

Terms of Reference for hiring agency for Development of E-Jal Water Tool

18.2052.1-001.00

Terms of Reference for hiring agency for Development of E-Jal Water Tool

- 0. List of abbreviations 1**
- 1. Context..... 3**
- 2. Tasks to be performed by the contractor 3**
- 3. Concept..... 7**
 - Technical-methodological concept..... 7
 - Project management of the contractor 7
- 4. Personnel concept..... 8**
 - Team leader 8
 - Expert 1 to 7 9-12
 - Required Qualification/experience for the consulting agency..... 12
- 5. Costing requirements 13**
 - Assignment of personnel..... 13
 - Travel 13
- 6. Inputs of GIZ or other actors..... 13**
- 7. Requirements on the format of the bid 14**

0. List of abbreviations

AVAVBAVB	General Terms and Conditions of Contract (AVB) for supplying services and work 2018
ToRs	Terms of reference
TAG	Technical Assessment Grid
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
WASCA	Water Security and Climate Adaptation in Rural Areas
MoRD, GoI	Ministry of Rural Development (MoRD), Government of India
MoJS	Ministry of Jal Shakti (MoJS)
NWM	National Water Mission
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
GP	Gram Panchayat
IWRM	Integrated Water Resource Management
INRM	Integrated Natural Resources management
CWRM	Composite water Resource management
MGNREGA- EB	Environmental Benefits through Mahatma Gandhi National Rural Employment Guarantee Act
RS/GIS	Remote sensing/Geospatial information systems

1. Context

The technical cooperation (TC) module 'Water Security and Climate Adaptation in Rural India' (WASCA, PN 2018.2052.1) aims to improve water resource management through an integrated approach, taking climate change into account. The project works jointly with two political partners, namely the Ministry of Rural Development (MoRD) and the Ministry of Jal Shakti (MoJS; Ministry of Water). MoRD is responsible for the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), a national level public employment programme that provides up to 100 days of guaranteed annual employment to any rural Indian family demanding for unskilled work. As of July 2020, MGNREGA covers about 141.6 million families across rural India as registered beneficiaries, and around 69 billion EUR have been spent in the period from 2006 to 2019. WASCA, same as its predecessor project "Environmental Benefits of the Mahatma Gandhi National Rural Employment Guarantee Act" (MGNREGA-EB, PN 2012.2528.3), supports the implementation of MGNREGA by leveraging its outreach and financial resources to enhance environmental and climate co-benefits generated by MGNREGA employment measures.

2. Tasks to be performed by the contractor

The contractor is responsible for providing the following services:

An agency is required to undertake an assignment to develop **E-Jal Water Tool** (a decision support system for localizing composite water resource management (CWRM) framework developed under WASCA project

The contractor is responsible for providing the following services:

A. The main objectives of the assignment are:

1. To finetune the GIS/RS and hydrological data aggregation and analysis functionalities created in existing version of the E-Jal Water Tool.
2. To create add-on functionalities for facilitating implementation planning with the help of open source datasets through Web-GIS based digital solutions.
3. To ensure compatibility with prevailing digital solutions such as MGNREGA MIS, NREGA-SOFT, Geo-MGNREGA, Bhuvan portals, SECURE etc.
4. To pilot test the planning, implementation, monitoring and impact assessment modalities of the E-Jal Water Tool in select project districts
5. To facilitate webhosting of E-Jal portal on official servers and enabling content management system
6. To induct essential section in the E-Jal portal for supporting GIS enabled monitoring and impact assessment
7. To design a mobile application based on functionalities of E-Jal water portal

B. Scope of work (Tasks & actions)

S.N.	Task	Action
1	Aggregation of spatial and non-spatial datasets in GIS environment for different administrative and hydrological units	<p>Following thematic layers pooled from Bhuvan servers: -</p> <ul style="list-style-type: none"> <input type="checkbox"/> Land use land cover map <input type="checkbox"/> Land degradation map <input type="checkbox"/> Soil erosion map <input type="checkbox"/> Salinity map <input type="checkbox"/> Geomorphology <input type="checkbox"/> Structural geology map <input type="checkbox"/> Drainage map <input type="checkbox"/> Watershed boundaries <input type="checkbox"/> Water bodies map <input type="checkbox"/> Terrain map <input type="checkbox"/> Hydrogeology map <input type="checkbox"/> Groundwater prospect <input type="checkbox"/> Satellite view <input type="checkbox"/> Canal network map <input type="checkbox"/> Geo-MGNREGA map <p>Following thematic layers and non-spatial datasets pooled in from WRIS portal (to be completed after getting access to the source data portal).</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rainfall <input type="checkbox"/> Temperature <input type="checkbox"/> Historical precipitation <input type="checkbox"/> Evapotranspiration <input type="checkbox"/> Soil moisture <p>Following set of non-spatial information pulled-in from various government web portals: -</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demography <input type="checkbox"/> Livestock <input type="checkbox"/> Socio-economic <input type="checkbox"/> Meteorology <input type="checkbox"/> Central flagship programs <input type="checkbox"/> Water resources
2	Creating digital repository of spatial and non-spatial datasets along with CWRM plan documents	<ul style="list-style-type: none"> - Administrative and hydrological boundaries of various units in vector formats - Currently administrative boundaries are sourced from Bhuvan needs to be

		<p>replaced by actual boundaries digitized by technical agencies.</p> <ul style="list-style-type: none"> - Hydrological (corrected) boundaries have already been included in the current version of Ejal (V1.0). - Additional vector outputs procured from state level departments will be added - Additional vector outputs developed by various technical agencies (groundwater, water quality, surface water sources, irrigation network, public infrastructure and spaces, forest, grey water and drainages) will be added
3	Services for interpretation of Area of Interest (Aoi) for planning and implementation of CWRM plans	<ul style="list-style-type: none"> - Assessment of scenarios in GIS (Geographic Information System) environment <p>Geo-processing of spatial information</p> <ul style="list-style-type: none"> - Quantifying surface water resources in different units - Quantifying sub-surface (soil) moisture regime in different units - Quantifying groundwater resources in different unit <p>Water quality Land resources Soil health</p>
4	Adding processing tool for characterization of specific geography to determine nature of physical interventions and related information (dimensions, outcomes, cost, etc.)	<ul style="list-style-type: none"> - Depiction of point, line and polygons feature - Length and area dimension measurements - Overlaying and swapping of thematic layers - Editing of spatial attributes - Importing and exporting geospatial outputs
5	Customizing online functions of E-Jal to record primary inputs (from user end) in a systematic manner.	<ul style="list-style-type: none"> - Provisioning for primary data inputs related to following aspects: - <ul style="list-style-type: none"> o Assessment of existing demands o Mapping of water management practices o Status of recycling/reuse of water o Assessment of grey water disposal practices
6	Developing ground truthing and field verification options	<ul style="list-style-type: none"> - Functionalities for data synthetization and deriving result for planning decisions

	for field testing of the prototype of the water tool	<p>(developed will be functional once the above outputs will be inserted)</p> <ul style="list-style-type: none"> - Preparation of water budget at different administrative and hydrological unit - Contextualizing water use pattern in each unit - Analysing water quality datasets - Exploring appropriate alternatives - Inter and Intra-annual patterns of precipitation, temperature, wind and humidity: - Assessment of extent and intensity of Evapotranspiration (ET) - Exploring options for enhancing adaptive capacities and community livelihood resilience - Temporal analysis of relevant parameters and projection for upcoming scenarios
7	Developing architecture of android/ios version of E-Jal Water Tool	Adding specific functions in the E-Jal Water Tool with added value of mobile operations such as GPS services, real time navigation, on-site input recording, progress monitoring and referring in the course of implementation of CWRM plans
8	Defining user access in tune with operational mechanisms	Developing staggered access aligned with administrative and technical hierarchies for the purpose of: - <ul style="list-style-type: none"> - Input seeking - Visualization - Analysis and scenario building - Capturing planning decisions - Technical examination of proposal - Modifications/alteration/ revisions - Approvals for executions
9	To facilitate webhosting of E-Jal portal on official servers and enabling content management system	<ul style="list-style-type: none"> - On NIC, MoRD and on standalone secure server as per arrangement evolved with partner ministries. - Handing over of control systems to the host-institution - Training of individuals of host-institution for content management and maintenance
10	To induct essential section in the E-Jal portal for supporting GIS enabled monitoring and impact assessment	<ul style="list-style-type: none"> - offering satellite imageries of different time series for capturing essential signatures related to works executed and its results for the purpose of efficient monitoring and objective (evidence based) impact assessment

11	Customizing ios/android version of E-Jal water portal.	- To design a mobile application based on functionalities of E-Jal water portal
----	--	---

Deliverables

- Single window solutions for fetching various online data sets from reliable web-portals
- Online digital repository of spatial and non-spatial data sets essential for planning decisions
- Practitioners' level Web-GIS services for processing and synthesizing GIS/RS outputs to take planning decisions
- User interface for capturing their interpretations/inputs and recording local aspirations
- Customize solutions for confirming planning decisions by front-line cadre
- Ready to use android/ios version of E-Jal Water Tool
- Customized user access of E-Jal Water Tool
- Handing over of E-Jal water portal and mobile application to host institution
- Capacity development of host institution functionaries about content management updating and maintenance

Certain milestones, as laid out in the table below, are to be achieved by certain dates during the contract term, and at particular locations:

Period of assignment: From 1st February, 2021 until 15th November, 2021

Milestone	Deadline
Inception report	15 days of contract award
Finalization of tools, methodology and overall framework of the assignment	30 th April, 2021
Interim report	31 st July 2021
Final report along deliverables	15 th November 2021

3. Concept

In the bid, the bidder is required to show how the objectives defined in Chapter 2 are to be achieved, if applicable under consideration of further specific method-related requirements (technical-methodological concept). In addition, the bidder must describe the project management system for service provision.

Technical-methodological concept

Strategy: The bidder is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see Chapter 1). Following this, the bidder

presents and justifies the strategy with which it intends to provide the services for which it is responsible (see Chapter 2).

The bidder is required to present the actors relevant for the services for which it is responsible and describe the **cooperation** with them.

The bidder is required to present and explain its approach to **steering** the measures with the project partners and its contribution to the results-based monitoring system.

The bidder is required to describe the key **processes** for the services for which it is responsible and create a schedule that describes how the services according to Chapter 2 are to be provided. In particular, the bidder is required to describe the necessary work steps and, if applicable, take account of the milestones and contributions of other actors in accordance with Chapter 2.

The bidder is required to describe its contribution to knowledge management for the partner and GIZ and promote scaling-up effects (**learning and innovation**).

Project management of the contractor

The bidder is required to explain its approach for coordination with the GIZ project.

- The contractor is responsible for selecting, preparing, training and steering the experts (international and national, short and long term) assigned to perform the advisory tasks.
- The contractor makes available equipment and supplies (consumables) and assumes the associated operating and administrative costs.
- The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.
The contractor reports regularly to GIZ in accordance with the AVB of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from 2018

4. Personnel concept

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 7), the range of tasks involved and the required qualifications. The below specified qualifications represent the requirements to reach the maximum number of points.

Team leader

Tasks of the team leader

- Overall responsibility for the advisory packages of the contractor (quality and deadlines)
- Coordinating and ensuring communication with GIZ, partners and others involved in the project
- Personnel management, in particular identifying the need for short-term assignments within the available budget, as well as planning and steering assignments and supporting local and international short-term experts

- Regular reporting in accordance with deadlines

Qualifications of the team leader

- Education/training (2.1.1) : Masters in Water Sciences/Hydrology or similar disciplines
- Language (2.1.2): Good business language skills in English & Hindi
- General professional experience (2.1.3): 10 years of professional experience in the water sector, research & policy analysis
- Specific professional experience (2.1.4): 5 years applied research in water resources management
- Leadership/management experience (2.1.5) : 3 years of management/leadership experience as project team leader
- Regional experience (2.1.6) : 5 years of experience related to national level programme
- Development Cooperation Experience (2.1.7) : 5 years of experience related to handling projects of international development cooperation agencies

Expert 1: Hydrology/Hydrogeology expert

Tasks of expert 1

- Lead role in developing methodology & strategy for the assignment
- Mentoring the project team for accomplishment of specific tasks
- Synthesising in the form of research results and actionable points
- Consultation with stakeholders

Qualifications of expert 1

- Education/training (2.2.1): Post-graduate Water Sciences/Hydrology/hydrogeology/Earth Sciences or similar disciplines
- Language (2.2.2): English & Hindi
- General professional experience (2.2.3): 10 years of experience on research on national programs for water resource management
- Specific professional experience (2.2.4): 5 years of experience on research on national programs for water resource management
- Regional experience (2.2.6): 5 years of experience in projects in India (country)

Expert 2-: Agriculture/Agriculture Engineering Expert:

Tasks of expert 2

- Lead role in developing methodology & strategy related to water demand supply management
- Designing water budgeting and inventory of corrective measures and customizing it for incorporation in E-jal water tool.
- Synthesising in the form of research results and actionable points

Qualifications of expert

- Education/training (2.3.1): Post-graduate in agriculture/agriculture engineering or similar disciplines
- Language (2.3.2): English & Hindi
- General professional experience (2.3.3): 10 years of experience in the relevant field

- Specific professional experience (2.3.4): 5 years of experience data sources management and interface for real time monitoring,
- Regional experience (2.3.6): 5 years of experience in projects in India (country)

Expert 3: RS&GIS Expert

Tasks of experts 3

- Spatial and non-spatial data sources management and interface for real time monitoring
- Spatial and non-spatial data structure concepts, database design and management, projections

Qualifications of expert

- Education/training (2.4.1): Post-graduate in hydro-informatics or similar disciplines
- Language (2.4.2): English & Hindi
- General professional experience (2.4.3): 10 years of experience on programming and in GIS data management mapping and processing systems,
- Specific professional experience (2.4.4): 5 years of experience data sources management and interface for real time monitoring,

Expert 4 & 5: Web development expert & Mobile app developer

Tasks of experts4

- Leading the web-portal development and data fetching modalities of E-Jal Water Tool
- Designing an architecture of android/ios application based on functionalities of E-Jal Water Tool.
- Data sources management and interface for real time monitoring
- Data structure concepts, database design and management, projections

Tasks of experts 5

- Support the web-portal development and data fetching modalities of E-Jal Water Tool
- Support in designing an architecture of android/ios application based on functionalities of E-Jal Water Tool.
- Data pooling and providing support in designing interface for real time monitoring
- Data structure concepts, database design and management, projections

Qualifications of expert

- Education/training (2.5.1): For expert 4 Post-graduate in computer science engineering/computer applications or similar disciplines. For expert 5 Post-graduate in computer science engineering/computer applications /statistical sciences or similar disciplines
- Language (2.5.2): English & Hindi
- General professional experience (2.5.3): For Expert 4; 10 years of experience on programming and in web development and processing systems and for expert 5: 5 years of experience on programming and in web development and processing systems,
- Specific professional experience (2.5.4): For expert 4 ; 5 years of experience data sources management and interface for real time monitoring and for expert 5 : 5 years of experience on programming and in web development and processing systems,

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Sociocultural competence
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

Expert 6 (Short- term expert pool 2) : Data Analyst

Tasks of experts 6

- Support the web-portal development and data fetching modalities of E-Jal Water Tool
- Support in designing an architecture of android/ios application based on functionalities of E-Jal Water Tool.
- Data pooling and providing support in designing interface for real time monitoring
- Data structure concepts, database design and management, projections

Qualifications of expert

- Education/training (2.6.1): Post-graduate in computer science engineering/computer applications /statistical sciences or similar disciplines
- Language (2.6.2): English & Hindi
- General professional experience (2.6.3): 5 years of experience on programming and in web development and processing systems,
- Specific professional experience (2.6.4): Specific professional experience: 3 years of experience data sources management and interface for real time monitoring,

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Sociocultural competence
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

Expert 7: Capacity development expert (short term expert pool 2)

Tasks of experts 7

- Lead the capacity development measures for operational aspect of E-Jal Water Tool
- Develop relevant learning and reference material for the purpose of handing over and proper functioning of E-Jal water tool
- Support related capacity development action taken up by GIZ and partner ministry
- Data structure concepts, database design and management, projections

Qualifications of expert

- Education/training (2.7.1): Post-graduate in social sciences or management or natural resource or similar disciplines

- Language (2.7.2): Hindi and English
- General professional experience (2.7.3): 5 years of experience on capacity building and orientation of government functionaries
- Specific professional experience (2.7.4): 5 years of experience on capacity building and orientation of government functionaries on NRM and water resources management
- Regional experience (2.7.5): 5 years of experience in projects in India (country)

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Team skills
- Initiative
- Communication skills
- Sociocultural competence
- Efficient, partner- and client-focused working methods
- Interdisciplinary thinking

4.2 Required Qualification/experience for the consulting agency

The agency must have the following administrative and financial requirements for conducting the assignment

1. Be a registered as national organization or entity
2. Average annual turnover for the last three financial years should be at least 1,00,000 Euros
3. The agency should have minimum 15 employees as on 31st December 2019
4. The agency must have handled at least 3 projects on web-based decision support system for rural development and water resource management sector and 2 reference projects in India in the last three years with minimum commission value of Euro 25,000.

The agency must have the following administrative and financial requirements for conducting the assignment

- Relevant experience and technical expertise of design and developing web application using Geo-Informatic Tools for NRM programmes
- Relevant technical knowledge, skills and extensive work experience of programming and customising decision support system for IWRM.
- Capability of training relevant stakeholders on Geo-Informatic decision support tools for natural resource management
- Demonstrated experience of development of web GIS application using python language

The agency and / or consortium should have other (non-evaluated) administrative and financial requirements for conducting the assignment

- Good knowledge and rapport with central/state government
- Experience in providing consulting services / implementation and excellent track record of completion of tasks according to timelines,
- Excellent reporting and writing skills (English, Hindi)
- Well qualified and experienced key professional staff
- Experience in managing projects with international organisation

5. Costing requirements

Assignment of personnel

Team leader: On-site assignment for 36 expert days

Expert 1: Assignment in country of assignment for 72 expert days

Expert 2: Assignment in country of assignment for 72 expert days

Expert 3: Assignment in country of assignment for 72 expert days

Expert 4: Assignment in country of assignment for 72 expert days

Expert 5: Assignment in country of assignment for 90 expert days

Expert 6: Assignment in country of assignment for 90 expert days

Expert 7: Assignment in country of assignment for 90 expert days

Grand Total: 594 person days

Travel

The agency is required to calculate the travel by the specified experts and the experts it has proposed based on the places of performance and list the expenses separately by daily allowance, accommodation expenses, flight costs and other travel expenses.

6. Inputs of GIZ or other actors

GIZ and/or other actors are expected to make the following available:

- Introduce the agency to the district and state administration at the start of the project.
- Suggest additional participants for any meetings, trainings, and workshops
- Any technical support required for the success of this initiative
- Support in the field visit of the participants

7. Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English (language).

The complete bid shall not exceed 30 pages (excluding CVs & company documents).

The CVs of the personnel proposed in accordance with Chapter 4 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages. The CVs must clearly show the position and job the proposed person held in the reference project and for how long. The CVs can also be submitted in English (language).

Please calculate your price bid based exactly on the aforementioned costing requirements. In the contract the contractor has no claim to fully exhaust the days/travel/workshops/ budgets. The number of days/travel/workshops and the budget amount shall be agreed in the contract as 'up to' amounts. The specifications for pricing are defined in the price schedule.