Institutionalizing Forecast-Based Action

Learning from FbA in northwest Bangladesh during the 2020 monsoon season

Photo by: Md. Farukh Hossain, Community Volunteer, Kurigram

POLICY BRIEF **SUFAL Project**

Key Recommendations to progress Forecast-Based Action

- **Capacity for FbA should build on existing strengths of communities; and local and national DRM systems.** For wider adoption, leadership and sustainability, FbA capacity should be embedded within local and national DRM stakeholders, structures and communities.
- **FbA should include a wide range of actions to enable communities and households to mitigate disasters.** Inclusive and participatory processes with communities can identify a wide range of household and community early actions, which meet the needs of different groups and deliver more than shifting humanitarian action early.
- **Increase forecasting capability with forecasting actors; and use of forecasts by authorities and communities.** Impact-based forecasts tailored to the decision and planning needs of different stakeholders is required for effective FbA, alongside capacity-building of forecasting authorities to produce forecasts suitable for FbA and for decision-makers at all levels to interpret and use them.
- **Financing needs to be secured for certainty of FbA.** Funds need to be committed in advance for FbA from within national and local disaster management budgets to ensure early actions can be taken, in addition to identifying other sources through social safety net programs, international humanitarian funding and climate finance.

Why Forecast-based Action?

In countries which face recurring disasters linked to natural hazards, Forecast-based Action (FbA) can help reduce humanitarian impact. Case studies from the Food and Agriculture Organization (FAO) estimate that every USD1 spent on early action leads to a return on investment between USD2.5 and USD7.1 in avoided losses and additional benefits[i]. In Bangladesh, losses from flooding account for 1.5% of Bangladesh's GDP (USD2.2 billion) per year[ii]. As the frequency and intensity of floods continue to increase, there has been a shift from response to early action to reduce the impact of disasters. Experience from managing cyclones in Bangladesh proves that early warning and anticipatory action can saves lives and livelihoods.

Countries have committed to strengthen early warning systems under the Sendai Framework for Disaster Risk Reduction and to reduce the risk of extreme events through their Paris Agreement commitments. FbA contributes to these commitments by bringing together disaster risk finance, climate and meteorological science and early action.

This policy brief highlights findings from an ECHO-funded project in northwest Bangladesh which focused on strengthening national and local disaster risk management capacity to implement FbA. The project supported local disaster management committees to pilot community-level early actions in the 2020 monsoon season. Based on learning from this project, recommendations can be made for governments, humanitarian agencies, NGOs and other stakeholders in scaling up FbA.

What is Forecast-based Action?

Forecast-based Action (FbA); also referred to in the humanitarian sector as forecast-based early action (FbEA), forecast-based finance (FbF) and anticipatory

action (AA), involve using forecasts to identify and prioritize actions which can be taken in advance of an anticipated event to mitigate the disaster impact[iii]. Hazard risks and potential impacts are assessed, early action plans developed, and triggers set for when action should be initiated. If the forecast triggers are met leading to a high probability of an event happening (such as forecasted water level in relation to flood danger levels, and number of days of continued flooding), the agreed actions and finance to implement those actions are instigated. By acting earlier, people and communities can mitigate the impact of the disaster rather than wait for humanitarian assistance after damage has already occurred. Actions may support institutional preparation for the disaster (e.g. stockpiling goods for distribution, preparing emergency shelters) and individual households to take early action (e.g. cash distributions, early warning information and advisories). Figure 1 explains the main components of FbA.

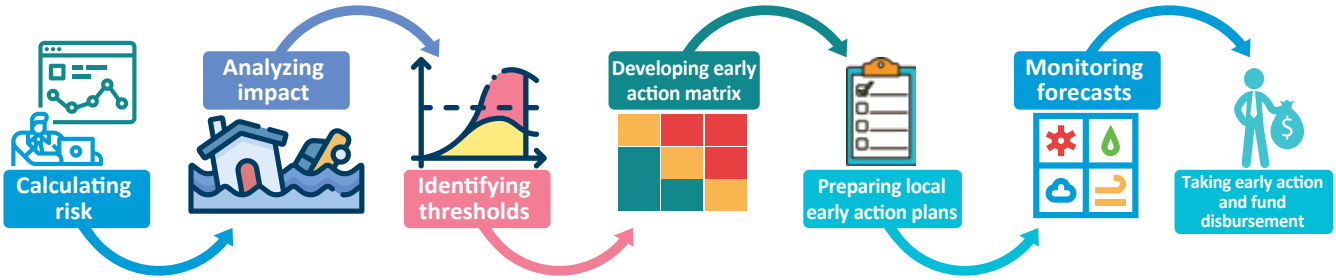


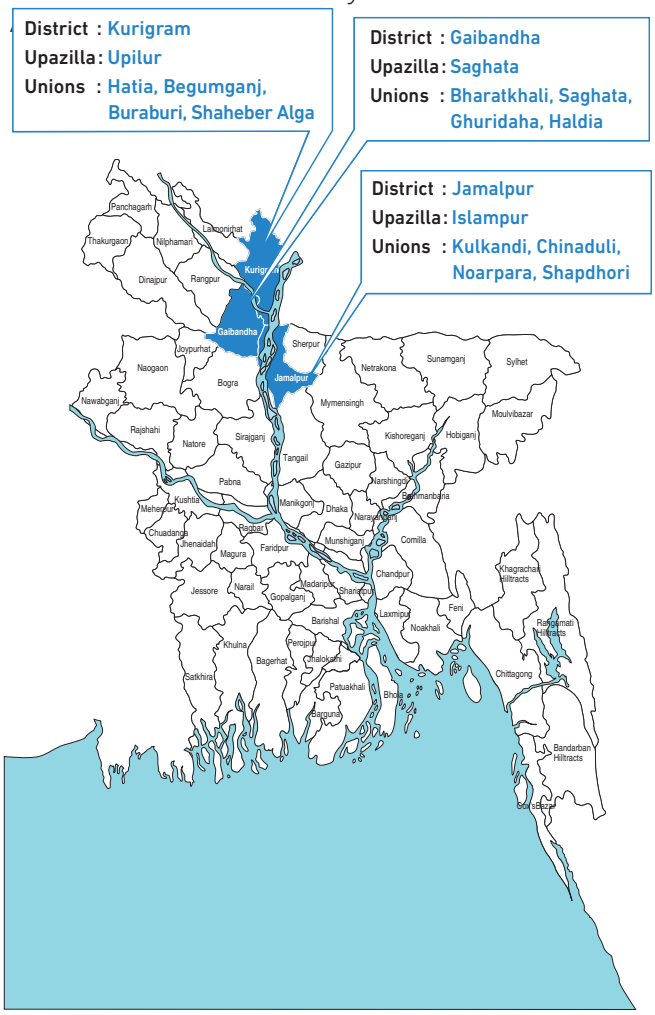
Figure 1: Process of developing the Forecast-based Action approach adopted by SUFAL

Floods in northwest Bangladesh

Bangladesh is one of the most flood prone countries in the world and experiences flooding during the annual monsoon season during June to September. According to the Needs Assessment Working Group's 2020 Impact Report, Bangladesh experienced the most prolonged monsoon floods since 1998, affecting 5.4 million people and leaving 1,059,295 families water-logged, covering 30 districts including 15 moderately to severely affected. The floods exacerbated the impact of COVID-19 and, 93% of the people's livelihoods were badly affected[iv]. Locations of the project were among the 15 districts worst impacted by the flooding and is a region with many hard-to-reach areas, extremely poor and marginalized populations.

About SUFAL

The project 'Supporting Forecast-based Early Action and Learning' (SUFAL) piloted an FbA approach for 2020 monsoon flood season in three districts in northwest Bangladesh. SUFAL worked closely with national and local governments and communities to address the technical, economic and institutional barriers limiting the adoption of FbA. SUFAL was implemented in a consortium led by CARE, with partners Concern Worldwide, Islamic Relief and technical partner Regional Integrated Multi-Hazard Early Warning System for Asia (RIMES); and was funded by the Directorate-General for European Civil Protection and Humanitarian Aid Operations (ECHO). SUFAL reached 358.553 people over the 2020 monsoon period supporting timely action to reduce the impact from floods (data from SUFAL Evaluation Study and Post-Monsoon



SUFAL Key Achievements & Impact in the 2020 Monsoon Season

Key Achievements

- Over 100,000 people supported with community-based early actions through local Disaster Management Committees.
- According to the evaluation report, among 39,729 households of the targeted unions, 97% received early warning messages through community volunteers, loudspeaker announcement individual information dissemination process in 2020. Listed 8,800 mobile phone numbers received early warning voice messages.
- Development and adoption of impact-based forecasts and vulnerability mapping by Flood Forecasting and Warning Centre (FFWC) and generation of 15-day outlook for flood 2020.
- Community-based early action plans and triggers for disaster management committees produced for 2020 monsoons and adopted for 2021.
- National Taskforce on FbF/FbA started through joint advocacy efforts with Red Cross movement and United Nations agencies.

Impact

- According to the post-monsoon assessment report, households saved an average of USD 570 in avoided losses to their assets and livelihoods through taking early action[v].
- 90% of early warning message recipients well understood the content of early warning messages and had at least 1 to 3 days of lead time to take early action as per the post-monsoon assessment report.
- From the evaluation report, 93% of participants took early actions individually and/or collectively within their communities in 2020 compared to 31% in 2019.
- 95% household who received early warning reserved food ahead of flood, followed by other early actions, such as, safeguarding assets (89%), managing transportation (66%), water (54%), health (51%), etc. according to the evaluation report.
- DRM committees able were able to mobilize resources about 7 days earlier in 2020 than previous years due to FbA processes.
- Community disaster response measures (e.g. emergency shelter preparation, repairs to embankments, livestock protection, WASH support, evacuation to safety, flood protection) had been taken with DMCs in advance of floods that benefitted over 100,000 people.

RECOMMENDATIONS FROM SUFAL

Building Institutional and Local Capacity

For effective humanitarian systems, all international, national, sub-national and local-level actors need to align their efforts with national disaster management policies, plans and procedures. However, while there is growing evidence of the benefits of acting early, the disaster management sector is still geared towards response actions driven by external agencies. For FbA to be embedded within national systems, establishing clear policies and building capacity of local disaster management committees, government departments and authorities is essential to generate wider adoption and leadership of FbA. SUFAL's efforts focused on awareness-raising and capacity-building of local disaster management committees and authorities, local humanitarian actors, community members and national disaster management agencies to strengthen integration of FbA as part of disaster response. Working with stakeholders in 2020 to develop local early action plans, improve ability to interpret and use forecast information, set triggers and identify funding for actions has created processes that has already seen FbA instigated by stakeholders themselves at the start of the 2021 monsoon season, but long-term sustainability of the approach is still an issue. The Government needs to take up the FbA approach nationally and promote specific actions locally.

FbA capacity should be strengthened among communities and households through a people-centered approach that enhances individual and collective leadership, ownership and agency. Households themselves can be supported to make informed decisions on early actions which they feel will help to mitigate the impacts of the disaster. In SUFAL, selected community leaders and officials were trained to access and interpret forecast information, almost 9,000 community members directly received early warning and advisories by mobile phone, and 12 disaster management committees were supported to lead implementation of early actions with communities such as preparation of temporary access routes, community shelters and cattle shades, resulting in 88% of message recipients taking early actions after receiving the messages. SUFAL also built capacity of key stakeholders to facilitate participatory engagement with communities and creating trust in the forecasts, leading to greater FbA outcomes and adoption. Collaboration and joint disaster planning

between local authorities and community members, and collective agreement on triggers and priority actions ensured that communities could engage and direct FbA and disaster management efforts to best reduce the effects of floods on their lives and livelihoods.

Adopting a Range of Early Actions

Participatory processes are key to ensuring that a broad spectrum of early actions is considered which are appropriate for what communities and households need to help them mitigate the impact of disasters, and are also fundamental to a people-centered and a 'do-no-harm' approach. Prior to the monsoon season as part of the disaster planning process, SUFAL conducted extensive community-level consultation meetings bringing together local authorities; local Disaster Risk Management (DRM) committees; and community members including women, youth and people with disability to identify early actions which can be taken by the government to support needs of the most vulnerable people.

A key step in the FbA approach is to define the triggers for action, i.e., the point at which early actions should be taken. Triggers are defined by a process of analyzing historical trends of disasters faced by a community, understanding the risk of a community, assessing available forecast information, and identifying thresholds at which an anticipated hazard can cause significant impacts to a community. SUFAL in collaboration with Flood Forecasting and Warning Center (FFWC) and Department of Disaster Management (DDM), developed an Early Action Matrix which includes triggers for various levels of floods and relevant early actions that can be taken when triggers are met. The resulting Early Action Matrix included two main levels of flooding: first, for above-normal floods at which community-level actions can be taken; and second, for extreme floods at which households need additional support for averting significant anticipated damages. International humanitarian organizations have set triggers for FbF at the higher level for extreme floods. In the 2020 monsoon season, SUFAL tested the triggers and early actions for above-normal floods which were identified through a participatory process and later evaluated through consultations with communities and institutional actors.

By adopting a participatory and inclusive approach to FbA, a wider range of actions were identified than solely provision of multi-purpose cash or inputs. Actions that require longer lead times for community and institutional actors to adopt, such as preparation of evacuation facilities and transportation to evacuation centers were prioritized by communities in SUFAL. (Figure 2) Dissemination of sectoral advisories can also be provided alongside forecasts to enable households to take early action themselves, for example to protect their agriculture or livestock. Providing both direct support to households (e.g. multi-purpose cash grants, distribution of hygiene kits) and community-level infrastructure support (e.g. provision of temporary cattle shelters for people to protect their livestock and evacuation to shelters) creates enabling conditions and options for FbA.

Type of Action	Early Action
Level 1 Early Actions **Can be taken at 50-60% probability of flood occurring**	• Provision of protective gear for DMCs and volunteers (COVID19 considerations) • Preparation of general advisory on forecast and flood risk for households • Dissemination of forecast and early warning information to community • Checking and repair of hand-held / mobile loudspeakers, volunteer support, renting van • Listing most vulnerable households for MPCG (Cross-check list of VGDNGF); selection criteria: poverty level, household location, gender/inclusion, Agri/WASH/health • Listing most vulnerable households for evacuation and other support • Preparation of flood shelters and evacuation points (repair rooms, WASH facilities, electric supply, with provisions for gender and special needs, COVID19 considerations) • Repair damage to access roads, evacuation routes and embankments (Coordination with BWDB and using indigenous knowledge), CfW for fixing roads, evacuation points • Protection and repair of tube wells and toilets in common and large catchment areas (schools, flood shelters, evacuation points)
Level 2 Early Actions **Can be taken at 75% probability of flood occurring and when at least 5 days flooding is expected**	• Multi-purpose cash grants (MPCG) to ultra-poor and poor households in flood forecasted zones (BDT 4,500) • Distribution of water container / tanks to households (20L/500L), water purification tablet, soap, ORS (BDT2,500 - need to be crosschecked) • Evacuation support to most vulnerable households with women, children, elderly, persons with disability (e.g. provision of boats and trawlers) Arrangement of transportation in case of evacuation (boats, trawlers), rent, fuel costs • Provision of face masks and/or first aid kits at shelters (coordination with DoH and DPHE) depending on numbers of persons taking shelter at each point

Figure 3 Sample of community-based early actions piloted by SUFAL in 2020 monsoon season. These show locally identified actions for above-normal floods; preparatory actions are taken when Level 1 triggers are met, and early actions are implemented when Level 2 triggers are met.

Actions should also be considered that go beyond shifting humanitarian response earlier - a longer-term approach is needed to mitigate the impacts of recurring disasters, particularly in contexts which face seasonal hazards such as annual monsoon flooding in Bangladesh. Identifying actions which can strengthen the whole continuum of efforts will be truly effective at reducing humanitarian need, by improving response to the current forecasted impacts while strengthening capacity to deal with the next monsoon season.

Improving Forecasts for FbA

An effective FbA system relies on forecasting accuracy and usability, and capability of national forecasting institutions. SUFAL partner RIMES worked with the Bangladesh national agency responsible for flood early warning, the Flood Forecasting and Warning Centre (FFWC) to generate reliable and actionable 15-day, 10-day and 5-day forecasts and flood risk information for use by local government and communities. As the agency embedded in national and district disaster preparedness and response systems, building their capacity to deliver forecasts for the 2020 monsoon season provided the foundation for sub-national and local implementation of FbA, and will also provide the basis for FbA to be scaled up to other flood-affected regions through nation-wide DRM mechanisms.

Impact-based forecasts and vulnerability mapping improve the usability of forecasts to identify types and scale of needs, and geographies; select appropriate early actions; develop local plans; and allocate funds for FbA. Meteorological information (e.g. rainfall distribution, water levels, inundation mapping, probabilities, etc.) should be seen as the starting point, but these forecast products need to be combined and interpreted with vulnerability data to base decision-making on where to focus support and the type of support needed by communities at risk. SUFAL combined indicators from primary and secondary data such as FFWC hydro-meteorological products, socio-economic and other vulnerability data, topographical information, and exposure risk to produce impact-based forecasts (IBF). Following that, a risk matrix can be created by combining the likelihood of the danger and the impact. People can interpret the risk for various places using flood risk maps which is based on vulnerability maps (Figure 4).

Forecasts need to be tailored for the decision-makers who are using them, alongside capacity-building in

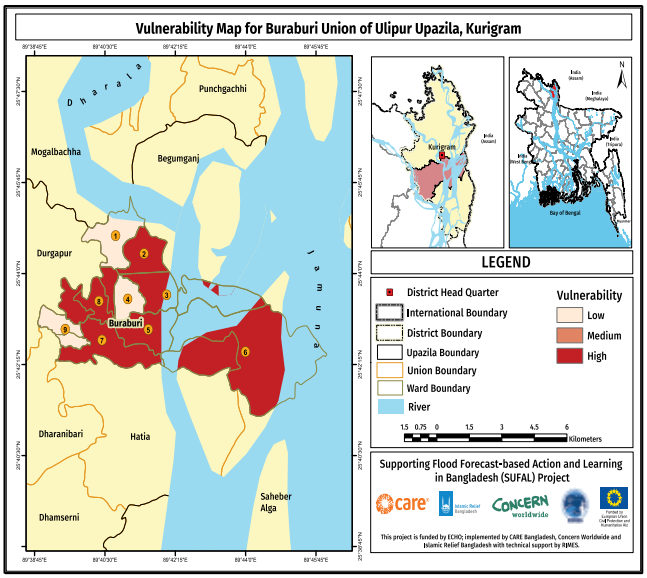


Figure 4 Sample of vulnerability maps developed to support impact-based forecasting and decision-making on FbA for SUFAL project locations.

using the forecasts. For local Disaster Risk Management (DRM) committees and authorities, forecasts needed to allow trigger levels to be defined and be appropriate for actions to be taken. In SUFAL, this was a two-threshold system based on flood danger levels and forecast trend to trigger preparatory and early actions (Figure 2). Impact-based forecasts tailored for different sectors (e.g. agriculture, livestock, WASH and health) enable sector-specific advisories to be developed and sectoral departments to incorporate early actions into contingency planning. Forecasts provided for communities and households also have different requirements to enable FbA. For reaching 'the last mile' – households that are particularly vulnerable, inaccessible and are less able to mitigate disasters – early warning messages disseminated through SUFAL focused on providing information that addressed households' needs and enabled their own decision-making.

Securing Sustainable Funds for FbA

The ability to adopt early action relies on having dedicated funds identified and secured in advance of an anticipated event, so early action plans are developed with the assurance that actions can commence once triggers are met. Without official finance for FbA in Bangladesh, actions at household and community levels under the SUFAL pilot were funded primarily through project funds, which does not foster sustainability of FbA within national and local Disaster Risk Management (DRM) systems. Data from a post monsoon assessment found that approximately 50% of surveyed households were not able to or only partially able to fund actions, demonstrating that reliable funding is essential for adopting early action.

Through Bangladesh DRM funding mechanisms, funds are allocated from national governments to local authorities for DRM activities, but currently there is uncertainty about whether they can be released for early actions and the effect on overall emergency response budgets. Without national commitments for FbA tied to national policy frameworks, even where local DRM committees and vulnerable communities want to take early action, there is uncertainty and hesitancy to use their DRM budgets for early action. Some 'no-regrets' early actions have proven easier to allocate local DRM funds and sectoral budgets, such as coordination meetings, disseminating forecasts, evacuation transport and preparing shelters. However, providing clarity within DRM policy on using budgets for early action or having an allocation within budgets for early action would provide more reliable and sustainable financing in the longer-term, and enhance local ownership and control of FbA.

Other sources of funding could also be explored to support FbA - linking forecast-based financing to social protection and safety net programs has been advocated by organizations such as the Red Cross Climate Centre[vi] and the World Food Program[vii]. In Bangladesh, social safety net schemes could fund repairing critical infrastructure in advance of floods and provide anticipatory cash transfers. Humanitarian funding mechanisms such as the IFRC Disaster Relief Emergency Fund (DREF), UN Central Emergency Response Fund (CERF) and Start Fund Bangladesh have committed funds towards FbA. With the potential for FbA to be seen as part of a longer-term approach, accessing climate funds to reduce disaster impact through FbA could also be explored, for example Bangladesh Climate Change Resilience Fund (BCCRF) and projects such as the UNDP-administered Local Government Initiative on Climate change (LoGIC).

Lessons for Global FbA Efforts

Learning from the SUFAL pilot has shown that for an effective FbA system to be in place it is essential to work within the local disaster management systems and structures to institutionalize the approach. This requires building the capacity of local and national DRM systems and promoting leadership within local government and DRM structures to operationalize the approach and feel ownership for FbA actions. This involves not just shifting humanitarian action by external agencies earlier but achieving greater collaboration and alignment across actors in order to focus on actions across the wider humanitarian-development continuum. This should include a broader range of actions than just household cash grants, determined in consultation with and based on the needs of the most vulnerable, including especially women, girls and people with disability.

This needs to be accompanied by localized, reliable forecasts combined and interpreted with impact and risk data which allow for identifying areas of greatest impact and effective targeting of actions. Local forecasting capacity, including capacity in impact-based forecasting and trigger development needs to be built in order to do this. Triggers must be developed in consultation with local stakeholders and must be relevant to the level at which the early action will take place. Ensuring inclusive participation of communities in this process will result in more relevant and increased uptake of actions. Longer lead times can allow for a greater range of actions to be taken, including no- or low-regrets actions in sectors of greatest impact and priority to communities (e.g. agriculture, livestock, fisheries, WASH, health) helping to build longer-term resilience.

All of this relies on securing a predicable source of funding in advance of a disaster as communities do not have sufficient funds to finance early actions themselves. For example, there needs to be a clear provision in local level government budgets for spending on early actions supplemented with funds from other sources. This is an area which will need continued joint efforts to advocate for into the future.

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[i] FAO (2019). Early Warning, Early Action. http://www.fao.org/3/CA3127EN/ca3127en.pdf

[ii] Ozaki, M (2016). Disaster Risk Financing in Bangladesh: Asia Development Bank South Asia Working Paper Series. No.46. https://www.adb.org/sites/default/files/publication/198561/sawp-046.pdf

[iii] For more detailed definitions and differences between FbA, FbEA, FbF and AA please see - Getting ahead of crises a thesaurus for anticipatory humanitarian action: https://cerf.un.org/sites/default/files/resources/Thesaurus_single%20column_WORKING_DRAFT.pdf

[iv] NAWG, 2020. NAWG Monsoon Flood Preliminary Impact and KIN Assessment. https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/nawg_monsoon_flood_preliminary_impact_and_kin_20200802_final.pdf

[v] "Rate of 1 Bangladesh Taka to 0.01159 US dollar as of October 2020 average, Oanda exchange rates."

[vi] Costella, C.; Jaime, C.; Arrighi, J.; Coughlan de Perez, E.; Suarez, P.; van Aalst, M. (2017) Scalable and Sustainable: How to Build Anticipatory capacity into Social Protection Systems. IDS Bulletin, Vol.48 No.4 https://bulletin.ids.ac.uk/index.php/idsbo/article/view/2885/ONLINE%20ARTICLE

[vii] World Food Program (April 2019). Forecast-based Financing: Anticipatory actions for food security. https://docs.wfp.org/api/documents/WFP-0000104963/download/

Photo by: Md. Nazimuzzaman

Early actions included repairs to embankments and roads ahead of floods, such as Harindhara embankment. Implemented in coordination with local government, SUFAL provided Cash for Work, and local government administration covered costs of materials and transportation. This reduced risk of breach along the embankment, preventing a village from inundation. Local government and SUFAL jointly prioritized points on roads and embankments for repairs; and repairs started when FbA triggers were met.

Islampur, Jamalpur District

Photo by: Asafuzzaman

In coordination with the local disaster management committee, SUFAL set up temporary cattle shades next to the flood shelter in Char Kanaipara, Holdia Union. People coming to this shelter from nearby flood-affected areas, were able to keep their cows and goats here, even moving these valuable livelihood assets before the rest of their households. Furthermore, local disaster management committees also assigned patrol teams which meant that farmers did not need to sleep next to their animals to prevent them from being stolen.

Saghata, Gaibandha District

SUFAL

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Photo by: Asafuzzaman

Islamic Relief Bangladesh

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Contact

Sumaiya Kabir, Consortium Coordinator, SUFAL, CARE Bangladesh, Email: sumaiya.kabir@care.org

Sheri Lim, Lead Advisor – Resilience and Gender, CARE International UK, Email: lim@careinternational.org