

Guidelines:

- This Request Submission Form should be completed by the organisation requesting technical assistance from the Climate Technology Centre & Network (CTCN) in collaboration with the National Designated Entity (NDE) of the country in question
- The Form must be signed by the NDE. Please see updated contact list of NDEs here: <http://unfccc.int/ttclear/support/national-designated-entity.html>
- The Form can be submitted as a Word file containing a digital signature or as a signed and scanned PDF file in combination with an un-signed Word file
- For requests submitted by multiple countries, all the NDEs of the respective countries shall sign identical Forms before official submission to the CTCN
- NDEs have the opportunity to submit CTCN requests in collaboration with National Designated Authorities (NDAs) for the Green Climate Fund (GCF) if targeting the GCF Readiness Programme.

Requesting country or countries:	Mongolia
Request title:	DEVELOPMENT OF CLIMATE CHANGE ADAPTATION STRATEGY FOR BUIR LAKE, MONGOLIA, USING NATURE-BASED SOLUTIONS
NDE	Ministry of Environment and Tourism Ms. Anand Tsog NDE in Mongolia Address: Government Building 2, United Nations street 5/2, Ulaanbaatar, Mongolia 15160 Email: anand@mne.gov.mn , anandtsog@protonmail.com
Request Applicant:	Ministry of Environment and Tourism Ms. Anand Tsog NDE in Mongolia Address: Government Building 2, United Nations street 5/2, Ulaanbaatar, Mongolia 15160 Email: anand@mne.gov.mn , anandtsog@protonmail.com

Climate objective:

- Adaptation to climate change
- Mitigation of climate change
- Combination of adaptation and mitigation of climate change

Geographical scope:

- Community level
 Sub-national
 National
 Multi-country

Buir Lake is a fresh transboundary water resource in Khalkh soum, Dornod Province of Mongolia and a part of the Amur-Heilong basin and the fifth largest lake in Mongolia. The lake's northern shore marks the boundary between Mongolia and China. It is fed by the surface waters of the Khalkha River and by groundwater of the Buir-Khalkha Aquifer. The surface area of the lake is 615 km², and maximum depth is 10.4 m. The lake basin area is 25,000 km² and mean volume of the lake is 3.8 km³. Buir Lake is very rich in plankton, benthic invertebrates, and other aquatic biota and is one of the most biologically rich lakes in Mongolia.

Problem statement related to climate change (up to one page):

Mongolia is in the arid and semi-arid region; therefore, the amount of precipitation generally is low. The larger part of precipitation falls in the warm season and only below 3% of winter precipitation falls as snow. The spatial distribution of precipitation in Mongolia is very specific due to a vast area, land composition, roughness and geographical peculiarity. Typically, precipitation decreases from north to south and from east to west; however, surface roughness has much impact on the spatial distribution of precipitation.

The surface water resource of Mongolia composed mainly from lake water (Tserensodnom J. et al., 1996) which is about 500 cubic km and another 19.4 cubic km accumulates in glaciers (Davaa G. et al., 2012).

Climate change studies show that a near-surface temperature and its annual mean over Mongolia have increased by 2.24° C between 1940-2016 periods, and during the period there has been 7% decrease in annual precipitation whereas a disproportionately large decrease occurred for summer rain. From 1940 to 2016, winter snow increased by 22% over the recorded period, while winter snow increased about 40% since 1961, indicating an intensification of the trend. A slight increase of precipitation is expected for the future, but the expected evaporation increase is expected to be several times higher than the expected precipitation increase.

Climate change impacts on water resources have been visible; surface water resources have been declining over the years as numbers of lakes been dried out. Total glaciers retreated by 29.9 in last 70 years. Glacier retreat and shrinkage intensified after 1990th and the most intensive ablation occurred in last 10 years (Davaa G, 2015). As glaciers are melting, the surcharge water is being evaporated or runoff without any added value to the surrounding communities, wildlife, and ecosystems.

At the national level, Mongolia has adequate exploitable water resources to meet water demand up to 2030 as per current research. However, there are challenges at certain local levels:

- Potential water shortages in dry months due to limited exploitable surface water resources caused by major seasonal disparities in rainfall patterns, as well as environmental flow requirements of 90-95% of the average surface water flow.
- Low quality and usability of certain surface water resources caused by the discharge of

untreated municipal and industrial effluent to water bodies.

- Low quality of ground water in shallow wells and temporary ponds due to washed pollutants and minerals from surface.
- Limited potential for development of surface water resources, such as hydropower and irrigation dams and for water transfers.

Hydrologically, many wetlands and China's fifth largest lake, the iconic Hulun (also known as the Dalai) Lake depend on the Buir Aquifer. The hydrological connectivity involves a series of subsystems with dependent ecosystems. The Buir Lake, the Hulun Lake, wetlands, and a considerable part of the grasslands of Mongolia's Dornod province largely depend on the Buir-Khalkha aquifer.

Older studies suggest that the groundwater table declined by 0.5–1.3 m from the 1980s to the 1990s (Zhao et al., 1999). Several newer studies indicate that this decline has continued and accelerated since 2011 (Shengli Tao, et al. 2015; Zhaofei Liu, et al. 2019). In case of a further decline of the groundwater the grasslands are likely to further deteriorate and the water level in the Buir lake will further decline. Subsequently, dropping water levels in the Buir Lake also affect the outflow of the lake and, therefore, the flow of the Orshun River will impact the various wetlands connecting the Buir and the Hulun Lakes, which are largely Ramsar listed.

These impacts will severely influence the local communities and their livelihoods, which are directly dependent on natural resources and related ecosystem services and functions.

Past and on-going efforts to address the problem (up to half a page):

From 2012-2018, Mongolia has successfully implemented the project funded by Adaptation Fund, *"Ecosystem Based Adaptation Approach to Maintaining Water Security in Critical Water Catchments"*. Through this project, climate-smart and ecosystem-based adaptation techniques with both simple and high impact technologies such as advanced irrigation systems and rehabilitation of natural springs were piloted in the Altai Mountain/Great Lakes Basin and the Eastern Steppe regions of Mongolia. Scaling up such measure are highly requested by local administrations and communities. With climate change impacts becoming evident and effecting rural livelihoods of communities, there is an increasing need for adaptation measures at the local level.

Additionally, high mountain water accumulation, glacier melt water and precipitation conservation and sustainable water resources management measures planned in the western part of Mongolia are included in the currently formulating Mongolia/ADB's programme to the GCF.

Specific technology¹ barriers (up to one page):

Changes due to climate change, including in temperature, rain and snowfall patterns, permafrost melting and glacial coverage in elevated areas affect the availability of fresh water. With such a complexity of factors impacting the ecological balance needed for sustainable agricultural livelihoods, an integrated ecosystems approach, fully informed by science-based studies, is needed for effective management of natural resources, particularly of water and pasture both for livestock and wildlife.

¹ *"any equipment, techniques, practical knowledge and skills needed for reducing greenhouse gas emissions and adapting to climate change"* (Special Report on Technology Transfer, IPCC, 2000)

Specially, the environmental water aspects are less addressed.

As mentioned, previously done a couple pilot or project scale activities in addressing ecosystem-based water management but, the approach needs to be further studied and evaluated in alignment with national planning.

Overall, due to the complexity of this issue, lack of technical capacities at the national and local levels as well as the relative new concept of climate impact assessments, baseline settings, ecosystem-based approaches, sustainable water resources management has not yet been advanced in its implementation.

Sectors:

Please indicate the main sectors related to the request:

- | | | | |
|---|---|---------------------------------------|--|
| <input type="checkbox"/> Coastal zones | <input type="checkbox"/> Early Warning and Environmental Assessment | <input type="checkbox"/> Human Health | <input type="checkbox"/> Infrastructure and Urban planning |
| <input type="checkbox"/> Marine and Fisheries | <input checked="" type="checkbox"/> Water | <input type="checkbox"/> Agriculture | <input type="checkbox"/> Carbon fixation |
| <input type="checkbox"/> Energy Efficiency | <input type="checkbox"/> Forestry | <input type="checkbox"/> Industry | <input type="checkbox"/> Renewable energy |
| <input type="checkbox"/> Transport | <input type="checkbox"/> Waste management | | |

Please add other relevant sectors:

Cross-sectoral enablers and approaches:

Please indicate the main cross-sectoral enablers and approaches

- | | | | |
|--|--|---|--|
| <input type="checkbox"/> Communication and awareness | <input type="checkbox"/> Economics and financial decision-making | <input checked="" type="checkbox"/> Governance and planning | <input type="checkbox"/> Community based |
| <input type="checkbox"/> Disaster risk reduction | <input checked="" type="checkbox"/> Ecosystems and biodiversity | <input type="checkbox"/> Gender | |

Technical assistance requested (up to one page):

This request aims to conduct an assessment to enhance climate resilience and adaptation, water security for local populations, and sustainability of the ecosystem services of the highly vulnerable ecosystem and its dependent population in semi-arid area of Buir Lake in Mongolia. Therefore the proposed activities focus on benefits for both ecological and human water use needs through the development and testing of tools that support adapting and enhancing the water basin ecosystem for the benefit of local livelihood and security of wildlife. This would be achieved through baseline status

evaluation of Buir Lake water resources and ecosystems, considering the options for the ecosystem-based management of Buir Lake reservoirs, dams, canals and irrigation systems, by using nature-based solutions (NBS) as the preferred response option in a specific pilot area. The experiences from the piloting work would feed into a Green Climate Fund project Concept Note for possible upscaling of resilience efforts in a broader area.

These NBS should focus on enabling collection and accumulation of the glacier melt water, spring snow melt water and heavy summer rain and flood water from the mountains and hill sides. Some options for increasing water storage and thereby climate resilience, could include collection of water in river bed associated ponds, and distribution of water through restored or slightly modified water channels. The aim of such measures will be to build climate resilience of the local communities, as well as reverse the current trend of rapid degradation of pastures and grasslands for livestock and wildlife.

To be able to successfully implement these proposed NBS interventions, it is necessary to determine where they are most needed and most efficient. Therefore, the proposed pilot activities will focus on establishing the information base and local capacity for decision making on location and design of the NBS in view of addressing the climate challenges in Buir Lake.

These aims will be achieved through pilot activities for improved data and information and assessment tools that can support more sustainable management of water basins of the country.

Project outputs will include updated, accessible and available consolidated eco-hydrological data, integrated hydrological assessment model, climate impact and vulnerability analysis for Buir Lake and adaptation strategy roadmap and methodological guideline for adaptation plan for similar water sources and ecosystems. These will be achieved through following activities:

1. Improving data and information availability for decision-making relating to Buir Lake baseline. Data and information is the basis for any climate related study or intervention, and the quality and availability of the data is a prerequisite to design of suitable and efficient interventions to manage ecosystem in whole. It is proposed to focus on developing a data and information solution that:
 - Identifies bio-tops and isobaths of the lake ecosystem and develop a topographic mapping, which will inform the bathymetric curve;
 - Offers near real time data which is essential for evaluation of the current status related to climate impact;
 - Provides reliable forecasts for the coming weeks and season; and
 - Can be validated and adjusted based on available ground observations.
2. Conduct climate change impact and vulnerability analysis. Under this component the project proposes to conduct climate change projections downscaled for the Buir Lake area and modelling of climate impacts and pressures on Buir Lake derived from applying climate change scenarios on the established hydrological model of the lake baseline. These will support decision-making regarding necessary interventions and evaluation of the available management options.
3. Develop a climate change adaptation roadmap for Buir Lake enabling strategic approach to climate change adaptation in basin and a methodological guideline document for adaptation plan development for similar ponds or lake ecosystems in Mongolia.
4. Training and capacity building. Local stakeholders should have the capacity and knowledge to apply and actively utilize the tools, knowledge and guideline by participating in developing

these researches and tools. It is therefore proposed that the project activities have active involvement of Mongolian stakeholders in providing inputs on aspects that are relevant for the local context in Mongolia. Further, the proposed project will include training of Mongolian stakeholders, including policy-developers, technical staff, and relevant agencies in country.

The proposed activities support an approach that is harmonized with local ecosystems and will support in strengthening local climate resilience and adaptation capacity.

This technical assistance will provide an informed basis for development of a draft GCF Concept Note for upscaling activities in a broader area.

Expected timeframe:

Please indicate the expected duration period for the requested technical assistance. Please note CTCN technical assistance is limited to a maximum duration of 12 months.

Anticipated gender and other co-benefits from the technical assistance:

Please describe the activities with gender linkages as well as the anticipated gender and other co-benefits (e.g. biodiversity, economic, social, cultural, etc.) that are likely to be generated as a result of the technical assistance.

For more information you can find guidelines on the CTCN's website here:

<https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development>

Further reading on gender can be found on the CTCN website here:

<https://www.ctc-n.org/technology-sectors/gender>

Key stakeholders:

Please list the stakeholders who will be involved in the implementation of the requested CTCN technical assistance and describe their role during the implementation (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.).

Stakeholders	Role to support the implementation of the technical assistance
National Designated Entity	Ministry of Environment and Tourism
Request Applicant	Ministry of Environment and Tourism
Please add as many stakeholders and lines as required.	National Agency for Meteorology and Environmental Monitoring Water Agency National Committee on Water Environment and Climate Fund Climate Research and Cooperation Center Provincial (Aimag) Environment Department Local Communities Experts

Alignment with national priorities (up to 2000 characters including spaces):

Considering the changes happened and projected for water resources in Mongolia, the national policies such as National Policy on Water (2010), Green Development Policy (2014), National Action Programme on Climate Change (2011), Mongolia's Sustainable Development Vision 2030 (2016), and Mongolia's Nationally Determined Contribution (2019) all reflected the adaptation needs for water resources including the conservation and efficient use of water resources, sustainable management and adaptation strategy etc. Therefore, the project objectives are fully aligned with national adaptation priorities and with the Integrated Water Basin Management Plan for the target area, which was elaborated in line with the Mongolian Law on Water.

Reference document (please include date of document)	Extract (please include chapter, page number, etc.).
Nationally Determined Contribution (NDC)	Direct alignment and contribution to NDC implementation is required for all CTCN technical assistances. Please include a direct reference to the INDC/NDC document (chapter, page number, etc.).
Technology Needs Assessment	
National Adaptation Plans	
Nationally Appropriate Mitigation Actions	
Add others here as relevant	

Development of the request (up to 2000 characters including spaces):

Sustainable water basin management and development of adaptation strategy in water resources is a priority activity identified under the newly approved NDC and the GCF Country Programme. During the development of both these documents multi governmental, non-governmental, civil society, and other relevant stakeholders were engaged, who identified their priorities at sectoral level and the dedicated Working group (consisting 30-40 experts) further analyzed and sorted for the final selection.

The development of this specific technical request had involve relevant core and line ministries' also agencies experts teaming with the GCF in-country Secretariat and the Focal point for the NDA.

Background documents and other information relevant for the request:

- Please list all relevant documents that will help the CTCN analyse the context of the request and national priorities. Please note that all documents listed/provided should be mentioned in this request in the relevant section(s), and that their linkages with the request should be clearly indicated. For each document, please provide web-links (if available) or attach to the submission form. Please add any other relevant information as required.
- Please indicate if this request has been developed with the support of the CTCN Request Incubator.

OPTIONAL: Linkages to Green Climate Fund Readiness and Preparatory Support

The CTCN is collaborating with the GCF in order to facilitate access to environmentally sound

technologies that address climate change and its effects, including through the provision of readiness and preparatory support delivered directly to countries through their GCF NDA. These actions are in line with the guidance of the GCF Board (Decision B.14/02) and the UNFCCC, particularly paragraphs 4 and 7 of 14/CP.22 that addresses Linkages between the Technology and the Financial Mechanisms².

The CTCN is therefore implementing some of its technical assistance using GCF readiness funds accessed via the country's NDA. Any application for GCF support, including the amount of support provided, is subject to the terms and conditions of the GCF and should be developed in conjunction with the NDA.

Please indicate whether this request has been identified as preliminarily eligible by the NDA to be considered for readiness support from the GCF.

Initial engagement: The GCF NDA of the requesting country has been engaged in the design of this request and the NDA will be involved in the further process leading to an official agreement for accessing GCF readiness support.

Advanced engagement (preferred): The GCF NDA of the requesting country has been directly involved in the design of this request and is a co-signer of this request, the signature indicating provisional agreement to use readiness national funds to support the implementation of the technical assistance.

NDA name: BATJARGAL Zamba

Date: 15th June 2020

Signature:



Monitoring and impact of the assistance:

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the technical assistance provided by the CTCN. I understand that these processes will be explicitly identified in the CTCN Response Plan and that they will be used in the country to monitor the implementation of the technical assistance following standard CTCN procedures.

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: ANAND Tsog

Date: 15th June 2020

² Please see:

https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i8b_tm_fm.pdf

Signature:



THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

The CTCN is available to answer all questions and provide guidance on the application process.