



BEST PRACTICES FOR ADAPTATION AND DISASTER RISK REDUCTION

CASE STUDY-12: < HOUSES ON RAISED STILTS: <TYPICAL HOUSING DESIGN TO REDUCE RISKS OF FLOOD DISASTER IN FLOOD PLAINS OF BRAHMAPUTRA RIVER BASIN >



RURAL VOLUNTEERS CENTRE
VILLAGE+P.O=AKAJAN, VIA-SILAPATHAR
DISTRICT-DHEMAJI (ASSAM), INDIA
PIN-787 059



TITLE: < Houses on Raised Stilts: <Typical housing design to Reduce Risks of Flood Disaster in Flood Plains of Brahmaputra River Basin >



ORGANISATION: <Rural Volunteers Centre (RVC)>

1. THEME: CBDRR flood resilient housing practice.

2. STATE/REGION/COMMUNITY: Assam/ Brahmaputra River Basin/Flood vulnerable population of Brahmaputra River Basin

3. BACKGROUND:

Context: The economic, social and geographical situation:

Geographical context:

The geographic area of operation of RVC covers the flood plains of Dhemaji and Lakhimpur District and Majuli Sub-Division of Assam in particular and whole of the 8 North Eastern states of India in general.

The District emerges from the foot hills of Arunachal Pradesh and stretches to the Brahmaputra River with Subansiri one side and the river Siang on the other. Geographically situated between the 94° 12' 18" E and 95° 41' 32" E longitudes and 27° 05' 27" N and 27° 57' 16" N latitudes, the district covers an area of 3237 Sq. Km and is a basically plain area lying at an altitude of 104 m above the Mean Sea Level.

The District Lakhimpur lies on north bank of the mighty river Brahmaputra. It is bounded on the north by Siang and Papumpare District of the state of Arunachal Pradesh and on east by Dhemaji District. Majuli, the largest River-island belonging to Jorhat District is on the south and Gahpur sub division of Sonitpur District is on the West. The exact location of the district is 26048' and 27053' northern latitude and 93042' and 94020' east longitude (approx.).

Being situated in a strategic location where the steep slope of eastern Himalaya abruptly drops, forming a narrow valley which makes the region, as well as the whole Upper Brahmaputra River-basin, immensely vulnerable to flooding, affecting 50% - 70% population every year for the last 3 decades. The mighty Brahmaputra River, the Subansiri River and numbers of their tributaries originating from the hilly terrain of Arunachal Pradesh account for the perennial flood problem of the region which has already caused irreparable damage to the region. In addition, extensive human interventions (deforestation, river stripping, construction of mega dams etc.) on the Brahmaputra River Basin compounded with probable impact of climate change are gradually making the whole of the Brahmaputra Basin immensely vulnerable to multiple hazards.

Socio Economical context:



- The District Dhemaji and Lakhimpur i.e. the immediate area of working of RVC is of rural character (98.5% populations are rural) and the economy is largely agro based.
- Livestock rearing is the main secondary livelihood practice of the community but the sector is yet to be commercially organized.
- Sericulture, fishing and driftwood business are practiced in smaller scale.
- Sand deposition, bank line erosion, shifting of river course and other adverse effects of chronic floods on fertile agricultural land have made even the affluent farmers land-less.
- The depletion of agro based traditional livelihood practices has resulted in inter-District and inter state seasonal and permanent migration in large.
- Access to basic needs (water, sanitation provisions etc) of the flood affected population is largely denied.

Rationale/ Justification for being a good practice and potential for scaling up /replication:

The “**The houses on raised stilts**” is a good practice and potential for scaling up because it is a time tested practice innovated, researched and developed by riverine village community basing on local skills and resources to reduce multiple risks of flood disaster in Brahmaputra River Basin.

Brief on the local condition:

Local conditions in general: RVC's experiences of working on the flood plains of Brahmaputra River Basin reflected that damage to shelter, inundation of homestead and water logging for a prolong period due to flood combined with lack of safe shelter structures locally creates untold miseries in the lives of the people. The miseries include lost of livestock, damage of HH properties, shifting of flood victims to distant relief camps, exposure to unhygienic conditions lead to outbreak of water borne diseases, skin diseases etc.

Project / Intervention Formulation:

The practice is innovated, researched and developed by community (flood vulnerable riverine village community) to reduce risks out of disaster. House on raised stilts (height up to 5 to 12 feet) is a practice to mitigate damage caused by flood. These houses are built on raised wooden stilts generally but using of quality bamboo Variety (Bhaluka) is also in practice. The affluent families preferred using concrete pillars. The platform is made of timber or bamboo matting/weave. Roof is either of thatch or CGI sheet and is always sloping roof. It has been observed that the wear and tear of the houses is less and thus repairing and maintenance intervals are long. If these houses are made of timber (stilts and platforms) then stand for more than 25 to 30 years without major repairing works. The other observation is that in “houses on raised stilts” materials liable to damage from high moisture are safe in comparison to other bamboo houses.



4. KEY ELEMENTS:

The practicing community:

The flood vulnerable people living on the flood plains of Assam part of Brahmaputra River Basin. The Mishing and the Deori tribes are the main practicing communities.

Geographical Coverage:

Flood plains of Assam part of Brahmaputra River Basin.

5. Disaster Risk Reduction aspects of houses on raised stilts:

FLOOD RESILIENT CHARECTERISTICS:

1. The main strength of this practice is that the houses are saved from ravages of flood. These typical housing structures do not get inundated during flood.

2. As the free flow of running water (during flood) is not hindered (the flowing water finds enough spaces to flow below the house) the structures are less vulnerable to erosion.

3. These typical type of houses are safe from impact of sand deposition.

4. Most importantly, the livestock are saved during the flood period as they are shifted to the raised stilts.

5. The non-inundation characteristic of the structure helps people to maintain a hygienic living environment and in turn prevent health complications. This largely helps the pregnant women and lactating mothers to take personal care which bear health of the baby.

6. The "houses on raised stilts" largely mitigates the shifting to relief camps/highlands in search of safe living space.

7. The structures largely attributes towards maintaining regular studies by the children.



6. COST INCURRED:

For a House of the size: Length 30ft (including 3 feet verandah) X Breadth 14ft X Length 16 feet (including 6 feet raised on stilts) to accommodate 5 to 6 persons:

Sl. No	Particulars	Quantity	Rate(INR)	Total(INR)
1.	Bamboo(Jati)	90	35	3150
2.	Bamboo(Bholuka)	50	80	4000
3.	Wooden Plank	48 Cft.	300	1440
4.	Rope	8 Kgs.	50	400
5.	CGI sheet	5 bundles	4500	22500
Total				31490



7. CHALLENGES:

Traditional practices and beliefs, religious beliefs of communities other than the practicing communities sometime prevents the community to adopt the model and these is a major challenge for replicating the model in different flood plains.

8. LESSONS LEARNT (both Positive & Negative)

Positive:

- The “*Houses on Raised Stilts*” have the potentiality to reduce risks of disaster in multiple sectors- (1) Safety to human and animal lives (2) Safety to food grains/seeds (2) Safe shelter during flood emergency (3) Safety to household belongings (4) Hygienic environment during flood.
- Being knitted closely with the culture of the community “*Houses on raised stilts*” model has attained sustainability.
- The “*Houses on raised stilts*” model bears the potentiality to replicate globally.
- The “*Houses on raised stilts*” model bears the potentiality to be adopted by Government departments/PRI/Autonomous Councils etc as a model design for flood plains of India.
- Adopting the “*Houses on Raised Stilts*” model by the state education department and state health department for construction of school buildings, Sub Health Centres, PHC will not only cut down the repairing and maintenance cost of these public properties every year after flood but will also ensure uninterrupted services during flood period also.
- Communities living on flood plains of Brahmaputra River Basin, which were not traditionally practicing the model, have also started accepting the model.

Negative:

- Traditional practices and beliefs of some communities living on the flood plains of Brahmaputra River Basin act as an anti-mechanism and prevent these communities to adopt these unique structures.
- The Indira Awas Yojana(IAY), Sarva Siksha Abhijaan(SSA) Mission and National Rural Health Mission(NRHM) which are meant for right to shelter, right to education of children and right to health respectively have shown no interest to the model. It is widely felt that adopting the model would have brought about larger impact of these schemes/ missions in the flood plains of India.

9. Submission may include photographs, graphs, charts, and other illustrations.

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