



TERMS OF REFERENCE

Project Name	Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan
Title of Assignment	Short term consultancy services for the Design, Cost Estimates, Drawings and Supervision of irrigation schemes
Duration of Contract	<ul style="list-style-type: none"> ▪ 75 days for Design and Cost Estimates and Drawings ▪ Supervision as required

1. BACKGROUND

The Royal Government of Bhutan (RGoB) in partnership with UNDP is implementing Global Climate Fund (GCF) Project titled "*Supporting Climate Resilience and Transformational Change in the Agriculture Sector in Bhutan*". The project seeks to enhance the resilience of smallholder farms to climate change, especially variation in rainfall and frequent occurrence of extreme events. One of the major has been to integrate climate change risks into water and land management practices that affect smallholders farms. Given that the reliance on rain-fed practices is also of limited use in the face of increasing rainfall variation, the project 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 34 existing open earthen canal irrigation schemes against extreme events.

However, due to dearth of design expert within the Department of Agriculture as well as at the district level to carry out the design works, the project will need support of an experienced irrigation expert to complete the project targets on time.

In this context, the Project Management Unit (PMU) of the Project is looking for a National Expert (Irrigation Engineer) to carry out the design, cost estimates and supervision of six irrigation schemes.

2. OBJECTIVES OF THE CONSULTANCY ASSIGNMENT

The main objective is to design, cost estimates and supervision of the following irrigation schemes:

1. Creedigang irrigation scheme, Korphu, Trongsa
2. Longchu irrigation scheme, Drakteng, Trongsa
3. Neycheychu irrigation scheme, Sergithang, Tsirang
4. Tashilingtoe, Tashibi & Salapong irrigation scheme, Phangkhar, Zhemgang
5. Lamitar irrigation scheme, Yoeseltse, Samtse
6. Chukam irrigation scheme, Dorona, Dagana

3. SCOPE OF WORKS

The responsibilities of the expert (Consultant) are comprised of the following:

- Prepare detailed designs, drawings and cost estimates and Bill of Quantities (BoQs)
- Provide supervision at least twice in every six months and additionally, as and when required by the PMU during other days.
- Take full accountability on the design, cost estimates and supervisory roles on the delivery of quality works including redesign and costing in the event of any omissions of the required components of the irrigation schemes.
- Consultant to report directly to the PMU on any matter related to the assignment.



The expert will carry out following as part of the detailed design assignment:

- Undertake assessment of water needs, water availability, resources availability of six schemes under the project;
- 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) and power supply, etc.
- Analysis of measures, quantities and description of each item in the BoQ and material specifications.
- Be available for technical support; undertake field visits for site supervision and monitoring during implementation as per ToR. The expert is required to respond to design queries, if any, after the completion of the assignment from the PMU and Dzongkhags. 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 Consultant.
- Technical advice to the development of a list of equipment and materials to be procured and installed in light of specific engineering parameters.
- Submit reports (design and site monitoring) as per the deliverables and intended outputs under this TOR

4. DELIVERABLES

Activity	Timeline	Payment schedule (%)	Requirement
Submission of workplan	5 days from the issuance of work order.	30%	Submit the work plan.
Design and estimates	75 days from the issuance of work order.	70%	Submit the completed design, estimate and drawing and make presentation to the client.
Supervision	As per implementation plan of the PMU & Dzongkhags.	Per visit basis	Submit the field report.

5. IMPLEMENTATION MODALITY & ACCOUNTABILITY

The expert will coordinate and collaborate in consultation with the PMU and concerned Dzongkhags. The expert shall report directly (accountable) to the Project Manager, PMU for overall work coordination.



6. PROCESS/RELATIONS

The expert will maintain partner relations based on Terms of References agreed with the partner organizations. He/she must submit the detailed work plan of deliverables and effectively 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.

7. ASSIGNMENT DURATION

The expert/firm will be recruited for a period of 75 days from February to May 2023.

8. QUALIFICATIONS AND EXPERIENCE

1. A Bachelor or higher-level degree in Civil Engineering (experienced 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 to Bhutan;
 - Preparation of technical specifications, cost estimates, tender documents, etc., preferably according to RGoB procedures; and
 - Preparation of detailed design reports.
 - Professional experience in the field of irrigation development.
 - The expert must have proven track record of successful design and implementation of climate resilient irrigation projects in Bhutan.
 - The expert should have experience in survey and design, quality control and construction management.
 - Experience of managing a small team to undertake studies and design works will be essential.
 - Experience of working closely with counterparts.
3. Must have undertaken design and implementation of a minimum of five (05) climate resilient irrigation schemes independently.
4. Familiarity with AutoCAD, SketchUp and Water-GEMS, or similar hydraulic design software.
5. Language requirement- Excellent written and oral competency in English and national language.

9. SELECTION & EVALUATION CRITERIA

Sl. #	Component	Evaluation Marks
1	Similar experience: Number of design and implementation of climate resilient irrigation schemes (ToR)	60%
2	Qualifications (ToR)	15%
3	Professional Experience (ToR)	15%
4	Familiarity with design software (ToR)	5%
5	Work experience in similar geological conditions (Bhutan)	5%
	Total	100%



10. CONSULTANCY FEE

The client will pay the expert based on the quoted price as detailed below:

1. Field visit to understand the ground situation prior to design work.
2. Design, cost estimate and drawing.
3. Supervision during the implementation (as and when required by the PMU).

11. PENALTY

If the consultant cannot deliver the work within the stipulated timeline, a penalty shall be levied as per the prevailing rules of consultancy services.