**Terms of reference**

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| **Position:** | Local consultant/hydrologist on predictive modeling of filling and breaking of moraine lakes (hereinafter referred to as the Performer) |
| **Project Name:** | "Further strengthening Kazakhstan's programming capacity, institutional support for expanding direct access to the Green Climate Fund and development of green finance system." |
| **Contract type:** | Individual Contract |
| **Place of service provision:** | Home-based, with possible business trips to Almaty |

**Introduction:**

The International Center for Green Technologies and Investment Projects (hereinafter referred to as the Center), in 2022, was designated by the Ministry of Ecology, Geology, and Natural Resources of the Republic of Kazakhstan as the National Implementing Organization of the Readiness project "Further strengthening of Kazakhstan's programming capacity, institutional support for expanding direct access to the Green Climate Fund (hereinafter – GCF) and development of the green Finance system". The Readiness project is implemented jointly with the United Nations Office for Project Services (UNOPS).

The Readiness project is aimed at further strengthening the country's potential and creating favorable conditions for more active participation in the GCF and attracting climate investment. The first Readiness grant created an initial enabling environment for the institutionalization of the National Designated Authority (hereinafter referred to as theNDA) and interaction with the GCF. The project will strengthen the NDA's ability to effectively and efficiently perform its functions, facilitate the successful completion of the GCF accreditation process by direct access applicants, and thus open up access to GCF funds to address climate change challenges in Kazakhstan, and allow for the development of an updated country program with a clear framework for priority climate change investments and portfolio. strengthen the practice of sustainable finance in the financial sector of Kazakhstan by creating an enabling institutional environment and building the capacity of local experts.

The Readiness project provides for five tasks:

Task 1: Update the Country Programme in accordance with GCF procedures and establish a coordination mechanism

Task 2. Institutional and potential support for direct access applicants in the GCF accreditation process

Task 3: Building the capacity of the private sector to facilitate the planning and implementation of GCF-funded activities

Task 4: Support Hydrometeorological diagnostics and identify future investment needs

Task 5. Preparation of a concept for integrating green finance issues into existing operations of the banking sector and financial institutions.

**Goal:**

The goal is to improve the system of forecasting natural disasters, which will provide information about the possibility and strength of impending threats, by predictive modeling of filling and breaking of moraine lakes.

These models will be used to predict the amount of water entering the lake from various sources, such as rain, snowmelt, or glaciers, taking into account the geography of the region, climatic conditions and other factors to predict the probability of a moraine breakout creating the lake.

Modeling will be carried out in a pilot version at the key site-Big Almaty Lake (hereinafter - BAO).

**Scope of services:**

1. Collection of initial data and in-house processing of data from field hydrological works and surveys of the BAO;

2. A set of data and information on industry tasks - in the hydrometeorological direction based on Earth remote sensing data (hereinafter – remote sensing);

3. Collection, systematization and compilation of initial hydrometeorological data of the BAO;

4. Collection, systematization and summary-analysis of stock data and desk processing of data from field hydrometric works and surveys;

5. Calculation of the BAO water balance, hydrological calculations, mathematical modeling, statistical processing of natural science data;

6. Hydrological calculations, analysis and processing of hydrometeorological data;

7. Calculation of the volume of Lake BAO and monitoring of the dynamics of its filling;

8. Preparation of the mathematical basis for forecasting and modeling the filling of the moraine lake BAO.

**RESULTS AND DEADLINES**

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| **№**  **n** | **Expected Results** | **Deadline** |
|  | A report on services performed under item 1 of the scope of services has been prepared, containing supporting materials (data collection, systematization and a set of initial hydrological data of the BAO.) | 4 weeks from the date of signing the contract |
|  | A report on services performed under item 2 of the scope of services containing supporting materials was prepared (on the value of representativeness of remote sensing hydrometeorological data) | 7 weeks from the date of signing the contract |
|  | , a report on services performed under item 3 of the scope of services containing supporting materials was prepared (data collection, systematization and summary of initial meteorological data BAO) | 12 weeks from the date of signing the contract |
|  | , a report on services performed under item 4 of the scope of services was prepared, containing supporting materials (data collection, systematization and summary analysis of stock data and desk processing of field hydrometric work and surveys). | 15 weeks from the date of signing the contract |
|  | , a report on services performed under item 5 of the scope of services was prepared, containing supporting materials (calculation of the BAO water management balance, hydrological calculations, mathematical modeling, statistical processing of natural science data.) | 18 weeks from the date of signing the contract |
|  | A report on services performed under item 6,7,8 of the scope of services was prepared, containing supporting materials (hydrometeorological calculations, analysis and processing of hydrometeorological data. Calculating the volume of Lake BAO and monitoring the dynamics of its filling. Mathematical basis for forecasting and modeling the filling of the BAO moraine lake) | 21 weeks from the date of signing the contract |

**Business trip**

30 days for field trips to conduct hydrometric work in the BAO, as a hydrologist-a member of the field team.

**Note:**

* The contractor is responsible for thequality of the prepared materials within the scope of its duties;
* The contractor works under the supervision of the team leader and the overall guidance руководителяof the project manager.
* The contractor prepares reports in Russian.
* The report must be submitted electronically in MS Word format for Windows files.

**Basic conditions**

* When performing the entire scope of services, the Contractor must ensure the complete safety of materials and finished products, excluding the creation of counterfeit products.
* It is necessary to ensure compliance with the legislation and regulations of the Republic of Kazakhstan on copyright (and related rights).
* All rights to manufactured products, including original documents and copies thereof, may be transferred to any third party by the Customer's decision, and such transfer may be made directly to a third party and immediately after completion and acceptance. All work performed in accordance with this Technical Specification (hereinafter referred to as the TOR).

**Payment schedule**

The contractor must include all expenses, including fees for professional services, travel, accommodation and other expenses, in its financial proposal for performing the tasks of the TOR. Transportation costs are indicated only if the trip is provided for by the ToR.

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| **Payment stage** | **% of the contract amount** | **Results** |
| 1 | 20 | Result 1 |
| 2 | 15 | Result 2 |
| 3 | 10 | Result 3 |
| 4 | 15 | Result 4 |
| 5 | 20 | Result 5 |
| 6 | 20 | Result 6 |

**Required skills and abilities:**

**Education:**

* higher education in natural sciences in one of the following specialties: geography, hydrology, water resources and wateruse;
* a master's degree in geography or hydrology is preferred.

**Technical and functional experience**:

* at least 3 years of experience in hydrology and geography;
* work experience in research projects in the field of hydrology, water resources, geography for at least 3 years;
* practical skills and ability to perform hydrological and water management calculations, at least one year of experience in modeling and forecasting runoff.

**Language proficiency**: Free oral and written knowledge of Russian is required.