

**Sectoral Breakout Groups**  
**Session VI, 10 March 2016**

**Draft template for project to**  
**Develop a climate service for use in the DRR sector**

**Product/Service:**

[Project title, descriptor]

Flash Flood Early Warning System for Bhutan

**Geographic scope:**

[Portion/countries of Third Pole Region that will benefit from this climate service]

National

**Description:**

[brief description of what need the product or service will fill ]

The HKH region lacks of a flash flood EWS, but given the complex topography and lack of observations the project will focus on Bhutan as a pilot given its observational capacities and its existing EWS on floods. Lessons learnt from Bhutan will be exported to other countries in the Region.

**Objective:**

[the change that the product or service will bring about/gap that will be filled by this product or service]

Enhance the floods EWS of Bhutan to cover flash floods

**Beneficiary:**

[to whom is the product/service targeted]

DRR sector and public

**Benefits:**

[the benefits to be derived from the product or service]

Reduced losses to human and cattle based on early warnings, water harvesting, reservoir operations and power generation

**Outputs:**

[the form the product(s) or service(s) will delivered in – publication, App, software, guidelines, data, etc.]

Seamless for seasonal outlooks, monthly, extended, medium and short range forecasts, Tone alerts, hand winding, FM community radios, megaphones in isolated communities, App, traditional warning trough traditional trumpets.

Database management system

**Activities:**

[the steps needed to prepare/produce the outputs]

1. Monitoring of global forcing parameters (ENSO, NAO, AO etc which influence the region)
2. Prediction system for Bhutan based on coupled climate model GCM
3. Dynamic and statistical downscaling
4. Generation of extended range and medium range forecast to update the seasonal outlook
5. River stream flow forecasting model
6. Regular updates to Disaster management agency

**Inputs:**

[the resources needed to conduct the activities]

- GPCs climate information, extended range from IITM Pune and medium range forecasts from ECMWF, IMD NCMRWF
- Daily reservoirs levels
- Glacial and snow data
- River flow runoff model
- Dynamic information land use land cover (satellite and other sources)
- Capacity building and training
- Resources needed to enhance the existing system (observation, communication, etc)
- Staff (hydrologist)
- Software and hardware

**Partners:**

[the entities that will be engaged, e.g. regional bodies, national bodies, local/community bodies, academia/research institutes, meteorological services, private sector/industry, regulators, financing agencies, civil society, media' etc.]

- Dept Disaster Management
- NMHS
- BIMSTEC
- RCC- IMD
- Local gov
- Red Cross
- UN Agencies
- Civil Society
- Education sector