

**GOVERNMENT OF ODISHA
DEPARTMENT OF WATER RESOURCES**

TERMS OF REFERENCE

Country:	India
Project Name:	Ground Water Recharge and Solar Micro Irrigation to Ensure Food Security and Enhance Resilience in Vulnerable Tribal Areas of Odisha.
Funded Activity:	GCF-FP045
Title of Consulting Services:	External 3rd Party Quality Control & Quality Assurance Consultancy Services for Installation of Ground Water Recharge Wells under GCF.
Contract Type:	QCBS (Lump-sum)
Period:	10th NOVEMBER, 2021



ODISHA COMMUNITY TANK DEVELOPMENT AND MANAGEMENT SOCIETY

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TERMS OF REFERENCE

CONSULTANCY OF THIRD-PARTY QUALITY CONTROL AND QUALITY ASSURANCE (QC&QA) FOR INSTALLATION OF GROUND WATER RECHARGE WELLS IN TANKS CONSIDERED UNDER GCF FUNDED PROJECT

1.0 INTRODUCTION

The Government of Odisha in partnership with National Bank for Agriculture and Rural Development (NABARD) is implementing "*Ground water recharge and solar micro irrigation to ensure food security and enhance resilience in vulnerable tribal areas of Odisha (Funded Activity: GCF-FP045)*" through "Odisha Community Tank Development and Management Society (OCTDMS)", an SPV under the Department of Water Resources (DoWR).

The Green Climate Fund (GCF), designated as an operating entity of the financial mechanism under Article 11 of the United Nations Framework Convention on Climate Change and established pursuant to the governing instrument having its Head Quarters at Songdo, Incheon, Republic of Korea is assisting with a grant of US\$ 34.357 Million and Govt. of Odisha will support the project with about US\$ 117.735 Million. There will be a Community Contribution of about US\$ 14.205 Million through cash/kind for the project.

In the prevailing socio-political scenario, creation of additional surface-storage through new major/ medium irrigation projects is not practically possible. Alternatively, ground water which is widely accessible and less impacted by droughts and floods provides a vast scope for its recharge through community-based rainwater harvesting practices.

The project aims at augmenting the ground water level through introduction of the structural measures such as to construct recharge structures (Wells) in 10,000 tanks in 15 districts viz., **Baragarh, Bolangir, Boudh, Gajapati, Kalahandi, Kandhamal, Keonjhar, Koraput, Malkangiri, Mayurbhanj, Nawarangpur, Nuapada, Rayagada, Sambalpur and Sonepur** to tap the additional water normally available during monsoon in the tanks (public/community/private) for post monsoon augmentation of the ground water to be used for providing micro-irrigation. Further, the project will install 1000 solar pumps on pilot basis for providing micro irrigation for agricultural purposes in line with national target of reaching 1,00,000 MW solar power by 2022.

The project will thus improve and ensure water security, food security, Energy security with linkage to climate change and adaptation solution to about 5.2 million vulnerable SC/ST population in these 15 districts. Enhanced food security in these areas will enhance their adaptive capacity.

2.0 PROJECT IMPLEMENTATION ARRANGEMENT

The project is implemented by the Department of Water Resources and Panchayat Raj & Drinking Water Department, Government of Odisha. "Odisha Community Tank Development and Management Society (OCTDMS)" as the State Project Unit (SPMU), located in the Rajiv Bhawan, Bhubaneswar will lead the implementation. A Technical Steering Committee, headed by the Chief Secretary, Government of Odisha will be responsible for the overall review and policy support system. At the district level, the office of the Collector and District Magistrate will be the nodal to steer the project and there will be a district level committee, in the name of District Level Project Management Team (DLPMT) to monitor and supervise the project activities.

3.0 THE PROPOSED INTERVENTION

- 3.1 A recharge shaft as concrete adaptation measure has been proposed in the community ponds to ensure the sub-soil/aquifer recharge. The Ground Water Recharge System (GWRS) would consist 2 to 30 (two to thirty) recharge wells (RW) of suitable size constructed within the water body depending on the pondage area. These wells during rainy season (June-September) provide an easy passage of excess rainwater inflow to percolate in to the underlying aquifers system through a filter pack of pebbles/ gravels. Accordingly, the project is proposing installation of 50,000 (approx.) recharge wells in the 10,000 tanks (1000 MI tanks and 9000 tanks under PR&DW Deptt.).
- 3.2 The construction of RWs (made of precast RCC rings) is simple and similar to the construction of any open well. These RWs are so designed that the excess rainwater/ runoff from the tank during the rainy season will be diverted to underground sub-soil/aquifers for recharge. At the end of rainy season, the average water level of at least 1.5 m in the tank can be maintained for pisciculture/ community use. Periodic replacement of filter packs of the RWs is the only requirement as maintenance of the GWRS to ensure its efficient functioning. The constructional details of a typical RW and GWRS have been indicated in the drawings at Annexure-1.
- 3.3 Works contractors would be engaged for the work which consists of Production, Supply, construction, conveyance and installation of the recharge wells and labour required for completion of the work in all respect as per the approved drawing and specification. The number of contracts would be about 2 (two) per each of the districts in the above 15 districts.

- 3.4 The recharge wells will be located & constructed in the upstream side of the tank at an offset of atleast 4.0 m apart from C/C in a line such that, the top level of Well cover is levelled @0.30 cm below the crest level of the Surplus Escape i. e; FRL level. The agency would arrange for taking such levels and the final location for installation of Recharge Wells is to be approved by the Engineer-in-Charge.

4.0 JUSTIFICATION FOR THE CONSULTANCY

The objective of the project is to install Ground Water Recharge Wells in the reservoir bed of 10,000 tanks under the Minor Irrigation and Panchayat Raj & Drinking Water Department spread across 15 districts of the state. The works include mostly civil works such as production of RCC rings for installation of recharge wells, providing filter materials to be placed inside the well and other fittings for entry of clean water into the well. Quality assurance during execution of the works plays an important role in achieving the quality in production maintaining the specification leading to longevity of the structures. In addition, capacity building of the Project/ Department staff to assess, maintain and ensure the quality of works and including the safety during construction is also essential for future sustainability.

To ensure that there are no compromises on quality of civil works, and no slippages in processes, it is proposed to procure the services of a third-party agency that will independently monitor and promptly evaluate the quality of the civil works. Based on the findings and recommendations of this agency, the implementation and quality of works would be ensured that meet agreed designs and specifications.

5.0 OBJECTIVES OF THE PROPOSED CONSULTANCY

The objective of this Consultancy would be:

- i. To ensure that the quality of works and installations along with workmanship is conforming to technical specifications, contract documents, designs/ drawings, relevant Indian standards.
- ii. To ensure "sound construction procedures".
- iii. Specially ensuring that foolproof arrangements have been made to assure the quality of construction through proper procedures, curing etc.
- iv. Deployment of the 'state of the art/ improved devices/ engineering instruments' to expedite quality control testing such as **Non-destructive concrete compression testing gauge, advanced concrete cover meter & Rebar detectors** for ensuring specified nominal cover in the RCC wells etc.

- v. To undertake monitoring of the quality of materials used, construction procedures as per the agreed designs, and quality of outputs at various construction stages as per the bid specifications.
- vi. To carry out the field tests required for assuring the quality in presence of the regular Water Resources Department staff.
- vii. To recommend measures for rectifying the defects observed during the inspection and ensuring compliance.

6.0 OUTLINE OF TASKS TO BE CARRIED OUT AND LOCATION OF THE WORK

About **600 to 700 tanks of Minor Irrigation and Panchayat Raj & Drinking Water Departments** in each of the 15 districts (as indicated in the introduction paragraph above) are considered to be installed with 50,000 Ground Water Recharge Wells in about 10,000 tanks. All these tanks are to be covered during this consultancy period for which, the consultants will carry out Quality Control & Quality Assurance work.

The tests would mostly consist of the quality & quantity of cement concrete and steel reinforcement that is used in the production of the RCC rings, if specifications for the production of RCC rings followed as desired and whether the required grades and quantity of the filter materials is used.

6.1 QUALITY CONTROL TESTING

Expected services to be provided by the consultant under this consultancy would be as follows:

- i. The consultant would be required to ensure and certify the quality of work by conducting the tests in-situ and laboratory inducting at least fully functional **One or more Mobile Quality Control Laboratory (MQCL)/ vehicle duly equipped** with necessary testing equipment (Bolero or equivalent).
- ii. The consultant MQCLs will be demonstrated within Two (2) months of signing the agreement and obtain due certification by the committee to be constituted by Project Director, OCTDMS.
- iii. The consultant will setup a full-fledged office in **one or two places in the above-mentioned districts or at Bhubaneswar**.
- iv. The consultant will develop MIS systems for monitoring and reporting of progress of works and their associated quality control and quality assurance aspects, acceptable to DPMU, SPMU, and GoO.

- v. Review meeting will be held every month to monitor the consultancy work.

7.0 DATA, SERVICES, AND FACILITIES TO BE PROVIDED BY THE CLIENT

The GCF project through their designated representatives would:

- a) Provide space for consultative meetings. It is expected that the consultant team will be in close and constant touch with the client and its' designated team during the period of the assignment. The space will be provided to facilitate the interaction and review of this assignment.
- b) Provide available data and information that would be relevant to carry out the assignment.
- c) Help, identify, contact in the project areas, when required, and facilitate consultation with agencies potential project beneficiaries and others. Would help establish contacts in the project areas and facilitate consultation with agencies. The consultant would be responsible for contacting the concerned Construction Engineers and synthesize and analyze the information available.
- d) Make available copy of GCF Operational policies and guidelines relevant to the needs of the agency.
- e) Provide a copy of Project Implementation Plan, Project Technical Manual and other relevant project related documents.
- f) The Consultant would get support of the Project Team throughout the assignment period. The Consultant would be responsible for all transport and accommodation at project sites and in zonal headquarters. All requirements regarding the Data Services and facilities will be informed to the SPMU well in advance. The consultant would be extended support by the project team at the Zone, District as well as at the project level.
- g) If the consultant desires, then Executive Engineer (s) in its jurisdiction, will provide space for parking of MQCL for field visit.

8.0 QUALIFICATIONS OF THE CONSULTANCY FIRM AND KEY PERSONNEL:

- a) The consultant firm should have prior experience in monitoring similar QC & QA work in civil engineering project in wide geographical spread.
- b) The consultant firm having experience in external aided projects is preferred.

- c) The Consultant is expected to mobilize logistic in terms of hiring of vehicles and identifying the base laboratory to carryout tests as envisaged in the assignment.
- d) The consultant firm having experience in technical audit in Irrigation sector is preferred.
- e) The agency should be a registered legal entity in India with at least 5 (Five) years of existence in the relevant field of working in Odisha (should attach the incorporation/ registration certificate and list of Board of Directors, office address details etc.);
- f) The agency should not be blacklisted with the Govt. of Odisha/ NABARD/ World Bank and other UN Agencies at the time of signing of contract for the consultancy.
- g) Should have an average Annual Financial Turnover of at least **Rs. 100 Lakh** (Hundred Lakh rupees) in three preceding years (should furnish three years audited statement of accounts);
- h) Should have worked in Government/ World Bank financed/ Externally Aided projects in India;

8.1 LIST OF KEY PROFESSIONAL POSITIONS WHOSE CV AND EXPERIENCE WOULD BE EVALUATED (LIKELY STAFF INPUTS)

The Consultant will provide a team of experts with the following skill sets who shall be adequately qualified and experienced in both Civil Engineering Construction management, quality control involved in it and related field to satisfactorily and timely deliver the expected outputs.

a. TEAM LEADER

- i. He shall be a Post graduate in Civil Engineering subject and possess **15 years'** post qualification experience in Construction Management of irrigation projects and having experience in supervisory position under the state Govt./ Central Government/ equivalent position in the irrigation projects/ Civil Construction projects.
- ii. Experience of managing multidisciplinary teams is essential.
- iii. Past experience QC & QA for external aided project will be preferred.

b. TWO SPECIALISTS (EXPERT) IN CIVIL WORKS/ CONSTRUCTION MANAGEMENT.

- i. They shall be graduates in civil engineering and possess atleast **5 years** of post-qualification experience in Construction, Quality Control and Quality Assurance of Irrigation/ Building/ Cement Concrete structure Works.

ii. Should have relevant experience in construction of cement concrete/
Reinforced Cement Concrete works.

iii. Past experience of having conducted field Quality Control tests is preferred.

c. FIVE LABORATORY TECHNICIANS (MQCL FIELD TESTS)

They shall be a Degree/Diploma in Civil Engineering and possess **3 years** of post-qualification experience in Quality Control and Quality Assurance Works.

They should be conversant with the testing in laboratory and field testing works. Past experience in Irrigation/Civil construction work is preferred.

9.0 DURATION OF THE ASSIGNMENT

The total expected duration of the assignment is 3 (Three) years from the date of signing the contract.

10.0 COMMUNICATION ADDRESS

The Expression of Interest to be submitted by speed post/Courier to the following address;

Project Director, OCTDMS

7th Floor, Rajiv Bhawan,

Bhubaneswar-751001

Ph: 0674-2512421/ email: spuoiipcra.od@gov.in
