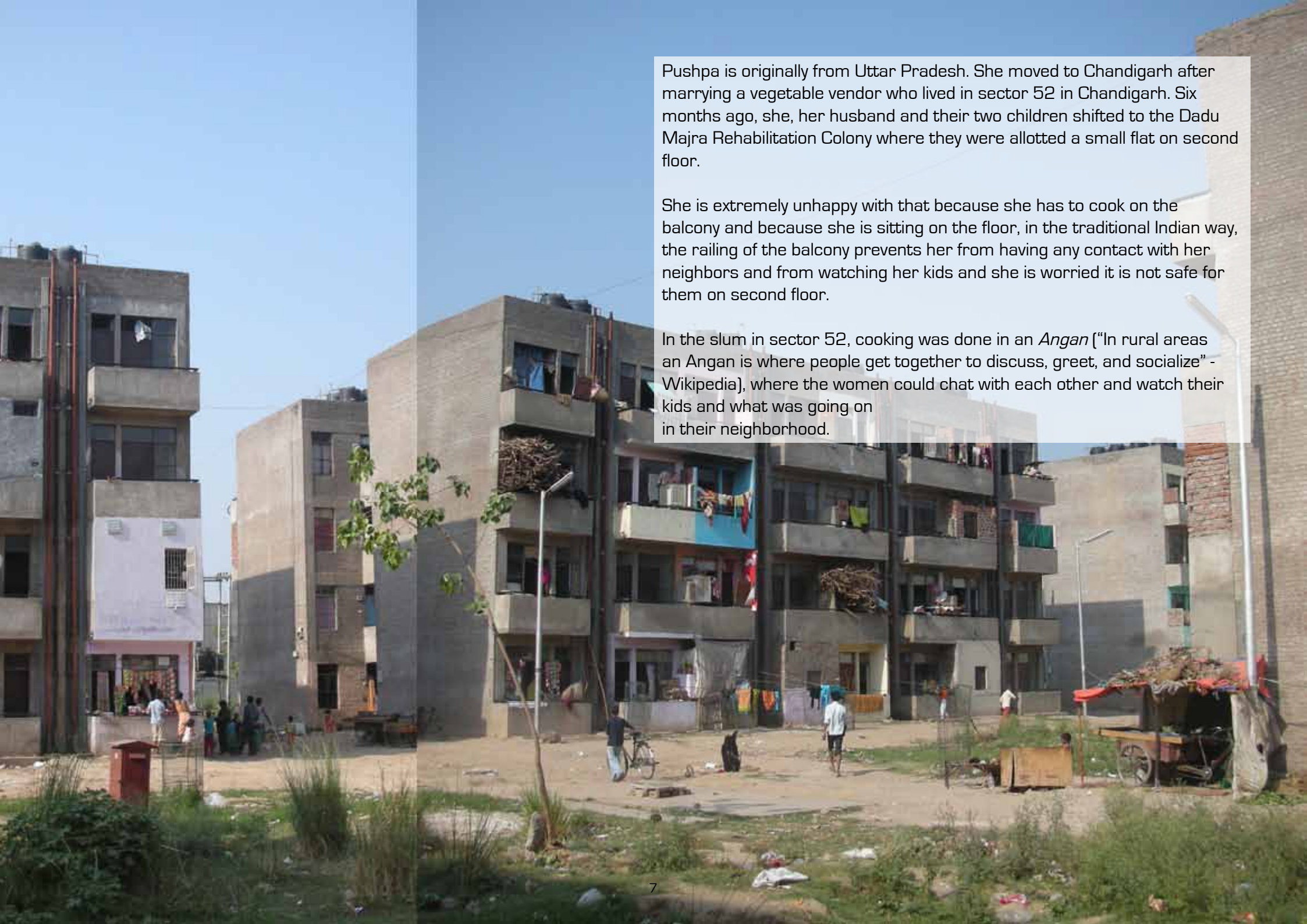
There are 1.120 families, or some 5-6.000 people, living in seventeen and a half double-blocks in the Dadu Majra Rehabilitation Colony.

Rampal is originally from Muzzaffarnagar in Uttar Pradesh, but he and his family shifted to Chandigarh in 1991. They used to live in a slum area in sector 52 but 6 months ago they were allotted a small flat on the ground floor in the Dadu Majra Rehabilitation Colony.

The family includes his wife, son, daughter-in-law, and two grandchildren who live together in the small flat. The two grandchildren go to a crèche and except for the daughter-in-law, who stays at home, the rest of the adults are working outside.

Rampal used to pull a rickshaw, which he hired and later owned one. Now he works at a school. They have a cooler and a refrigerator at home and use an indigenous stove for cooking.





Pushpa is originally from Uttar Pradesh. She moved to Chandigarh after marrying a vegetable vendor who lived in sector 52 in Chandigarh. Six months ago, she, her husband and their two children shifted to the Dadu Majra Rehabilitation Colony where they were allotted a small flat on second floor.

She is extremely unhappy with that because she has to cook on the balcony and because she is sitting on the floor, in the traditional Indian way, the railing of the balcony prevents her from having any contact with her neighbors and from watching her kids and she is worried it is not safe for them on second floor.

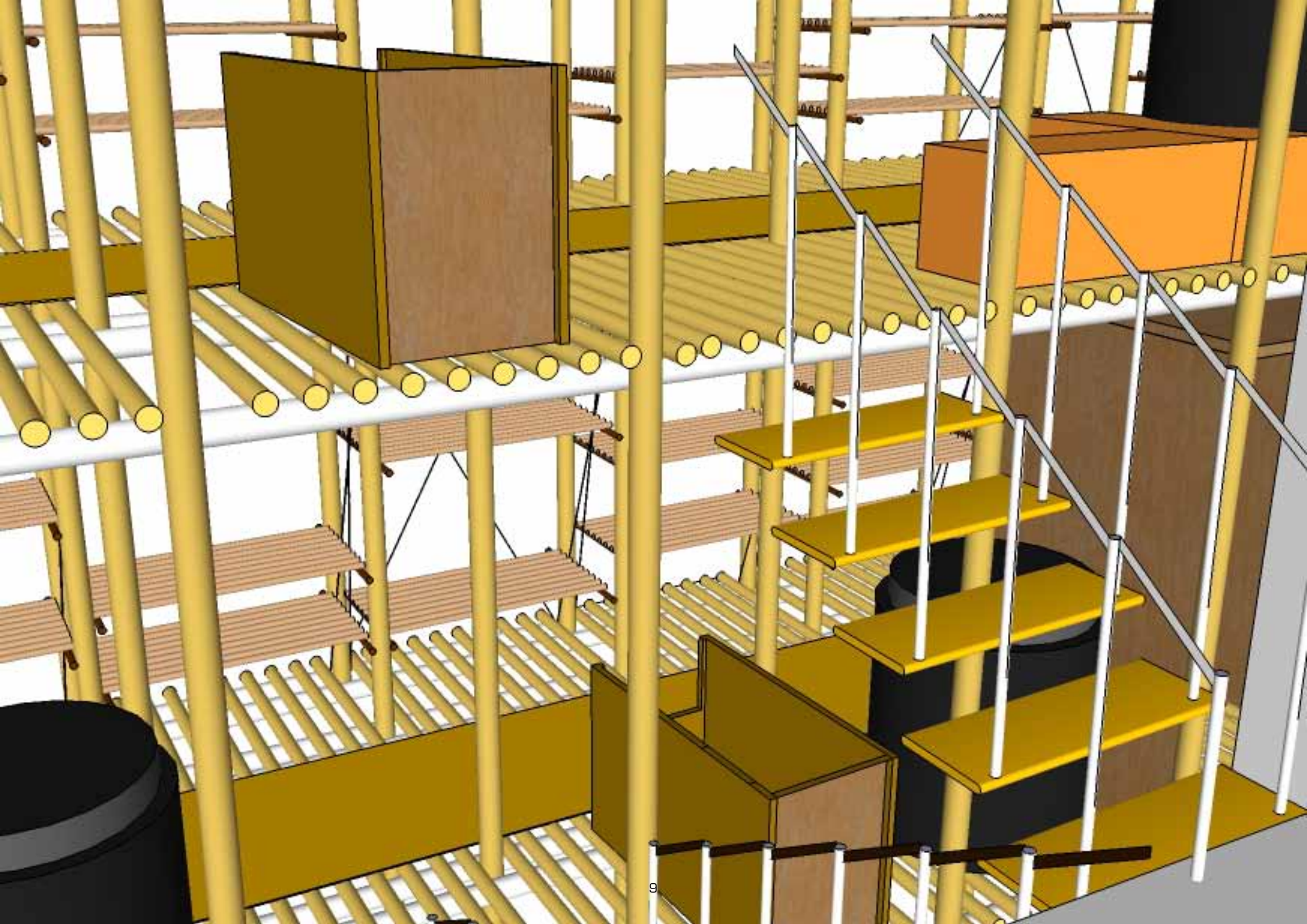
In the slum in sector 52, cooking was done in an *Angan* ("In rural areas an Angan is where people get together to discuss, greet, and socialize" - Wikipedia), where the women could chat with each other and watch their kids and what was going on in their neighborhood.

Community kitchen gardens are proposed as a remedy to make the inhabitants of the Dadu Majra Rehabilitation Colony less vulnerable to fluctuating food prices and insecure food supply while simultaneously reducing the need for government subsidies. Furthermore, community kitchen gardens may serve to create social cohesion and respect for the environment among the people living in the colony.

With limited availability of land in the colony, kitchen gardens are envisioned as vertical structures placed at the blank end walls of each double-block (nearly all facing East/West). The triple layered scaffolding-like structure is made of *Balliyaan* (eucalyptus poles) and anchored to the existing building. It measures 2.4 m (width) x 21.0 m (length) x 12.0 m (height).

With 3-400 people occupying one double-block, the output of two Vertical Kitchen Gardens will not be enough to feed everyone, but it will make a significant contribution, in terms of vegetables, herbs and fruit.

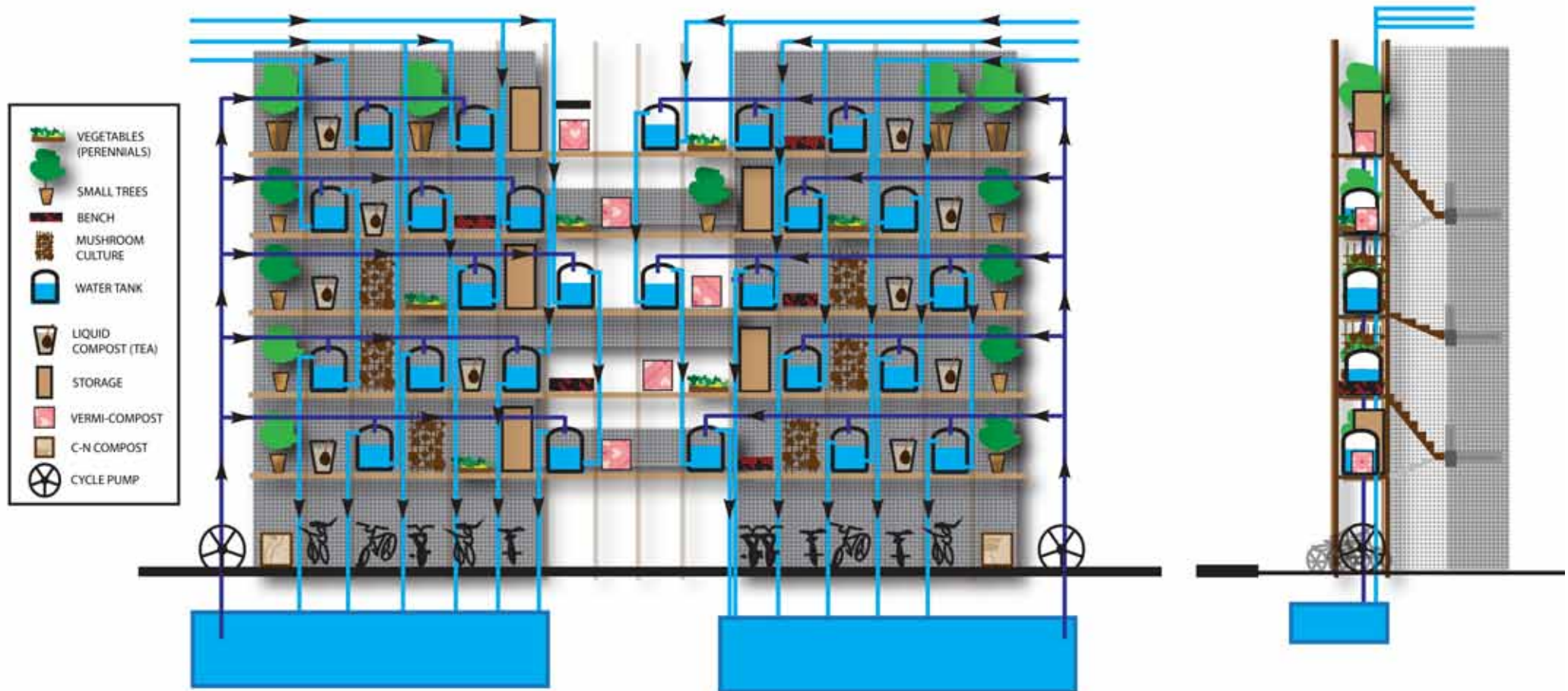




The inner layer (1.2 m wide) contains 25 water tanks (500 l each) that fill up with rainwater, and 10 large buckets (100 l each) in which water is being enriched with vermi compost, which is being produced in small containers on each level. Plants are watered daily (or every other day) but only with enriched rainwater once every two weeks. The rainwater is harvested from the roof of the existing buildings and led through pipes into the water tanks on the upper levels. When these tanks fill up excess water runs into the tanks on the lower levels and from here eventually into underground tanks where the water is stored. Cycle-pumps on the ground are used to re-circulate water to the tanks above, primarily to those on the lower levels.

Citrus trees and vegetables, which demand relatively large amounts of soil, are grown in containers that are also placed in the inner layer. Mushrooms are grown in the darkest parts.

Benches with storage space and sheds for storage are located on each level.



The outer layer consists of a shelf system (0.6 m wide) where herbs and annual vegetables are grown in small (recycled) containers with small amount of soil. Herbs are used for consumption, medical purposes and pest management.

Between the inner and the outer layer are walkways (1.2 m wide, 2.2 m high) connected to the existing staircases.

The whole structure is covered in a mesh, for instance a fishing net, to keep plants and people (children) from falling out. Grapes may grow on parts of this mesh. Smaller sections of the structure may be covered in agricultural plastic, for instance poly house plastic, to create green house effects.

Carbon/nitrogen compost (to enrich the soil) is produced in large containers on the ground level of the structure, which also includes parking space for two-wheelers and bicycles.

