
Farming in Delhi - 6

Waste Management in Urban Farming

Waste Management in Urban Farming



Waste Management in Urban Farming

☺ All wrongs reversed

This work is made available under the Creative Commons Attribution 4.0

International License: <http://creativecommons.org/licenses/by/4.0>.

Any part of this work can be translated or republished for non-commercial purposes without the prior permission of the authors or People's Resource Centre as long as People's Resource Centre is referenced and a link to the original source is provided.

November, 2020

Research and writing : Aakiz Farooq, Nishant

Design : Aakiz Farooq

Pictures : Afzal Adeeb Khan, Avikal Parashari, Joe Athialy, James Wllinger

Original research : Radheshyam Mangolpuri, Rajendra Ravi

Support : Akshita Rawat, Anita Kapoor, Arjun Singh, Nanhu Prasad, Rahul Kumar, Sunita Rani

Publisher

People's Resource Centre (PRC) [www.prcindia.in]

Supoort

Institute for Democracy and Sustainability (IDS) &

India Institute for Critical Action : Centre in Movement (CACIM) www.cacim.net

Contact

H. No. 7, Lane no. 6, Block-A, Himgiri Enclave, Pepsi Road, Main Burari Road,

New Delhi-110084.

prc.india@yahoo.com | [@prc_in](https://twitter.com/prc_in) | + 91 98682 00316

For Private Circulation Only

Many rivers and ponds are bearing the burden of cleaning the cities. The water sources filled with contaminated water reek of a society, which can go to any extent for it's convenience and which is unwilling to pay any price to clean it's dirty water ; which only has a relationship of exploitation with it's water sources
- Sopan Joshi (Jal Thal Mal)

Human faeces is produced from the soil and can easily return to the soil, especially if it is converted into manure through the process of composting.

- Joseph Jenkins (The humanure handbook)

In an urban society, an ecologically sustainable future is unimaginable without the effective management of waste. A major proportion of our waste is made up of organic matter (all such substances which contain carbon), including leftover food, leaves, farm residues, human and animal faeces. Minerals like nitrogen, potassium, and phosphorus which can be found in organic waste add to the richness of the soil and are beneficial for the cultivated soil. Therefore all of the nutrients must be transported back to the soil, from where they originated and where they can be best put to use, in a completely natural manner.

Over the years, human waste generated from urban areas has been seen as "waste" and discarded, flushed, and forgotten. Its potential has not been realized, being left completely unutilized and thus has not been harnessed for the cultivation of land, to increase the fertility of the soil. In this process, precious fertilizers are being wasted, as well as adding to the contamination of rivers, drains are being filled and thus leading to an increasing threat to urban ecology and public health.



Bhalswa Landfill

Photo : Afzal Adeeb Khan, Avikal Parashari

In the book “Jal Thal Mal”, Sopan Joshi conceptualizes the problem of waste disposal as “three ideas of purity”. He argues that there is nothing called waste in the natural world. What we call “waste”, is the material that we simply cannot make use of because we haven’t found a way to use it effectively and hence call it waste. He argues that our body converts a large part of the food that grows from the water and land (soil) into human excreta within a few hours. Organic waste can be easily mixed back into the soil through composting. By doing this, the important nutrients present in the soil are put back in the soil and thus help increase its fertility (Joshi, 2017).

Open defecation has always been associated with being “backward”. People

who indulge in it are named and shamed, being accused of not being “urban”. However, when the same thing is done by the means of flushing human excreta and using tons of water to dump untreated sewage in water bodies, thus polluting it, no one bats an eye. This idea was also discussed and elaborated upon by Sopan Joshi, during the webinar, “Farming the City”, organized by the People’s Resource Centre. He argued that our excreta contains elements that can cause various diseases, but this does not mean that we just have to remove it from our body in some way. It is essential to find a way for the proper management of this waste in which the nature-compatible and beneficial use of human faeces can be utilized. (For the recording of this session go to <https://youtu.be/Zzi6eqyFs78>)



Okhla Landfill, Delhi
Photo : James Wendlinger

The same idea has been highlighted in the book, "The Human Handbook", written in 1996 by Joseph Jenkins, which stresses upon the various ways in which human faeces and urine are used in soil. It further discusses the history of toilets and presents an overview of the faults of flush toilets developed in England. Jenkins, too, develops simple and effective methods of composting human sewage through which toilets of urban homes can be used to prepare compost for farming and does not have to rely on using drinking water. Moreover, he also suggests ways by which any individual can indulge in making a compost box by separating the organic waste from the general waste generated in households. Jenkins further states that there is no need for money for fertilizer and composting in the world. This can be done by anyone anywhere the plant can

grow. He writes that effective learning and safe ways to convert faeces, urine and other excreta into manure is extremely important for today's urban population.

In different countries of Asia, such as Japan, China, etc. human excreta and urine is used as an effective tool to increase the fertility of agricultural land. Asians have developed an understanding of human excreta where it is viewed as a natural resource instead of waste. Asian countries like China, Japan, Korea etc have developed organic farming practices without using chemical fertilizers. It is worth noting that when western countries were producing waste, the same "waste" i.e. human faeces and urine, was being utilised by Asian countries to produce nutritious elements (Jenkins, 1996).





Bhalswa Landfill

Photo : Afzal Adeeb Khan, Avikal Parashari



Okhla Landfill, Delhi
Photo : James Wendlinger

In another book titled “Farmers of Forty Centuries”, Dr F.H King gives a detailed account of the practices developed by the people of China, Japan and Korea for the effective use of human excreta. The techniques of conservation and use of human faeces and urine adopted by China, Japan and Korea figure as the most efficient soil management techniques among those adopted by other countries. In these countries, human faeces and urine is used in the production of fertiliser and thus increase the fertility of the soil. While the western countries adopted the use of chemical fertilizers due to its capacity to act fast in less time and thus speed up the production process, they also caused damage to the quality of the soil. Though the benefits were fast and immediate, the method was not

sustainable and resulted in long term damage to the soil. On the other hand, China, Korea, Japan, and other Eastern civilizations adopted large-scale biological methods to enrich the soil and effectively used it to meet their health and food needs

In recent years, the practices which have been part of Asian countries for centuries have been gradually abandoned. Recent surveys and studies have shown that the situation in Asian countries is deteriorating. Japan which has from long adopted the practice of organic waste management has from the last few years gradually abandoned it. Similarly, China has also abandoned the practice of the management of organic waste and the effective use of human excreta.



Bhalswa Landfill

Photo : Afzal Adeeb Khan, Avikal Parashari

Apart from composting, another effective use of organic waste involves converting it into biogas which can be used as a source of energy. Organic waste produces flammable gases, and this has been used for centuries to convert waste into a source of energy. Developing countries have been at the forefront in introducing biogas and its effective use. India, China, Nepal, Vietnam, Bangladesh, Sri Lanka and other developing countries have used organic waste extensively to produce biogas. In particular, China has been using human faeces and urine for this purpose for a long period of time. In China, biogas is widely used as a source of energy, especially in the villages. The Chinese government also provides subsidized biogas plants.

In India as well, there have been various efforts by the government to promote the production of biogas. For example, as part of the National Biogas and Fertilizer Management Program (2009-10), one and a half lakh 'family-friendly' biogas plants were planned to be established (Abbasi et al, 2012). Recently, India has introduced a biogas plant which can be used in public toilets to effectively collect human faeces and urine to convert it into biogas. However, this initiative hasn't been implemented yet and has been slowed down due to the lack of confidence and knowledge about biogas digesters among local level government officials.

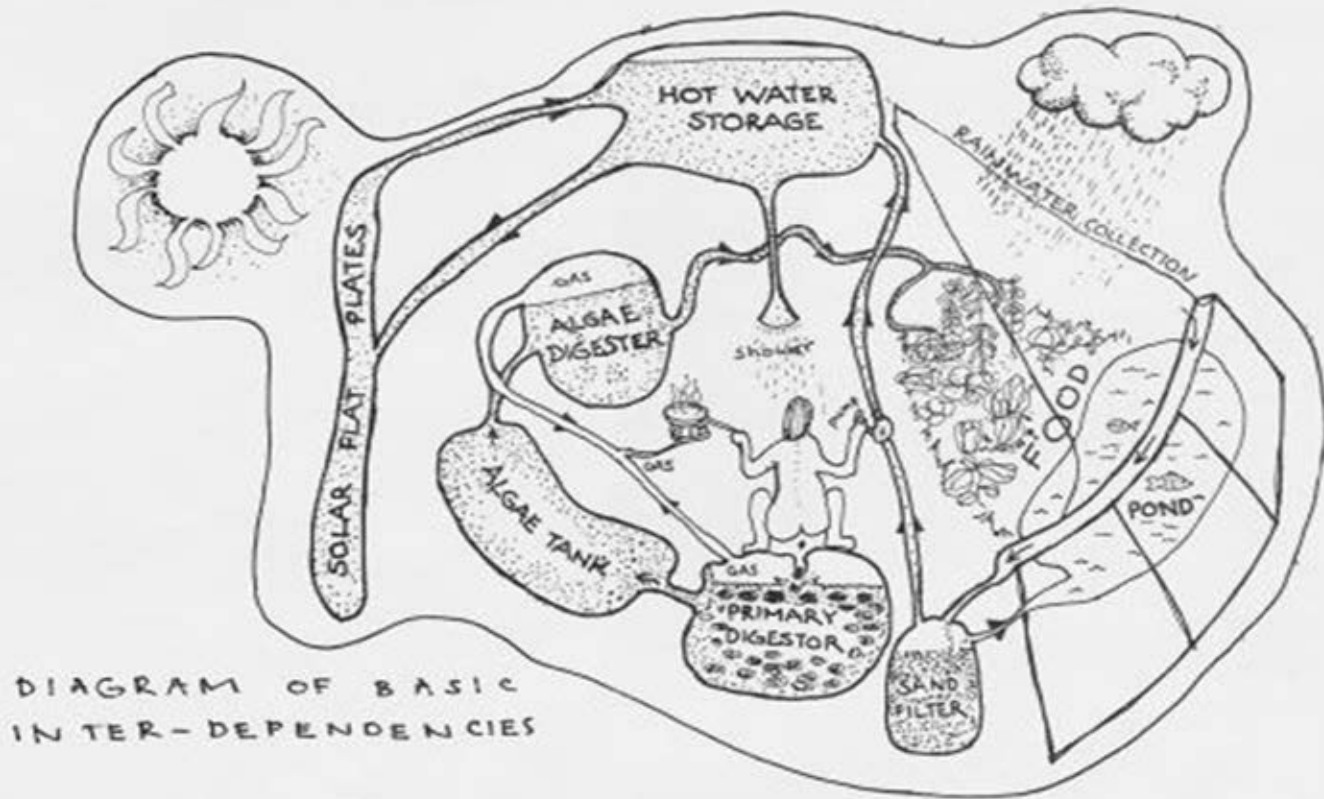


A House in Delhi
Photo : Joe Athialy

The residue (such as straw) from agriculture can also play an important role in the process of composting and can make the soil more fertile by introducing important minerals into it. It has been a common understanding that the "waste" from agriculture is mineral-rich and therefore returning it back to the soil will be in the interest of the farmers. The technological and policy changes after the Green Revolution have caused the loss of this consciousness among the general population, especially the farmers. Due to the lack of public knowledge and pressure from the market, many farmers have abandoned agroecological practices and do not make use of agricultural waste in the soil. There is a dire need to bring this in public discourse and further inform the farmers as well the State about the

imperative need for going back to agroecology to effectively use waste.

In Delhi, there currently exist three mountains of garbage. The first mountain is in Bhalaswa, in the North Delhi Municipal Corporation area. The other mountain lies in Okhla, in the South Delhi Municipal Corporation area. The third mountain can be found in Ghazipur lying in the East Delhi Municipal Corporation area. The height of these mountains is increasing day by day. The plan is to build another similar garbage mountain in Delhi, however, due to the unavailability of land which can be used as a landfill, the municipal bodies in Delhi are yet to lay the foundation of the fourth mountain.



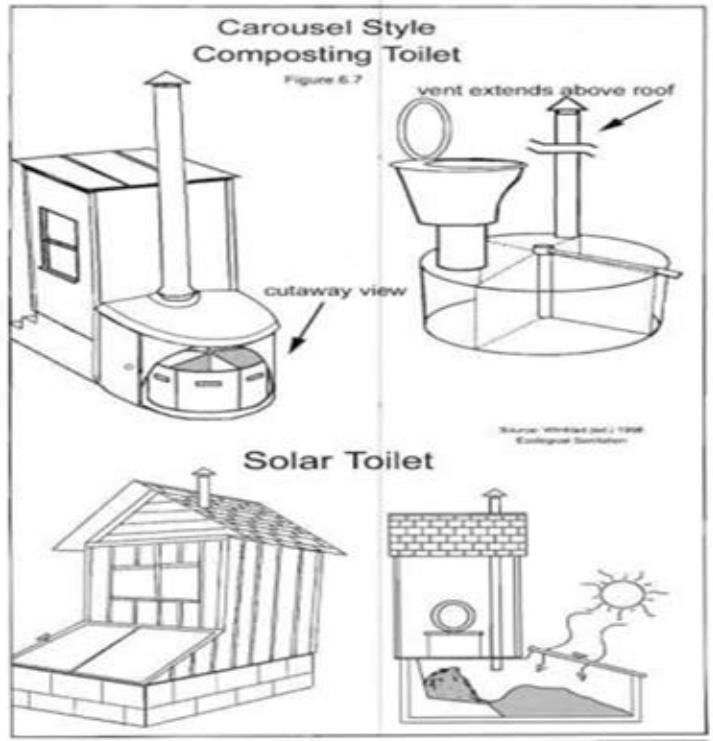
A sketch made by Cairn demonstrating the mutual dependence among different parts of his natural house

However, there exist no such mountains of garbage in the New Delhi Municipal Council and Delhi Cantonment Council areas. The accumulated garbage of both these areas is not disposed of there but is transported to other areas. If the garbage disposal is done in a more planned way, following agroecological methods, such garbage mountains will cease to exist. The waste accumulated in these mountains can be used to generate electricity and produce fertilisers. This will not only make our fields fertile but also supply us with energy.

One can also find vegetable, fruits and flower mandi's in Delhi. Thousands of tons of garbage is released daily from their premises. This waste mainly consists of vegetable leaves, stalks, sprinkles, rotten vegetables, fruit pulp after extracting the juice, fruit peels, animal dung, the residue

of their straw, dust etc. The second kind of "waste" can be found in liquid form, consisting of excreta and urine of animals and humans which flows through drains and ravines. The third type of waste, called straw, is collected from the soil after harvesting in the fields.

Nowadays, burning of straw is not only restricted to Punjab and Haryana but has become a norm in many other states as well. Such practices are being followed by farmers in Delhi as well. The Indian farmers used to use agricultural waste to make manure but with the advent of the green revolution and the chemical fertilisers it brought along, the importance of this waste shrank considerably, rendering this potential waste as a useless substance in the eyes of farmers. With increasing piles of garbage, the problem of disposal also



Left : Deepa, a resident of Greater Kailash, New Delhi, has created a method of composting human waste in her toilet. She says, this idea came to her after reading Joseph Jenkin's book - 'The Humanure Handbook' and Sopan Joshi's - 'Jal tha! Mal' (For additional information turn to the references mentioned in this booklet)

Right : In his book, 'The Humanure Handbook', Joseph Jenkins has discussed various practical models of converting human waste into compost. One such model - 'Carousel Style Composting Toilet' has been illustrated here. Source : 'The Humanure Handbook', page ; 116

came about. With no possible solution in sight, farmers took to burning waste in their fields which resulted in the burning of a lot more than intended. In this process, not only the garbage, but various microbes that increase the fertility of the soil, and the soil itself was also burnt.

Garbage has a huge potential of being valuable. Shailaja R. Rao suggests, "The residues left in the farm, which are mostly kept on the road outside the farm or burnt, should be converted into nutrient-rich compost. Compost provides the soil with nutrients that increase plants, increase soil fertility, improve soil structure and provide food to earthworms. These also reduce the dependence of farmers on chemical fertilisers, thus reducing the expenses on farming."

In an article titled "Farm waste", Mahatma Gandhi argues, "compost can be made from any kind of plant waste which is not needed in the farm in any other way. This garbage can contain all these things : grass, cotton, peas and sesame stalks, leaves of tenu, linseed, mustard, black and green gram stalks, sugarcane and peels, roots and sugarcane roots, fallen from trees The leaves and grass-fodder, the uncooked parts of the bitter waggon" (Gandhi, 1962, pp 118).

Historically, different transformative political views have accorded different importance to waste. Karl Marx, writing in the context of London stated "the filth out of consumption has great importance in farming. The capitalist economy makes a grand waste of it.



Okhla Landfill, Delhi
Photo : James Wendlinger

In London, for instance, there is no other use except putting the excreta of 4.5 million people into the River Thames, and that too after heavy expenditure" (Marx, 1992). Later Marxists tried to link and find a closer relationship between "treating waste as non-waste and capitalism". Marxist thinkers argue that if one looks at the literal meaning of waste or the popular opinion about waste, then waste mostly means things that have no use which are worthless. In the capitalist system, waste is the political opposite of "value" (Gidwani & Reddy, 2011). Although the opposition to organic waste being considered as "waste" has increased in recent times in the capitalist system but even now the practice of treating organic waste as garbage and discarding it is still widespread.

Recently there has been the formation of small groups and organizations as part of movements seeking freedom from the

clutches of the state and capitalism. The emphasis has been on self-sufficiency and decentralization. One such example of great importance is that of Graham Caine who built the first "eco-house" in the city of London. It has been described in detail in an article by Lydia Kalipoliti (2012). Graham Caine built a first of its kind Eco House (natural house) as a living laboratory in 1972, and upon its construction, it left the entire neighbourhood amazed. This eco-house was fully functional in which waste and sewage were converted into methane through tanks and digester and further used as a fuel for cooking. Solar panels were installed which used to heat and filter water, waste was also used to generate energy/heat, to increase soil capacity, and produce electricity. There was also a hydroponic greenhouse in which radishes, tomatoes, and even



Bhalswa Landfill

Photo : Afzal Adeeb Khan, Avikal Parashari

bananas were cultivated. In making this house, Cain had made himself a living part of it. He took care of everything ensuring adequate doses were given to different parts of the house. He closely monitored his garbage, cooking, water usage, and everyday activity and went on to relate his routine with this home routine. In this way, there was a deep connection between the resident and the residence.

Cain's project received considerable attention from the British Media. It appeared on many news programs. India also has a relationship with this project as Cain was influenced by the massive agitation for cow dung gas in India at that time. In front of the eco-house, you could see a hand-written banner: From here we grow (ie, 'Here we grow'). And due to its growing popularity, many more groups started advocating for the establishment of more such houses.

Many came forward to fund these projects. But the eco-house was labeled as "illegal" and demolished in a very short period and it soon assumed its existence only as a memory. This project was largely inspired by the ideas of American thinker and activist Murray Bookchin.

Without relying on the state, promoting self-sufficiency and decentralization, the ideas of bringing a change of the system through the power of the people could be seen to be alive in this project. Cain's Eco House effectively showed how everything in nature is interconnected and if we want, nothing will be wasted.

(This booklet is the result of the research and documentation done in the original work titled "Report on Urban Farming in Delhi")

References

Joshi, S. (2018). Sewage Water. Rajkamal Paperbacks. New Delhi.

Jenkins, J. (1996). The Human Handbook: A Guide to Composting Human Manure. 1st ed. Joseph Jenkins, Inc.

King, F.H. (2004). Farmers of Forty Centuries: Organic Farming in China, Korea, and Japan. Courier Corporation.

Abbasi, T. Tausif, S.M. Abbasi, S.A. (2012). A Brief History of Anaerobic Digestion and Biogas. Biogas Energy, (Pages 11–23). Springer. New York.

Rao, S.R. Chemical-free Farming by Traditional Methods and with their Seeds. Navdanya, New Delhi

Gandhi, M. (1962). Village Swaraj. Collectors: Hariprasad Vyas. Navjeevan Prakashan Mandir, Ahmedabad.

Marx, K. (1992). Capital Volume-3. Penguin UK.

Gidwani, V & Reddy, R. (2011). The Afterlives of "West": Notes from India for a Minor History of Capitalist Surplus. Antipode, 43 (5), Panna: 1625–1658.

Kalipoliti, L. (2012). From Shit to Food: Graham Cans eco-house in South London, 1972–1975.

Building and Landscapes: Journal of the Vernacular Architecture Forum. 19. Panna: 87-106.

This booklet is the result of the collective efforts of many people but the most important contribution has been of the farmers, fishermen, farming in different parts of Delhi. Labourers, livestock farmers, new-age farming businessmen who took time to interact with us and share their opinions and information. The team of the Public Resource Center, who shared the ground research with us, prepared the report "Farming that is invisible from the landscape" and due to which we could prepare the booklet.

Peoples Resource centre aims to build new infrastructures of solidarity with the valuable fragments of learning derived from collective actions everywhere and the possible alternatives imagined by all people. The initiative seeks to explore the possibilities of bringing the resources back into the people's powerful control, and to understand whether and how that can eradicate the most persistent problems such as hunger, homelessness, ambient pollution, and social injustices based on caste, gender and religion. PRC engages with movement groups and communities in the places with the ongoing or potential struggle over resources, and regularly undertakes policy monitoring, research and documentation, and grassroots networking to generate resources for collective resistance and creative action.