

# **Request for proposals: Contribution to the modernization of water resource monitoring networks in Burkina Faso for the implementation of the flood early warning system (SAPCI)**

October 2024

## **ABOUT THE NDC PARTNERSHIP**

The NDC Partnership is a global coalition of countries and institutions working to mobilize the support needed to achieve ambitious climate goals while promoting sustainable development. Through the Partnership, developed member countries pool their resources and expertise to provide developing countries with the tools they need to implement their Nationally Determined Contributions (NDCs) and combat the effects of climate change. Hosted by WRI, the UNFCCC Secretariat and the United Nations Office for Project Services (UNOPS), the NDC Partnership has members in every region of the world, with offices in Washington, DC and Bonn, Germany.

The NDC Partnership is committed to working with Burkina Faso to prioritize projects in the water sector that advance the implementation of the NDC and the National Adaptation Plan (NAP). The Partnership is launching this Call for Proposals in response to the priority project "Contribution to the modernization of water resource monitoring networks for the implementation of the flood early warning system (SAPCI) in addition to the HYDROMET project and the drinking water supply and sanitation program (PAEA)".

## **CONTEXT**

Burkina Faso, located in a climatic zone characterized by a marked rainy season, faces increased risks of flooding, particularly around its many water reservoirs and in urban centers. These events, increasingly frequent and intense due to climate change, directly threaten the safety of people and property, as well as the economic and social development of surrounding communities. The need to prevent and minimize the impact of these floods has therefore become a strategic priority for the government.

The Flood Early Warning System (SAPCI) implemented by the HYDROMET Project and the PAEA program supports the strategic structures and urban centers of Ouagadougou and Bobo-Dioulasso. However, major towns and regional roads are not covered. This project will provide additional support for the implementation of SAPCI by extending its area of influence.

The early warning system includes hydrometeorological monitoring stations, an efficient communications network for the rapid dissemination of warnings, and training and awareness-raising programs for local communities on flood preparedness and response measures. The involvement of local communities in the implementation and maintenance of the system is essential to its success and sustainability. The funding will enable the monitoring network to be strengthened through the acquisition of hydrometeorological monitoring stations.

Of the 141 automatic stations planned, 14 have been installed and 73 are in the process of being acquired by the State (through the DGRE) and its various partners, although 54 stations lack funding. This shortfall in automatic remote transmission stations will be reduced to 46 thanks to this project, reflecting additional efforts in terms of contribution to water resource monitoring. This early warning system should considerably reduce the vulnerability of populations to flooding, reduce loss of life and material damage, and strengthen the resilience of communities in the face of natural disasters.

## SCOPE OF WORK AND ACTIVITIES

Hydraulic structures are engines of socio-economic development. They support the livelihoods of many people, especially rural women. The monitoring system focuses on some of these strategic structures in order to collect information on the basis of decision-support tools such as hydrological information notes and bulletins. The need to secure these strategic facilities and modernize their monitoring system aims to :

- Instantly monitor the availability and quality of water resources at strategic facilities;
- Anticipate the risks of flooding, drought and water pollution on these structures;
- Minimize the security risks taken by agents in collecting information;
- Reduce operating expenses.

## RESULTS/KEY DELIVERABLES

To bring this project to fruition, support is required in the form of expertise to be provided by a team of experts to develop the following deliverables:

Deliverables	Description	Activities	Support requested
<b>Deliverable 1:</b> Acquisition and installation of 8 automatic stations with satellite remote transmission. The list of stations is in the annex.	The objective of the deliverable is to set up, operationalize and integrate the early warning system into the SAPCI at national level. These 08 stations must comply with the guidelines of the	<ul style="list-style-type: none"> <li>• Acquire 08 automatic stations with satellite remote transmission;</li> <li>• Manufacture eight four-metre-high shelters with two coats of paint (one rustproof, one white) for the eight hydrometric stations.</li> </ul>	The acquisition of automatic stations requires the mobilization of a service provider to supply the equipment; An OEM expert for training and equipment installation.

	<p>hydrometric and water quality network optimization study. The technical specifications of the equipment are attached.</p>	<ul style="list-style-type: none"> <li>• Transport the eight shelters to the field</li> <li>• Train staff in the use and maintenance of equipment;</li> <li>• Install the eight stations purchased.</li> </ul>	<p>The contract can be launched as an all-in-one package (acquisition, training and installation).</p>
<p><b>Deliverable 2:</b> Production of hydrological information around the dams on which the automatic stations are installed (Samendeni, Dourou, Ziga, Bagré, Douna, Moussodougou, Liptougou and Yakouta) and on all monitored dams, for decision-makers, stakeholders and other water resource users</p>	<p>Hydrological bulletins are produced on a monthly and decadal basis. Over the year, 12 monthly bulletins and 36 hydrological information notes will be produced.</p>	<ul style="list-style-type: none"> <li>• Mobilize an expert to automate broadcast products</li> <li>• Collect decadal and monthly hydrological data</li> <li>• Produce distribution products (hydrological bulletins and hydrological information notes)</li> <li>• Hold a workshop to validate the document produced. The five-day workshop will be held in Koudougou, in the Central West region of Burkina Faso, and will bring together some thirty participants.</li> </ul>	<p>The DGRE already develops distribution products, but distribution products can be automated using R and Python, and the DGRE does not have this expertise. This will require the mobilization of an expert hydrologist with knowledge of R and Python to build the capacity of DGRE hydrologists. This activity will take place in two phases: an initial one-week training phase in Ouagadougou. Fifteen agents from the hydrology department and the UCDIEau will be trained for this purpose. The second phase will be devoted to implementing the training through the automated production of broadcast products. During this phase, the consultant will accompany DGRE managers in production for at least three months.</p>
<p><b>Deliverable 3:</b> Setting up a resource management</p>	<p>Implementation of the resource management model will enable</p>	<ul style="list-style-type: none"> <li>• Acquire the water resources management model The model is implemented on a</li> </ul>	<p>Mobilize a modeling expert (water resource management)</p>

<p>model around the Dourou and Loumbila* dams.</p> <p>*The implementation of the model itself will focus on the Dourou and Loumbila dams, but all strategic and multi-purpose dams are concerned.</p>	<p>optimum management of the resource and equitable sharing between the various users. It will highlight the match between water supply and demand.</p>	<p>software package (WEAP). The software is free for developing countries.</p> <ul style="list-style-type: none"> <li>• Mobilize an expert hydrologist specialized in water supply and demand modeling</li> <li>• Implement the water resources management model</li> <li>• Former DGRE technicians in water resource management modelling</li> </ul>	
<p><b>Deliverable 4:</b> Modernizing water resource monitoring</p>	<p>Modernization of the collection network requires total control of the tools installed in the field, and perfect mastery of the collection, processing and validation of hydrological data from automatic and manual stations.</p>	<ul style="list-style-type: none"> <li>• DGRE staff involved in processing and validating hydrological data for all stations, including the eight installed as part of the project.</li> <li>• Strengthen the DGRE's capacity to store hydrological data through a 10-day training workshop in Koudougou on the hydromet V2 software. The workshop will bring together 30 people from the Ministry through the DGRE.</li> </ul>	<p>Recruit an expert in hydrological data analysis and processing Recruit a HYDROMET database expert</p>
<p><b>Deliverable 5:</b> Making hydrological information accessible to all users</p>	<p>Hydrological information must be accessible to all users through distribution products. In fact, a channel for disseminating hydrological information must be clearly defined.</p>	<ul style="list-style-type: none"> <li>• Set up a communication system: Once the dissemination product has been developed by the technicians, the communication expert will have to use the key elements of the document in simpler language to make it more accessible.</li> <li>• Disseminate hydrological products through communications channels: radio, online media, social networks (Facebook, whatsapp groups, etc.). Sensitize stakeholders to the use of broadcast</li> </ul>	<p>Communication expert</p>

		products. This activity will be carried out in collaboration with audiovisual services (through commercials).	
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## PROJECT MANAGEMENT

This project will be closely managed by a steering committee headed by the Ministry of the Environment, Water and Sanitation through the General Directorate for Water Resources (DGRE). To harmonize sectoral actions, other departments of the Burkina Faso government will also be involved throughout the mission:

Department	Structure	Attached structure	Number
Ministry of the Environment, Water and Sanitation (MEEA)	MEEA General Secretariat	General Secretary or his technical representative	01
	General Directorate for Water Resources (DGRE)	General Manager	01
		Director of Water Studies and Information (DEIE)	01
		Hydrological Service (SH)	02
		Service for Information, Promotion of Studies and Research on Water (SIPEau)	02
		Planning, Monitoring and Evaluation Department (SPSE)	01
		Finance department (SF)	01
Ministry of Transport, Urban Mobility and Road Safety (MTMUSR)	National Meteorological Agency (ANAM)		01
Ministry of Urban Planning, Land Affairs and Housing (MUAFH)			01
Ministry of Territorial Administration, Decentralization and Security (MATDS)	Directorate General of Civil Protection (DGPC)		01
Ministry of Infrastructure and Public Works (MID)			01

Department	Structure	Attached structure	Number
Ministry of Solidarity, Humanitarian Action, National Reconciliation, Gender and Family (MSAHSNGF)	National Council for Emergency Relief (CONASUR)		01
Non-governmental organization	Burkinabe Red Cross		01
Representative of the NDC Partnership			01

## TEAM OF EXPERTS REQUIRED

The various types of expertise required to complete this mission are listed in the following table:

N#	Profile	Number	Qualification requirements	Experience
1	Expert hydrologist	1	BAC+5 in hydrology or rural engineering (Hydraulic engineer)	10 years' experience in developing and automating hydrological broadcast products
2	IWRM expert	1	BAC+5 in hydrology, hydraulics, environment	5 years IWRM experience
3	Computer expert	1	BAC+3 or higher in computer science	5 years' experience in database design
4	Expert in uses and users	1	BAC+5 in socio-economics or other related field	5 years' experience in IWRM
5	An expert in hydrology	1	BAC+5 in hydrology with experience in HYDROMET database management	10 years' experience in HYDROMET database management
6	Data science expert	1	BAC+5 in hydrological data analysis	5 years' experience in hydrological data analysis
7	Communication expert	1	BAC+5 in communications	5 years' experience in the field

For the entire project team, fluency in French is essential.

## CONTRACT TERMS

- Estimated start date: November 2024
- Estimated completion date: September 2025

Detailed project planning will be carried out in consultation with the government.

## PROPOSAL REQUIREMENTS

Prospective vendors should submit:

- Description of the proposed project management structure (core team/project leader, subcontracting organizations, local experts, etc.).
- CVs of team members.
- Examples and references of similar previous work.
- Proposed project implementation approach/monitoring plan.
- A proposed budget with a breakdown of costs enabling us to assess reasonableness and compliance with our backers' requirements.
- A proposed schedule for deliverables and payments.

## EVALUATION AND SELECTION

### Evaluation Criteria

The following elements will be the primary considerations in evaluating all proposals submitted in response to this RFP:

- Completion of all required elements;
  - The extent to which the vendor's proposal fulfills WRI's stated requirements as set out in the RFP;
- Experience with similar projects;
  - Overall cost of the vendor's proposal;
  - Debarment and sanctions – WRI will not consider proposals from vendors that are presently debarred by the U.S. government or named on any restricted parties lists;
- Sustainability – WRI values sustainability and all other factors being equal, will favor a proposal to more sustainably perform the work.
  - **The bidder offering the best overall value will be selected. For this procurement, price and non-price aspects are considered to be of approximately equal importance.**

### Selection Process

No proposal development costs shall be charged to WRI / all expenses are to be borne by the bidders. WRI may award to the bidder offering best value without discussion. However, WRI reserves the right to seek bidder clarifications and to negotiate with those bidders deemed to be within a competitive range.

WRI may, at its discretion and without explanation to the prospective vendors choose to discontinue this RFP without obligation to such prospective vendors or make multiple awards



under this RFP. Contracts will not be awarded to vendors debarred by the US government or named on restricted parties lists.

## **PROPOSAL SUBMISSION**

Please submit proposals and relevant documents by December 6, 2024 in electronic format to:

- Alice Bonétat, Regional Program Manager, NDC Partnership Support Unit, Alice.Bonetat.5@ndcpartnership.org
- Roman Dehsabzi, Project Coordinator, NDC Partnership Support Unit, Roman.dehsabzi@ndcpartnership.org

WRI may, at its discretion and without explanation to potential suppliers, elect to abandon this Invitation to Tender without obligation to such potential suppliers or to award multiple contracts under this Invitation to Tender.



**ANNEX: TECHNICAL SPECIFICATIONS FOR AUTOMATIC STATIONS WITH SATELLITE REMOTE TRANSMISSION**

N°	Furniture	Technical specifications requested by the administration	Technical specifications proposed by the bidder
01	Radar sensor	<p><b>Make: To be specified</b></p> <p><b>Model: To be specified</b></p> <p><b>Features</b></p> <ul style="list-style-type: none"> <li>• Application Surface water, streams, rivers, tidal areas, reservoirs, lakes, isolated areas, sedimented water, outdoor applications, etc.</li> <li>• Parameters assessed: Water level/distance from water surface</li> <li>• Measurement technology : Non-contact radar sensor</li> <li>• Benefits: Low-energy radar pulses for outdoor applications for non-contact measurement of surface water levels. Installation on bridges or load-bearing structures</li> </ul> <p><b>Compensated wave influence, reduced clogging flexible integration thanks to standard interfaces, simple installation, discreet design, very low power consumption making it easy to use without stand-alone stations.</b></p> <ul style="list-style-type: none"> <li>• Register as an intern: No</li> <li>• SDI-12 or RS-485 interface (SDI-12 protocol)</li> <li>• Measurement range: 0.4 to 35 m</li> <li>• Measurement accuracy (SDI-12): 0.4 to 2.0 m: ±10 mm; 2.0 to 30 m: ±3 mm; 30 to 35 m: ±10 mm</li> <li>• Coefficient of mean temperature (in the range: -20 to +40 °C): 0.01% of the final value of the measurement range/10 K</li> <li>• Measurement accuracy (4 to 20 mA): ±0.1% of final value of measurement range</li> </ul>	

N°	Furniture	Technical specifications requested by the administration	Technical specifications proposed by the bidder
		<ul style="list-style-type: none"> <li>• Coefficient of mean temperature: 10 ppm of final value of measurement range/°C (at 20°C)</li> <li>• Measurement time: 20 seconds (SDI-12) or 30 seconds (4 to 20 mA)</li> <li>• Antenna opening angle: 12° (± 6°)</li> <li>• Supply voltage: 5.4 to 28 V DC, typ. 12/24 V DC</li> <li>• Interfaces: 4 to 20 mA; SDI-12; RS-485, 2-wire (SDI-12 protocol)</li> <li>• Certification (Europe: ETSI EN 300 440); (United States: FCC 47 CFR Part 15); (Canada: RSS 210 version 7)</li> <li>• Radar transmission frequency: 25.3 Ghz</li> <li>• Pivoting range, cardan suspension               <ul style="list-style-type: none"> <li>○ Lateral axis: 180° (± 90)</li> <li>○ Longitudinal axis: 30° (± 15°)</li> </ul> </li> </ul> <p><b>Description</b></p> <p>RLS low-power radar pulse sensor for non-contact surface water level measurement. Suitable for remote or hard-to-reach sites</p> <p>Cable length 100 m (twisted pair, PVC, black, 2 x 2 x 0.75 mm<sup>2</sup>)</p>	
02	Recorder with integrated meteosat modem	<p><b>Make: To be specified</b></p> <p><b>Model: To be specified</b></p> <p><b>Features</b></p> <p><b>Analog inputs :</b></p> <ul style="list-style-type: none"> <li>• Analog - 4 - 20 mA :               <ul style="list-style-type: none"> <li>○ Number of entries: 1</li> <li>○ Range: 0 - 22 mA</li> <li>○ Accuracy at 25°C: 0.02%.</li> <li>○ Load: internal 200 Ω</li> </ul> </li> <li>• Analog - Differential               <ul style="list-style-type: none"> <li>○ Number of entries: 3</li> </ul> </li> </ul>	

N°	Furniture	Technical specifications requested by the administration	Technical specifications proposed by the bidder
		<ul style="list-style-type: none"> <li>○ Range*: <math>\pm 39</math> mV, <math>\pm 312</math> mV, <math>\pm 2.5</math> V</li> <li>○ Accuracy at 25°C: 0.004%.</li> <li>○ Resolution: 0.298 <math>\mu</math>V at <math>\pm 2.5</math> V scale</li> <li>● Analog - unbalanced <ul style="list-style-type: none"> <li>○ Number of entries: 2</li> <li>○ Range: 0 - 5 V</li> <li>○ Accuracy at 25°C: 0.004%.</li> <li>○ Resolution: 0.298 <math>\mu</math>V</li> </ul> </li> </ul> <p><b>Connection type</b></p> <ul style="list-style-type: none"> <li>● Precision analog reference: 2.5 V, 10 mA</li> <li>● 12 V switch: 1.0 A</li> <li>● Protected 12 V: 1.0 A</li> <li>● RS485</li> <li>● GPS INPUT: SMA-F</li> <li>● RS232: DB9</li> <li>● USB (OTG): USB MICRO AB</li> <li>● USB host: Type A</li> <li>● WIFI</li> <li>● microSD: Internal, expandable up to 32 GB</li> <li>● configuration software for Mac, PC, Android, iPhone : linkComm : intuitive multi-system, graphic, extensible design</li> </ul> <p><b>Digital outputs</b></p> <ul style="list-style-type: none"> <li>● Number of inputs: 2.0 - 15 V</li> <li>● Input type: Status, counter, frequency</li> <li>● Maximum input frequency: 10 KHz,</li> <li>● Number of outlets: 2</li> <li>● Output types: On/off/pulse. Open collector with 100 ohm limiting resistor. 100 mA, 15 V maximum</li> </ul> <p><b>IP index</b></p> <ul style="list-style-type: none"> <li>● IP63</li> </ul> <p><b>Operating temperature range</b></p> <ul style="list-style-type: none"> <li>● -40 - +70 °C</li> </ul> <p><b>Consumption</b></p> <ul style="list-style-type: none"> <li>● Voltage: 9 - 20 VDC</li> </ul>	

N°	Furniture	Technical specifications requested by the administration	Technical specifications proposed by the bidder
		<ul style="list-style-type: none"> <li>• Standby: &lt; 2 mA typ @12.5 VDC</li> </ul> <p><b>SDI-12</b></p> <ul style="list-style-type: none"> <li>• Independent inputs: 2</li> <li>• Compliance: V1.3</li> <li>• Power supply: 500 mon max</li> </ul> <p><b>Telemetry</b></p> <ul style="list-style-type: none"> <li>• Geostationary satellite</li> </ul> <p><b>Power supply</b></p> <ul style="list-style-type: none"> <li>• A4 solar panel and voltage regulator: 12V/20w</li> <li>• Battery: 12V/27AH</li> </ul> <p>Accessory</p> <ul style="list-style-type: none"> <li>• <b>Dome/Hat antenna (offering optimum gain between 5.5-8 dB)</b></li> <li>• <b>NEMA-certified protective enclosure</b></li> <li>• <b>Digital display: 2 lines</b></li> <li>• <b>Lightning protection kit</b></li> <li>• <b>General grounding</b></li> <li>• <b>Wiring kit</b></li> </ul>	
03	<b>Equipment training for at least thirty (10) managers</b>	<p>A training session is mandatory when the equipment arrives. This training will take the form of classroom theory coupled with installation on a site in the central region. It will take place over five working days. It will bring together agents from the central and decentralized departments of the Ministry in charge of water and sanitation. It will provide an opportunity to test the equipment acquired. For this activity, please enclose a hydrologist expert with 10 years' experience in the field. He/she must have led two training sessions in the installation of automatic remote transmission stations (supporting training certificate), and two experience sessions in the installation of automatic stations (supporting certificate of good execution).</p>	

N°	Furniture	Technical specifications requested by the administration	Technical specifications proposed by the bidder
		<p>A hydrology technician with experience in installing automatic stations (Diplôme de Technicien Supérieur en hydrologie)</p> <p>The supplier will propose a training plan that takes into account the above elements.</p> <p>Participants' per diems will be paid for by the project owner.</p> <p>The organization of the training course (room hire, travel expenses for participants, participant kits, coffee breaks, printing costs for certificates and trainers' fees) is the responsibility of the contract holder.</p>	
04	<b>Transport and installation of equipment on site</b>	The contractor is responsible for transporting and installing the equipment at the hydrometric network sites. The contractor must involve the Directorate General for Water Resources (DGRE) in the installation of the equipment.	