GLOBAL RESILIENCE PARTNERSHIP | WATER WINDOW

Members of the Susta CDMC search and rescue task force in Nepal demonstrate how to safely rescue a drowning person from floodwaters.

EXECUTIVE SUMMARY

SIX PILLARS OF A TRANSBOUNDARY FLOOD RESILIENT COMMUNITY

This document summarizes a model of what a community in a development context needs to be resilient to floods. It is intended to provide a high-level framework that government and development actors can use to build the flood resilience of communities where they are pursuing sustainable development outcomes.

The full document can be found at lwr.org. It includes careful consideration of the particular needs of flood-prone communities in transboundary settings as well as evidence of the pillars in practice from Lutheran World Relief's Transboundary Flood Resilience (TBR) Project. Look for updated iterations of the full Six Pillars document as we continue to gather evidence on flood resilience and learn from our TBR Project.

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This document was made possible by the support of the Z Zurich Foundation. The contents are the responsibility of Lutheran World Relief and do not necessarily reflect the views of the Z Zurich Foundation.

The Ganges-Brahmaputra-Meghna (GBM) river basin, which spans Nepal, India, Bangladesh, Bhutan and China, is the most populated river basin in the world with over 630 million people and has "the largest number of the world's poor in any one region."[1] It is also one of the most flood-affected areas, with nearly 16,700 people killed, 203 million displaced and more than $19 billion in economic damages sustained as a result of 67 large floods that occurred between 2000 - 2010 alone.[2] With the continued intensification of the effects of climate change such as glacier melting and unpredictable and severe monsoons, it is likely that the vulnerable communities in this region will suffer an increasing number and magnitude of flood events in the coming years.[3] The GBM countries and the international development community are starting to turn their attention to the importance of effective transboundary water management and flood resilience, but much work has yet to be done to adequately build the resilience of these largely agrarian communities to the worsening floods they face.

1 The Food and Agriculture Organization of the United Nations (FAO). (2011). "Ganges-Brahmaputra-Meghna river basin," *AQUASTAT* Survey, p.3. Retrieved from: http://www.fao.org/nr/water/aquastat/basins/gbm/gbm-CP_eng.pdf.

2 Priya, S., Young, W., Hopson, T. and Avasthi, A. (2017). Flood Risk Assessment and Forecasting or the Ganges-Brahmaputra-Meghna River, World Bank Group's Water Global Practice, p.5. Retrieved from: https://reliefweb.int/sites/reliefweb.int/files/resources/120482-WP-P156643-PUBLIC-108p-WBFloodReportOct.pdf

3 Ibid, p.7.

Lutheran World Relief (LWR) has been working to strengthen the flood resilience of transboundary river basin communities in the GBM region since 2013, specifically along the flood-prone Gandak/ Narayani and Koshi rivers. We have reviewed our experiences and those of our partners as well as extensive peer and academic research into flood resilience and developed a comprehensive model that answers the fundamental question of "What does a community need to be resilient to floods?" This simple question has an enormously complex answer. However, the Six Pillars model of a flood resilient community can give governments and development practitioners helpful high-level categorizations of the answers from which they can drill down, contextualize and implement the elements that most directly meet the needs of any flood-affected community with whom they are working.

WHAT DOES IT MEAN TO BE RESILIENT?

LWR defines resilience as the capacity of a system (e.g. a community) to absorb the impacts of shocks and stressors, adapt to change and potentially transform in a manner that enables the achievement of development results (e.g. sustainable livelihoods, well-being, poverty alleviation).[4] In our resilience programming, we work to increase a community's absorptive, adaptive and transformative capacities[5] by strengthening their livelihood capitals (social, economic, human, physical and natural) and their resilience attributes (robustness, self-organization, learning, redundancy, scale, rapidity, flexibility and diversity and equity).[6]

WHAT DOES A COMMUNITY NEED TO BE RESILIENT TO FLOODS?

To ABSORB the impacts of a flood in the immediate term, a community needs...

1. **An Early Warning System (EWS)**
2. **Community-based Disaster Risk Reduction (CB DRR) Institutions**
3. **Disaster Resilient (DR) Infrastructure**
4. **Safety Nets**

To ADAPT to the impacts of annual flooding that continuously impedes their customary means of earning a living, a community needs...

5. **Flood Resilient (FR) Livelihoods**

To TRANSFORM so they are no longer vulnerable to the impacts of flooding, a community needs ...

6. **Public - Private Support**

4 Read more about LWR's approach to resilience at lwr.org/what-we-do/resilience

5 IPCC Working Group II. (2007). Climate Change 2007 – Impacts, Adaptation and Vulnerability, Cambridge University Press. Retrieved from: https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4_wg2_full_report.pdf

6 Ospina, A.V. (2013). "Climate Change Adaptation and Developing Country Livelihoods: The Role of Information and Communication Technologies". PhD dissertation, IDPM, University of Manchester, UK.

Ram Kisun Koiri shows the flood gauge in Narsahi, Nepal that his CDMC monitors. When water reaches the red zone, dangerous flooding is imminent, and the communities must be evacuated immediately.

THE SIX PILLARS: HIGHLIGHTS

EARLY WARNING SYSTEM (EWS)

Ensuring rapid and clear communication of flood information is key to saving lives and protecting homes and possessions as the more forewarning people have, the more time they have to secure their belongings, erect additional flood barriers around their homes and reach higher ground.

- A transboundary flood EWS should be institutionalized within the governments of the river basin countries as well as supported by their communities. These two integrated tracks ensure that accurate, real-time flood information reaches as many people as quickly as possible, including those in less technologically connected communities. It also creates system redundancies that help continue the flow of information and services even if parts in one track of the system fail.
- To ensure that the community-based track of the EWS is effective and sustainable, task forces of community members must be organized, trained and equipped to perform EWS services such as flood gauge and telemetry reading and intra- and inter-community notification.
- In contexts where the river crosses international borders, the EWS task forces on both sides of the border must have multiple established communication channels with one another, as this is the point in the system where breakdowns are most likely to occur.

COMMUNITY-BASED DISASTER RISK REDUCTION (CB DRR) INSTITUTIONS

There are many things communities can do prior to a flood to reduce their risks and address their vulnerabilities in order to prevent significant damage to their homes, property and livelihoods.

- The first is to draw upon their bonding social capital to facilitate their self-organization into community disaster management committees (CDMCs). The role of CDMCs is to take the lead in preparing the community for floods and responding when a flood hits. CDMC members must be trained on how to identify and address community vulnerabilities and risks as well as on how to provide early warnings, first aid, search and rescue services, evacuation point management and CDMC leadership/coordination. Once properly trained, members can divide themselves into task forces.
- To be as prepared as possible before a flood, CDMCs must routinely undertake community Hazard, Vulnerability and Capacity Assessments (HVCAs). This task is necessary for a community to understand where their capacities and assets already exist and where improvements and additional resources are needed so they can focus on filling those gaps. CDMCs must be trained on how to conduct inclusive, participatory assessments to ensure they capture the perspectives of women, youth and marginalized members of the community who face specific socioeconomic challenges that affect their resilience. HVCAs inform community DRR plans, which CDMCs must also develop to prepare for and mitigate the immediate impacts of floods in their community.
- In transboundary river basin contexts, there is a need for another type of CB DRR institution – Transboundary Citizen Forums (TBCFs). These groups are federations of CDMCs from both sides of the border in a transboundary river basin and serve three explicit functions: to ensure the early warning alerts make it across borders; to share resources, skills and knowledge to improve flood resilience in the region; and to lobby their respective governments for more transboundary flood early warning, preparedness and recovery collaboration.
- The effectiveness and success of these CB DRR institutions depends on the strength of the bonding social capital between the communities and their institutions, the strength of the bridging social capital between CDMCs within an EWS chain and within the TBCFs and finally, the strength of the linking capital between the TBCFs and public and private institutions.

DISASTER RESILIENT (DR) INFRASTRUCTURE

Just as people in the community need to be prepared for floods, so too must a community's infrastructure be prepared.

- In flood-prone under-developed river basin communities, essential DR infrastructure includes emergency shelters, embankments and raised housing and platforms.
- All communities should have at least one emergency shelter that is sufficiently big and easily accessible to accommodate all residents, including disabled individuals.
- Wherever possible along a flood-prone river, embankments or sloped walls should be constructed to contain and redirect water.
- In areas where homes have been previously destroyed by floods and in new settlements in flood-prone areas, houses should be built on raised foundations of either concrete or wood. Community members who have the resources to raise their existing houses or build a second floor in their home should be encouraged to do so. Those unable to make such improvements can construct simple raised platforms upon which they can safely store their belongings and food supplies during a flood.

SAFETY NETS

A safety net in the context of resilience-building is a mechanism that replaces something lost or provides additional financial or material support during times of shocks or stress. Safety nets can be formal mechanisms such as government or private insurance schemes, or informal mechanisms such as a savings and credit fund within a farmers' association. Access to both increases a community's ability to absorb any losses caused by a flood and recover their normal standard of living quicker.

- Government and private insurance schemes can offer coverage for anything from houses and personal belongings to crops and loss of income, but it is typically the most expensive safety net option.
- In order to promote the resilience attribute of redundancy while taking into account that the barriers to bank loans and insurance can be prohibitively high, it is important that community organizations offer similar but more accessible financial services as well. Community Self-Help Groups (SHGs) or farmer associations, for example, should be trained to manage savings accounts and extend credit to community members.
- Another safety net needed in flood-prone communities is grain and seed banks, which simply are stored supplies of grain for future consumption and seeds for future planting. While both types of banks improve the quality of life and livelihoods in general, following a disaster, such banks can provide food and ensure agriculture livelihoods continue in the following planting cycle if damage to crops is sustained.

Kumari Gurung manages her community's women's savings and credit cooperative. She volunteered to organize the group at first, but now the government pays for her services.

FLOOD RESILIENT (FR) LIVELIHOODS

In resilience building, it is critical that livelihoods are adapted in such ways that afford people the ability to spend more on their own risk reduction and to continue earning a living after a flood.

- An agricultural community's social capital can be harnessed to build resilience through the creation and capacity building of existing farmers cooperatives, associations or SHGs.
- Farmers groups or SHGs can strengthen a community's physical capital as it pertains to livelihoods through the collective acquisition and use of improved agriculture tools and flood-tolerant seed varieties of crops as well as through the establishment of seed banks. These physical inputs into agriculture can help farmers improve and maintain their crop production even if a flood hits.
- Farmers groups and SHGs can help their members make the necessary adaptations to their agriculture practices to make their natural capital more flood resilient and thus more productive and sustainable in the long-term. Such adaptations include diversifying and rotating crops and employing conservation tillage. Diversifying and rotating crops helps improve soil nutrients while also increasing the number of farmers' income streams. Conservation tillage forgoes tilling and keeps the remnants of the previous harvest in the fields to boost soil cover and water absorption, lessening soil erosion and even flooding.
- Farmers' livelihoods need diversity and flexibility as well in order to be resilient. Through vocational trainings, farmers can diversify their own skill sets and take up alternative livelihoods that are less vulnerable to floods to further diversify their income streams so that money can still be earned if one stream is disrupted by flooding.

PUBLIC-PRIVATE SUPPORT

In most cases, community resources are limited, and they need the assets as well as the financial and policy support of the public and private sectors to help them holistically transform into flood resilient communities.

- Both the government and private sector must have an awareness of what flood resilience is, how it is achieved and how it aligns with their objectives. This awareness must be translated into willingness to support flood-prone communities. Where awareness and willingness to act do not already exist in these sectors, non-governmental and community actors (via the TBCFs) must drive efforts to build linking social capital and advocate for government and private sector support.
- Non-governmental actors can approach businesses that are either social enterprises or have a social welfare element to their business model, like a linked foundation or a stated commitment to sustainability, to bring flood-vulnerable communities to their attention. These types of companies often already fund development programming or offer products and services that are affordable and geared to serve low-income communities, like flood-tolerant seeds or microinsurance. Another option is to approach businesses that utilize local natural resources or labor or are seeking to expand their consumer base in the region.
- Building awareness and motivating public and private sectors to act may take years of advocacy and institutional reforms. However, once community connections with the public and private sector are made and their awareness has translated into willingness to act in support of flood-prone communities, collaborative short- and long-term plans for DRR and EWS policies, practices and resource allocation must be created and funding to enact those plans secured.

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