ANTICIPATION OF TROPICAL CYCLONE (CYCLONE BIPARJOY) IN INDIA – ALERT 722

SUMMARY – ANTICIPATION OF TROPICAL CYCLONE – INDIA

The Indian Joint Typhoon Warning Centre (JTWC) issued an alert, on June 5th, 2023, after a cyclone was observed forming in the Arabian sea, assigning it the name Tropical Cyclone Biparjoy. It steadily strengthened, gaining Category 1 status with wind speeds of 130 km/h (80 mph). With a predicted landfall on the 16th of June, Start Network member SEEDS raised an anticipation alert and commenced anticipatory action. Initial forecasts identified Kutch in Gujarat as directly in the cyclone's path. SEEDS used their innovative disaster modeling tool to predict that 900,000 people were at risk, with most coastal homes vulnerable to severe damage. They initiated discussions with local authorities to disseminate early warning information to communities. Government preparation anticipated landfall site meant communities were successfully evacuated to flood shelters, returning after 3 days with compensation payment. As a result there was no loss of human life or livestock reported. At the same time SEEDS were observing a humanitarian crisis developing in Rajasthan, due to heavy rainfall in the wake of the cyclone. Heavy rainfall continued relentlessly for over 36 hours, leading to major flooding and destruction with some communities experiencing a 4-5 foot rise in water levels. SEEDS quickly adapted to the changing situation, redirecting staff and supplies to Rajasthan to address these emerging needs. After a rapid needs assessment and liaison with local authorities' hygiene kits, shelters kits and water filters were distributed to 3,995 households most affected by flooding in Rajasthan. They helped establish 16 village level community relief distribution committees and two community complaints redressal committees to ensure the actions were rooted in community needs. The monitoring and planning under the cyclone anticipation alert enabled swift adaptation to the evolving situation, ensuring assistance was directed toward unmet needs.

"Anticipatory Action is a new concept for us in India. The tool we developed provided us the path of the cyclone and identified vulnerable populations in the path of the storm. However, in future we will enlarge the scope and make better anticipation planning for secondary locations as well"
- **Yezdani Rahman (Regional Director of Programmes, SEEDS)**

3,295 HHS RECEIVED SHELTER KITS

3,995 HHS RECEIVED HEALTH AND HYGIENE KITS

700 HHS RECEIVED WATER FILTERS

02 COMMUNITY COMPLAINT REDRESSAL COMMITTEES FORMED AT BLOCK LEVEL

16 COMMUNITY RELIEF DISTRIBUTION COMMITTEES FORMED AT VILLAGE LEVEL

Cyclone monitoring: Monitoring information from the meteorological services

Early warning: sharing updated forecasting with community leaders and planned accordingly

Disaster risk reduction: Used an innovative anticipation tool, developed in collaboration with Start Network to identify populations at most risk (21,844 people)

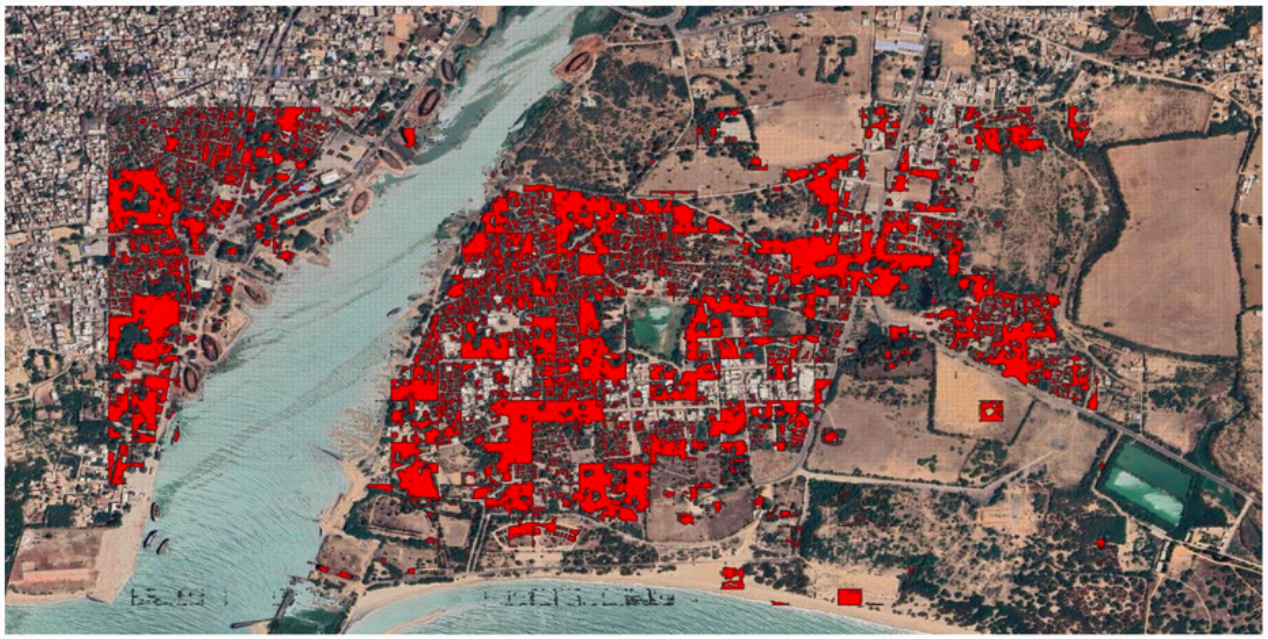
Alert No 722	**Hazard** Cyclone Biparjoy	**Onset** Rapid
Country Panama	**Region** Gujarat predicted; changed to Rajasthan	**Location** Rajasthan, District: Barmer, Sub-Division/Tehsil: Serwa, Panchayat Samiti/ (block): Fagaliya and Serwa
Date of Alert decision 14/06/2023	**Early Action window** 2-5 days	**Budget** £200k
Beneficiaries 21,844 people	**Sectors** WASH, Health, NFI, Shelter	**Convening Agency** SEEDS - Sustainable Environment and Ecological Development Society
Was the crisis as anticipated?	The situation rapidly evolved as the cyclone made landfall as predicted. While the targeted area experienced less impact, other areas saw greater impacts. Actions were quickly adapted to address the changing situation.	

BACKGROUND

On the 5th of June 2023, the India Meteorological Department (IMD) observed the formation of a cyclone in the Arabian sea. The Joint Typhoon Warning Centre (JTWC) issued an Alert, assigning it the name Tropical Cyclone Biparjoy, as it steadily strengthened, gaining Category 1 status with wind speeds of 130 km/h (80 mph). With a predicted landfall on 16th June, Start Network members SEEDS, NEADS, Caritas India and Save The Children plus Inter-Agency Group (IAG) Gujarat raised an anticipation alert. Cyclone Biparjoy made landfall, as anticipated, on June 16th near Naliya in Gujarat, but was less severe than forecast, with winds of 95 km/h (60 mph). The cyclone then underwent rapid intensification, escalating from a cyclonic circulation to a very severe cyclonic storm. On June 17th, 2023, Biparjoy moved towards South Rajasthan, causing very heavy rainfall for over 36 hours, causing major flooding and destruction. This caused mass disruption to life in many districts, including Barmer, Sirohi, Banswara, Udaipur, Rajsamand, Pali, Ajmer and Kota. Severe water logging and flooding was widespread, with some communities experiencing a 4-5 foot rise in water levels, necessitating rescue operations by the national and state disaster response forces. By continuously monitoring data from the meteorological service, SEEDs took action at the cyclone's landfall site in Gujarat and quickly adapted to the changing path and intensity, pivoting their early response to address the emerging humanitarian situation in Rajasthan.

ANTICIPATED HUMANITARIAN SITUATION

Initial forecasts identified Kutch and Saurashtra in Gujarat as most at risk, with Kutch directly in the cyclone's path. Up to 896,124 individuals were predicted to be in the path of the highest wind speeds (120 km/h), while 2,577,474 others were at risk from winds of 90 km/h. Anticipated impacts included destruction of homes and infrastructure, threats to life and livelihoods, displacement, waterlogging from heavy rain, pollution of water sources, and inaccessibility due to flooding, fallen trees, and power lines. Plans were developed to address these specific needs. The SEEDS anticipation modeling tool, supported by Start Network, indicated that most coastal homes could be damaged.



Modelling analysis of Mandvi town in Kutch, showing potential damage, based on an anticipatory tool developed by SEEDS and the Start Network

Forecasts initially identified Kutch and Saurashtra in Gujarat as most at risk, with Kutch directly in the cyclone's path. Up to 896,124 individuals were predicted to be in the path of the highest wind speeds (120 km/h), while an additional 2,577,474 individuals faced winds of 90 km/h. Anticipated impacts included destruction of homes and infrastructure, threats to life and livelihoods, displacement, waterlogging from heavy rain, pollution of water sources, and inaccessibility due to flooding, fallen trees, and power lines. Plans were developed to address these specific needs. SEEDS' anticipation modeling tool, supported by Start Network, indicated that most coastal homes could be damaged

START FUNDS' DECISION TO FUND

The allocation committee decided to allocate £200,000 to this alert on 14th June 2023. The committee considered the alert fit with the Start Fund niche, as a forecasted medium scale crisis. The alert note provided a solid risk analysis, including the usage of an anticipation tool co-developed by SEEDS with the Start Network, that provided additional triangulation, and identification of vulnerable populations.

There was discussion around the timing of the alert and activities as landfall was expected on 15-16th June. However, the committee believed this anticipation alert would reinforce the actions of early warning mechanisms and national response bodies. It was also identified that a response of this nature could help prevent secondary and tertiary displacement by supporting communities with accurate and timely information and assistance.

ANTICIPATION WINDOW

Actual landfall was 16th June, giving a short 2-day window for action but in reality communication and coordination actions had commenced earlier (from 5th June), and these few days were important for building momentum, ensuring timely and appropriate messaging to communities and initiating response preparations. An additional 3-day window (until June 19), was used to prepare to swiftly pivot and respond in areas of Rajasthan more severely affected by the cyclone's aftermath. Due to the rapid onset of cyclones, anticipatory action windows are short, as they develop quickly, change intensity, and shift paths.

PURPOSE OF THE ANTICIPATORY ACTION AND EARLY RESPONSE

Raising an anticipatory alert, rather than a response alert, allowed SEEDS to respond proactively by anticipating the cyclone's direction, landfall, and potential scale of damage, enabling them to plan resources accordingly. When the cyclone's path and nature changed, they were able to react immediately, ensuring an appropriate and timely response in the most affected areas of Rajasthan. This approach allowed SEEDS to align their response with the affected population, in coordination with other actors. Given the short window for anticipatory action, the primary focus of the response was information sharing to raise awareness within communities and protect lives and assets from rapid onset flooding. The Start Fund's approach to anticipatory action is crucial for managing such crises, as it encourages NGOs to be proactive, taking proactive action over waiting for reactive responses. Start Network members can warn communities and address gaps by implementing risk reduction and response plans based on anticipated impacts and needs.

ANTICIPATORY ACTION

The anticipation alert enabled the pre-deployment of volunteers, coordination with the Government, identification of suppliers, and community-level awareness raising at predicted landfall sites. Although the humanitarian situation changed significantly, the alert allowed SEEDS to pivot and respond quickly in areas more severely affected. After early actions in Gujarat, the team was redirected to Rajasthan for a rapid needs assessment and response, in coordination with the Government.

EARLY ACTIONS	PURPOSE
Cyclone monitoring: Monitoring cyclone weather forecasting information from the meteorological services	To continuously assess the situation and carry out scenario planning for potential impact site – Gujarat
Early warning: Monitoring and sharing updated forecasting from the meteorological services with community leaders and planning/ coordinating accordingly.	To warn and prepare community leaders and communities to prepare for and coordinate early actions - Gujarat
Disaster risk reduction: Innovative anticipation tool, developed in collaboration with Start, along with information from the Met Office to model the cyclone and identify areas population at most risk. 21,844 people	To identify and support the most affected and isolated communities with accurate information and actions they can take to protect themselves (e.g. protecting food stores and documents, seeking refuge on higher ground) – Gujarat/Rajasthan
EARLY RESPONSE	**PURPOSE**
Shelter/NFI Kit: Kits consisting of tarpaulin, floor mat, mosquito net, rechargeable solar torch and nylon rope to 3,295 households	To provide adequate shelter after severe heavy rain and storm and flooding damage - Rajasthan
Hygiene: Kits consisted of bathing soap, washing soap, washing powder, a bucket with a lid, a bucket without a lid, a mug, 2 sanitary napkin packs, a cotton towel, cloth masks, toothbrushes, and toothpaste to 3995 households (covering 17,000 individuals)	To maintain health and wellbeing in the wake of the storm and flooding damage - Rajasthan
WASH: 700 stainless steel non-electric water filters were distributed to 700 of the most vulnerable households with 4 water filter candles	To promote the habit of drinking clean water in storm affected community, at risk of water borne diseases – Rajasthan

DEATILS OF ACTION

Communities in Gujarat received early warning messaging prior to the cyclone's landfall on June 16. After observing lower-than-expected damage at the landfall site and the growing destruction in Rajasthan, SEEDS redirected volunteers from Gujarat to the affected region. They provided support to the most impacted communities in Barmer, which included 16 settlements (Gram Panchayats) across Fagaliya and Serwa blocks. A rapid joint needs assessment with CARITAS led to interventions in the following sectors: 1. Shelter/NFI kits, including tarpaulins, floor mats, mosquito nets, rechargeable solar torches, and nylon rope for 3,295 households; 2. Health & hygiene kits, including bathing soap, washing soap, washing powder, buckets, sanitary napkins, cotton towels, cloth masks, toothbrushes, and toothpaste for 3,995 households (17,000 individuals); 3. Stainless steel non-electric water filters (with 4 filter candles) for 700 households to provide clean drinking water. Assistance was prioritized for the most vulnerable and marginalized groups, including scheduled castes, scheduled tribes, people with disabilities, single women-headed households, and the elderly.

SEEDS adopts a community-led approach in all their programs, empowering communities to contribute ideas, make decisions, and enhance their preparedness for the future. In this response, committees of 5-7 members were formed: 16 Relief Distribution Committees (RDCs) at the village level and 2 Complaint Redressal Committees (CRCs) at the block level (1 in Fagaliya Block and 1 in Serwa Block). These committees played a crucial role in promoting accountability and transparency during the intervention by upholding the Common Humanitarian Standard (CHS) principles and addressing feedback and complaints from the communities.

Community meeting ©SEEDS

OPERATIONAL CHALLENGES AND LEARNING

Anticipatiory action in a constantly evolving situation: The changing nature of the cyclone meant that the organisation had to stay flexible, reacting to a reduced impact at the landfall site and then pivoting to respond to a developing humanitarian situation in another state, as a result of heavy rain in the wake of the cyclone. It is important that Cyclone anticipation alerts plan for this unpredictability and review and adapt plans on an hourly/daily basis. Donors should be flexible to facilitate adaptive actions being adopted, to ensure assistance is targeted to the most affected.

Cyclone impact: The Biparjoy floods in Rajasthan were more destructive than the cyclone impact in Gujarat. There was immense damage to infrastructure and livelihoods. In Barmer (Rajasthan), heavy rain lashed the city causing severe waterlogging and flooding, with up to 4-5 feet rise in water levels in some places. For future Cyclone anticipation responses, it is important to have a broader analysis of the changing nature of cyclones and the transformation into depressions and storms. In particular to realise that the greatest destruction can be as a result of heavy rain/ weather depression in the wake of the initial cyclone, rather than the strong winds of the cyclone itself. The path of the storm and area of greatest predicted impact can change within a few days.

Flexible funding: The convening agency was able to pivot to provide timely support targeting those most affected in a different state. Without this anticipatory alert, relief would have been delayed by a significant number of days. There is a benefit of combining anticipation with early and effective responses where the first 72 hours can be crucial for saving lives and livelihoods.

Volunteers collecting information ©SEEDS

Anticipation is not a substitute for comprehensive DRR: The floods destroyed many houses, especially fragile kutcha houses of vulnerable groups. Many people were rendered homeless and remained displaced for a long time. Through their expertise in shelter and DRR, SEEDS could have assisted with emergency shelter construction and more resilient shelter designs. Although this would require significant additional funding and is not covered by this anticipatory funding mechanism. In Gujarat the existing flood shelters and evacuation plans ensured there was no loss of life or livestock.

Community participation is key to successful anticipation: Participation of the local communities in anticipatory action and early response is key to a successful intervention. It is important for the convening agency to host open discussions with the community and maintain a high level of transparency and accountability throughout the entire process.

I**nnovation:** This anticipation alert deployed a tool developed by Start Network members in India in collaboration with Start Network's Crisis Anticipation and Risk Financing team. It provided a satellite image highlighting vulnerable areas and suggested target zones for members. However, the tool can be enhanced to model the further progression of cyclones, including anticipating additional destruction as the cyclone evolves into storms or depressions, changes direction, or dissipates.