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TERMS OF REFERENCE

Job title:	National Consultant in Hydrology to support strengthening and expansion of service delivery based on the WMO Strategy for Service Delivery
Type of Contract:	Individual Contract (IC)
Duty station:	Home based (Republic of Moldova)
Section/Unit:	Environment, Energy and Climate Change Cluster
Languages requirement:	English, Romanian, Russian
Contract Duration:	November 2020 – May 2021, 30 working days
Payment arrangements:	Lump sum contract (payments linked to satisfactory performance and delivery of outputs)
Evaluation method:	Interview of shortlisted candidates

I. BACKGROUND

Climate change is already profoundly impacting the conditions for resource availability and agricultural activities. Over the last decade, the country has experienced a number of extreme events, such as droughts and major floods, along with the incremental effects caused by increased mean temperature, and the uneven distribution of precipitation through the year, which have had negative consequences on the country's economy, and its population wellbeing and health. Severe droughts are recurring more frequently causing significant economic losses. The increasing scope and intensity of extreme events has also resulted in increased frequencies of high-risk situations.

The Government sees the National Adaptation Planning (NAP) process as key to achieving the adaptation objectives outlined in its 2014 Climate Change Adaptation Strategy of the Republic of Moldova, and its 2020 Nationally Determined Contributions (NDC), as well as the continued mainstreaming of climate change considerations into its policies and budgeting processes. The proposed project supports the Government of the Republic of Moldova in advancing the second cycle of its National Adaptation Planning process (known as NAP-2). The outcomes of the NAP- 2 national adaptation planning processes, are:

- **Outcome 1:** To strengthen and operationalize the national steering mechanism for climate change adaptation (CCA);
- **Outcome 2:** To improve the long-term capacity on planning and implementation of adaptation actions through CCA technologies;
- **Outcome 3:** To improve the mainstreaming of climate change adaptation through the increased alignment of national development priorities, in the priority sectors (forestry, health, energy and transport).

The NAP-2 goals will be achieved within two parallel implementation tracks. The first track implemented by UNDP expands and deepens the national approach developed under the NAP-1 and strengthens synergies both

vertically, at different levels of the governance, and horizontally, between the sectors affected by climate change to reduce duplication of efforts, pool scarce resources for effective use, and ensure a coherent and comprehensive approach to the integration of CCA responses into development planning, while the second track will focus on adaptation in the agriculture sector and will be concurrently implemented under the auspices of FAO.

Hydrological observation network in the Republic of Moldova

As Moldova braces for the impacts of climate change, timely and accurate hydrology/weather information will be critical toward its efforts to prepare for and respond to the country's intensifying disaster risk as well as to support decision makers to mainstream adaptation measures into national and sectorial policies. This assignment will support the State Hydrometeorological Service (SHS), that is a part of the Ministry of Agriculture, Regional Development and the Environment. SHS is the main player in providing timely and accurate forecasts and warnings, however, modernization and optimization of hydrological observation networks shall be improved, and climate services extended.

The hydrological observations network aims to make measurements and observations on the state and evolution of surface waters on the territory of the Republic of Moldova. The hydrological observations network is organized in two hydrological stations Balti and Dubasari, having in its structure 54 hydrological stations, including 35 - in the Dniester Hydrographic District and 19 - in the Danube-Prut, Black Sea Hydrographic District.

According to the way of organization, operation, and equipment, 2 categories of posts are distinguished:

- **classic measurements** and hydrometeorological observations that are executed by observers twice a day (08:00 and 20:00) without interruption.
- **automated** - hydrometeorological measurements are performed in an automated mode based on sensors without the involvement of the observer. The data collected are transmitted online via one of the hydrological specialized software (Dniester - "Hydras" and the Prut - "FMweb Moldova HydroData").

The hydrometeorological information collected is used for hydrological forecasts and warnings, for the synthesis of multiannual data on surface water resources and regime, for operational decisions in the field of prevention of dangerous hydrological phenomena, for water management, as well as for drawing up the river basin management plan.

Dubasari Hydrological Station was founded in November 1956 and is located on the left side of the Dubasari Reservoir, in the Transnistrian region. Out of a total of 35 subordinated hydrological posts, 10 are under the jurisdiction of Tiraspol, including 8 posts which are located on the district of the Danube-Prut and the Black Sea Hydrographic District. The other 17 posts are located in the Dniester River Hydrographic District. Out of the total number of HP, 17 are classic, 14 are automated and 4 are mixed, having an automated system of hydrological observations, but also having observation specialists.

The headquarters of the Dubasari hydrological station is in Dubasari, the town from the Transnistrian region and are not applying WMO directives and guidelines. These issues should be also approached in the current assignment providing solutions options for ensuring constituency of the hydrological observations.

In the entire country, the equipment is outdated, and technical-material supply and the logistic equipment of the station are of poor quality or missing. The assigned observers at classic stations still use outdated equipment, which is marked by physical wear. There are no special means of transport to organize the measurements, as well as special equipment to ensure the quality and accuracy of the data presented.

Balti hydrological station was founded in 1946 and is joined with the meteorological station. According to the internal assessment, its location, operational conditions, and equipment of the station not fully aligned with international standards (e.g. WMO Directive on Applicable Hydrology). Of the total number of hydrological

posts related to Balti Station, 17 are classic and 12 - mixed, with an automated system of hydrological observations, but also with observers.

In frames of several projects implemented previously equipment was provided for automatic hydrological measurement. The project "Flood Prevention on the Prut River", (2010-2012) by the Czech Development Agency provided 11 automated hydrological posts; later the World Bank supported project "The Disaster and Climate Risk Management in the Republic of Moldova" (2010-2013) and 6 more automated hydrological stations were installed on the Dniester River, including the data storage server and the software "Hydras". "Transition to High-Value Agriculture" Project, funded by the USA, resulted in the provision of the hydrological network with 8 automated posts on the Dniester River.

Currently, out of the total of 30 automated posts, installed in the period 2010-2015, only 10 are fully functional, another 20 are partially functional, having certain malfunctions or completely non-functional, of which 3 are stolen or vandalized.

As a result, hydrological monitoring is still based on the operation of the classic hydrological posts, where measurements are made manually by technicians. The work procedures are lengthy, as all data is processed manually once it is entered into paper and electronic registries, the last ones using basic office software programs. Consequently, in case of emergency such working approach cannot serve as an operational source of data for the prevention of dangerous hydrological phenomena.

In the current operational mode Moldova cannot provide real time data of hydrological monitoring for the Dniester district basin that created difficulties in the negotiation process for water usage in the Dniester Commission. Limited financial resources available results in low maintenance level and currently automatic observation system cannot provide the data to be used for timely identification and monitoring of flood risks.

Another problem is the use of two different software products for data management of hydrological data in the Dniester river basin and the Prut river basin, which also creates major difficulties in the efficient management of the hydrological monitoring system. As a result, computer systems are not interoperable and have high maintenance costs.

All portable devices (current meter rotors) that are used for measuring water speed in rivers are mechanical and outdated, being produced in 1950s-1960s. According to the international standards such devices must be calibrated every three years, while their most recent calibration was done in 2015.

II. OBJECTIVES AND SCOPE OF THE ASSIGNMENT

The main objective of this assignment is to support the international expert to review existing hydrological observation network in the Republic of Moldova, assess its main functions and operational modality, the gaps and barriers and provide recommendations for improved climate-related services.

III. DUTIES AND RESPONSIBILITIES

Summary of key functions:

National Hydrology Consultant will be guided by the International Hydrology Consultant to make comprehensive assessment of the hydrological network and provide recommendations for its improvement. More specifically to:

- Support the International Hydrology Consultant (IHC) in undertaking a review and assessment of the existing hydrological observation network according to the existing international requirements and relevant WMO guidelines;

- Together with IHC review the river networks, physical conditions and the area covered by the hydrological observation posts. Spatial locations of existing equipment should be addressed at the highest level of details;
- Together with IHC assess the rationale of the current budget allocation for the hydrological monitoring based on the data and calculations provided by the State Hydrometeorological Service;
- Collect information on data transmission, processing and storage on local, national and international levels as well as modality and quality of hydrological forecasts and warnings;
- Provide suggestions on optimization of hydrological monitoring network for improved climate risk management, forecasting, and early warning;
- Under the guidance of IHC visits existing hydrological observation points and collect required information;
- Assess together with the ICH the institutional arrangements for operation and maintenance of the hydrological observation network, and identify limitations such as management, capacity, planning, budget allocations, etc.
- Support organization of two online workshops that should involve a wider range of stakeholders in the assessment of hydrological observation network and validate their visions and recommendations.

No.	Deliverables	Tentative timeframe/deadline
1	Detailed workplan for the implementation of assignment as well as outline of the Final Report	November 2020 2 w.d.
2	Hydrological observation network assessed, and institutional operational capacities evaluated, and one online workshop organized	Aprilie 2021 20 w.d
3	Draft version of the Report on improvement of the hydrological observation network to deliver user-oriented climate services send for consultation with key stakeholders and one online workshop organized	May 2021 4 w.d.
4	Final Report on improvement of the hydrological observation network to deliver user-oriented climate services approved by the SHS and UNDP	August 2021 4 w.d.

This is a part-time consultancy. The timeframe for the work of consultant is planned for November 2020 – August 2021.

Management arrangements:

The consultant will work in close cooperation with the international expert on hydrology and team of consultants on meteorology, under the guidance of the National Team Leader and NAP 2 Project Manager. Implementation of the current assignment envisage a close cooperation with the State Hydrometeorological Service, that is responsible for hydrometeorological monitoring.

Financial arrangements:

Payments will be disbursed in several instalments, upon submission and approval of deliverables, and certification by UNDP Moldova Project Manager that the services have been satisfactorily performed.

Confidentiality:

Materials provided to the Individual Consultant and all the proceedings within the consultancy contract shall be regarded as confidential, both during and after the consultancy. Violation of confidentiality requirements may result in immediate termination of contract.

IV. REQUIREMENTS FOR EXPERIENCE AND QUALIFICATION

Academic Qualification:

- University degree in Hydrology or Water Resources Engineering or other relevant area.

Experience:

- At least 5 years of progressively working experience in the area of hydrology;
- Proven knowledge of water cadaster and operating principles of hydrological stations, hydrological forecast;
- Proven knowledge of hydrological monitoring and data quality assurance;
- Proven experience in conducting comprehensive assessments and writing reports;

Competencies:

- Ability to work remotely;
- Excellent facilitation and public presentation skills;
- Excellent and proven analytical and writing skills;

Language requirements:

- Proficiency in written and spoken English, Romanian and Russian are required for this assignment.

V. PAYMENT MODALITIES

The consultant's payment will be lump sum amount based, disbursed in instalments upon satisfactory performance and approval of deliverables.

VI. APPLICATION PROCESS

Applicants shall submit the following **required documents**:

- CV, including information about past experience in similar assignments and contact details for at least 3 referees;
- Brief description of why the individual considers him/herself as the most suitable for the assignment;
- Offeror's Letter confirming Interest and Availability with financial proposal (in USD, specifying the total lump sum amount). Financial proposal template prepared in compliance with the template in Annex 2.

Incomplete applications will not be considered.

If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

VII. ANNEXES TO THE TOR

Annex 1- Individual Consultant General Terms and Conditions

Annex 2- Offeror's letter confirming interest and availability, including financial proposal (template).