

ADAPTING WITH FREEDM

Flood Resilient Environmentally Enhanced Disaster Management In Bihar



Lutheran World Relief
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THE VULNERABILITY OF THE KOSI BASIN

The Kosi Basin is prone to frequent flooding. With 50% of the silt load of Nepal flowing through the Kosi, the water used to have little depth and helped keep the land fertile. The situation has now changed dramatically. The construction of embankments and dams has increased the water depth. Instead of the earlier phenomenon where silt used to spread, it now piles up in limited locations. Over a period of time, the course of the river has also changed and therefore the old river beds are now dry.

Increase in the siltation means the water already has less natural seepage; a problem compounded by unplanned development. Saharsa also faces the lethal combination of alluvial soil and water which leads to liquefaction.

42.4 lakh hectares of Bihar is prone to floods, covering 76% of its population. The massive Kosi floods of 2008 were an example of the devastating impact of floods in this area.

SEEDS worked in the Saharsa area post the 2008 floods; both for shelter reconstruction through the Owner Driven Reconstruction Collaborative (ODRC) and for immediate health needs through the establishment of the Biratpur Health Centre. The learning and experience of the area showed the multitude of problems that this vulnerable community faces annually.

The changing climatic conditions are wreaking havoc on poor vulnerable communities. The loss of agricultural land and limited livelihood options manifest in food insecurity. Usual disaster preparedness mechanisms can also not cope with the complex new nature of floods.

Relief and rehabilitation programs of Government fall far short of reaching the affected population in these communities due to the magnitude and scale of annual disaster and their impact. The multi-faceted problems require a pre-emptive approach. Basic amenities need to be attended to and communities strengthened in order to cope with the recurrent disasters. This requires an overall resilience model.

The Flood Resilient Environmentally Enhanced Disaster Management (FREEDM) project, supported by Lutheran World Relief, attempted to do just that; helping communities adapt to the changing risks. The multi-pronged approach includes preparedness, risk mitigation and livelihood adaptation initiatives.



ADOPTING AN OVERALL RESILIENCE MODEL

SAHARSA | SONBARSA BLOCK



Intervention areas

The intervention area focussed on Sonbarsa block of Saharsa district. Ten hamlets across two revenue villages of Biratpur panchayat and three revenue villages of Atalkha panchayat in the Sonbarsa block were selected. With many branches of the Kosi river flowing through them, these were two of the worst affected panchayats during the 2008 floods.

“On the functioning of DMCC, I will say it’s very simple and process oriented. Whatever concerns and crisis come in the DMC, all the presidents bring them to the DMCC meeting. We sit every 15 days and discuss it democratically to try and find some best possible solutions for every problem and challenge. I am confident about the current situation and interest of members. I feel they are now all equipped, capacitated and motivated. We can conveniently run this organisation even without any kind of external support...”

- Duryodhan Yadav, DMCC President



ENHANCING DISASTER PREPAREDNESS

A community-led multi-tiered disaster management system

Rather than work with only one main committee, a multi-tiered system was set up. This ensured maximum participation through divided responsibilities and allowed the community themselves to take on both implementation and monitoring roles.

At the hamlet level, Disaster Management Committees (DMC) were formed with 20 community members each. These DMCs implement the initiatives under the project at their hamlet level.

At the panchayat level, a Disaster Management Coordination Committee (DMCC) was formed to encourage the community to monitor and make project decisions themselves. One member of each of the ten DMCs is a representative of the DMCC. In the long run, the DMCC can independently advocate DRR concerns of their area with multiple stakeholders. The SEEDS project team’s main role was to therefore facilitate and enhance capacity.





Task force training

Communities are the first responders in any disaster situation. Knowledge of immediate response skills and techniques can have a direct impact on lives saved and on the overall resilience of a community.

Across each of the ten hamlets, task forces were formed. Training was done on search and rescue operations, first aid, fire safety, evacuation and communication; and on relief and shelter options.

Adolescent girls have been a major focus in the training. They've come out of their houses to join the adults and the boys in learning how to save themselves and their community.





“With the help of the FREEDM project, I now know the scientific method of measuring any change in water level of our river through the ‘river gauge’. You know when Saharsa was recently on high alert; I was very confident and kept observing and recording every single inch increase in water level. I informed the entire community and neighbouring communities and put up the flags.”

– Chandrakant, Early warning volunteer and task force member, Badhauna hamlet

Early warning

Simple early warning systems have been set up that are easy to implement, comprehend and monitor at the local level. Core to this are the water gauges and flag warnings that show different levels during an emergency.

Water gauges have been installed in several low-lying areas. These locations where water levels can be accurately recorded were decided with GPS support. Consistently monitored, the gauges are marked with three colours. The white pole is in the water and marks up to 120 metres. The pole with yellow and red markings is placed on the river bed close to the water; marking up to 190 metres.

These three colours correspond with the flags that are raised to inform the community of the action they need to take at that time.



The white flag (level 01) indicates to the community that they need to be on alert. The yellow flag (level 02) is a sign to gather important possessions and be ready to evacuate. The red flag (level 03) is the call for immediate evacuation to a higher plain.

A full evacuation demonstration was done for the first time after the last alert in Bihar in July 2014 where the community moved out with all of their clothes, utensils, livestock and other belongings.

Early warning boards have been placed at a widely visible location in each of the ten hamlets and outside the Panchayat office. This helps ensure that the information stays alive in people's consciousness, even during peace time, so that the behaviour becomes a habit.





MANAGING AND MITIGATING RISKS

Bioshields combat ecological fragility

The region also faces extreme ecological challenges. Repeated flooding and related environmental impacts have led to the erosion of soil and the destruction of many old trees. The creation of natural buffers can help reduce the velocity of the water.

A bioshield element to the project is helping communities protect themselves against inundation. Over 2.5 acres of bamboo buffers and 8.5 acres of banana buffers have already been planted. Popular species of bamboo and banana plants were used as well as low-cost and appropriate technology.

With inputs from the Bihar Agriculture University, Sabour, Bhagalpur, bamboo and banana nurseries have also been established.





“It was very difficult for me to earn a living, but I didn’t want to leave the village. This bamboo nursery will not only help my family for our livelihood, but will also help my village to plant bioshields. With the plants I have already sold, I have been able to deposit extra money into the CDRF. It is a ray of hope.”

– Mukesh, Bamboo nursery owner, Gwalpara



Linking ecological protection with livelihoods

Nurseries for bamboo and banana plants are helping communities link ecological protection with an eco-friendly livelihood model. Seven bamboo and seven banana nurseries have been established across the intervention area. The nurseries are run by community members who have been identified by the DMC.

The banana saplings cost in the range of Rs. 15-20; and the bamboo saplings are sold in the range of Rs. 70-75.

Bamboo and banana trees are useful in multiple ways for the villagers. Aside from being a buffer, they are also widely used to build boats, especially during floods.



Community disaster resilience fund

The community disaster resilience fund (CDRF) is a contributory little 'savings bank' within each of the ten hamlets. The money that is collected is used to handle emergencies in a more efficient manner; including procuring first aid materials. The money itself is contributed by each family in each village on a monthly basis. The minimum amount has been set as Re. 1; though most families have begun contributing higher amounts. This money is also being generated through different parts of the project, including the banana and bamboo nurseries.

Women's involvement in CDRF is a huge accomplishment in itself as they gain confidence through the collection and monitoring of the fund.

"Initially Re. 1 was collected from the community, but it did not work out. Hence we decided to conduct a transect walk. Some families came out to contribute Rs. 5. The key issue was accounting and involving larger group of people. Our DMC decided to allocate roles and responsibilities to each member and be accountable to collect the cash from their neighbours. The collections are recorded in the most transparent way."

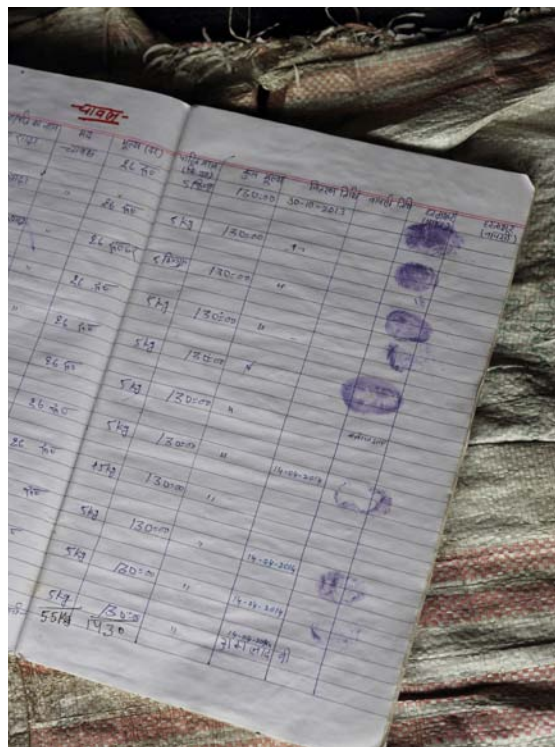
– Poonam Devi, DMC Member,
Atalkha West



Insurance schemes

The recurrent floods also disrupt the ongoing livelihood systems within a community. Insurance support can help deal with the contingencies faced almost annually in terms of loss of lives, livestock and crops. Linking with the government and insurance companies, the risk to major livelihoods in the area were minimised.

Group insurance cover was introduced for 400 farmers; 50 families benefitted from livestock insurance for cows and buffalos; and another 88 were given life insurance. Livestock in this region play a core role to plough the fields, as the main milk supply and for their manure that is used for both fertilizer and cooking purposes.





ADAPTING FOR LIVELIHOOD SECURITY

New farming techniques and short-term crops

Families in this area are primarily agricultural labourers. However, due to lack of access to resources, they are forced to migrate and take up labour work. The climate variability which has brought changes to the normal seasons is aggravating the situation. With recurrent floods deteriorating the quality of the soil and the changes to the top soil, the traditional farming practices are no longer viable.

Short-term cropping is an option that allows farmers to grow several different types of crops in one year; rather than only one season of traditional wheat, rice or maize. It presents great potential to grow flood resistant/shorter duration crops in the locality.

With the introduction of the alternative short term crop technique, the fertility of the soil is replenished. Considering the small size of most farmer's fields, this is also a great way to increase yield; leading to greater food security.

Based on scientific knowledge of local experts and in consultation with the DMCC, appropriate vegetables and techniques were selected. This includes chillies, cabbage, cauliflower, brinjal, ladyfinger and many others.

Training and inputs (vegetable seeds, medicines, on hand support) have been given to more than 500 farmers. The seeds are complemented with organic farming practices, based on compost and free from harmful chemicals.

Like Rajesh Kumar, some members of each DMC are now helping train farmers; counselling them during seed distribution and demonstrating its use to ensure the best produce of yield.

As members of the DMCC, they look after transfer of scientific knowledge. Advocacy with the local government and with other DMCs on assisting and monitoring farmers continues.

“We have learnt methods of organic farming, production of bio-fertilisers and short-term cropping options. I have planted different short-term crops in several acres such as brinjal, tomato, onion, ladyfinger, green chilli and I have earned good profit. I’ve also had the opportunity to transfer my knowledge at local level. There is a great difference in monetary output as well as quality of product under short-term cropping.”

- Rajesh Kumar Singh, DMC President, Jalseema





“The grain bank has helped us a lot and offered a ray of hope. We usually store wheat and rice. We also take care of grains and take different collective measures in maintaining the quality of grains and keeping it insect-free. Generally we use neem leaves. This is a brilliant and sustainable start. Now it’s our obligation to maintain this station and I hope we will.”

– Meena, Grain Bank Treasurer, Gwalpada

Improving food security: Grain Banks

In the event of an emergency, food security becomes one of major sticking points. This need became particularly apparent in the wake of the 2008 floods when all the food grains were lost. The concept of a grain bank helps ensure that the community can sustain themselves in the initial days after a disaster strikes; or in times of personal crisis for a particular family. It is helpful in managing the nutritional requirement; especially of children and elderly people.

Grain banks have been established in all ten hamlets with clear regulations. Every family contributes a handful of wheat or rice; or more if they can spare it. The collection and recovery is done on a monthly basis. Proper records are maintained of every major and minor transaction including the deposits, allocations and recovery.

The grain itself is stored in large metal bins. Rather than any medicines, neem leaves are added for pest control. Each bin holds six quintals of grain. 400 kg of rice and 400 kg of wheat were provided to each hamlet as an initial start-up. From then on, it is running on community contributions.

On average, families in need are given 5 kg of grain in one transaction; though the amount can vary according to the discretion of the DMC. This is done even in non-disaster times to ensure that there is a constant churning of the grain and that freshness is maintained.





RECLAIMING WATER BODIES

Clean water availability was another major issue for communities in the area. The key source of water was from the abundant hand pumps. However, these posed serious health risks such as infectious diseases, gastritis and diarrhoea as the iron content was so high. Forget potability; the water could not even be used for household chores. It would actually stain their clothes and vessels. At the same time, the handpumps are rendered unusable during flood times. Reclaiming traditional water bodies was therefore essential to long-term resilience.

Though wells have traditionally been a better source of clean water with less iron content; most wells lay abandoned or defunct. Through participatory planning and assessments, eight wells were identified by the community. With proper repair and retrofitting, these wells have been rendered usable again.

The platforms for the wells were raised and catchment areas were created using reinforced cement concrete beams to ensure safety during floods. The wall thickness of each well was increased to 10 inches to increase earthquake resistance; an important facet as the area lies in seismic zone IV. Traditional purifying systems using limestone were adopted to cleanse the well water. Finally, awareness generation campaigns on the benefits of reviving and maintaining traditional well systems attempted to bring a change in the community mindsets.

For several of these eight wells, such as the one near a school in Butah or the one on a main connecting road in Jalseema, their location itself has made them a boon.

“Initially we were only a handful of members, but now our group size is continuously increasing. In a real sense, they are representing civil society! We are an apolitical group, a kind of pressure group, which can function by creating and putting pressure on the government bodies for the fulfilment of social needs! I have faith in this forum. One day we will succeed in making our dream a reality.”

- Veena Devi, Active member of Saharsa Nagrik Manch



BROADER LINKAGES AND ADVOCACY

Saharsa Nagrik Manch

Saharsa's urban infrastructure is quite poor and has a lot of gaps. Water logging is a constant menace and solid waste lies scattered everywhere.

Community-led initiatives are often the most effective in solving local problems. The Saharsa Gram Vikas is a micro-level, multi-stakeholder citizen forum that helps the community bridge the gap with governance.

The forum aims to bring the community together to identify, assess and engage with local issues. It creates concrete links with ongoing development programmes and national policies. It will also help mobilise greater citizen participation.

The Saharsa Nagrik Manch is a united pressure group which brings together stakeholders from all walks of life. They have a definite structure, by laws, rules and regulations and are currently working on developing an action plan.

Their effectiveness was proven in the wake of the high alert in Saharsa in August 2014. Members of the forum helped conduct surveys of flood affected areas; and passed on information from the district collector to the DMCC and DMCs established in the hamlets.



“When a general meeting was organised in our Tola for formulation of the Disaster Management Committee, I was thrilled to understand that the project as explained by SEEDS team members ensured 50 percent representation of women; who otherwise would remain suppressed or not be part of the process. My view is that if women are given knowledge and a platform, they have immense capacity to contribute to the initiatives and campaign to change the scenario.”

- Bijli Devi, DMC Member, Atalkha West

MAKING A MARK

“I personally feel I have started my own revolution against this traditional society...and I expect the same from my other daughters, sisters and mother. If we will think properly, then we can take collective steps for making our life 'productive'. I think that day is not too far.”

- Babita Devi, DMC Member, Atalkha West

Unplanned trigger for social change: Women take the lead

Women have taken a lead role throughout the FREEDM project. Whether in grain banks, community disaster resilience funds, short-term crops or community systems and task forces; women and young girls have been active participants. This is slowly making an impact on the social construct of the village with more women coming out of their homes and actively making their voices heard.





Tried and tested: A successful community-led early warning system

Often, the strength of a system cannot be truly observed till a crisis strikes. The recent flood alert in Saharsa in August 2014 acted as a trial run of the entire system. The district which was on high alert as Nepal was likely to release excess water accumulated due to landslides into the Kosi river. The last incidence of this in 2008 had led to major floods in the region.

However this time the situation was different. The community was more informed and prepared to face floods, with a major aim to have no loss of lives. It was an exemplary example of the functioning of the community-led system.

As soon as the first piece of information on the likelihood of floods was received, the DMCs in each of the ten hamlets became active. Emergency meetings were called to decide on the plan of action. A clear line of communication was established between the DMCC committee, the heads of each DMC and the Saharsa Gram Vikas. Information gathered from District authorities by the Saharsa Gram Vikas was passed on to the DMCC and further down to the DMCs for action.

1455

**DIRECT
BENEFICIARIES**

500+

**FARMERS TRAINED
ON SCIENTIFIC
TECHNIQUES**

16000

**INDIRECT
BENEFICIARIES**

1

**DISASTER
MANAGEMENT
COORDINATION
COMMITTEE**

8

**REPAIRED &
RETROFITTED
WELLS**

10

**DISASTER
MANAGEMENT
COMMITTEES**

7

**BANANA
NURSERIES**

7

**BAMBOO
NURSERIES**

11

**ACRES OF BANANA AND
BAMBOO BIOSHIELD
PLANTATION**

88

**LIFE
INSURANCE
POLICIES**

50

**LIVESTOCK
INSURANCE
POLICIES**

400

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