

EARLY ACTION PROTOCOL

Kaduna State, Nigeria | Floods



Cash distribution taking place in Kaduna for the SRSP Pilot in August 2022. Credits: NRCS

1. RISK ANALYSIS

Prioritized hazard and its historical impact.

Nigeria experiences heavy rains across all States each year resulting in overflowing rivers and dams. Flooding ranks as the highest environmental disaster in the country causing significant destruction of property and loss of lives. Riverine floods rank highest especially in states bordering the Niger and Benue Rivers, with urban floods being experienced in most states of the country. Some littoral States experience ocean surge which has led to flooding in some instances. The major contributing factors to flooding in Nigeria are dam management, dumping of refuse in drainages causing blockage, and building on flood plains with no provisions for surface drainage. According to National Emergency Management Agency (NEMA), in 2022 Nigeria faced the worst flooding observed in the last 10 years, affecting 4.4 million people, displaced 1.4 million and 600 fatalities. In 2020, the flooding, had also devastating impacts (more than 129, 000 displaced; 68 persons killed), properties and farmlands, affecting 320 local government areas in 35 states including the Federal Capital Territory (FCT). The impact of the 2012 floods was very high: 363 people were killed, 5,851 injured, 3,891,314 affected and 3,871,053 displaced. The floods in 2018 were also devastating: 2.3 million people were affected.

Generally, anticipatory action to floods in Nigeria has not been prioritized. Many of the Nigerian states that are affected by seasonal flooding have little or no systems to support communities in anticipating, preparing, and protecting themselves and their livelihoods to losses resulting from the various types of flooding including recovering resiliently from the disaster events. In this Early Action Protocol (EAP), we majorly focus on Kaduna state, which was the location for the pilot intervention for the shock responsive social protection project being implemented with ECHO funding, in cooperation with the International Federation of Red Cross and Red Crescent Societies (IFRC), the Red Cross affiliated Climate Center based in the Hague, the Nigerian Red Cross (NRCS) and the UNICEF.

A study conducted in farmlands of Kaduna state indicates that as many as 46 percent of respondents attribute high flood risk to inappropriate disposal of refuse into water channels resulting in drainage blockage (Musa et al, 2022, 143). Waste removal and dumping of waste that fills drainage systems has several implications for injury and water, sanitation, and hygiene (WASH) risks in areas predisposed to contagion e.g., where there is no formal drainage wastewater removal infrastructure, latrines, etc. Kaduna State Environmental Authority (Lawal Jibrin) recorded 190 defaulters for breaking sanitation regulation requirements in 2020. Pollution Control Law has been promulgated to deter violations. Waste removal is second only to river overflow as a contributor to flooding in Kaduna state. River overflow has a severity index 0.31 while waste disposal/drainage has a severity index of 0.29 (Gwamna, N.D).

During these flooding incidences, the most vulnerable and most at risk have suffered disproportionately due to the pre-existing vulnerabilities including gender inequalities. Some notable cascading impacts from flooding include damage to public infrastructure, disruption of socioeconomic activities, loss of agricultural land, forced displacement, health (including mental health and well-being) and increased sexual exploitation of affected women and children.

Flood Impacts

The following section presents the key flood impacts identified from a review of publicly available data, peer reviewed literature, and news media.

Between April 2021 – September 2021, the state recorded 26 deaths, 2,026 houses destroyed, and property worth as much as N1.5 billion (3.5 million USD) lost due to flooding. Each year, the number of deaths from flooding of rivers is more than any other natural disaster in the country (Augustine et al, 2015). Generally, preparedness and responses to floods are poorly funded and experience in recent years, showed the low capacity of the Government in coordinating emergency responses. Women, children, persons with disabilities and the elderly are particularly vulnerable, and suffer disproportionately from pre-existing gender inequalities, lack of access to land and basic

services, sexual violence, and engagement in negative coping mechanisms. Kaduna State is one of the States in Nigeria affected by seasonal flooding with little or no systems to support communities in protecting themselves, preventing loss of lives and livelihood and early recovery. Some notable cascading impacts include damage to public infrastructure such as roads been submerged, market and schools flooded, disruption of socioeconomic activities, as well as loss of agricultural land. The affected population often end up being displaced with no means of livelihood.

As a result of these, there is an increased risk in violence, harassment, sexual exploitation of affected women and children. The major causes of flooding in Kaduna State includes long hours of heavy rainfall, dumping of refuse into water channels, lack of and poor drainage networks, topography and nature of urban land surface. The main affected areas are located along the Kaduna River: Kaduna, Chikun, Zaria, Igabi, Bunungwari, Kauru, Sanga.

Flooding tends to occur at the peak of the rainy season and depending on the magnitude of the event, it takes 3-5 days for the flood water to recede (Ibrahim et al, 2016).

Topographic Characteristics

Bordering areas: Persistent flooding/high flood risk in neighboring areas (Zamfara, Sokoto, Kebbi, Kano and Katsina) could have impacts on Kaduna as especially with the tributary river connected to River Niger. Fluvial flooding (when the discharge from rivers exceeds the capacity of the river channel to contain it) due to high precipitation downpour is an underlying risk which could be addressed by forecast data and early warning systems while the risk of excessive rainfall potentially impacting dams (e.g., Kanimi reservoir) could be addressed via the same channels (Adedokun, 2014; Connelly et al., 2015). Zaria city potentially poses flood risks due to the drainage patterns (which are dendritic).

High Plains: Pluvial flooding (when rainfall exceeds the capacity of land surfaces to absorb excess runoff water) and runoff could be exacerbated by the short trees, shrubs, and grasses characteristic of Kaduna state's high plains (Adedokun, 2014; Connelly et al., 2015).

Overflowing Riverbanks: A study of Kaduna Metropolis indicates that the area has a high-water table (Ibrahim et al, 2016). This risk factor is problematized by the overflowing of riverbanks. A study in Kaduna State Local Government Area (LGA) indicates that river overflow is the highest risk of flooding in the study area and proximity to the flooding source (nearly 30% of residences in the study area) was a key indicator for exposure to the impacts of flooding. Additionally, the highest subset of the population is exposed to multiple incidents of flooding (34.6 percent experience three floods per rainy season in 2021). Additionally:

- 11.04% and 2.76% of the residents have experienced floods at least 6 and 9 times respectively in a single season.
- 19.94% of residential buildings located are within 0.1-0.5 km and 13.49% are located within 0.5-1.0 km away from the flood hazard/flood source

Vulnerability

This section summarizes the key vulnerable groups identified from a review of publicly available data, journal publications, and news media reports.

Livelihood Groups

- **Homeowners:** Despite persistent flooding, homeowners are less likely/less willing to relocate during the rainy season and high flood risk seasons due to perceived investments in their property (Vanguard News Nigeria, 2021). Most homeowners (67.7 percent) in the Kaduna Metropolis LGA indicate that the flooding results in water entering the home in comparison to the 25 percent of respondents who reported that flooding completely damaged the home (Ibrahim et al, 2016). Studies suggest that rental prices in Kaduna are relatively lower, increasing the rates at which residents opt to stay within the locality despite the risk of recurrent floods (Ibrahim et al, 2016, 16). One long term intervention at the site of homeownership/rentals is raising the house foundation, incorporating climate sensitive land use strategies into the local building codes

(i.e. regulatory/policy intervention), and enabling local government to monitor residential building construction (Augustine et al, 2015).

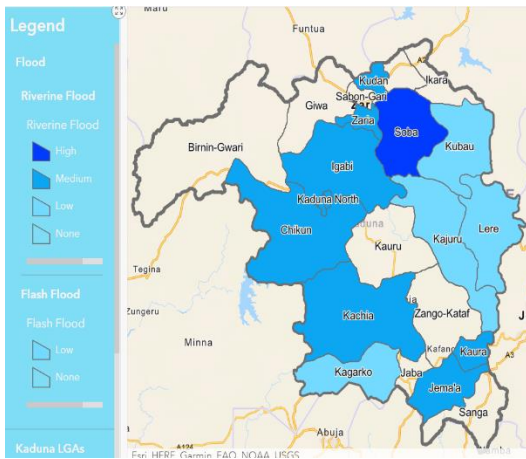
- **Markets and Informal Traders:** Kaduna Metropolis is the economic and financial capital hub of the State. Chikun, Igabi, and Kaduna are the largest (spatial) areas of the Metropolis while Kaduna North and South are the most populated areas. Here, flooding has been most frequent along Kigo road new Extension, Ungwan Rimi Barnawa, Downquarters, and Bashama road (Tudun-wada), Nariya, and Rigasa Ungwan Rido, and this disrupts market operations as well as the small-scale informal traders.
- **Small Scale Farmers:** Reductions in the size of arable land are reported after floods. In a study of farmlands in Kaduna state, respondents indicated that shrinkage in arable land is “the most serious” effect of flooding. However, the efficacy of early warning systems is a major contributor to successful adaptation and resilience building in these livelihood groups. Most respondents in the same study indicate that evacuating culverts and constructing drainages before the onset of rains effectively mitigated flood risk (Musa et al, 2022, 143). A more localized study in Jema’a indicated that floods also cause decrease in length of the growing season and poor yield (Lawrence et al, 2021). Adaptation practices such as multiple cropping, planting early maturing crops (and use of crop varieties acclimatized to the rainfall/flood conditions) were found to be effective adaptation strategies. These also rely on the efficacy and accessibility of early warning systems and forecast data by the State/LGA and the farmers.

Kaduna State Statistical Bureau January 2022 bulletin indicates that rates of inflation (affecting consumer price indexes CPIs for consumables including vegetables – 6.61%, Fruit 4.69%, Garments 3.36%, Potatoes, Yam and other tuber 1.22%, and bread and cereal 1.17%) were higher in rural areas where inflation stood at 18.19% in December 2021, compared to urban areas where inflation was recorded at 15.42% in December 2021 (Kaduna State Bureau of Statistics, 2022).

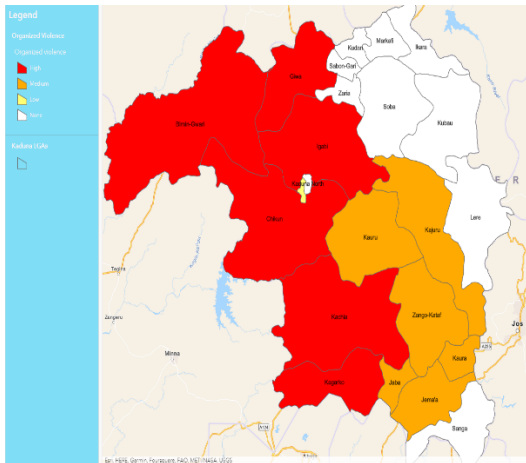
According to Ibrahim (2016), public infrastructures such as roads, electric and telephone lines, markets, schools and churches are all susceptible to flooding in the Kaduna Metropolis. The exposure of this public infrastructure has implications for short term accommodation sites and the long-term sustainability of the social and cultural ecosystem in the area (*ibid*).

Those with underlying health risks are disproportionately exposed to the rise of communicable disease and contagion which can be facilitated by flooding (e.g. damage to water, sanitation, and health infrastructure). In one study of the Kaduna Metropolis LGAs, 25 percent of respondents reported “*health problems arising due to flooding*” (Ibrahim et al, 2016, 19). Ensuring that residents have access to clean and sufficient drinking water as well as medicine and health facilities would create a short-term intervention point especially in the case of flash flooding.

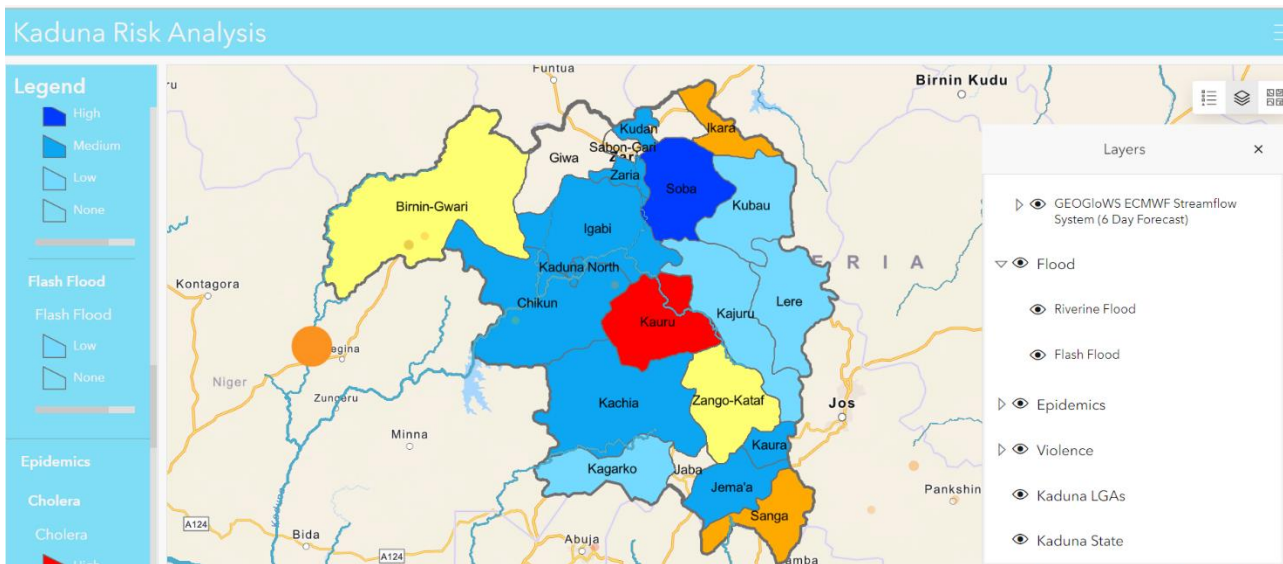
The risk analysis identified flood, epidemics and armed violence as the significant risks in Kaduna State. Riverine flooding in Kaduna occurs due to overflow of the Kaduna, Kogum, Gurara, Matsirga and Galma Rivers. At the same time, flash floods are caused by indiscriminate dumping of refuse and construction of houses along waterways, occurring mainly in the urban area and slums of Kaduna North and Kaduna South. The impact of flooding across affected LGAs is ranked at medium level compared to the country-level impact. Local Government areas affected include Kaduna North and South, Cikun, Igabi, Soba, Kachia, Kubau, Lere, Kaura and Jema’a and Kajuru.



Data source: NEMA, SEMA, NiMET, NHISA



Data source: IPCR




Data source: NEMA, SEMA, NiMET, NHISA

In the end, three Local Government Areas (LGA) in the Kaduna state namely Chikun, Kaduna North and Kaduna South were pre-selected. Within these LGAs, the six communities of Romi, Narayi, Nasarawa, Kigo Road, Kabala West and Bachama were targeted.

2. EARLY ACTION INTERVENTION

Overall objective of the intervention	<p>The proposed early action intervention aims to mitigate the impact of river flooding by providing households (HH) in highly flood-prone regions with Early Warning, Early Action messaging accompanied by multipurpose cash to support anticipation and their preparation to save lives, prevent loss of and preserve livelihoods and minimize negative coping strategies in advance of the peak of flood inundation in Kaduna State.</p>
Potential geographical high-risk areas that the EAP would target	<p>The pilot project had pre-selected three Local Government Areas (LGA) in the Kaduna State namely Chikun, Kaduna North and Kaduna South. Within these LGAs, the six communities of Romi, Narayi, Nasarawa, Kigo Road, Kabala West and Bachama were targeted.</p>
Who will be assisted through this operation and what criteria will be used for their selection?	<p>The following criteria has been used to select beneficiaries for the pilot:</p> <ul style="list-style-type: none"> Vulnerability based (to climate/floods) Poverty (assets, income, land, housing type) Child-sensitive (children with 0-5yrs, children headed household) Gender sensitive (pregnant and breastfeeding women, women headed household) Disability (household with people with disability) <p>The beneficiaries were selected with the help of Red Cross Volunteers, who went to the 6 communities and registered 5,000 households which met at least one or more of the criteria listed above.</p>
Trigger(s) statement (August 2022 Pilot) *	<p>In this pilot phase, the selected trigger details were:</p> <p>Forecast source: Global Flood Awareness System (GloFAS, www.globalfloods.eu)</p> <p>Event: two year return period</p> <p>Probability threshold: 10%</p> <p>Location: anywhere in Kaduna State</p> <p>The skill of GloFAS was evaluated, using the GloFAS reforecast (a database of forecasts generated with the operational model, covering the past 20 years). Analysis focused on a point on the Kaduna River, near to Kaduna town. Evaluation of the selected trigger showed that it:</p> <ul style="list-style-type: none"> has a 75% chance of triggering in a single year would trigger on average twice per year leads to a false alarm at least 50% of the time correctly triggered ahead of 40% of the specified events in the reforecast data <p>Operational forecasts can be monitored via the GloFAS web viewer (www.globalfloods.eu). However, it is not currently possible to view the selected low event magnitude and probability threshold on the viewer. In order to do so and to make trigger monitoring more efficient, an automatic daily download, processing and email of GloFAS forecast data was set up for the specified trigger. This was monitored daily by the Climate Centre, who raised the alert once the trigger threshold was breached.</p>
*Note	<p>For the pilot, it was required to maximize the chance that the trigger would be activated. For this reason, the target event is relatively frequent (2-year return period, occurring on average once every two years). The probability threshold for activation was also set low, at 10%.</p> <p>It is likely that this would trigger at least once every year at this point. When considering all points in Kaduna State, it is almost guaranteed that the trigger would activate somewhere during the season. For long-term sustainable development of the trigger, it is strongly recommended to focus on a higher magnitude/less common event (e.g., 5-year return period), as well as to use a higher probability threshold for the trigger.</p>

2. PILOT INTERVENTION

	Multi-purpose Cash	Budget	425,000 EUR
		Total HHs targeted	4,970 Households
Readiness activities:	<ol style="list-style-type: none"> 1. Pre-registration of beneficiaries based on selection criteria, post community engagement and consultations 2. Preparatory meetings, agreement, and Standard Operating Procedures (SOP) with Financial Service Provider (FSP), the United Bank for Africa (UBA) in this case 3. Daily GloFAS monitoring and email alert set up in the backend to activate alerts when the trigger is met 		
Prepositioning activities:	<ol style="list-style-type: none"> 1. List of beneficiaries shared with UBA by UNICEF after NRCS prelisting and data collection at community level (house to house) 2. Funds from the donors sent to the UBA through UNICEF 3. Beneficiaries' coupons printed and ready for distribution with UBA staff 4. List of beneficiaries shared with NRCS volunteers to help in the verification procedures at payment sites 5. Preparedness meetings held with UBA, NRCS staff and Volunteers and UNICEF to ensure coherent understanding of project objectives, targeting criteria and intended impacts 6. Communication materials prepared for raising awareness before and during intervention 7. Community consultation and engagement e.g., regarding the content and format of communication package, appropriate payment points and preferred Feedback and Complain mechanism, etc. 		
Prioritized Early Actions:	<ol style="list-style-type: none"> 1. Communication materials printed and distributed at community level 2. Kaduna Social Investment Office, State Emergency Management Agency (SEMA), State Cash Transfer Unit and the State Operations Coordinating Unit (SOCU) informed and monitoring the exercise 3. Early warning for forecasted floods and cash distribution locations communicated via messages, community, religious leaders, and community resilience committee members 4. UBA Staff, UNICEF and NRCS staff and Volunteers positioned for cash distribution 		

3. THEORY OF CHANGE BEHIND THE ASSUMED LINK BETWEEN CASH INTERVENTION AND FLOOD RISKS

The cash intervention through the Shock Responsive Social Protection (SRSP) pilot aimed to reduce the impacts from flash floods in the 3 LGAs identified at high risk from floods. Due to climate change, the magnitude and frequency of such events is expected to increase. Poor households are the most vulnerable to weather-related natural disasters and can often be excluded by interventions that focus on the total amount of damage rather than the impact on vulnerable populations. Anticipatory actions can increase preparedness and thereby reduce vulnerability to help flood affected households and communities manage future risks. Cash based early action that is timely and channeled through cost-effective delivery mechanisms is expected to reduce negative coping mechanisms, as well as allow beneficiaries to use the cash effectively in maintaining pre-flood food consumption levels along with carrying out other recovery actions as needed.

The cash based early action in anticipation of floods in Nigeria is expected to address the following prioritised, potential impacts of the floods and have the subsequent consequences:

- ✓ Loss of livelihood and income sources: The cash provided is expected to cushion the shock of lost income for the temporary flooding period and consequently maintain pre-flood consumption levels. It can also help protect their means of livelihood by migrating their business/trading points.
- ✓ Lack of finances in vulnerable households to evacuate from the flood area where and when needed: The cash when provided in advance is expected to help aid the migration/evacuation of vulnerable individuals living in flood plains.
- ✓ High level of loss and damages to productive assets and infrastructure → the cash is expected to help in increasing preparedness so that agricultural tools or assets that help beneficiaries to earn income/procure subsistence, is not damaged. The cash could also be used for repair works or building of plinths or other protective measures for physical property. Removal of productive assets, like agricultural tools, livestock or stored seed grains, can also be done in advance.
- ✓ Increased livestock losses Anticipatory cash is expected to help livestock owners remove their livestock to safe shelters and thereby reduce losses.
- ✓ Increased debts and sell of household assets: The cash will reduce the need to take debts at high interested rates and will also help in averting negative coping mechanisms through sell of Households assets.
- ✓ Reduced food security and nutrition: The cash is expected to be used for procuring food items such that meal size reduction can be prevented. The cash can also help in preventing reduction of meal frequency and dietary diversity.

The impacts being targeted, associated with the objectives of the intervention can have a wide range of positive outcomes. The negative impacts of floods may be minimised by undertaking early action through the timely sharing of flood risk information and cash distribution to most vulnerable households. Ongoing evaluation will be needed to assess the extent to which these outcomes are realised. Knowledge on the practical applications of cash pre-flood remains limited as it is a new area of programming. Evaluations of this program and others like it will help to build up the necessary evidence base and refine the protocols over time to be most effective at reducing flood impacts.

4. INTEGRATION WITH THE NCTP: OPPORTUNITIES AND RECOMMENDATIONS

One of the objectives of this SRSP operational pilot program in the Kaduna state of Nigeria has been to understand the feasibility of integrating shock response components to the National Cash Transfer Program (NCTP) in the country for fast onset disasters like flash floods. The pilot implemented provides key entry points on how this could be achieved:

- 1. Updating the National Social Register with information on climate vulnerable groups:** As the National Social Safety Nets Coordinating Office (NASSCO) updates the national social register to include the poorest Households in Nigeria, it will be imperative that data in the social registry also includes information on vulnerability to climate hazards, including flash and riverine floods. NASSCO State-level counterparts known as State Operations Coordinating Unit (SOCU) is the agency responsible for the data collection at State level. During the data collection process conducted by the SOCU at State level for the registry, including questions on whether the households have been affected by floods in previous years, can be useful for future targeting of flood affected individuals. For those HHs that have been already registered, a similar question can be included in the next round of update of the Social Registry, which currently is scheduled to happen every three years.
- 2. Including Climate vulnerability indicators in the current SSR and NSR Questionnaire:** In the future, if the NCTP is expected to scale up for shock response, it is important to be able to identify swiftly who among the listed beneficiaries in the state social registry are disproportionately vulnerable to the specific hazard being addressed. For this, including certain key indicators of climate vulnerability (like house distance from flood source, height of the house) could be included in the data collection questionnaire. For future interventions, it is recommended that LGAs are selected based on the GloFAS forecasts. Once the trigger is activated based on a forecast, the risk prone areas should be targeted. It is recommended that communities are prelisted, so that only community verification is done after the trigger, thereby quickening the intervention timeline.
- 3. Pre-registration of beneficiaries:** In case it is not possible to include climate indicators into the State Social Registry external support from other agencies can be taken to rapidly register Households and individuals at risk of a forecasted or potential shock. The National Social Safety Net Coordinating Office (NASSCO), which is the mandated body for the implementation of the National Social Registry and the National Cash Transfer Office (NCTO) Responsible for the cash transfer programmes, could liaise with the IFRC Nigeria office and the Nigerian Red Cross Society, to mobilize its network of volunteers and register Households prior to the monsoon season in the LGAs forecasted to be at risk from floods. In case pre-registrations of beneficiaries is not possible in all areas with elevated risk during the monsoon season, then the capacities have to be developed for a rapid post-trigger registration. An exercise should be completed to prepare in advance everything that is required for a speedy registration activity, including list of staff available at short notice, list of devices and appliances available for data collection and pre-agreed registration questionnaires. This preparatory phase will benefit from engaging with the community to gather preliminary data on vulnerable households.
- 4. Establishing working relationships/MoUs with Financial Service Providers:** Quick disbursement of the cash during and after a shock can be facilitated by well established relationships with Financial Service Providers (FSP). In the case of the pilot, a Long-Term agreement between the United Bank for Africa and UNICEF supported the quick mobilization of staff at the cash distribution points after the activation of trigger. Such arrangements with pre-identified FSPs can save crucial time and help the NCTP become shock responsive.
- 5. Earmarking a % of funding for shock response:** Depending on interest and political will, the total funding earmarked for NCTP can be increased to include a percentage of funding earmarked for shock response. Sources of funding that can be explored to cover for the additional fiscal space include international aid, increasing taxes, regulating illicit financial flows and revisiting budgetary allocation.
- 6. Coordinating with Technical working groups:** There are different groups at national level: Federal Technical Working Group (TWG) on Social Protection - Chaired by Ministry of Humanitarian Affairs, the Development Partners Group (DPG). These groups have been discussing SRSP and meet quarterly. It is recommended that NRCS, regularly participates in such meetings, promotes consulting and sharing experiences and ambitions for working with social protection systems in general and NCTP in particular. External partners like UNICEF, WFP, Action Against Hunger, Save the Children International, NRCS or other actors who might have worked in

similar interventions, can be part of this group and share beneficiary lists, methodology documents or other supporting resources that can enable a swift intervention process. These WGs can eventually work as a resource group for coordinating efforts, standardizing benefit levels and targeting strategies.

5. LESSONS LEARNED FOR FUTURE SCALE-UPS

Ensure spatial consistency between the hazard forecast and intervention

The trigger was set to activate upon breaching the set threshold anywhere in Kaduna State, unconstrained to match the pre-selected intervention areas. This should be reconsidered in future. Intervention areas should be chosen "in real time" once the forecast highlights the specific areas with elevated flood risk.

Develop a robust system for daily trigger monitoring

It is unfeasible to use the GloFAS web viewer for regular operational trigger monitoring beyond a few reporting points.¹ This was overcome in the pilot stage by setting up a temporary automated system to download, process and email a map with the required forecast information for the trigger. Going forward, it should be investigated if such a system could be integrated centrally into GloFAS operations. The contents of target email alert (forecast visualization and description) should also be co-designed with target stakeholders, who should also receive the email directly and be trained in its interpretation.

Ensure the trigger is reasonably defined for smaller tributaries, given forecast skill assessment is appropriate for the skill. GloFAS evaluation across Nigeria shows strong skill differences between small tributaries and larger rivers. This indicates that use of a single trigger threshold will not lead to the same skill characteristic for any river. In general forecasts are not skillful for smaller tributaries.

There are a few options for triggers based on current skill levels:

1. A single trigger threshold could be used for all rivers, independent of skill. However, we would have to accept that when the system triggers on smaller tributaries it is likely to be a false alarm. Ease of implementation: Simple.
2. Alternatively, Forecast-based Financing (FbF) systems can be set up only for rivers where the skill is sufficiently high. The drawback here is that communities living near smaller flood-prone tributaries will not be covered. However, unless the data and forecasts are improved at that lead time, there is limited scope to cover these communities without running into the risk of high false alarms. Ease of implementation: Needs a bit of analysis and iteration of acceptable skill levels but technically possible. Easier to implement if the operational trigger is based on processed GloFAS data.
3. Hybrid Option: The trigger can be based on the forecast for major points but will include communities living near upstream tributaries in the intervention. The logic for that is: given a 10-day forecast triggering on the mainstream, high rainfall in the upstream catchment is likely due (if not arrived already). So upstream communities have a higher risk of flooding soon (if they haven't been flooded already) and can benefit from cash. Ease of implementation: Most complicated. Selecting the trigger is the same as option 2. But it requires every major river segment to be associated with a set of upstream tributaries for intervention and may have to be done 'by hand' across the country.

Ensure collecting traceable Unique Identifier Number while pre-listing While listing vulnerable Households, it is important to ensure that the National Identifier Number as well as the Social Registry Number (if available) is noted down. This will help find overlaps between the beneficiaries in the State and National Social Registry for NCTP and can be useful for targeting flood hazards in the future. The unique ID-Nr can also aid SOCU in expanding the social registry to include the climate vulnerable groups by easily identifying the Households that need to be included.

Prepare FSPs in advance for the intervention. The Bank of Africa (BoA) was briefed about the objectives of the program, targeting criteria and procedures for the cash distribution well in advance of the intervention. The presence of BoA branches in the target districts/LGAs was favorable and an important factor for the choice of FSP, since accessibility and network of the FSP plays a defining role in the swiftness of the intervention. It is recommended that

¹ Checking forecast probabilities for a specific lead time requires multiple clicks and reading data from a table, for each "reporting point". There can be upward of 20 reporting points to check, and this must be repeated every day. Aside from being overly cumbersome, it carries a significant risk of human error; oversight or click-fatigue might mean reporting points are missed, or data misread.

any future intervention also establishes a good working relationship with an appropriate FSP, followed by adequate trainings/briefings to communicate goals and objectives, and ways of working (expected working hours on disbursement days, arrival and departure timings, awareness of inclusion).

Alert and aware all relevant actors prior, during, and post intervention. The operational pilot in Kaduna was a joint effort from UNICEF, IFRC, NRCS and RCCC, but the relevant government counterparts from the State Operations Coordinating Unit (KADSOCU), State Cash Transfer Unit (SCTU), State Emergency Management Agency and Kaduna State Social Investment Office (KADSIO) were also present to support the activity. It is highly recommended that all relevant partners, as well as community leaders, are identified and mapped in advance, contact lists are prepared, and alerts regarding triggers, and subsequent intervention procedures are communicated to all.

Improving the distribution process via FSPs. Despite pre-agreement, the FSP aka UBA staff did not use digital scanners for the verification, and this resulted in delays at the confirmation desk where the coupons for payment were being issued to the beneficiaries. Coupons did not have sufficient identifiers for ease of tracing and identification. This process has to be improved in advance of the next intervention. A contingency plan also needs to be put in place to avoid delays.

6. REFERENCES

7. Adedokun, W (2014). Identifiability of distributed floodplain roughness values in flood extent estimation. *Journal of Hydrology*. 3(14):139-157 doi:10.1016/j.jhydrol.2005.03.012
8. Alabi, A. 2020. Over 2,000 hectares of rice farms destroyed in Kaduna. Over 2,000 hectares of rice farms destroyed in Kaduna | *The Guardian Nigeria News*.
9. Augustine, I.E. and Akinlolu, A.T., 2015. Flood disaster: An empirical survey of causative factors and preventive measures in Kaduna, Nigeria. *International Journal of Environment and Pollution Research*, 3(3), pp.53-66.
10. Connelly, A., (2015). "Testing innovative technologies to manage flood risk". proceedings of the institution of civil engineers – Water Management. 168 (2), pp: 66-77. doi:10.1680/wama.14.00063.
11. Gwamna, D.E., Abdullahi, A.C., Kazeem, A.S. and Mohammed, I., N.D. Evaluation of the causes of flood and mitigation strategies in Kaduna South Local Government Area, Nigeria.
12. Ibrahim, A.H. and Abdullahi, S.Z., 2016. Flood menace in Kaduna Metropolis: impacts, remedial and management strategies. *Science World Journal*, 11(2), pp.16-22.
13. Jeb, D.N., and Aggarwal, S.P. (2008). "Flood in Inundation Hazard Modeling of the River Kaduna using Remote Sensing and Geographic Information Systems", *Journal of Applied Sciences Research*, 4 (12), pp 1822-1833.
14. Musa, I., Suleiman, U.B., Dalhatu, Z.M. and Zakari, Z.M., Risk Perception of Floods on Farmlands in Kofar Kona, Zaria City, Kaduna State, Nigeria.
15. Kaduna State Bureau of Statistics. 2022. Demography. <https://kdbs.ng/domains/demography/> .
16. Kaduna State Bureau of Statistics. 2022. KD Statistical Bulletin. <https://kdbs.ng/app/uploads/2022/02/KDBS-Statistical-Bulletin-January-2022.pdf> .
17. Lawrence, U.E. and Elisha, I.K.P.E., 2021., Appraisal Of Farmers' Understanding, Perception And Knowledge Of Climate Change And Adaptation Strategies In Jema'a Local Government Area, Kaduna State, Nigeria.
18. Vanguard News Nigeria. 2021. Kaduna state residents in flood prone areas say nowhere to relocate. <https://www.vanguardngr.com/2021/09/kaduna-residents-in-flood-prone-areas-say-nowhere-to-relocate/> .