



TERMS OF REFERENCE

Project Name	Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan
Title of Assignment	Technical Specialist for Irrigation Design & Implementation
Contract Type	Individual Consultant – 2 Persons National
Duty Station	Agriculture Engineering Division, Department of Agriculture, Thimphu
Duration of Contract	1 year and renewable based on performance
Pay Scale	Nu. 80,000 (lumpsum)

1. BACKGROUND

The Royal Government of Bhutan (RGoB) is implementing Global Climate Fund (GCF) Project titled “Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan”. The investment program, seeks to enhance the resilience of smallholder farms to climate change, especially variation in rainfall and frequent occurrence of extreme events, through three complementary outputs of which integrating climate change risks into water and land management practices that affect smallholders is one of the important output/component. Given that the reliance on rain-fed practices is also of limited use in the face of increasing rainfall variation, this component will realign four irrigation schemes towards reliable water sources to support farmers experiencing water scarcity during the dry season. The project will also be used to strengthen the resilience of 32 existing open earthen canal irrigation schemes against extreme events. GCF resources will also be used to procure and install water harvesting technologies through construction of small earthen check dams and ponds, and earthen storage tanks as small-scale reservoirs for irrigation water supply during dry periods and drought. Other water saving technologies such as drip irrigation and sprinkler irrigation will also be supported for high value crops such as vegetables and horticulture crops.

However, due to dearth of design expert within the Agriculture Engineering Division of the Department of Agriculture as well as at the district level to design larger abstraction and more complicated works including mitigation of slope instability processes, the project will need support of an experienced irrigation or water supply expert particularly during the first few years of project implementation.

In this context, the Project Management Unit (PMU), Green Climate Fund (GCF) Project, GNHC is looking for a National Expert (Irrigation Engineer) to provide technical backstopping and support to the engineers of Agriculture Engineering Division under Department of Agriculture, Ministry of Agriculture and Forests and project districts who are involved in implementing aforementioned irrigation activities.

2. OBJECTIVES OF THE CONSULTANCY ASSIGNMENT

The overall objectives are to:

- design quality, appropriate, efficient, economical and sustainable irrigation systems;



- provide technical backstopping to engineers of Agriculture Engineering Division (AED) and project districts in the implementation of the irrigation activities of the project.
- Work with and build the technical skills of AED and district engineers for the design and implementation of irrigation schemes.
- Ensure quality and timely completion of irrigation schemes

3. SCOPE OF WORKS

The responsibilities of the expert (Consultant) comprise the following:

1. Under the GCF Project Component Manager (Irrigation) and Chief Engineer, AED, DoA, prepare/lead the design, cost estimate and tender preparation of the irrigation schemes of the project, including intakes, transmission and distribution systems, pumps, reservoirs, etc.

As part of this, the expert will:

- Undertake assessment of water needs, water availability, resources availability of each schemes under the project, etc;
 - Design of intakes and/or infiltration galleries to maximize their efficiency, and minimize the effects of siltation, climate change impacts and their maintenance requirements;
 - Design water transmission main including pipe trenching & laying, thrust blocks, pressure testing, access for cleaning/repair (incl. air/scour valves), pumping and power supply, etc.
2. Prepare the detailed designs and drawings of the proposed schemes.
 3. Assist the engineers in preparing As-built drawings for the proposed schemes after completion of the works.
 4. Assist AED and districts engineers to prepare the required technical specifications, bills of quantities, cost estimates and tender documents.
 5. Participate in the evaluation of bids (both goods and works).
 6. While designing and adopting particular technology, consideration should be given for the life-cycle costs of the proposed systems, the financial and technical capacities of the respective local governments to operate and maintain proposed system.
 7. Be available for technical support; undertake field visits for site supervision and monitoring during implementation. The expert is required to respond to design queries, if any, after the completion of the assignment. The expected maximum turnaround time (TAT) for such queries is 10 days. If design queries cannot be sufficiently clarified through phone or email, the expert will be required to visit the site in person and any expense incurred in the process shall be borne by the Client.
 8. Provide on-the-job training and mentoring to the designated AED and dzongkhag engineers on the design and procurement of irrigation schemes, use of relevant software, suitable technologies, etc.



9. Review of technical drawings, specifications, Bill of Quantities (BoQ), etc., prepared by district engineers, and suggest for improvement, as necessary;
10. Analysis of measures, quantities and description of each item in the BoQ and material specifications.
11. Technical advice to the development of a list of equipment and materials to be procured and installed in light of specific engineering parameters.
12. Conduct periodic monitoring of all infrastructure activities within the framework of the project.
13. Incorporate successful regional and international experiences in irrigation systems and strategies in comparable situations, especially in the field of water demand management to optimize the system, water resource(s) and equitable water use.
14. Conduct any other tasks needed for successful completion of the consultancy's objectives.

4. IMPLEMENTATION MODALITY & ACCOUNTABILITY

The expert will be stationed in the Agriculture Engineering Division (AED), Department of Agriculture, Ministry of Agriculture & Forests, Thimphu, Bhutan. The expert shall report directly (accountable) to the Chief Engineer, AED, for day-to-day work and the Project Director, GCF PMU, GNHC for overall work coordination. AED will provide: furnished work space, office internet access and phone facilities, printing facilities, data required for the design of the systems, assistance to prepare drawings, and administrative support, etc.

The expert will work closely with GCF Project Component Manager (Irrigation) and other relevant staff designated. The work will be executed through a combination of design work at the AED office and site visits as required. He/she will report from time to time on progress of the work and on any other issues during the course of implementation. The expert will work as a team member with the Project Management Team, Dzongkhag Engineers, Dzongkhag Agriculture Officers, Geog Agriculture extension officers and local leaders who will assist him/her in coordination of work within the dzongkhag.

5. WORK STATION

Thimphu, Dagana, Punakha, Samtse, Sarpang, Tsirang, Trongsa, Wangdue, Zhemgang Districts but will require extensive travel to remote areas of the identified geogs/chiwogs.

6. SKILLS TRANSFER

The expert will be required to work with junior professional counterparts to whom he will transfer skills and knowledge.



7. KNOWLEDGE MANAGEMENT/PROFESSIONAL DEVELOPMENT

The expert will contribute in a demonstrable manner to the development of knowledge, approaches, methods and techniques. He/she must actively contribute to sharing his/her knowledge with partner/clients, colleagues with the engineers in the Department of Agriculture and the Districts.

8. PROCESS/RELATIONS

The expert will maintain partner relations based on Terms of References agreed with the partner organizations. He/she must manage own activities based on a work plan and works independently with minimum supervision. He/she must balance partner expectations, colleagues' needs, innovation (external & internal) and efficiency considerations.

9. ASSIGNMENT DURATION

The expert will be recruited for an initial period of 12 months and renewed based on the performance thereafter.

10. QUALIFICATIONS AND EXPERIENCE

10.1 Required qualifications and experience

1. A Bachelor or higher-level degree in Civil Engineering (specialized in Irrigation engineering). Preference will be given to those with MSc Post graduate qualifications.

2. A minimum of 10 years' experience in:

- Planning and designing of Irrigation systems, including: intakes, transmission and distribution systems, pumping systems, reservoirs, infiltration galleries etc., in situations and contexts similar to Bhutan;
- Preparation of technical specifications, cost estimates, tender documents, etc., preferably according to RGoB and international procurement procedures or similar procedures; and
- Preparation of detailed design reports.
- Professional experience in the field of irrigation development.
- The expert must have proven track record of successful implementation of irrigation projects in the country/Bhutan.
- The expert should have experience in survey and design, quality control, construction management and ability to train other persons.
- Experience of managing projects involving studies for irrigation development, design of small scale gravity works, drip & sprinkler works and water storage structure/reservoir.
- Experience of managing a small team to undertake studies and design works will be essential.
- Experience of working closely with counterparts and providing training/capacity building.

3. National experience of irrigation systems and strategies in comparable situations, including water demand management.



4. Familiarity with AutoCAD and Water-Cad, or similar hydraulic design software.

5. Language requirement- Excellent written and oral competency in English and national language

10.2 Desired qualifications and experience

- Experience of on-the-job training and mentoring in irrigation and water supply skills.
- Knowledge of climate change impacts and resilience strategies.
- Experience of leading and managing irrigation and water supply projects and design teams.
- Survey and design knowledge using relevant computer aided software.
- Knowledge and experience in workshop facilitation, training, presentation and participatory techniques.
- Experience with writing of strategies, reports and assessments.
- Literate in computer applications.
- The expert is expected to report in English and thus will require fluency in this language.
- Posses the ability and commitment to work and give results with minimum supervision.
- Ability to work under pressure and to coordinate and link with multi-disciplinary experts; and willingness to travel frequently to project sites.
- Must be willing to travel extensively in remote areas.

11. CONTACTS/PARTNERS

- Agriculture Engineering Division, Department of Agriculture (DoA), Ministry of Agriculture and Forest (MoAF).
- Project Management Unit, Green Climate Fund (GCF) Project, GNHC.
- Dasho Dzongdag, Dzongkhag Engineer, Dzongkhag Agriculture Officer, Site Engineer, Agriculture Extension staff, Gup, etc., of Project Dzongkhags.

12. REMUNERATION

The client will pay the expert a minimum lumpsum amount of Nu. 80,000 (eighty thousand only) per month. With an annual increment of 7.5% and daily allowance of Nu. 2000 per day and mileage as per RGOB rules.

The interested qualified candidates must submit the following documents to the HRO, GNH Commission, Thimphu. The documents must be submitted in a clearly labelled Envelope **“Expression of Interest for the National Expert - Technical Specialist for Irrigation Design & Implementation”** not later than **5 PM, on 14th August 2020**, to the address mentioned above.

For further inquiry, please contact Mr. Karma Wangdi at 17378087 or email karmawangdi@gnhc.gov.bt. Only shortlisted candidates will be contacted for the selection process.



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1. Civil Service Employment Application Form
2. Detailed CV
3. Copies of Academic transcripts and Certificates
4. Motivation letter
5. Valid Security Clearance
6. Reference/Support documents (relevant training documents).
7. Valid Medical certificate certifying fitness to take up this assignment
8. Copy of Citizenship card
9. Copy of extra-curricular activities
10. No Object Letter, if employed.