CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Country:	Bhutan	**Date**	*3 May 2016*

Title	**Capacity development for preparing an integrated flood management plan for Dungsumchu Basin in Samdrupjongkhar**

Contact information:

Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).

	National Designated Entity	**Request Proponent**
Contact person:	Mr. Karma Tshering	Mr. Tenzin
Position:	Senor Programme Officer/NDE Focal Person	Director
Organization:	National Environment Commission Secretariat	Department of Engineering Services
Phone:	+975 2 323 384	975-2-321828
Fax:	+975-2-323385	975-2-321828
Email:	ktshering@nec.gov.bt	tenzin@mowhs.gov.bt
Postal address:	P.O. Box 466, Thimphu	P.O Box 791

Geographical focus:

{Select below the most relevant geographical level for this request:}

☐ *Community-based*
☒ *Sub-national*
☐ *National*
☐ *Multi-country*

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Dungsumchu Basin in Samdrupjongkhar Dzongkhag

Theme:

{Select below the most relevant theme(s) for this request:}

☐ *Adaptation to climate change*
☐ *Mitigation to climate change*
☒ *Combination of adaptation and mitigation to climate change*

Sectors:

{Please indicate here the main sectors related to the request. e.g. energy, industry, transport, waste,

agriculture/fisheries, forestry, water, ecosystem/biodiversity, coastal zones, health, education, infrastructure/human settlement, tourism, businesses, early warning/disaster reduction, institutional design and mandates, cross-sectorial}

Infrastructure/human settlement and disaster reduction

Problem statement *(up to one page):*

*{Please describe here the **difficulties and specific gaps** of the country in relation to climate change, for which the country is seeking support from the CTCN. Please only provide information directly relevant to this request, and that justifies the need for CTCN technical assistance.}*

Floods are recurrent phenomena in Bhutan from time immemorial causing extensive damages during the monsoon season (June – September). Floods of varying magnitude, affect some or most parts of the country, almost every year due to different climates and rainfall patterns. With the increase in population and developmental activities in the country, there has been a tendency to occupy the flood plains, often resulting in serious flood damages and loss of live over the years. Of late, some areas, which were not traditionally prone to floods, also experienced severe inundation. Floods cause severe bank erosion if the river banks are fragile and not protected against the heavy flood discharges.

On the other hand, owing to the climate change, the rainfall pattern has become erratic with prolonged drought period followed by unusually high precipitation. Flooding in southern and as well as in northern Bhutan is becoming a regular phenomenon. Considering the fragile geological conditions along the southern foothill, flash floods carrying sizeable amounts of boulders and debris causes substantial damages to the property, agricultural land and loss of lives in Bhutan from time to time. In 2004, flash floods that occurred in the 6 eastern Dzongkhags killed 9 people, washed away 29 houses, damaged 107 houses and destroyed 664 acres of wet and dry farm roads (***National Adaptation Programme of Action: update of Projects and Profiles 2012.*** The cyclone Aila of 2009 led to loss of 12 lives and damages to agriculture, roads, bridges, schools, hydro projects and other infrastructure. The flashflood of August, 2015 in Samdrupjongkhar caused damages to flood protection walls, roads, bridge and other infrastructure. Lots of investment has been made in the past for flood protection works along the banks of Dungsumchu. And as per the site investigation also, more protection works are required to reduce the population's vulnerability to flood. However, till now no proper detailed engineering study has been conducted in the past for training of Dungsumchu to reduce the flood impacts before implementation of the structures. The Urban ***Development Plan for Samdrupjongkhar Thromde 2013-2033*** also highlights the need to identify feasible technical solutions to address the flooding problems.

The ***Technology Needs Assessment and Technology Action Plans for Climate Change Adaptation, March 2013*** also emphasized on reducing the vulnerability of people, infrastructure and agricultural fields to natural disasters such as flash floods. Enhancing river training works was identified as a potential technology option in this regard.

There is an urgent need in Bhutan to devise solutions to address the frequent flooding problems. And this has to start at the top, through the development of an effective contemporary flood management plan, which will then pave the way ahead for subsequent action on the ground. CTCN technical assistance is requested for developing this plan, as a pilot project, for the **Dungsumchu Basin in**

Samdrupjongkhar, which can be scaled up to the others Basins indigenously.

Past and ongoing efforts *(up to half a page):*

*{Please describe here **past and on-going processes, projects and initiatives** implemented in the country to tackle the difficulties and gaps explained above. Explain why CTCN technical assistance is needed to complement these efforts, and how the assistance can link or build on this previous work.}*

The Government of Bhutan has recognized the need for an integrated approach to flood management in the country. Hence, after the mid-term review of the ***10th Five Year Plan***, the Government passed a resolution to establish a new institution to oversee all flood management works in the country. Accordingly, the Flood Engineering and Management Division (FEMD) under the Department of Engineering Services was formed in 2012. The Division has been mandated with a huge responsibility of protecting communities from flood as planned in the ***11th Five year Plan*** by the Government. Further, the Government has approved a budget of Nu.728 million in the 11th Five Year Plan for flood protections works throughout the country.

The newly established Division at present lacks technical capacity as well as resources for integrated flood management in Bhutan. The challenges faced by the Division at present are as follows:

1) Lack of technical capacity in conducting flood risk assessment studies before implementation of the flood protection works.
2) Lack of technical capacity in preparation of "Flood Hazard Map" for flood prone rivers along settlements resulting in inappropriate land use planning in flood prone areas.
3) Lack of expertise in hydrological and hydrodynamic modeling resulting in collection and assumption of design parameters from the field (maximum water level and velocity) for design of flood protection structures.
4) Relying only on conventional method (gabion walls, RCC walls etc.) and overdependence on structural measure only for flood management in the country.

To start addressing this capacity limitation, the Department of Engineering Services sent a team of FEMD engineers to the Asian Institute of Technology (AIT) in November 2015 to undergo a 1-week workshop on "Design of Stormwater Management Systems". It is during this workshop that the idea for a larger integrated flood management Plan was developed.

It is expected that CTCN assistance will further enhance capacities of engineers in FEMD and Samdrupjongkhar Thromde, in order to mitigate flood impacts and damages.

Assistance requested *(up to one page):*

*{Please describe here the **scope and nature of the technical assistance requested** from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}*

CTCN technical assistance is requested for building capacities of the stakeholders in order to develop a Flood Management Plan for Dungsumchu Basin in Samdrupjongkhar. Specific capacity building needs includes:

1) Developing flood management vision and objectives**.**

2) Performing baseline surveys and analyses (data collection, hydro-meteorological analysis, hydraulic analysis).
3) Carrying out flood hazard assessments and developing flood hazards maps.
4) Selecting options to reduce flood risks.
5) Engaging stakeholders and soliciting public participation.

Ideally the assistance package would involve two workshops, interspersed with a data collection/ assimilation phase. The first workshop, organized for around 10 participants, will train the participants in the technical knowledge of the aforementioned topics. It is desired that apart from theoretical knowledge, some field exercises and field visits are included in the workshop structure to ensure that participants are exposed to real-world situations. Following this workshop, participants will carry out the data collection and preparatory exercises to actually develop a flood management plan. CTCN support, in the form of mentoring is requested during this period. A final workshop will be then held to develop a draft flood management plan with real-world data and information.

Expected benefits *(up to half a page):*

*{Please outline here the **medium and long-term impacts that will result** from the CTCN technical assistance, including how the assistance will contribute to mitigate and/or adapt to climate change.}*

The **project-specific benefits** would include the following:

- Engineers and officials would have enhanced their knowledge and skills on integrated flood management;
- Reduction in vulnerability to flood hazard for people and infrastructure along the banks of Dungsumchu in Samdrupjongkhar;
- Engineers would have improved their knowledge on best practices for flood management to address impacts from climate change;
- The communities along the banks of Dungsumchu would have increased resilient against climate change impacts;
- Increased awareness among the communities on the flood hazards due to climate change impacts.

Post-technical assistance plans *(up to half a page):*

*{Please describe here **how the results of the CTCN technical assistance will be concretely used** by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}*

The project will ideally result in "Flood Management Plan" for Dungsumchu basin in Samdrupjongkhar consisting of flood hazard map which identifies the flood prone areas and also designed adaptation measures to reduce the flood impacts. Because flood management plans are a new concept in Bhutan, this will be a sort of a pilot project. The post assistance plans include:

1) Once the flood management plan is in place, funding for the actual implementation of interventions will be sought from national and international sources.
2) Developing guidelines for scaling up the pilot project, upon successful completion, to other Basins in Bhutan.
3) The adaptation measures recommended and designed will be constructed by the Dzongkhags to build a climate resilient society.
4) The flood hazard map will be used for appropriate land use planning and also to create awareness on the flood hazards among public, local authorities and other agencies.

Key stakeholders:

*{Please list in the table below the **main stakeholders** who will be involved in the implementation of the requested CTCN technical assistance, and what **their role** will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the **main/lead counterpart(s)** of CTCN experts at national level, in addition to the NDE.}*

Stakeholder	**Role to support the implementation of the assistance**
National Environment Commission Secretariat	Coordinating Agency
Ministry of Works and Human Settlement	Overseeing Agency
Department of Engineering Services (main counterpart)	Lead Implementing Agency and chief beneficiary
Samdrupjongkhar Thromde	Provide support in organizing consultative meeting with relevant stakeholders; workshop participants
Department of Disaster Management	Provide assistance in community engagement, potential workshop participants
Department of Human Settlement	The flood hazard map will be incorporated in land use planning as non-structural measure for flood management

Alignment with national priorities *(up to half a page):*

*{Please demonstrate here that the technical assistance requested is **consistent with documented national priorities** (examples of relevant national priorities include: national development plans, poverty reduction plans, technology needs assessments (TNAs), LEDS, NAMAs, TAPs, NAPs, sectorial strategies and plans, etc.). For each document mentioned, please **indicate where the priorities specifically relevant** to this request can be found (chapter, page number, etc.).}*

One of the key programmes under construction sector in the ***Eleventh Five Year Plan Document (2013-2018)***, is engineering adaptation and disaster risk reduction. As per the plan, the major activities to be undertaken during the plan period are construction of flood protection walls and land reclamation along major flooding rivers and disaster risk assessment. Therefore, this assistance will help in achieving the goals of reducing the vulnerability of the people and places to floods in Bhutan as outlined in the plan.

Another element, under the construction sector in the ***Eleventh Five Year Plan Document (2013-2018)*** is to give high priority for training and capacity building of engineers, architects and other professionals in the construction sector. Therefore, the assistance will also fulfill the objective by enhancing the technical capacity of the engineers.

"Technology Needs Assessment and Technology Action Plans for Climate Change Adaptation March 2013" also highlights the technology option of river training works against natural disasters. This assistance will, thus, result in transition of TNAs into on-the-ground action by enabling the Samdrupjongkhar Dzongkhag to plan for an effective flood management system.

Development of the request *(up to half a page):*

*{Please explain here **how the request was developed** at the national level and the **process used by the NDE to approve** the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles, and describe any consultations or other meetings that took place to*

develop and select this request, etc.)}

The idea for developing an integrated flood management plan for a Basin in Bhutan was developed during a training workshop on "Design of Stormwater Management Systems" that took place at the Asian Institute of Technology (AIT) in November last year. Six engineers from FEMD attended this workshop. The discussions during the workshop provided good food for thought on how best to go about it, both from a technical and institutional point of view. After returning to Bhutan, the team had internal discussions with colleagues from the Department and Ministry and subsequently, developed this request. CTCN was identified as a potential source for support and the CTCN NDE was approached, who provided thorough guidance and feedback on the process of application, and the content of the request.

Expected timeframe:

*{Please propose here a **duration period** for the assistance requested.}*

Maximum 1 year

Background documents:

*{Please list here **relevant documents** that will help the CTCN understand the context of the request and national priorities. For each document, provide weblinks if available, to attach to the submission form while submitting the request. Please note that all documents listed/provided should be mentioned in this request in the relevant question(s), and that their linkages with the request should be clearly indicated.}*

- Kingdom of Bhutan (March 2013): Technology Needs Assessment And Technology Action Plans For Climate Change Adaptation

- Kingdom of Bhutan (March 2013): Barrier Analysis And Enabling Framework Report "Adaptation" .

- Kingdom of Bhutan (March 2013): Technology Action Plans For Climate Change Adaptation

- Kingdom of Bhutan (March 2013): Project Idea Report Adaptation

- Bhutan (October 2013): 11th Five Year Plan, Volume 1 (http://www.gnhc.gov.bt/wp-content/uploads/2011/04/Eleventh-Five-Year-Plan.pdf)

- Bhutan (October 2013): 11th Five Year Plan, Volume 2 (http://www.gnhc.gov.bt/wp-content/uploads/2011/04/11th-Plan-Vol-2.pdf)

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☒ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor

the implementation of the CTCN assistance.

☒ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:	
NDE name:	Karma Tshering
Date:	10 June 2016
Signature:	

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG
Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.
>>> Contact the CTCN team at ctcn@unep.org