



# BEST PRACTICES FOR ADAPTATION AND DISASTER RISK REDUCTION

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## **CASE STUDY-5: FLOOD RESILIENT WATSAN STRUCTURES- < COMMUNITY HAND-PUMPS ON RAISED PLATFORMS>**



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



**TITLE:** < Flood Resilient WatSan Structures- < Community Hand-pumps on raised platforms >

**ORGANISATION:** <Rural Volunteers Centre (RVC)>

**1. THEME:** CBDRR mechanism for protected water sources.

**2. STATE/REGION/COMMUNITY:** Assam/Upper 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 hand-pump on raised platform is a good practice and has the potential for scaling up/ replication because it has proved to be the only answer for ensuring protected water source to the community in the time of flood in a sustainable way. Being based on locally available simple technology it is easily replicable by the community in their own. The impact of the flood resilient hand-pumps in the lives of the people mainly on the lives of the women was best reflected during flood 2008 in Dhakuakhana Block of Lakhimpur District.

#### **Brief on the local condition prior to Project initiation:**

***WATER, WATER EVERY WHERE NOT A SINGLE DROP TO DRINK***



Access to protected sources is one of the major constraints that the flood affected people of Brahmaputra Basin come across every year. The inundation of the hand-pumps in the during flood compels people to go for unsafe water consumption as well as using of water far below the required level triggers health hazards as well as environmental degradation in large scale through out the Brahmaputra River Basin.

The other condition is that the people have to

traverse a long distance in quest of safe drinking water by boat sailing through high speed flood current. Traditionally collection of water for household uses is done by the women in this part of the globe and thus it is the women who have to suffer most.

Moreover, destruction of the protected water sources every year compels people to shy away from the safe practices in the long run as it becomes impossible for the people to go on constructing/repairing the sources every year out of economic hardship.



#### **Project / Intervention Formulation:**

In the given situation, during the early months of 2005 RVC came up with the ***flood resilient Raised hand-pumps*** concept for the flood plains of Upper Brahmaputra River Basin with the



objectives to ensure flood affected community's access to protected water sources in a sustainable manner and in turn contain health hazards and environmental degradation in the flood plains.

#### **Goal and Objectives:**

Goal: The flood affected community of Brahmaputra River Basin are free from water related health hazards and lives on a safe hygienic environment.

Objective: The people of Brahmaputra River Basin have access to protected water sources during emergency period locally.

#### **4. KEY ELEMENTS**

**Target Beneficiaries:** The initial targeted beneficiaries are the flood vulnerable/affected people inhabiting the Upper Brahmaputra River Basin.

**Geographical Coverage:** Dhemaji District, Lakhimpur District and Majuli Sub-Division of Jorhat District(Presently).

**Key Project Activities/ Key Innovative Features - (capacity building, institution building, awareness, empowerment, etc) and methodologies/practices:**



The process started with construction of raised platforms (depending upon the highest flood level) and installing the hand-pump on it. In the initial years i.e. 2005 and 2006 square shaped raised platforms had been constructed but it was observed that the square shaped raised platform get eroded from the edge line by high velocity

current. The observation led RVC to think over the design and ultimately design had been modified to cylindrical shaped raised platform which is yielding result.

The other changes that has been introduced to the initial design is that in the initial design the foot-steps were of the height 12 feet which were not convenient for the pregnant women as well as for the persons with disability. With the understanding the design has been changed and presently the steps were constructed of the height 8 feet.



The technology involves in the process is simple mason works and to make the community self-reliant on technology application training has been provided to 1 or 2 numbers of community



selected volunteers on hand-pump repairing, hand pump installation and mason works. Hence onwards the hand-pumps are maintained by the water-user group which consists of women from each of the user household.

#### **CASE STORY:**

The Assam Flood Response Recovery phase program was initiated by RVC in 3 villages (No 1 Pithiyal, No.2 Pithiyal and Sekoni Dangdhara) of Matmora Panchayat, Dhakuakhana Block, and Lakhimpur District from the month of April 2008. . The targeted villages are amongst the 2007 worst affected villages. RVC initiated the program with construction of raised platforms to make the existing the community hand-pumps flood resilient. The target was 24 hand-pumps in 3 villages.

While making the hand-pumps resilient program was going on unprecedented flood ripped though the Dhakuakhana block. One of the immediate critical issues was severe crisis of safe drinking water as well as water for household uses due to damage/inundation of the hand-pumps.



- But in the given situation we the people of No.1 Pithiyal did not suffered like previous years so far safe drinking water and water for household needs were concerned said Mr Bidyut Hazarika, President of No.1 Pithiyal Duryug Pratirodh Samiti (DPS). It was all because of the flood resilient hand-pumps that RVC has constructed in our villages. At that juncture we in total had 9 numbers of flood resilient hand-pumps (constructed under

Assam Flood Response program)in our village which served all the 178 HH of our villages as protected water sources for the whole monsoon period when the other hand-pumps remained inundated or get damaged).



- It is not only the people of our village accrued benefits from the hand-pumps but people from 6 numbers of adjacent villages (viz. Amlakhi, Banhpara, Bholukaguri, Khagarihulah, Lakhipur and Khaman Konwar Gaon ) added by Mr. Rama Hazarika, Secretary, No.1 Pithiyal Duryug Pratirodh Samiti.
- When asked about what specific benefit/s the women have accrued out of the flood resilient hand-pumps during the period of crisis, Ms Barnali Hazarika, hygiene promoter of the said village pointed out that it is the women folk who have actually been benefited because traditionally it is the women who have to collect water for household needs. Thus the flood resilient hand-pumps apart from rendering service as protected water sources also had attributed towards reducing risks of the women who otherwise would have to travel a long distance risking their lives in high speed water current by boat to collect water.

#### **Key Technical Inputs:**

No major technical inputs is required accept simple mason works and installation of hand-pumps.

#### **Impact – Social / Environmental/ Economical/ Policy Changes.**



### **Social impact:**

- Accessibility to protected water sources during flood period and post-flood session has largely brought about behavioral changes at community level regarding hygiene practices.
- Practices of Community maintenance of water sources have come into place.

### **Economical impact:**

- The flood resilient hand-pumps have eliminated the recurring expenses that the community/Government departments/Autonomous councils/PRI have to bear every year on repairing of hand-pumps, procuring of hand pumps, installation of hand-pumps etc.
- Training on mason works and hand-pump installation enables few persons within the community to take up income generation activities.
- Accessibility to protected water locally enables the women to give more time in income generation activities.

### **Policy changes:**

- Critical engagement is going on with PRIs and Autonomous Councils to adopt the model in flood plains of Upper Brahmaputra River Basin. During the year 2008, 40 numbers of Gaon Panchayats, 10 numbers Anchalik Panchayats and 5 numbers of District Panchayats across 4 districts of Assam namely, Dhemaji, Lakhimpur, Jorhat and Sonitpur were educated on the flood resistant WatSan structures and the model has been accepted by the PRIs for replication in coming years.

### **5. COST INCURRED:**

Rs. 10000.00 per hand-pumps.

### **6. MONITORING MECHANISM:**

No external formal monitoring mechanism is required. The maintenance is done by the Water-user groups.

### **7. CHALLENGES:**

No major challenge is faced except mobilizing resources to the remote locations.

### **8. LESSONS LEARNT** (both Positive & Negative)

#### **Positive:**

- Flood vulnerable people's access to protected water locally during flood and post-flood period enable the people to maintain hygienic living conditions which largely influence the health of the people mainly of the children and women.
- Cut down of recurring expenses on procuring hand-pumps, installation of hand-pumps and repairing of hand-pumps encourage the communities as well as Government and Non-Government agencies to replicate the model.



- Hands-on training for mason works and hand-pump installation bears the potentiality of income generation.

**Negative:**

- The high Cost incurred on making the hand-pumps resilient prevent community to replicate the model at household (individual) level.

## **9. CONCLUSION**

Thus an experience initiated by RVC in the year 2005 with 5 hand-pumps in Sissiborgaon Block of Dhemaji District has received acceptance from the community, PRIs, Autonomous Councils as well as from National and international NGOs. The acceptance has enabled RVC to replicate the model in other Districts and thus today there are 101 numbers of flood resilient hand-pumps in flood plains of Upper Brahmaputra River Basin i.e. on Dhemaji(10 numbers), Lakhimpur(86 numbers) and Majuli Sub-Division(5 numbers) of Jorhat District. The most encouraging factor for RVC is the thanks received from the Sub-Division Officer, Dhakuakhana Sub-Division (Lakhimpur District) during flood 2008 for the service rendering by the flood resilient hand-pumps to the people in distress. It is worthy to mention that the Sub-Division Officer diverted a portion of the money budgeted for procurement of hand-pumps towards other emergency materials after witnessing the flood resilient protected water sources.

## **10. Submission may include photographs, graphs, charts, and other illustrations.**

Photos and case studies are included.