

**TERMS OF REFERENCE (TOR) FOR
CLIMATE RESILIENT AGRICULTURE PRACTICES EXPERT
UTTARAKHAND CLIMATE RESPONSIVE RAINFED FARMING PROJECT**

PROJECT NUMBER- P179357 Ref No. 07/11-12(5) /UCRRFP/2022-23

1. PROJECT OVERVIEW

Uttarakhand Climate Responsive Rain-fed Farming Project (UCRRFP) will be implemented by the Watershed Management Directorate, Uttarakhand. The project development objectives are to improve resilience of production system to make mountain farming GHG Emission competitive and profitable in selected micro-watersheds of Uttarakhand. UCRRFP is a six-year project to be operational from 2023 to 2029. The project cost is USD 138.39M (IBRD: USD 100M, State Govt. USD 32.82M & Beneficiary: USD 5.56M).

1.1 Project Description

Uttarakhand being a hilly state agriculture is pre- dominantly rain-fed and remains vulnerable to moderate to extreme weather conditions. Sustaining increased agriculture outputs in a rapidly changing climate will require adaptation at a faster pace. Enhancing food security while reducing GHG Emissions from farming practices will require transition to production systems that are more productive, use input more efficiently, have greater stability in outputs and are resilient to short- and long-term climate variability.

Uttarakhand Climate Responsive Rainfed Farming Project (UCRRFP) will be implemented in 06 hilly districts and 02 plain districts of Uttarakhand covering about 1200 villages and comprising of 56 Micro watershed clusters.

1.2 Result Indicators

The following Key Performance Indicators (KPI) are proposed for measuring the core outcomes of the project: -

- ◆ **KPI #1:** - Reduction in GHG emissions from representative cropped land parcels.
- ◆ **KPI #2:** - Increase in productivity of selected crops.
- ◆ **KPI #3:** - Increase in net income of sampled households adopting improved agricultural technology.

- ◆ **KPI #4:** - Increased water discharge in the identified spring- sheds.

1.3 Project Components

Component A- Participatory and Science based Planning (USD 20.91million)

Given the science-based focus of the project the Project Management Unit (PMU) setup under the WMD will constitute a consortium that will engage researchers/scientist from leading institutes to handhold the project implementation. The project implementation at ground level would involve a community demand driven approach where in through participatory approach climate resilient Gram Panchayat Plans will be developed. This would involve community mobilization, sensitization and their awareness building to the climate change mitigation and adaptation strategies.

Component B – Building Climate Resilient Watersheds and Production Systems (USD 76.64 million)

To build the climate resilient watersheds with the support of participating communities, watershed and spring-shed management interventions shall be carried out. These initiatives would help in resolving the issues of availability of water for irrigation and other purposes which is critical for building the resilience of the marginal mountain farmers whose farming is totally rain-fed.

To increase the productivity, the project will give both technical and farming inputs to the farmers in agriculture, horticulture, allied sectors and small ruminants. In the endeavour to make farmers climate resilient integrated farming systems shall be promoted, organic farming, integrated pest management, integrated nutrient management and protected farming systems shall be developed. In the process the project will support interventions that reduce GHG emissions from farming systems.

Component C- Improving Income Resilience (USD 17.57 million)

The projects priority is to increase the income resilience of the mountain communities for this effort shall be made to strengthen the Agri-marketing systems of the farmers by organizing them into farmer's federations and by providing them value addition services, developing end to end supply chains and by making agro-logistics carbon

neutral. The project shall support the development of Agri-enterprise hubs by setting up of Agri Business Growth centres in the remote areas.

With the objective of the ensuring inclusiveness and equity various non-farm based livelihood initiatives will be provided to the marginalized households in the project villages.

Component D –Knowledge, ICT and Project Management (USD 23.27 million)

The project with the support of the consortia will set up a knowledge hub in the PMU. This knowledge hub will analyse, synthesize and document the various methods/practices/approaches/strategies/required in the efficient use of the natural resources, GHG emission reduction, development of resilient integrated farming systems and marketing inputs. The project will work towards enhancing the staff's capacity at the WMD and inter- departmental levels to mainstream climate resilient approaches at the state level.

This component would also cover the institutional setup, coordination, monitoring and evaluation of the project and overall management of the project by the PMU.

NEED FOR CONSULTANCY SUPPORT

1. The project has an objective to improve the resilience and productivity of smallholder farmers for increased profitability with low GHG emissions through improved techniques and sustainable agricultural practices.
2. Building competence of multi- stakeholders on the impacts of climate change in Agriculture / Agri-allied sectors to identify and implement climate change related interventions.
3. Project implementation at ground level would involve a community demand driven approach where Climate Resilient Plans will be developed, Consortia with researchers/scientists from pioneer institutes will handhold the project implementation in this direction.
4. Monitor and plan the project outcomes that will strengthen the adaptive capacities of vulnerable smallholder farmers, especially women, to climate change induced impacts on their Agro-ecosystems and livelihoods through

resurgence of minor irrigation schemes, soil moisture management and water use efficiency, climate-resilient agriculture, improved access to climate information and markets, and partnerships with public and private sectors.

5. Project is envisaged with researching and promoting agricultural strategies to counter the effects of changes in soil, climate, weather, and pest damage.
6. Growing concern of Project is to study detrimental effects on the environment and biodiversity as well as the resilience and adaptability of cropping systems to climate change. Crop diversification and systemic research approach may stabilize productivity of cropping systems and reduce negative environmental impacts and loss of biodiversity.

SCOPE OF WORK

1. Agricultural intensification has increased crop productivity but has led to production with lower diversity of cropping systems, higher genetic uniformity, and a higher uniformity of agricultural landscapes, So an understanding of crop diversification and systematic research approach is to be included.
2. Review the use of 'crop diversification' measures in agricultural research, analyse changes in crop diversification studies over time, identify diversification practices based on crop species and experimental setup, identify target parameters to assess the success of diversification.
3. Finding problem of existing farming practices and the potential need for diversification, characterisation of the baseline system to be diversified, defining the scale and target area, and defining the expected impacts.
4. Develop tailored agronomic approaches, examine, Research, and Solve problems related to crop management, output, and quality, developing and promoting better farming practices. Develop better planting, cultivation, and harvesting techniques, improving crop yield, and solving problems for all stakeholders.
5. Visiting fields to collect seed, plant, and soil samples, testing samples for nutritional deficiencies, diseases, or other changes, assisting with the plant sourcing, testing, and selection. Developing planting and irrigation schedules,

budgets, and timelines.

6. Demonstrate experience on the application of farmer centred extension approaches such as farmer field schools and farmer to farmer extension models.
7. Adopting potential practices to make cropping systems more diverse in space, time and genetics. Consequences of diversification are temporal shifts and ranges of phenological stages (relevant for biodiversity and adaptation to climate change), more frequent or continuous soil cover and more diverse management strategies, i.e. ‘tillage’, ‘sowing dates’, ‘fertilization’, ‘irrigation’, ‘harvesting’ and also reducing labour peaks and economic risk.
8. Preparing Baselines of crop diversification, in order to improve the performance of an existing system. There are numerous benefits of multi-cropping, including the preservation of biodiversity, reducing crop failure risk, decreasing pollution, and reducing the risk of diseases and pests such as weed invasion. Therefore, the current research is being carried out to evaluate the prospects and challenges of climate.
9. Monitoring the project outcomes that will strengthen the resilience and adaptive capacities of rainfed farmers, to climate change induced impacts, carbon sequestration, low GHG emissions, improved rainfed agricultural productivity and water resource management.

KEY DELIVERABLES:

1. Development of package of practices for climate resilient diversified agricultural production system, which helps to minimize risks (climate) at both production and marketing stages to increase the average income of the farmers.
2. Development of indicators for mitigation and adoption for climate resilient agriculture and allied activities.
3. Development methods/protocol for implementing climate-resilient agricultural practices at field level.
4. Development of modules to measure key indicators in relation to climate resilient agriculture.
5. Collection, analysis and interpretation of related field as per project requirements.
6. Develop innovative methods, teaching/learning tools, techniques, approaches and materials, including written, audio/visual material, field visits, best practice and models for climate- resilient agriculture.
7. Coordinate with all stakeholders in developing various-sector knowledge pool and give inputs in developing dissemination protocols that will lead to achieve the Project outcomes.

8. Training manual and training sessions for project staff, farmers and all stakeholders .
9. Preparation of different reports as per requirements of PMU.

JOB DESCRIPTION:-

Location of Job: PMU, UCRRFP, WMD, Dehradun, Uttarakhand.

Reporting Line: Project Director, UCRRFP, WMD.

WORK STATION:-

The consultants would be based in the Watershed Management Directorate, Dehradun and would make field visits to project area as needed.

OWNERSHIP :-

Watershed Management Directorate of Uttarakhand will have ownership of the data/applications etc. The consultants will have no right of claim to the products developed and shall not replicate them without prior consent of WMD.

ESSENTIAL QUALIFICATIONS :-

1. Graduate degree in Agriculture with Post Graduate degree in Agronomy/ Crop science/ Horticulture including vegetable science with minimum five years of Professional experience in the field of Hill/ Rainfed agriculture/Farming, out of which at least three years of experience of working in govt sectors, govt. projects/ externally aided projects.
2. Ability to analyse the data, make inferences and ability to prepare reports. (A copy of a best report- pdf format max 250 MB prepared by the applicant needs to be uploaded on the website)

DESIRABLE QUALIFICATIONS :-

1. Doctorate degree in relevant fields.
2. Advanced courses in Crop Production/ Sustainable Agricultural Land Management / Ecology/ Climate Change/Sustainable Development.

3. Any published papers/documents in climate resilient agricultural practices for rainfed agricultural production systems.
4. Any other qualifications/knowledge/ printed or audio visuals related to scope of works.

REMUNERATION:

Depending on qualification, experience and competency of the candidate, the salary is negotiable.

PERIOD OF SERVICE:

The contract shall be initially for a period of minimum 1 (one) year with a provision of further extension on an annual basis up to the end of the project, subject to satisfactory performance as assessed by the Project Director, UCRRFP.
