Background

- Nepal is considered one of the most disaster-prone countries and exposed to multiple hazards including earthquakes, floods and landslides.
- It is ranked 20th in terms of flood affected population. According to the Post Flood Recovery Report of 2017, the Nepal flood of 2017 affected 1.7 million people living in 35 districts. It destroyed 41,626 houses and partially destroyed 150,000 houses.
- The estimated value of the damage is NPR 60.71 billion, which is equivalent to three percent of the total GDP of Nepal.
- The government of Nepal has prioritized the improvement of flood resilience of communities and infrastructures.
People covered by EWS messaging

Indigenous CB-EWS techniques were in place.

Improvements in tower systems, sirens, signaling.

Increased lead time, staff gauge, shaft encoder, bubbler sensors, wireless phones.

- 3 river systems (29,000 Hhs)
- 7 river systems (68,000 Hhs)
- 12 river systems (400,000 Hhs)
- Two-third country population

Construction of watch towers

Link to upstream gauge station

Automation of gauge station

Flood forecasting & SMS messaging

Weather Forecast (Radar)

Increased lead time up to 5 hours, shaft encoder, bubbler system, computer modeling, initiation of Radar, tele/satellite communication.

- Radar technology, Forecast based warning, use of GLOFAS and localized forecasting models, telecommunication

EWS related Technology Development

2000s 2006 2010 2014 2018
Research site

- Located in far west of the country
- One of the perennial major river basins
- Very dynamic river with major channel changes
- District has been target of recent resettlement
- Area affected by devastating flood in 2014
- Basic river level EWS provides 4-6 hours advance warning
- Has been in operation for 10 years
Research methods

- Backward looking study, value of an existing operational EWS;
- Comparison between costs of EWS and benefits delivered to the community;
- Used Department of Hydrology and meteorological figures for costs of the EWS;
- Challenge to understand loss and damages due to flood events…?

So undertook participatory assessments to gather the missing data;
- Focus group discussions were used to refine the research questions;
- Tested the research methodology with community mobilisers in each community;
- Followed up with 453 household interviews in 20 communities distributed along the length of the river.
Findings

- 96% indicated that they were able to save property due to flood EWS in the last flood they faced.
- The reported value of saving during a flood event was estimated at $1,083 per household.
- Major items saved ranked in order of value were:
  - Vehicles and machinery
  - Tools and equipment
  - Stored agricultural products
- The estimated total WTP is $6,430 (or annual fee per household of $0.70), which is higher than the annual maintenance and operating costs of approx. $5,000.

- The study ignores the costs of EWS dissemination as currently funded by CSR from the two telecoms service providers, NTC and NCELL.
- The study also struggled with NELD and co benefits as the monitoring stations have other purposes; irrigation and potable water services.
Next steps

- DHM interested in the costs of the EWS itself
- Local Government interested in the savings in avoided losses and damages.
- Indirect benefits in capacity built among local populations.
- More work on the Non Economic Loss and Damages (NELD) savings
- Sustainability of insurance as a risk transfer mechanism
- Work with local government to integrate the findings into their annual budget planning.
- Linking existing system into other hazards to create MH-EWS;
  - Landslides similar hydro met triggers
  - Unseasonal storms

Devolution of roles and responsibilities under current federalization process?
Thank you for listening….

Any Questions?