PRAN
Participatory action for Resilience, Adaptation and Nature based solutions

DRRIS

Dynamic Risk-reduction & Response Information System

TOOLKIT

PRAGYA

KARUNA
DEUTSCHLAND

german
cooperation
DEUTSCHE ZUSAMMENARBEIT

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Solutions

This toolkit has been prepared by **Pragya** (www.pragya.org), a not-for-profit, development organization working for the appropriate development of the vulnerable communities and sensitive ecosystems of the world.

Pragya has long experience of working in some most remote and marginalized regions. Based on rigorous consultative research, Pragya has developed DRRIS (Dynamic Risk-reduction & Response Information System) – a program for participative risk governance and disaster response for two critical components of the Disaster Management cycle:

    i. Early warning and grassroots preparedness;
    ii. Post-disaster damage and needs assessment and communication system

These process and tools supplement the capacity building efforts and communication resources/networks in target locations and help in the mainstreaming and effective execution of Disaster Management plans of the local authorities.

This DRRIS Toolkit is designed for Hazard Monitoring, Early Warning and Relief Needs Communication and is customized for the communities residing in the Ganges-Brahmaputra-Meghna Delta. The toolkit would be accompanied by a DRRIS app and web platform and would be used by the Responder Network in the target districts comprising Climate Resilience Champions (CRCs), CBDRR leadership groups, communication points in the neighbourhood (Points of Presence), Climate Action Clinics (CACs), local government and first responders, weather monitoring agencies and civil society.

- DRRIS catalyzes effective, composite disaster response at 3 windows of opportunity: pre-disaster preparedness, early warning, and immediate post-disaster relief - which can reduce the toll of extreme events considerably.
- It incorporates 2 tools – "**Go-Risk**" (early warning tool with grassroots measurement grids and communication channels for pre-disaster use) and "**RnR-Comm**" (relief & response information-sharing tool to help multi-agency response coordination for post-disaster use) to enhance local self-reliance and improve the effectiveness of humanitarian support.
- DRRIS develops structures and networks to connect communities with state and civil society responders, ensuring the flow of information and effective coordination.
- It adopts the approach of risk governance for dynamic management of hazards, vulnerabilities, and disasters, and to facilitate linkages for people-state collaboration for timely action/support.

• Hazards Definitions

Flood	A flood is an excess of water on land that is normally dry.
Cloudburst	A cloudburst refers to particularly heavy precipitation (e.g. 100 mm/hour rainfall) in a short period of time over a limited geographical area (e.g. few square kilometres).
Drought	A drought is a period of time when an area or region experiences below normal precipitation. Note that it is a temporary aberration.
Landslide	Landslides are the downslope movement of rock, debris and/or earth under the influence of gravity.
Forest fire	Forest fire refers to an uncontrolled combustion or burning of plants in a natural setting, which consumes the natural fuels and spreads based on environmental conditions such as wind and topography.
Locust menace	Locusts are transboundary migratory pests that can form swarms containing millions of locusts, and cause devastating impacts on crops, pasture, and fodder.
Bank erosion	Bank erosion occurs where streams begin cutting deeper and wider channels as a consequence of increased peak flows or the removal of local protective vegetation.
Earthquake	An earthquake is a series of underground shock waves and movements on the earth's surface caused by natural processes within the earth's crust.
Cyclone	A cyclone is a weather system consisting of an area of low pressure, in which the wind circulates inward in either a clockwise direction (Southern hemisphere) or anticlockwise direction (Northern hemisphere). This may lead to storm surges in coastal regions.
Coastal Erosion	Coastal erosion is the loss or removal of sand, soil and rocks along the coastline due to the action of ocean waves, water currents, tides, which can occur slowly over time or very rapidly during severe storms.
Heatwave	A heatwave is a period of excessively hot weather, when temperatures are very high compared to those normally expected.
Tsunami	Tsunamis are high waves in oceans or other water bodies caused by earthquakes, volcanic eruptions or similar disturbances.

DRRIS

Dynamic Risk-reduction & Response Information System

GO-RISK TOOLKIT

GO-RISK REPORTING FREQUENCY

• For **RAPID ONSET** Disasters:
If the threshold is breached – every few hours.
During potential hazard months as per calendar – once every week.
Other periods - once every month.

• For **SLOW ONSET** Disasters:
Once every month

GO-RISK COMPONENTS

• **Hazards Calendar:** To be computed at village level. One digital copy would be available at CACs.

Type of hazard	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Landslide												
Flood/cloud burst												
Earthquake												
Forest Fire												
Bank Erosion												
Locust Menace												
Drought												
Coastal Erosion												
heatwave												
Cyclone												
Tsunami												
Others: _____												
Others: _____												

• **Village Level Disaster Plans:** To be developed for each settlement based on the NIDM Manual on Village Disaster Management Plan.

• **Hazard Specific Tools:** To be used for the specific type of natural hazard for monitoring threshold levels and triggering alerts. Described in detail in the following sections.
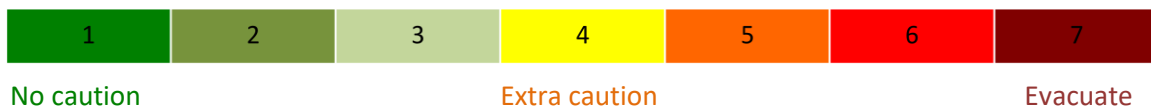
GO-RISK - LANDSLIDE

PARAMETERS	
	1. Rainfall duration and intensity **ALERT!** • When rainfall measurement crosses 12 mm/hour for 10 hours • When rainfall measurement crosses 2 mm/hour for 100+ hours (4 days+) • When rainfall measurement crosses 144 mm in 24 hours **2. Slope / soil movement**
FREQUENCY	
	1. Rainfall measurement: • Once a day during potential landslide hazard months as per seasonal calendar • During slight rainfall – once every 12 hours • During heavy rainfall – once every 1 hour **2. Surveillance of slope / soil movement:** • Once a day during potential landslide hazard months as per seasonal calendar for vulnerable sites • Once a week for general surveillance
TOOLS	
	1. Low cost tools: • Bell and bottle rainfall measurement device • Simple rain gauge, tipping bucket rain gauge • Landslide hazard – physical observation checklist **2. High cost tools:** • Wireless rain gauge with battery operated transmitter • Digital extensometer; chain deflect meters, single or multi-drill hole extensometers • Acoustic EWS device • Solar-powered radio telemetry system for remote transmission • Wire loop breaking alarm • SGI rod inclinometers, Kirby's T-pegs, strain probes in flexible boreholes • SenSlide: a sensor network based landslide prediction system • Photogrammetric techniques for landslide monitoring
MONITORING SITES	
	1. Precipitation measurement: • 1 per settlement **2. Surveillance for mass movement:** • All potential landslide zones are identified during mapping
NETWORK INSTITUTION	
	India: • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Geological Survey of India • Indian Meteorological Department (IMD) • National Institute of Disaster Management • Wadia Institute of Himalayan Geology • Department of Civil Engineering - IIT Mandi Bangladesh

	• Bangladesh University of Engineering and Technology • Department of Disaster Management • Bangladesh Meteorological Department (BMD) • Department of Disaster Science and Management (DSM), University of Dhaka

GO-RISK Landslide hazard – physical observation checklist

☐ Broken water lines; sticking doors and windows, and visible open spaces indicating jambs and frames out of plumb

☐ Tilting or cracking of concrete floors and foundations

☐ Ancillary structures such as store and cattle shed tilting and/or moving relative to the main buildings

☐ Unusual bulges in the ground, street/pavements or sidewalks; sunken road beds

☐ Leaning electricity poles, trees, walls or fences; offset fence lines

☐ Unusual sounds, such as trees cracking or boulders knocking together; a faint rumbling sound that increases gradually as the landslide nears

☐ Falling of rocks, soil, debris etc. in small amounts at regular intervals.

Total number of observed signs

1	2	3	4	5	6	7

No caution   Extra caution   Evacuate

GO-RISK - CLOUDBURST /FLOOD

PARAMETERS	
	1. Rainfall intensity **ALERT!** • When rainfall measurement crosses 100 mm/hour **2. Level of water in water channels** To be calibrated for each stream or location separately **ALERT!** (example) • 0.8m above regular high flow level – Alert • 1m above regular high flow level - Get Prepared • 1.3m above regular high flow level - Evacuate **3. Atmospheric Pressure** **ALERT!** • When the barometric air pressure falls by 4 mb over 3 hours
FREQUENCY	
	1. Rainfall measurement: **2. Level of water in water channels - observation:** • Once a day during potential flood hazard months as per seasonal calendar • During slight rainfall – once every 12 hours • During heavy rainfall – once every 1 hour
TOOLS	
	1. Low cost tools:

	• Bell and bottle rainfall measurement device • Simple rain gauge, tipping bucket rain gauge • Water level markers in streams, rivers (new markers installed / existing pillar/post or part of bridge) **2. High cost tools:** • Wireless rain gauge with battery operated transmitter • Rainfall data logging system with battery operated logger • Network of rain gauge (upstream) for entire stream basin or watershed • Automated water level sensors, bubbler, Self-contained Continuous Flow Bubbler with integrated pressure sensor • Radar Level for non-contact water level measurement • Wireless rain gauge with cloudburst alarm • Eco Net data logger; NexSens iSIC-MAST Data Logging System
MONITORING SITES	
	1. Precipitation measurement: • 1 per settlement **2. Water-level measurement:** • 2 or more sites (if possible, upstream every 500 m along the stream based on distance from settlement and availability of personnel) • Better to have monitoring sites upstream to allow higher response time
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian Meteorological Department • National Institute of Disaster Management (NIDM) • National Institute of Hydrology, Roorkee, India • National Water Academy, India Bangladesh • Bangladesh Meteorological Department (BMD) • Water Resources Planning Organisation (WARPO), MoWR • Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) • Centre for Environmental and Geographic Information Services (CEGIS) • Bangladesh University of Engineering and Technology (BUET), Dhaka

GO-RISK - EARTHQUAKE

PARAMETERS	
	1. P-wave and S-wave of earthquake • Displacement amplitude of the P-wave's vertical component (Pd) **2. Traditional indicators** **ALERT!** • Restlessness in cows in cattle sheds (Reliability rating: 1/5) • Mice / rats running out of house (Reliability rating: 4/5)
FREQUENCY	

(icon)	**1. P-wave and S-wave of earthquake** • Continuous **2. Traditional indicators** • Continuous
TOOLS	
(icon)	**1. Low cost tools:** N/A **2. High cost tools:** • QuakeGuard™ Seismic Warning Systems • Earthquake Alarm Systems (ElarmS) • SEP seismometer • RockWave vertical sensor • P-Alert acceleration sensor • MEMS (micro electro mechanical systems) accelerometer • Earthquake Early Warning System • Radon Gas monitoring
MONITORING SITES	
(icon)	**1. Earthquake amplitude measurement:** • One per district; away from sites with artificial/human triggered vibrations (construction/mining sites etc)
NETWORK INSTITUTION	
(icon)	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian Meteorological Department (IMD) – nodal agency • Earthquake Risk Evaluation Centre (EREC) – part of IMD • National Institute of Disaster Management • National Seismological Network (NSN) – maintained by IMD Bangladesh • Dhaka University Earth Observatory (DUEO) • Bangladesh University of Engineering and Technology (BUET) • Geological Survey of Bangladesh (GSB) • Bangladesh Meteorological Department (BMD)

GO-RISK – FOREST FIRE

PARAMETERS	
(icon)	**1. Observable Thresholds** **ALERT!** • Visible smoke rising out of forested area • Visible flames in forested area • Presence of Ground fire / Surface fire / Crown fire • Direction of fire spreading **2. Weather data** • Temperature data - Maximum (°C)

	• Temperature data - Minimum (°C) • Wind speed data (km/h)
FREQUENCY	
	1. Identification: • Once a week during potential months – corroboration by network partners **2. Surveillance (post-identification):** • The site and fire spreading is observed twice a day • Continuous monitoring by Network partners using satellite images
TOOLS	
	1. Low cost tools: • Scoring sheet for Forest Fire Hazard • HF communication set / satellite telephone **2. High cost tools:** • Satellite images, aerial photographs, GIS • Drones • IR (Infrared) spectrometers to identify the spectral characteristics of smoke • Light detection and ranging systems—LIDAR (detection of light and range) that measure laser rays reflected from the smoke particles. • Forest and wildfire detection systems combining sensors and AI (e.g. Firehawk, IQ FireWatch)
MONITORING SITES	
	1. Observation sites: • Potential sites as identified during preliminary mapping
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • State Forest Departments • Forest Survey of India (FSI) • Indian Space Research Organisation (ISRO) Bangladesh • Bangladesh Forest Research Institute (BFRI) • Bangladesh Forest Department • Department of Disaster Management • Centre for Climate Change and Environmental Research (C3ER), BRAC University • Institute of Forestry and Environmental Sciences, University of Chittagong

GO-RISK – LOCUST MENACE

PARAMETERS	
	1. Observation - Locust presence **ALERT!** • Isolated individual locusts; 1 locust per 400 m (transect walk) • Scattered low number of locusts; Upto 20 locust per 400 m (transect walk) • Active group of locusts; moving in swarms ; >20 locust per 400 m (transect walk) • Active group of locusts; breeding - egg laying on ground or group of hoppers spotted (transect walk)

	2. Type of locust • Desert Locust / Migratory Locust / Bombay Locust / Tree Locust
FREQUENCY	
	1. Identification: • Once a week during potential months for identifying any occurrence – corroboration by network partners **2. Surveillance (post-identification):** • Every 24 hours for next 1 week • Continuous monitoring by Network partners involving field staff
TOOLS	
	1. Low-cost tools: • Observation sheet for Locust Menace / Locust surveys or population monitoring • HF communication set / satellite telephone **2. High-cost tools:** • Satellite Remote Sensing and GIS Applications • Drones
MONITORING SITES	
	1. Observation sites: • Agriculture farms
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • State Agriculture Departments • Directorate of Plant Protection Quarantine and Storage, Ministry of Agriculture & Farmers Welfare Bangladesh • Bangladesh Agricultural Research Institute (BARI) • Department of Agriculture Extension – Plant Protection Wing • Bangladesh Institute of Nuclear Agriculture (BINA) • Bangladesh Rice Research Institute (BRRI)

GO-RISK – BANK EROSION

PARAMETERS	
	1. Observation Threshold **ALERT!** • Bankline retreat in one site • Bankline retreat in multiple sites • Bankline retreat with high volume of material eroded away **2. Erosion monitoring pins** **ALERT!** • Number of erosion monitoring pins washed away from the monitoring plot None / 1 / 1-5 / >5

	3. Bank retreat distance (with reference to control points) None / <1 m / 1-2 m / >2 m
FREQUENCY	
	1. Identification: • Once a week during potential months for identifying any occurrence – corroboration by network partners **2. Surveillance (post-identification):** • Every 24 hours for next 1 week • Continuous monitoring by Network partners involving field staff
TOOLS	
	1. Low-cost tools: • Observation sheet for Bank Erosion (Erosion Pins/Pegs) • HF communication set / satellite telephone **2. High-cost tools:** • Satellite Remote Sensing and GIS Applications • Sediment monitoring
MONITORING SITES	
	1. Observation sites: • Riverbank sites as identified during preliminary mapping
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Central Water Commission • National Institute of Hydrology (NIH), Roorkee • National Remote Sensing Agency (NRSA) Bangladesh • River Research Institute (RRI) • Bangladesh University of Engineering and Technology (BUET), Dhaka • Centre for Environmental and Geographic Information Services (CEGIS), Dhaka • Water Resources Planning Organisation (WARPO) • Surface Water Modeling Centre

GO-RISK - DROUGHT

PARAMETERS	
	1. Steep drop in annual precipitation **ALERT!** • When SPI value is -1.5 • When annual rainfall measurement is <75% of long term mean annual precipitation **2. Traditional indicators** **ALERT!** • Occurrence of locusts (Reliability rating: 5/5) • Significant reduction in discharge of perennial springs (Reliability rating: 5/5)
FREQUENCY	

	1. Rainfall measurement: • Once a day; reporting once a month **2. Traditional indicators:** • Once a week during potential drought hazard months as per seasonal calendar
TOOLS	
	1. Low cost tools: • Simple rain gauge, tipping bucket rain gauge **2. High cost tools:** • Digital software for calculating SPI value based on rainfall data • Wireless rain gauge with battery operated transmitter • Rainfall data logging system with battery operated logger • Satellite data and Normalised Difference Vegetation Index – NDVI, Evaporative Stress Index - ESI • Mesoscale hydrologic model (e.g. South Asia Drought Monitoring System – SADMS)
MONITORING SITES	
	1. Precipitation measurement: • 1 per settlement cluster
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian Meteorological Department • National Institute of Disaster Management • National Centre for Medium Range Weather Forecasting (NCMRWF) • National Remote Sensing Centre Bangladesh • Bangladesh Meteorological Department (BMD) • Bangladesh Space Research and Remote Sensing Organisation (SPARRSO)• Bangladesh University of Engineering and Technology (BUET), Dhaka • Bangladesh Agricultural Research Institute (BARI) • Centre for Environmental and Geographic Information Services (CEGIS), Dhaka • Soil Resources Development Institute (SRDI), Dhaka

GO-RISK - CYCLONE

PARAMETERS	
	1. Wind speed **ALERT!** • Depression - 28 knotts or 50 km/h (squally wind threshold) • Deep depression - 34 knotts or 62 km/h (gale wind threshold) • Cyclonic Storm - 50 knotts or 88 km/h (threshold for mariners) • Severe cyclonic storm 64 knotts or 117 km/h(hurricane force threshold) **2. Rainfall** **ALERT!** • When rainfall measurement crosses 30 mm/hour

	3. Atmospheric Pressure **ALERT!** • When the barometric air pressure falls by 10 mb over 3 hours (For Gale force wind) • When the barometric air pressure is <100 mb; falls by 4 mb or more over 3 hours; falls by 8 mb or more over 12 hours (For Severe Storms)
FREQUENCY	
	1. Wind speed measurement: • Once a day; reporting weekly during regular conditions • Once a day; reporting daily during high alert • Once a day; reporting every 3 hours after threshold breach **2. Rainfall measurement:** • Once a day; reporting weekly during regular conditions • Once a day; reporting daily during high alert **1. Atmospheric pressure measurement:** • Once a day; reporting weekly during regular conditions • Once every 3 hours; reporting daily during high alert
TOOLS	
	1. Low cost tools: • Aneroid barometer • Anemometer • Simple rain gauge, tipping bucket rain gauge **2. High cost tools:** • Automated weather stations • Doppler radar; Weather surveillance Radar • Rawinsonde • Satellite data (TRMM Microwave Imager; Wind Scatterometer) and modelling software • Buoys with Ocean Temperature Measurement instrument; Reconnaissance Aircraft
MONITORING SITES	
	1. Observation sites: • 1 per settlement cluster (coastal areas)
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian Meteorological Department - Regional Specialized Meteorological Centre (RSMC)- Tropical cyclone • National Centre for Medium Range Weather Forecasting (NCMRWF) • National Institute of Disaster Management - National Cyclone Risk Mitigation Project (for West Bengal) • Area Cyclone Warning Centre - Kolkata • Indian Space research Organisation (ISRO)

	Bangladesh • Bangladesh Meteorological Department (BMD) • Storm Warning Centre (SWC) - (National Weather Forecasting Centre) • Cyclone Preparedness Program (CPP) Implementation Board • Control Room, Disaster Management Bureau (DMB) • Directorate of Meteorology – Bangladesh Air Force (BAF)

GO-RISK – COASTAL EROSION

PARAMETERS	
	1. Profile monitoring **ALERT!** • When the first stake or marker located 10 m from eroding feature is gone. • When the second stake or marker located 3 m inward from the first stake is gone. **2. Beach elevation profile monitoring** • Plot cross sectional profile using measurements from Emery rods, walking seaward in a straight line at selected site • Monitor regularly to track changes in profile and rate of change over time
FREQUENCY	
	1. Surveillance (post-identification): • Immediately before and after each storm • Once a week during potential months • Otherwise, once a month
TOOLS	
	1. Low cost tools: • Stakes or fixed reference markers; measuring tape • Emery rods (straight pieces of wood 2 meters long with 10 cm markings, attached by a string 5 meters apart; data sheet (Sl No; Distance; Change in Elevation; up/down) **2. High cost tools:** • GPS or smartphone • Stakes with Camera • Dumpy level (Surveyors or Builder's Level) • Remote sensing and Satellite data (LIDAR); GIS • Drones • Terrestial Mobile Mapping System (Quad vehicle or ATV with GPS, videogrammetric equipment); Digital Elevation Modelling • Nearshore bathymetry measurement using GPS, boat-based lidar, and sonar
MONITORING SITES	
	1. Profile monitoring: • 3 sites per identified eroding feature (at risk) location; each site would have 3 markers in a straight line perpendicular to the coast, 3 m from each other **2. Emery rods measurement:** • 1 transect line per identified eroding feature (at risk) location
NETWORK INSTITUTION	
	India • District Disaster Management Authority

	• State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • National Center for Coastal Research (NCCR) - National Institute of Ocean Technology (NIOT), Chennai • Indian National Centre for Ocean Information Services (INCOIS) - Ministry of Earth Sciences (MoES) Bangladesh • Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) • Centre for Climate Change and Environmental Research (C3ER); BRAC University • Bangladesh University of Engineering and Technology (BUET) • Department of Oceanography, University of Chittagong

GO-RISK - HEATWAVE

PARAMETERS	
	1. High temperatures **ALERT!** <u>India</u> • When maximum temperature is 40°C or more (plains)[#] • When maximum temperature is 37°C or more (coastal areas)[#] *# Official alert is issued based on records from at least 2 stations for 2 consecutive days)* <u>Bangladesh</u> • Mild heat wave - when maximum temperature is 36-38°C • Moderate heat wave - when maximum temperature is 38-40°C • Severe heat wave - when maximum temperature is 40-42°C • Extreme heat wave when maximum temperature >42°C **2. Temperature departure from normal** **ALERT!** <u>India</u> • Heat wave - When maximum temperature is 4.5°C or more than average • Severe heat wave - When maximum temperature is 6.4°C above average
FREQUENCY	
	1. Temperature measurement: • Once a day during potential hazard months as per seasonal calendar; consecutive days if threshold is breached • Otherwise, once a week
TOOLS	
	1. Low cost tools: • Thermometer for air temperature measurement; Maximum and minimum thermometer; Stevenson screen **2. High cost tools:** • Automated Weather Station

MONITORING SITES	
	1. Temperature measurement: • 1 per settlement cluster
NETWORK INSTITUTION	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian Meteorological Department - Heat Wave Desk at the National Weather Forecasting Centre; Regional and Local Meteorological centres • National Institute of Disaster Management • Indian Institute of Public Health, Gandhinagar (IIPHG) Bangladesh • Bangladesh Meteorological Department (BMD) • National Oceanographic and Maritime Institute (NOAMI), Dhaka • Bangladesh University of Engineering and Technology (BUET)

GO-RISK - TSUNAMI

PARAMETERS	
	1. Earthquake monitoring - P-wave and S-wave Refer to section– Go-Risk Earthquake **2. Traditional indicators** **ALERT!** • An earthquake that lasts for a long time (Reliability rating: N/A) • The ocean water receding unusually far (Reliability rating: N/A)
FREQUENCY	
	1. Earthquake monitoring: • Continuous **2. Traditional indicators:** • Continuous
TOOLS	
	1. Low cost tools: • N/A **2. High cost tools:** • Refer to section– Go-Risk Earthquake • Deep-ocean tsunami detection buoys or Deep-ocean Assessment and Reporting of Tsunami – DART Buoy • Mareograph or Tide gauge network • Bottom Pressure Recorder (BPR) gauge network
MONITORING SITES	
	1. Seismic activity and tide gauge measurement: • Near coastal area, and towards deep sea

NETWORK INSTITUTION	
	<u>India</u> • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • Indian National Centre for Ocean Information Services (INCOIS) • Indian Meteorological Department (IMD) • National Remote Sensing Centre (NRSC) • National Institute of Ocean Technology (NIOT), Chennai <u>Bangladesh</u> • Bangladesh Meteorological Department (BMD) - National Tsunami Warning Center • Department of Disaster Management

DRRIS

Dynamic Risk-reduction & Response Information System

RNR-COMM TOOLKIT

RNR-COMM DATA FREQUENCY

• For **RAPID ONSET** Disasters:
SOS - Every 12 hours for first 3 days; Every 24 hours for 7 days
Tracking Emerging Needs - Every 3 days (in case of severe, ongoing events); Every week for 3 weeks

• For **SLOW ONSET** Disasters:
Every 15 days for 3 months

RNR-COMM COMPONENTS

• **Assessment Updates** for Natural Disasters:

SOS Report First Communication / Flash report	**Overview** Type of disaster; date and time – Safe reporting; or Damage & needs reporting; affected area; no of casualties; estimates of severity; emerging threats
SOS Report Damage Assessment / Initial Report	**Preliminary Needs Assessment** Number of people affected and their location(s) Disaggregated by sex, age, disability, etc. Deaths, permanent disabilities, major injuries, minor injuries and missing persons Immediate priorities for external relief Where material is required and approximate quantities related to following sectors: Water Supply Sanitation and Hygiene Food Security and Nutrition Shelter, settlement and non-food items Health Systems Access conditions
Tracking Emerging Needs Continual updates	**Assessment of Emerging needs** Likely movement of people Security of the affected population / special security risks for vulnerable groups Access to public places, resources

RNR-COMM – SOS

LEVEL OF EMERGENCY	
	Level 1 - Safe; No assistance required at the moment **Level 2** - Some relief assistance required; no urgent requirements **Level 3** - Relief assistance required **Level 4** - Immediate relief assistance required; critical medical emergencies **Level 5** - Immediate evacuation, search & rescue needed; Immediate relief assistance required
SCALE OF EMERGENCY	
	1. No of Deaths: • Male: • Female: • Children

	2. No of Persons Missing:
	• Male: • Female: • Children
	3. No of Persons Injured/Need Medical Attention:
	• Male: • Female: • Children
	4. No of Persons Particularly Vulnerable:
	• Pregnant/lactating women:
	• People with Disabilities:
	• Elderly:
	• Infants (0-1 years):
	• Children (0-5 years):

SPECIFIC REQUIREMENTS

	1. Safe water requirement:
	• Upto 100 people: • Upto 500 people: • 500+ people
	2. Sanitation facility requirement:
	• Upto 100 people: • Upto 500 people: • 500+ people
	3. Food requirement - Adults:
	• Upto 100 people: • Upto 500 people: • 500+ people
	4. Food requirement - Infants:
	• Upto 10 infants: • Upto 50 infants: • 50+ infants
	5. Emergency Healthcare requirement:
	• Upto 100 people: • Upto 500 people: • 500+ people
	6. Temporary Shelter requirement:
	• Upto 100 people: • Upto 500 people: • 500+ people

SITUATION UPDATE

	1. Fresh Incidents:
	• None / Yes, but not significant / Yes, caused further damage
	2. Access condition:
	• Cut-off / reachable only by air
	• Reachable on foot / pack animals
	• Reachable by road
	• Reachable by waterways

INFRASTRUCTURE DAMAGE

	1. Damage to School:
	• None/Partial/Full
	2. Damage to Health Center:
	• None/Partial/Full
	3. Damage to Houses:
	• Not affected: • Partially damaged: • Fully damaged:

AVAILABLE RESOURCES

	1. Food stock available:

	• No food / Available for 1 day / Available for 3 days / Available for 3+ days **2. Health personnel available:** • None / Traditional healer / Paramedic or CHW / Certified doctor **3. Cooking / boiling facility available:** • Not available / Available but inadequate / Available: **4. Medicines available:** • No medicine / Available for 1-3 days / Available for 3-7 days / Available for 7+ days

RNR-COMM – TRACKING EMERGING NEEDS

DISPLACED POPULATION	
	1. No of Persons Displaced: • Male: • Female: • Children

EMERGING CONCERNS	
	1. Cases of Gender Based Violence: • None / Isolated incidents reported / Frequent incidents reported **2. Cases of Violence Against Children:** • None / Isolated incidents reported / Frequent incidents reported **3. Cases of discrimination and reduced access to resources:** • None / Isolated incidents reported / Frequent incidents reported **4. Psycho-social trauma care:** • Not available / Available but inadequate / Available **5. Child Friendly Spaces:** • Not available / Available **6. Disease outbreak:** • None / Isolated incidents reported (specify disease ___) / High number of incidents reported (specify disease ___) **6.a Disease outbreak:** • If high number of incidents reported – specify number of cases: ___

SITUATION UPDATE	
	1. Fresh Incidents: • None / Yes, but not significant / Yes, caused further damage **2. Access condition:** • Cut-off / reachable only by air • Reachable on foot / pack animals • Reachable by road • Reachable by waterways

Hazard specific variations

The RNR reporting is similar for most hazards. However, there are customized reporting requirements for some specific hazards – as mentioned below.

RNR-COMM – LOCUST MENACE

SCALE OF EMERGENCY	
	1. No of farmers affected: Farmers: _____[number field] **2. Area of farmland affected:** In hectares: _____[number field] **3. List of crops damaged: [text field]** _____ _____ _____

SITUATION UPDATE	
	1. Fresh Incidents: • None / Yes, some hoppers or adult locusts visible/ Yes, swarms of locusts still present **2. Available support:** • Pesticide sprays deployed by government • Pesticide sprays deployed by farmers • Farmers using fire / drums / destroying eggs • No action taken so far

RNR-COMM – FOREST FIRE

SCALE OF EMERGENCY	
	1. Area of forestland affected: In hectares: _____[number field] **2. Area of rangeland affected:** In hectares: _____[number field] **3. No of days the fire has been raging:** In days: _____[number field] **4. List of villages threatened: [text field]** _____ _____ _____ **5. No of Deaths:** Male: _____[number field] Female: _____ Children: _____ **6. No of Persons Missing:** Male: _____[number field] Female: _____ Children: _____ **7. No of Persons Injured/Need Medical Attention:**

	Male: _____ [number field] Female: _____ Children: _____
SITUATION UPDATE	
	1. Fresh Incidents: • None / Yes, some smoke visible/ Yes, some flames visible - with limited spread / Yes, raging fire clearly visible – and spreading rapidly **2. Available support:** • Fire fighters deployed by government • Water sprays deployed by communities • Fire breaks / firelines set up • Communities / animals evacuated • No action taken so far

RNR-COMM – ALL STAGES

COMMUNICATION	
	1. Low cost tools: • SMS based reporting to CAC • Toll-free phone number with voice mail and call recording facility at CAC • Dedicated email ID at CAC • Excel conversion App for SMS based data • RE powered communication facilities and battery backup **2. High cost tools:** • HF Radio/Manpack transceiver-based reporting to CAC and network partner • Local police wireless systems / walkie talkies • Grid/balloon for extended wireless access • WLL/Satellite phone based reporting to CAC and network partner
NETWORK INSTITUTIONS	
	India • District Disaster Management Authority • State Disaster Management Authority (SDMA) / State Emergency Operation Centre (SEOC) • National Disaster Management Authority • National Disaster Response Force • State Disaster Response Force • Inter Agency Group (IAG) • National Commission for Women; State Commissions for Women Bangladesh • Department of Disaster Management • District Relief & Rehabilitation Officers (DRRO)/Upazilla Project Implementation Officers (PIO) • District Disaster Management Committee/Upazilla Disaster Management Committee/Union Disaster Management Committee • International Centre for Diarrhoeal Disease Research, Bangladesh • Ministry of Women and Children Affairs (MoWCA)