

## **DEALING WITH THE DELUGE OF WASTE: FLOOD WASTE MANAGEMENT IN A TWO-TIER CITY OF INDIA**

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Natural disasters are like snowflakes, while there are similarities between them, yet no two look alike (Ferris et al, 2013). Similarly floods and the wastes produced out of it also differ with space and time. Flood wastes encompass all the waste left untreated during normal conditions and also the wastes actually produced out of the disaster. Flood results in concoction of all kinds of solid waste including infrastructure, household, organic, plastic, hazardous and liquid waste including pesticide runoff, human sewage and oil leakages. In some cases, where the waste collection is worse, flood water can also mix with bio-medical waste and increase the risk of contamination. In short, flood results in mixing of all kinds of waste and segregation becomes extremely difficult. In most cases, flood waste sets down more burden on communities who are already struggling to cope with the catastrophe. The frameworks of flood waste management like the United Nations Disaster Waste Management Framework and Bangkok Flood Waste Management Framework have mentioned technical solutions to handle flood waste, but they have failed to address the socio-economic dimensions of flood waste. Therefore, this study will **examine the socio-economic dimensions of flood waste management**. The objectives of this study are:

1. To study solid waste management during normal conditions and during floods in Jalpaiguri town.
2. To examine the strategies adopted by local bodies to deal with the issue of solid waste after the flood in Jalpaiguri.
3. To document the various socio-economic dimensions of flood waste.

Ontologically the study is an exploratory qualitative case study research which aims to address gaps in the current academic field. The field study area is Jalpaiguri, located at the foothills of Himalayas and in the northern part of the state of West Bengal. Jalpaiguri receives 3242 mm of annual average rainfall in a span of three months.

### **FLOOD WASTE:**

In this section, I have analyzed my data based on flood waste management cycle.

**A. Mitigation Phase:**

Mitigation is the process of reducing the impact of disaster from life and property. It is the most important stage as all preparations to reduce the impact of flood waste are taken here. If the mitigation strategies are sustainable, future hazard potential can be greatly reduced. The mitigation strategies are taken by both the government and local people. In Jalpaiguri, the mitigation strategies have been limited to engineering measures like building high drains, stronger embankments and creation of temporary shelter. Non structural measures are neither given any importance nor encouraged by state officials. The steps taken by local people are controlling the generation of building wastes by elevating their houses and building stairs to their houses. Poor families in the slums also cover their walls with tarpaulin sheets to prevent weakening of the walls due to repeated entry of dirty water.



Figure 1: Cemented stairs at Mahamaya Para



Figure 2: Raised plinth of kachcha houses

Source: Field Visit

Date: 6.11.19

Most steps taken by people are structural and related to their houses as they are biggest safety net.

Another life changes, the slum dwellers had to undergo was invest less on electronic items like televisions, refrigerators, etc. In this way, waste generation is itself reduced.

*“We have stopped investing in electronic items. Even if we get loans, we do not spend on them because we know one monsoon will destroy everything. Even if we keep our items at higher elevations, electronic items get destroyed if they stay inside a water logged room for more than ten hours.”- (FGD No. 3, Date: 10.11.19).*

#### **B. Preparedness Phase:**

This is the phase, where local people plan how to respond. This is a period when huge amount of participation and cooperation is seen within the neighborhoods as they start informing each other as soon as they come to know about the hazard. Floods bring communities together and they act with a union that is hard to see in a non-flood situation. People belonging to upper class, who have access to resources like televisions and radios, start informing those belonging to slums as they know how much impact a flood can make on life of slum dwellers. Natural disasters can bring communities together to work for a common goal. During this period, another important aspect arises due to gender bias. Women are still considered as caretakers of household, thus men can save their life but women have the burden of carrying important documents and money. There are many studies which show the vulnerabilities of women, but their active contribution in community and household often go unnoticed (Gender in Humanitarian Work, 2019). Thus they end up being the last one in getting saved.

#### **C. During flood phase:**

This is the phase when actually the phenomenon of flood starts to occur. There are various socio-economic problems, which are faced in this phase:

The vulnerabilities of women increase as the disaster management cycle proceeds (Hafizah, et al, 2017). The situation is quite similar in the flood waste management cycle. During this time, most of the houses have a general trend that the women of the houses stay back to look after the household, documents and other valuable items. *“When it floods, my mother stays back in the house to look after all the house items. She cooks and stays on the bed for 3-5 days, until flood water recedes. While my brother, father and I look for shelter in higher lands.”* -(Respondent No.1, Interview Date: 5.11.19). This puts the women in an inequitable situation of how they are exposed to flood water and the wastes. This shows the burden of accountability and responsibility on them.

Lack of appropriate facilities for sanitation in flood-prone areas is one of the reasons behind environmental and health degradation (Kazi& Rahman, 1999). During floods, due to the absence of toilets, people resort to unhealthy practices like open defecation which are not common in dry seasons.

#### **D. After Flood Phase:**

This is the stage when the flood water recedes but the flood waste generation increases and ideally the full waste collection should take place. This is also the time of recovering lost items and getting new documents done. In Jalpaiguri, due to the total absence of Flood Waste Management operation, the situation is miserable. When the local people come back to their houses after the nightmare, they have to toil so much to bring the situation to normal. Many items become non-functional. Local people use sand and silt bags to soak the water, only after which the cleaning process starts. They cannot eat or cook in their house after coming back due to the stench of human excreta from their houses.

The working days in slums are affected and being daily wage labourers, post flood cleanup becomes a huge problem. In most of the slum households, the burden of clearing wastes fall on women and

sometimes in this way, they miss their daily wages. Since women are the housekeepers in a patriarchal society, the responsibility of cleaning falls on them and they are forced to put in extra time and effort for driving away vectors (Ganesan, 2017). So they are exposed to various wastes which can be hazardous to their health. Hafizah et al (2017) identifies the root cause of this vulnerability lie with access of resources that lie with lack of access to resources like income and education that allow people to cope with disasters. On the other hand, mostly men help in rebuilding their houses and doing the laborious jobs. In a country like India, middle class and upper class residencies hire maid for cleaning their houses. The maids are themselves hired mostly from the nearby slums. Thus the burden of cleaning gets doubled on them.

Post cleaning, the residents dump the waste in a common area, hoping that the area will get cleared by the Municipality workers. Mostly such local dumps are formed in the backyard of slums or near the poor neighborhoods. Sometimes, the residents also set fire on the local dumps without any scientific treatment. Open burning results in 19% of air pollution due to release carbon monoxide, carcinogenic hydrocarbons and particulate matters, twice harmful than the pollution from road transportation of Mumbai (Joshi, 2013).

Open dumping sites are usually found in the outskirts of a town and in Jalpaiguri, the landfill site is Balapara dumping ground, in proximity to a village. Thus the villagers are made to suffer from the wastes produced by a town. Post monsoon, all the wastes from the town collected are dumped here without any scientific treatment. Wet wastes produce odour which has a serious effect on the nearby residents (Anand, 2017). Landfill should be located away 500 meters from human habitation and should not be situated on the windward side (Guidelines for Disposal of Wastes, Botswana, 1997). In Jalpaiguri, the landfill is located 50 meters away from human habitation and is also situated on the windward side. This increases the responsibility of local people to clear the wastes as all the wastes fly and fall near

their houses on a windy day. The problems in landfill are weather dependent, intensifying with season (Ganesan, 2017). The Municipality has provided roads in the village, but has failed to build a wall or fence around the landfill. Literature suggests that there is a wide range of invisible health impacts of landfill like co-disposal of industrial and municipal waste increases the risk of health infections like HIV and Hepatitis B (FodayPinkaSankoh, 2013).

#### **CONCLUSION:**

From the study, I have come with some major loopholes and have given relevant suggestions which are required for better flood waste management. To implement a successful flood waste management plan, it is important to have an integrated waste management plan. Current study in Jalpaiguri shows a very poor level of waste management practice. Until and unless, there is a good waste management strategy during normal conditions, it will become difficult to adopt a flood waste management strategy.

Human beings are capable of adaptation and this study shows how human beings have coped up (in mitigation phase) with flood waste over the years. The problem is thus that Urban Local Bodies work in isolation from local communities and fail to realize the major problems dealt by the locals and they just go on catering to the basic need like providing mosquito nets, jaggery and puffed rice during floods. But what they fail to realize is to meet the other essential needs like sanitary napkins or building materials for reconstruction of houses.

Absolute immunity from flood is inconceivable, but more eco friendly approaches appropriate for urban locations are required to achieve sustenance. Urban environment leads to quick generation of surface runoff, which gets mixed with liquid and solid waste of the town. The storm water drains should be constructed in such a way that the water is utilized for recharging groundwater. Moreover there should

be enough awareness among the Urban Local Bodies and local people for operating and maintaining the storm water drains, and not used as a garbage dump.

Open dumping is a major issue in Jalpaiguri. Biomedical wastes are dumped near the river banks. Panga river flowing downstream also carried tons of waste from Jalpaiguri Municipality way back in 2008. This resulted in several complaints from Haldibari which is located downstream of the Panga river. Currently, groundwater of Balapara dumping ground has totally degraded. These instances show how poor liquid and solid waste management puts the water sources, river and groundwater at the risk of contamination. It is important to acknowledge that rivers and groundwater are common pool resources and should not be in the benefit of the upper class. Moreover the sustained marginalization of the people for decades put the economically poor people at a higher risk of diseases and economic losses.

More attention should be given to the health issues pertaining to flood waste post flood. Health camps should be conducted during and post flood at all the flood locations to give attention to skin diseases and also the special needs of the vulnerable.

Lastly, academicians and government policies should acknowledge the problem of flood waste. They should cater to the need of vulnerable populations in all the flood waste management phases and not just limit themselves to the flood phase. Thus, I would like to end by saying that floods can be perennial or episodic in nature but flood waste management needs to be an ongoing priority with greater attention to vulnerable population. Moreover flood risk reduction and environmental conservation should go hand in hand.

**REFERENCES:**

Anand, A. (2017). The Invisible Outcasts : A Public Health Hazard Study of Communities Living in Rafique Nagar and Shivaji Nagar near Deonar Dumping Ground.

Association of State Floodplain Managers Conference 2020

Ferris, Petz and Stark (2013), *The Year of Recurring Disasters*, Chapter 1 of the Year of Recurring Disasters: A Review of Natural Disasters in 2012. Published by Brookings Institution.

FodayPinkaSankoh, X. Y. (2013). Environmental and Health Impact of Solid Waste Disposal in Developing Cities: A Case Study of Granville Brook Dumpsite, Freetown, Sierra Leone. *Journal of Environmental Protection*, 665-670.

Ganesan, P. (2017). Landfill sites, solid waste management and people's resistance: A study of two municipal corporations in India. *International Journal of Environmental Studies*. 74:6, 958-978, DOI: [10.1080/00207233.2017.1374076](https://doi.org/10.1080/00207233.2017.1374076)

*Gender in Humanitarian Work* (2019), UNFPA, UN Women and UNOCHA, Myanmar.

Guidelines for Disposal of Wastes, Botswana, 1997. Retrieved from: <http://www.gov.bw/globalassets/mewt/dwmpc/guidlines-for-the-disposal-of-waste-by-landfill.pdf>

Hafizah, Farah, Noraida, Yudi, Rashida, Leila (2017), *Gender Issues and Women Vulnerabilities During Flood Disaster in Kelantan, Malaysia*. Centre for Research on Women and Gender (KANITA), Universiti Sains Malaysia and 1 School of Social Sciences, USM, Malaysia Centre for Research on Women and Gender (KANITA), Malaysia.

Kazi, M.N. and Rahman, M.M. (1999), "Sanitation strategies for flood-prone areas", paper presented at the 25th WEDC Conference: Integrated Development for Water Supply and Sanitation, Addis Ababa.

M.P. Joshi, S. P. (2013). Solid Waste Management on Dumping Ground in Mumbai Region – A Study. *International Journal of Computer Applications* (0975 – 8887), 17-22.