
Government of Nepal
Ministry of Energy, Water Resource and Irrigation
Department of Water Resource and Irrigation
Rani Jamara Kulariya Irrigation Project-II
Tikapur, Kailali

TERM OF REFERENCES
FOR THE PROCUREMENT OF THE CONSULTING SERVICES FOR
THE IMPLEMENTATION OF TRAINING OF TRAINER (TOT) FOR LEAD WUA

**Detailed Hhs Survey Through Customized Office Data Collection Application
For Sub-Branch Wise Sub-Branch Command Area**

And

Performance Evaluation/Study Of WUAs Under RJKIP

April 2022

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The Implementation of Training of Trainer (TOT) For Lead WUA

1. The Project

The Rani, Jamara, and Kulariya Irrigation Scheme (RJKIS) is one of the largest farmer-managed irrigation systems located in Province -7 Kailali District of Nepal. At present the system covers a net cultivable area of approximately 14,300 ha of which about 11,000 ha is currently being irrigated. The system is a cluster of three independent canal systems each with its separate water intake from a natural channel of the Karnali River. The system has been suffering from problems such as frequent wash-out of temporary diversion works, large fluctuations in the river course at the head of the main diversion channel, erosion of canal banks, and sediment deposition in the canals after every flood. Additionally, a major shift of in the course of the Karnali River towards the eastern bank and away from the western intake site in the recent past has triggered more difficulties in diverting water to the irrigation system during low river flow periods.

To address these issues, the Government of Nepal (GoN), as per the request of the irrigation users of the Rani, Jamara and Kulariya system, has planned for modernization and improvement of the scheme with financial assistance from the IDA/World Bank. Accordingly, the financial agreement was signed in year 2011 and schemes improvement work initiated at the end of same year. The scope of scheme modernization works included: (a) modernization of the RJK system; (b) strengthening community-based water management; (c) providing support to agricultural development in the irrigated area; (d) encouraging crop diversification; and (f) facilitating market access. The phase -I of the system modernization was completed on December 2017

In the meantime, GON requested the World Bank to provide financial support for the remaining works of modernization of RJKIS. The World Bank agreed to provide financial assistance for the Phase-II which is now focusing on modernization of the lower-order irrigation system so that irrigation water can reach farmers' fields with the optimal flows, continuation of the WUA institutional support program including implementation of a comprehensive agricultural improvement/development program. As a part of system improvement, the scope of the work includes the rehabilitation and modernization of 14 sub-branch (secondary) canals (66.7 km) and 32.3 km of tertiary canals in Kulariya; 15 sub-branch canals (86 km) and 20 km of tertiary canals in Jamara; and 19 sub-branch canals (60 km) and 36 km of tertiary canals in Rani canal.

2. Rationale

After the implementation of modernization and command area development activities, the WUAs are supposed to assume O&M responsibilities in a more technical and professional manner than that of the present mode of resource mobilization, that is largely limited to silt excavation for water diversion. For this reason, existing capacity of WUA need to be enhanced and make them capable of formulation and implementation of adequate Operation & Maintenance (O&M) plans, setting of irrigation service fees, maintaining proper record of maintenance and other accounts, establishing in-house participatory monitoring mechanism including the optimization of on-farm water management practices for enhancing the efficiency of the improved irrigation system. To this end, the project has separate component for strengthening of WUA to make them capable of

taking over the new responsibilities with improved efficiency even after the project services are fully withdrawn.

Under the on-going Phase II, Command Area Development (CAD) activities are initiated below secondary canals up to the watercourse level to ensure the year-round irrigation with proper water management. The irrigation system below secondary canals include sub-secondary or sub-branch canal, tertiary, and watercourses to supply water to the farm field.

In this connection, the project intendeds to build the capacity within WUAs so that the project can reach out to beneficiary farmer and deliver the information on detail process and procedures applicable to implement joint participatory system improvement and management. In order to support project in all these activities, the service procurement for the project consultant has already been initiated, however the process may require another 3-4 month to on-board project consultant whereas the design and implementation of TOT program requires immediately to ensure the involvement of beneacaries in system improvement activities. The project felt that the temporary option to fulfill the existing human resource gap at project could be hiring a consulting firm and mobilize for the preparation of TOT manuals including the organization of TOT. For the reason discussed above, the consulting services for short period is proposed till the recruitment process for project consultant concluded.

3. Objectives

3.1 Overall Objective

The overall objective of the procurement of the consulting service is to streamline the joint participatory irrigation management activities in project area.

3.2 Specific objective(s)

The specific objective of the procurement of the consulting services is to produce local resource person capable of mobilizing beneficiary farmer in the wider range of activities from participatory system design to O&M of improved system.

4. Terms of Reference of Consulting services

The consultant is requested to:

- a) The consultant should provide outline of the course contents / curricula for each of the training courses in accordance with the training objectives and expected outputs stipulated in section 3.0 of this ToR. The consultant should also mention the required number of class hours for each of the training contents. The final course contents / curricula shall be finalized and approved by the project office,
- b) During the inception phase, the consultant shall review the overall joint participatory irrigation system development process adopted by the project. The project documents related to training need

assessment, WUA institutional development action plan for Phase-II and other relevant information will have to be reviewed and then design the training manuals/handouts to fulfill the gap identified in those reports. The training course should be designed focusing on the issues of the RJKIP, rather than generic. The trainees should be allowed sufficient practice after imparting the corresponding theoretical knowledge.

- c) For each of the training course module, the consultant shall provide detailed training methodology. The training methodology must be finalized in consultation with the project office
- d) Upon comments from the project office, the Consultant shall finalize the handouts /training manuals before implementation of training program.
- e) As part of the training management plan, the consult must provide the Training plan including the training session/class schedule for each of the training courses. The plan shall be finalized in discussion with the project office and will be subject of approval from the project authorities. The Plan must show the time involvement (input) of each expert proposed by the consultant. Training classes must not exceed 8 hours in length per day.
- f) At the end of each training course, the consultant shall conduct evaluation of the trainees and all successful completions must be accompanied by certificate of achievement. Similarly, at the end of each training course, there will be evaluation of the trainers, training environment including logistics, training methodology etc. by the trainees. The consultant shall prepare the test question papers and evaluation questionnaires/ checklists and finalize them upon incorporating the comments from the project. The evaluations must be carried out in the presence of representatives of the project office. If the project points out the area to be improved in training implementation, necessary measures shall be applied by the consultant as suggested by the representative of project.
- g) The Consultant must provide all the training materials / handouts in electronic form to the project office. The Project reserves right to duplicate training materials to conducts such training programs in future at no additional cost.
- h) The consultant will be responsible to find appropriate training venue for organizing approximately 10-days long residential training. All expenses related to training will be the part of the contract.

5. Facilities to be provided by the consultant

- a) The consultant shall ensure that experts are adequately supported and equipped. In particular it shall ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities.
- b) The consultant shall provide all course materials, training manuals / handouts, software, and required stationeries to all the trainees.
- c) The consultant shall ensure and manage the training class rooms required for the training. The training classes must be spacious with good ventilation and lighting facility, and must be located in a place free from noise pollution.

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- d) The consultant shall manage for the excursion sites in accordance with the objective of the assignment. The consultant shall provide transportation to and from the excursion sites.
 - e) The arrangement related to food and accommodation of trainee shall be the responsibility of consultant.

6. consultants Profile and expertise Required

The project seeks a consultant with an extensive knowledge and experience in rural development, preferably in the context of participatory joint irrigation development in large irrigation projects of Nepal.

6.1 Profile of key experts

6.1.1 Key expert -1: Team Leader- Training Management Specialist

- a) At least 5 years, preferably 10 years of sound professional experience in the areas relevant to the assignment.
- b) Professional experience of managing training in the World Bank/ADB assisted projects is preferred.

Education

Master's Degree in Sociology/Rural Development/Economics or related disciplines/fields under the scope of this assignment

6.1.2 Key expert 2: Subject matter specialist – Institutional Development

- a) At least 5 years, preferably 10 years of sound professional experience in the areas relevant to the assignment.
- b) Professional experience of working in the area of WUA institutional development, GESI social safeguard in large irrigation project of Nepal will be an advantage.
- c) Professional experience of working in the area of institution development and gender and social inclusion in large irrigation project of Nepal will be an advantage.
- d) At least 5 years' experience of working with infrastructure development project relevant to this assignment

Education

Master's Degree in related disciplines/fields under the scope of this assignment

6.1.3 Key expert 3: Subject matter specialist – System O&M

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- a) At least 5 years, preferably 10 years of sound professional experience in the areas relevant to the assignment.
 - b) Professional experience of working in the area of supporting/preparing the participatory joint canal O&M Plan will be an advantage.
 - c) At least 5 years' experience of working with infrastructure development project relevant to this assignment

Education

Bachelor's Degree in related disciplines/fields under the scope of this assignment, Master's will be an advantage

6.2 Other requirements for experts

- a) The expert should have a Nepalese nationality with an ability to speak Nepali language, ability of speaking and understanding Tharu Language will be an advantage.
- b) Previous working experience in the terai district of province-7 will be an advantage.
- c) Good knowledge of socio-economic, geographic and cultural setting of province-7 terai area of Nepal.
- d) Good knowledge and practice of computer programs (Microsoft Word, Excel and PowerPoint).
- e) Proficiency in English and Nepali.
- f) Knowledge of local language spoken in project area will be an advantage.

7. Location and Duration

7.1 Starting period

The assignment is expected to start as soon as possible after the signature of the contract by both parties (anticipated by Dec 2021), in any case no later than 15 working days after the signature of the Contract by both parties.

7.2 Foreseen finishing period or duration

The duration of this Contract is 3 months from the date of signature by both Parties.

7.3 Location(s) of assignment

The consultants will be assigned in Tikapur Kailali,

8. Deliverables, payment mode and language

Deliverables	Inception Report	Draft Report	Final Report
TOT	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 4 weeks from the contract agreement	A final report with deliverable shall be submitted 5 weeks from the contract agreement
WUA Performance Evaluation	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 10 weeks from the contract agreement	A final report with deliverable shall be submitted 12 weeks from the contract agreement
HHs Survey/Census	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 4 weeks of the contract agreement	A final report with deliverable shall be submitted 5 weeks from the contract agreement
Payment mode	30% after the submission of inception report	50% after submission of draft report	20% after final report submission
Language	English	English	English

Detailed Hhs Survey Through Customized Office Data Collection Application For Sub-Branch Wise Sub-Branch Command Area

1 Project Background and Problem Statement

Rani, Jamara and Kulariya are three separate irrigation systems originally constructed by the local farmers. Rani and Kulariya irrigation systems were developed by the farmers between 1896 and 1915. The Jamara system was developed from 1903 onwards. These three irrigation systems were independent, traditionally operated and managed by the indigenous Tharu community. Later on, towards the end of 1986, all these three systems were integrated to Rani, Jamara, Kulariya Irrigation System (RJKIS). The source of water for these irrigation systems is the Karnali river. Farmers have to spend long time and effort especially in dry season to get water in to their canals and distribute to their farmland for irrigation. This tedious diversion work has to be done by the farmers every year. This situation becomes more severe in case the river swings towards the east as it has happened now for several years.

Understanding the gravity of the farmers' problems, the Government of Nepal, Department of Irrigation, took initiative and carried out studies for its solution. The best feasible recommended solution to this problem as revealed by the study was to construct a permanent side Intake structure on the left bank of Karnali river at Chisapani and a main canal followed by a feeder canal to join Rani, Jamara and Kulariya canals. Consequently, DOI set up Rani, Jamara, Kulariya Irrigation Project (RJKIP) Office at Tikapur, in Kailali District in FY 2066/67 to implement the Project activities. The construction of side intake has been accomplished. The construction of main canal is in the verge of completion.

The existing Rani Jamara and Kulariya Irrigation Scheme consists of three independent traditional irrigation systems constructed, operated, and managed by the indigenous Tharu community. The ethnic composition of the project area includes Tharus as the dominant group (48 percent) followed by Chhetri (17 percent), Dalit (15 percent), Brahmin (10 percent), and others (7 percent). Implementation of this project will narrow down the regional imbalance and solve serious problem of irrigation faced by the indigenous people.

For the effective completion of the project as per planned it is important to carry out smooth and efficient collection of Data for the approximately 27,000 families of locals residing in that area which will require Technical assistance. With the use of an Offline Data Collection application the process of rehabilitation of the locals and impact evaluation in raising the standard of living of the farmers and other locals in the community can be made easier and more easy to analyze as well as report for Rani Jamara Kulariya Irrigation Project.

2. Objectives of the HHsSurvey Work

The specific objectives of this census are as follows:

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- a. Development of a Mobile Application that collects the overall data concerning the social and economic aspects of approximately 27,000 families of Locals that are directly or indirectly impacted by Rani, Jamara, Kulariya Irrigation Project.
 - b. Digitalization of Survey Questionnaires.
 - c. Reporting and recording of the collected data in a technical and digitally organized manner for future analysis and Impact Evaluations.

3. Scope of the Works

1. The core focus of this project will be the development of a mobile application that will run on easily available Smartphone and tablets according to the preference of the user and collects data which are designed in the form of survey Questionnaires.
2. This project will assist the Client in Baseline studies, Mid-Term Evaluations and End-Term Evaluations for the feasibility study and survey of the Rani , Jamara , Kulariya Irrigation Project.
3. The Project on its Final Phase will be able to Report and Record the financial and social aspects of the local people residing in the project development areas and the changes in the living standard of the locals.

4 Methodology

1.1 4.1 Survey Area

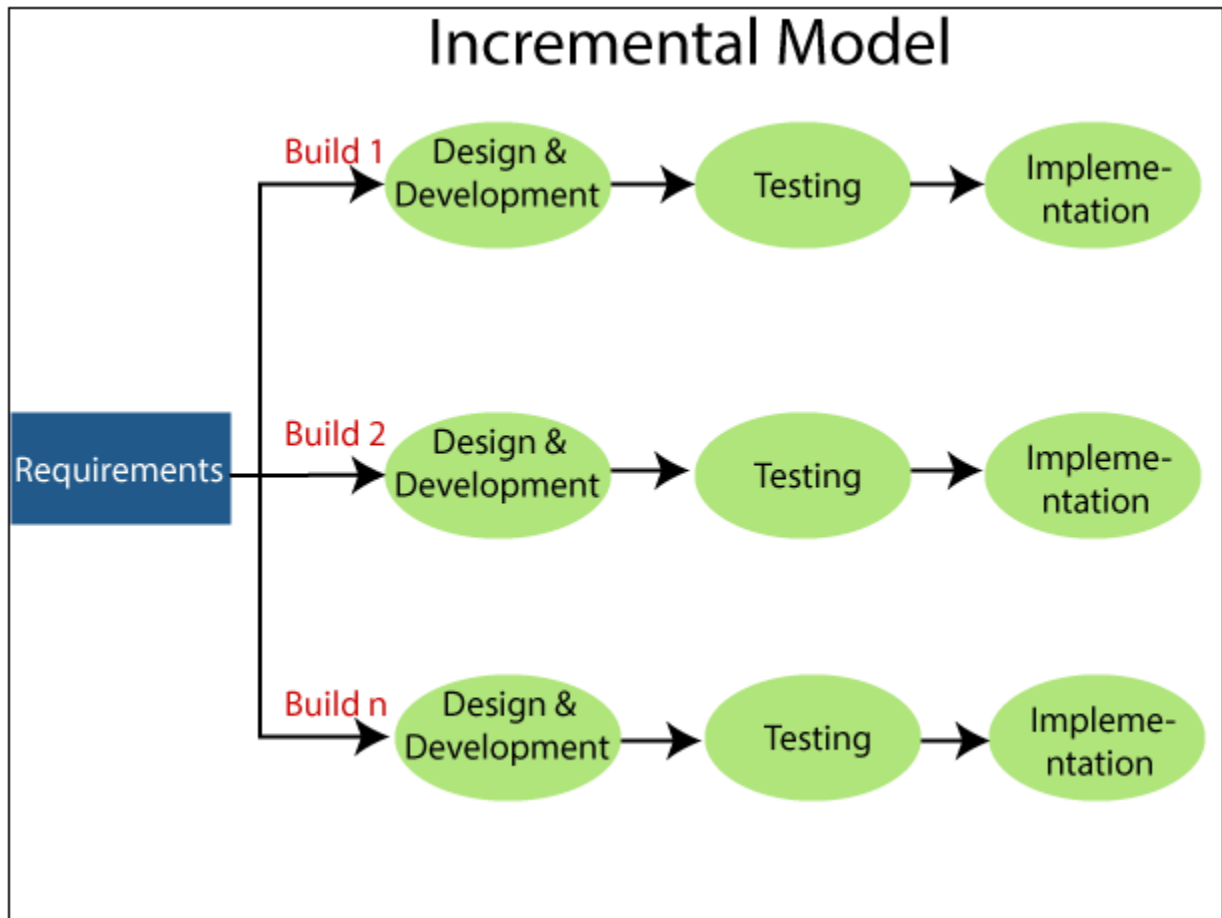
This study will be conducted in 48 SBCs of Rani, Jamara and Kulariya Command Area. Located in the Kailali District of the Far Western Development Region, the project covers three municipalities, two at the township levels (Tikapur and Lamki-Chuwa) and one at the village level (Janaki).

1.24.1.1 Development Phases



1.34.1.2 Development Process Model

Considering our Requirements, we will be Implementing Incremental model for the development of the system.



4.1.3 Phases of incremental Model

Requirement analysis

In the first step of the incremental model, the product analysis expertise identifies the functional requirements and non-functional requirements. This stage plays an important role while developing software under the gradual method.

Design & Development

In this phase of the SDLC's incremental model, the system functionality and design of the development methodology has ended with success. When the software develops new practicality, the incremental model uses the design and development phase.

Testing

In the incremental model, the testing phase examines the performance of each existing function as well as additional functionality. In the testing phase, different methods are used to test the behavior of each task.

Implementation

In the implementation phase, coding is done for developing software. The design of the software, which is made in the designing phase, is now implemented practically, and final coding is done. Upon completion of this process, the quality of the product working will be enhanced and upgrade to the final system product.

Why Incremental Model?

1. Errors are easy to detect.
2. Easy to test and debug.
3. Flexible.
4. Easy to manage risk because it has been managed through iteration.
5. The client is provided with significant functionality at an early stage.

1.44.2 Operating Environment /IDE: Andriod Studio

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhances the productivity when building Android apps

4.3 SDK/ Framework: Flutter

Flutter is a free and open-source mobile UI framework created by Google. In a few words, it allows us to create a native mobile application with only one codebase. This means that one can use one programming language and one codebase to create two different apps (for iOS and Android). Flutter consists of two important parts: An SDK (Software Development Kit): A collection of tools that are going to help develop applications. This includes tools to compile your code into native machine code (code for iOS and Android). A Framework (UI Library based on widgets): A collection of reusable UI elements (buttons, text inputs, sliders, and so on) that you can personalize for your own needs.

4.5 SQLite Database:

SQLite is a lightweight database management system that uses SQL for querying data. It allows to manage local data as if it were stored on an SQL RDBMS (Relational Data Base Management System) server and access it using the same SQL querying and manipulation code as you would in a client/server database situation.

This local data is, usually, just in the form of files. However we can even create "in memory" databases and/or tables ... allowing you to process data in memory as if you'd created a database and then written your queries or reports off of that database.

4.6 Data Collection :

After the application Prototype is ready the technical team and the client will conduct a meeting and discuss the data Collection steps which will include provision of training by the developers to the enumerators at the site . The collected data will be entered

to the app through mobile devices or tablets . For Data Collection Procedure following steps will be considered.

- **Considering Client's data needs.** Creating option for qualitative evaluation, but advances in this field are rapid, so this may change.
- **Managing the data collection process easier :** Data are submitted in real time, allowing managers to see the pace of data collection, the coverage, and which data collectors are submitting data when and from where.
- **Making entering and aggregating data easier:** Because the data are entered into the main database at the same time as they are collected, the long process of transcribing and double-entering responses is eliminated. Data can be analyzed as soon as collection is done.
- **Offering instant visualization of data:** Includes basic breakdowns of answers to each question. This can be used for managing data collection or to aid later analysis.
- **Leading to cleaner data:** Because platforms allow the form designer to put limits and skip logic on questions, answers that don't make sense can be disallowed.

- **Making the process more reliable than traditional paper surveys:** because it reduces the costs associated with printing and form transportation, double entry, and data cleaning.
- **Allowing the easy capture of other forms of data,** such as images, videos etc .

Characteristics	Variations
Platform compatibility for the Application	Andriod Phones, Tablets, Handheld Andriod Devices.
Language Compatibility for the Application	English Nepali
Web portal entry	A useful feature that allows being able to enter data through a web portal for further reporting after it is entered through a phone.
Complexity Level	The UI of the Application will be simple, easy to understand and user-friendly for quick and convenient collection of data.

4.7 Data Recording and Reporting

1.54.7.1 Draft Report, Data Sheet and other relevant data

We will provide the draft report containing the detailed activities and outcomes of the program and the data sheets collected from the field sample plots within the deadline allocated by the contract agreement. Furthermore, all relevant photographs, specimen and raw data used for completion of the assignment will also be submitted to the client.

5. Duration of the Worksand Report Requirement

The duration of study shall be of two and half month, during and at the end of which the Consultant shall submit the following reports:Final Report

In the end, a final report is prepared and submitted to the client. The contents of the final report will be similar to the draft report. However, the final report will also address the comments of the Client on the draft report. As the time between draft report and final report is just 15 days, we expect the client to provide us their comments within 5-7 days so that the Technical team can address those comments and submit the final report within the deadline.

- Inception design/methodology report (two copies) within one week from the date of signing of the agreement.
- Draft report (two copies) within six weeks from the date of signing of the agreement.
- Final report (five copies along with one copy electronic version) within two weeks after receiving comments on the draft report from the Client.

6. Team Composition

1.6 6.1 Data Analyst

The team leader is responsible for organizing all the phases of the fieldwork, and application development from the preparation to the data collection. They have the responsibility of contacting and maintaining good associations with the local community and all the relevant resources and should keep a good overview of the progress achieved in the fieldwork.. Other specific responsibilities include:

Key Responsibilities:

- a. Assess and analyze Inventory documents and reports related to Rani, Jamara, Kulariya Irrigation Project.
- b. Develop a plan of actions with timeline of each of the actions after discussion with Clients and other Team members.
- c. Coordinate the team and make sure that all the crew members are trained and capable to perform their respective jobs for the assignment;
- d. Prepare the inception report for guiding the technical team and the inception workshop;
- e. Coordinate consultation meetings and policy discussions at all levels;
- f. Manage all administrative, financial and other logistic issues of the assignment;
- g. Make sure that all the field data are recorded properly, and database is maintained;
- h. Prepare interim and final reports.
- i. Visit the site of data collection if required and demanded by the Client.
- j. Training and consultation of the enumerators for technical assistance.

6.2 Technical Assistant

Key Responsibilities:

- a. Responsible for development of The front-end as well as the back end of the mobile based Data collection Application.
- b. Responsible for the management of the web Portal
- c. Conduct Product testing by identifying and resolving any issues
- d. Conducting audits and Drafting quality Standards

6.3 Enumerators

Key Responsibilities:

- a. Conducting survey at the project site
- b. Raw Data Collection

7. Organization

The team leader will represent the Consultant Technical team, other experts will coordinate under the team leader.

A clear description of duties will be provided to all the staff of the Consultant in order to avoid overlapping and interference. Further to minimize the risks from the uncertainties such as required data types, previous study reports and secondary data availability, the communication and coordination between Client and the Team Leader is crucial.

In addition to the proposed experts, the consultant will provide additional coordination and technical support as per the requirements

8 Deliverables, schedules, mode of payment and language

The following are the deliverables, schedule and mode of payment given as follows:

Program	Inception Report	Draft report	Final report
TOT	a) A brief inception report(mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the	b) A draft final report summarizing all activities carried out with deliverables. – by the end of 3rd week from the assignment	At the end of 4 th week after assignment

	commencement		
WUA Performance Evaluation	A brief inception report(mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within two week of the commencement	A draft final report summarizing all activities carried out with deliverables. – by the end of 8 weeks from the assignment	At the end of 12 week from the assignment
WUA Performance Evaluation	A brief inception report(mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within two week of the commencement	A draft final report summarizing all activities carried out with deliverables. – by the end of 8 weeks from the assignment	At the end of 12 week from the assignment
Mode of Payment	30% after the submission of inception report	50% after submission of draft report	20% after the submission of final report
Language	Reports are must be in English language	Reports are must be in English language	Reports are must be in English language

9 Administrative Information

9.1 Language of the specific contract

All the activities and deliverables related to the contract shall be in English

The RJKIP will provide the following inputs;

- a) Office space at project office as necessary during field visit
- b) Provide letter to concern agencies for project related activities,
- c) Provide relevant project report and documents for review.

10 Supervision Arrangements

The activities foreseen under the TOR will be supervised by the project manager or a professional assigned by him.

11. Work Schedule

After the contract agreement is signed, the inception workshop starts. In the first week of inception workshop, a set of working methodology and data collection will be presented to the client and the inception workshop will last for 2 weeks. The Inception report preparation with incorporation of all the feedbacks and suggestions from the client on the working methodology and data collection will be completed in the second week of the inception workshop.

The literature review of background documents and consultation with the client will go on continuously during the inception workshop phase. And then as per the details of the mobile Application and the deadline given by the client the mobile application will be developed. It will be then tested and reviewed by the Client and as per the comments and advices it will be modified.

The field inventory and data collection will start immediately after the submission of inception report where field personnel are mobilized in order to collect raw data, photographs, maps and other related data from the field. The field inventory and data collection will take about 4-5 weeks to complete.

The data analysis is then performed after the completion of data collection in order to extract information required for report preparation. The data analysis phase will take 2 weeks. After the data analysis is completed, the draft report is prepared and the data sheet from field plot inventory will be compiled for submission as well as raw data, photographs, maps and other related data to the assignment.

The draft report preparation and compilation of data will take 2 further weeks. Finally, the comments and suggestion on the draft report by the client, detailed activities and outcomes of the program will be incorporated in the final report within the last 2 weeks and then submitted to the client.

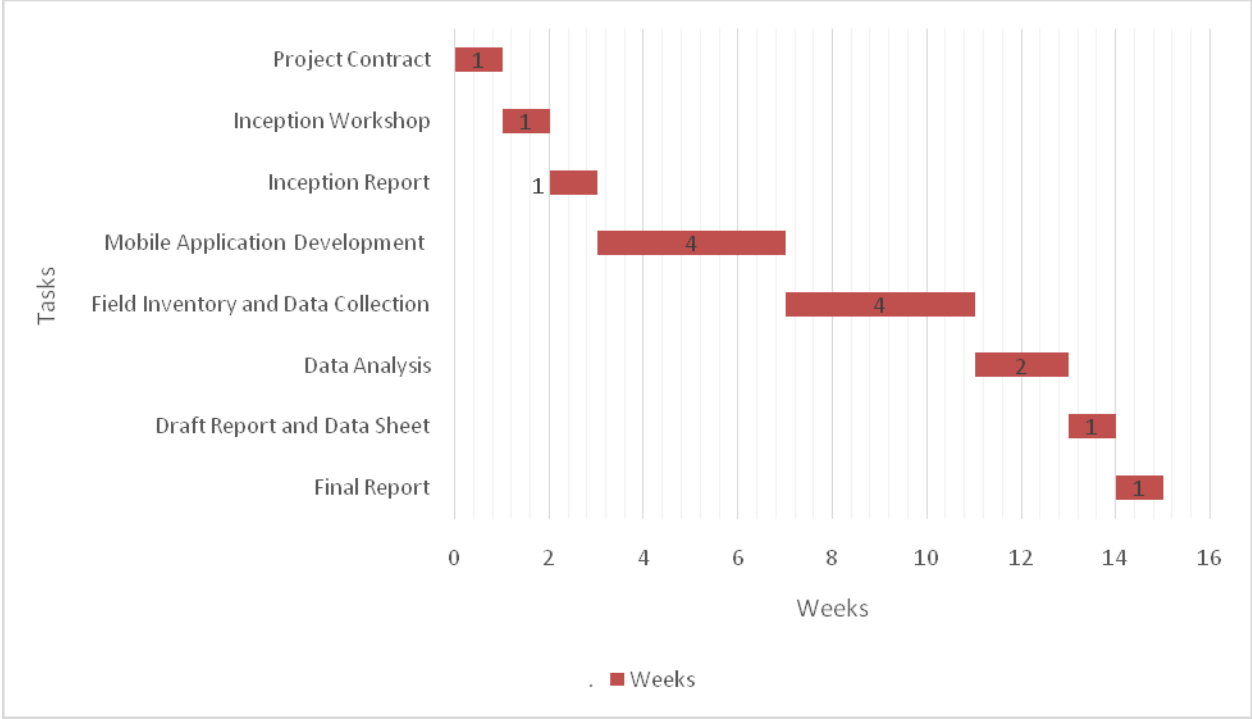


Figure 1 Gantt chart representing general work schedule

Performance Evaluation/Study Of WUAs Under RJKIP

1. Background:

- 1.1. Rani Jamara Kulariya Irrigation System (RJKIS) is one of the largest farmers managed irrigation system in Terai with total command area of 21,700 ha. including Lamki extension. The scheme is located in Kailali District, Far Western Province no.7 of Nepal. Rani, Jamara and Kulariya are three separate irrigation systems originally constructed by the local farmers. Rani and Kulariya irrigation systems were developed by the farmers between 1896 and 1915. The Jamara system was developed from 1903 onwards. These three irrigation systems were independent, traditionally operated and managed by the indigenous Tharu community. Later on, towards the end of 1986, all these three systems were integrated to Rani, Jamara, Kulariya Irrigation System (RJKIS). The source of water for these irrigation systems is the Karnali river. Farmers have to spend long time and effort especially in dry season to get water in to their canals and distribute to their farmland for irrigation. This tedious diversion work has to be done by the farmers every year. This situation becomes more severe in case the river swings towards the east as it has happened now for several years.

- 1.2. Understanding the gravity of the farmers' problems, the Government of Nepal, Department of Irrigation, took initiative and carried out studies for its solution. The best feasible recommended solution to this problem as revealed by the study was to construct a permanent side Intake structure on the left bank of Karnali river at Chisapani and a main canal followed by a feeder canal to join Rani, Jamara and Kulariya canals. Consequently, DOI set up Rani, Jamara, Kulariya Irrigation Project (RJKIP) Office at Tikapur, in Kailali District in FY 2066/67 to implement the Project activities. The construction of side intake has been accomplished. The construction of main canal is in the verge of completion. Similarly, an agreement was signed between GoN and the World Bank on October 18, 2011 and closed on September 2018 for the development of Phase-I of the Project. The loan agreement for the Modernization of Rani Jamara Kulariya Irrigation Scheme Phase -2 has been signed on May 10, 2018. The Phase-II program primarily includes rehabilitation, extension and construction of new canals and structures below secondary level to provide irrigation in the command area of RJKIS and adopt desired irrigation water management practices for the planned cropping pattern. After implementation of Phase-II activities, the command area is expected to increase from existing 11,000 ha to 14,300 ha. Increased command area with reliable year-round irrigation and better water management supported by agricultural development activities will bring in significant increase in agricultural production. This increased production from the project will certainly be helpful to fulfill food-grain requirement at local, regional and national level and backup food security aspect of the nation. Additionally, increased production will lead to increased income and subsequently uplift the living standard of the farmers.

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- 1.3 About 42 percent inhabitants of the project area belong to indigenous Tharu community. Implementation of this project will narrow down the regional imbalance and solve serious problem of irrigation faced by the indigenous people. Completion of Main, Feeder, Branch Canals and Phase-II activities will provide a leeway to the farmers for overall development of agriculture.
 - 1.4 The modernization of Rani Jamara Kulariya Irrigation Scheme Phase-2 aims to ensure adequate and reliable irrigation water and to foster improved farming practices in the command area of Rani Jamara Kulariya Irrigation Scheme. The Phase-2 which is a follow up project of Phase-1 targets to modernize the lower order irrigation system from sub-branch to watercourse, strengthening of WUA/WUC and implementation of a comprehensive agricultural improvement program. The modernization of Rani Jamara Kulariya Irrigation Scheme Phase-2 is expected to come effective on July 01, 2018 and to close on December 31, 2023.
 - 1.5 The beneficiaries are the farmers/water users in the project area. The project covers three municipalities, two at the township levels (Tikapur and Lamki-Chuwa) and one at the village level (Janaki). The project will be implemented by Department of Irrigation (DoI) and Department of Agriculture, Rani Jamara Kulariya Irrigation Project (RJKIP).
 - 1.6 There are three tiers of WUA organization e.g. 48 Sub-Branch WUAs at sub-branch canal level; similarly three Branch WUA at branch level and one Main WUA at the main canal level.
 - 1.7 Component 2: Strengthening Water Users Associations/Committees (WUAs/WUCs) and Agricultural Production Support (US\$13.4 million, of which US\$11.3 million IDA) will support: (i) strengthening WUAs/WUGs to assume responsibility for management, operation, and maintenance of the modernized system; and (ii) carrying out a series of agriculture-based activities in the project area to internalize the gains made in phase 1 and to increase and sustain agricultural production through the promotion of water-smart improved farming practices, crop diversification, post-harvest support, farmer workshop through demonstrations and farmer field schools, and other adaptive processes. Thus the second phase will adopt value-chain-based approach to support agricultural activities.
 - 1.8 Subcomponent 2a. The activities will include carrying out a program of activities, including capacity building and workshop to strengthen WUAs/WUCs to assume responsibility for management, operation, and maintenance (MOM) of the modernized system, including proper and equitable distribution of water, water use, development, and implementation of MOM plans; setting ISFs; proper maintenance of records and accounts; promoting citizen engagement (CE) and gender mainstreaming for participatory irrigation management (that is, the aforementioned GoN's JPM program), a Gender Action Plan (GAP) as part of a Vulnerable Community Development Plan (VCDP), and participatory monitoring, learning, and evaluation. The GAP includes awareness raising, capacity development workshops, farmer field school (FFS), agriculture-based workshop, small farm machinery support to women members, compensation to female-headed households (FHHs), and so on.

1.9 In this regard, this ToR is prepared for conducting performance evaluation/study of WUAs for confirming the present status of WUA and capable more to run the system MOM, which is also mentioned in PAD and PIM to conduct such study annually for assessment of WUA performance. It is also included in the 5 years WUA Institutional Development Action Plan. Outcomes or gaps of WUAs as reporting by this study will support to guide the WUAs for further strengthening through self-governing, self-operating, self-supporting and self-sustaining..

2. The assignment

2.1 Background of the Assignment

Performance evaluation/study of the functionality of the system and the WUAs should be carried out regularly by the project office. This will help check the fast deterioration of the system due to negligence. The organization could be assisted further, and rewarded if they are functioning very well as envisaged. The status of the system performances must be recorded in the office as a regular works. Assurances to WUA will be required during their operation and maintenance activities. Especially structural damages due to flood or other events needs engineering design consideration, which is beyond the capability of WUA, so project office must assist in such technical problems. Similarly it is necessary to assist WUAs in institutional development and water management of the systems and to make the WUAs more capable enough to self governing, self financing and self regulating organizations.

2.2. Review of the system Operation and Maintenance

The evaluation of the system performances from the Benchmarking toolkit will illustrate the weakness in the system. These can be rectified and improved the system performances. Improvements could be made in water delivery, income per hectare cultivated land, delivery efficiency etc.

The system office has conducted the Benchmarking survey of the sub-systems. The Benchmarking has diagnosis of the system performance using the BM toolkit. Appropriate indicators as applied in benchmarking for basic information collection could be applied here for comparison.

The degree of the efforts to make the farmers aware on the role of the Operation and Maintenance of the system would decide the sustainability of the system.

2.3. Expected Results from the Study

Following are the key expected result from study not limited to;

- Identify the gaps of WUAs in institutional development, system MOM, role and responsibilities and easy to improve in the day ahead.
- Responsive command area development of phase-II.
- Guide to increase responsibility of MOM taken by WUA.

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- Provision of demarcation of responsibility between project and WUA adhered.
 - Indicate to increase contribution of resources by WUA for MOM.
 - Increased income of farmers of the system/sub-systems through agriculture production.

2.4. Evaluation of WUA Performance

Based on WUA activities, the performance evaluation of WUA takes place. Different parameters will be identified and evaluation will be undertaken on those parameters. Examples of parameters to carry out evaluation of WUAs performances are;

a; organizational indicators like regular meetings, minutes of meetings, record keeping, attendance record, General Assembly meetings, frequency of meetings, book keeping, formulation of rules and regulations, fund of WUA, Irrigation Service Fee (ISF) collection, fund raising and proper use of available WUA assets and equipment, conflict resolutions and irrigation service delivery etc.

b; technical indicators like office building of WUA, regular O&M of canal, water allocation and distribution, water management, command area development (CAD) and command area protection (CAP) works etc.

c; environmental indicators like mitigation measures for social and environmental impacts on the irrigation sub-systems,

It was agreed by project and WUA for command area development and protection in phase-II of the project is subject to properly implementing are also the major indicators for evaluation of WUA performance not limited to following;

- Registration of WUAs;
- Preparing User's list,
- Establish of WUA office,
- Hired office support staff,
- Regular meeting of WUA including GA,
- Record keeping of meeting minutes and further implementation,
- Annual audit of WUA and renew,
- Utilization of WUA Asset,
- Prepare Implementation procedure of assets,
- Implementation of CAD/CAP works,
- Canal Maintenance Operation and Management plan,
- ISF collection and management,
- Prepare annual work plan including financial, MOM, resource mobilization and fund collection of WUAs,
- Execution of annual work plan including financial, MOM, resource mobilization and fund collection of WUAs,
- Formulation of constitution, rules and regulations including code of conduct as required,
- Execution of constitution, rules and regulations including Code of conduct of WUA,
- Effective Implementation of Water distribution schedule,
- Conflict management,

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- Aware of role and responsibilities of WUA executive committee members.

The contractors have already on board for CAD and CAP works. Further, the RJKIP has conducted different trainings, workshops, seminars, orientations, exposure visit for capacity building and prepare them self governing, self-reliance and self regulating organization under institutional development works. .

This study will be carried out in the project area focusing capacity of WUAs and project activities on (i) institutional development of WUA; (ii) improvement of infrastructure through CAD/CAP works; (iii) impact on WUA sustainability.

3. Objective of the Assignment

The overall objective of this proposed consulting service is Evaluation of WUA performance. The specific objectives of this study are as given below:

- Assess the WUA activities in connection of institutional development and capacity building.
- review the improvement of infrastructure through CAD/CAP work,
- assess the water management activities within the sub-systems,
- evaluate mitigation measures for social and environmental impacts,
- Assess the vision, goal, strategy, and capacity of WUAs for system MOM.

4. Scope of work

The main task of the consulting services is to conduct Evaluation of WUA Performance in 48 (47) sub-branch level WUAs, three branch level WUAs and one main level WUA within the RJKIS and produce separate three major section in a report based on the following guidelines and scope of works:

1. Review concerned documents of the project,
2. The Evaluation of WUA Performance should conduct in close consultation with concerned WUAs, project office, water users, stakeholders and local line agencies, consultants, donor and client through individual interview, focus group discussion, participatory rural appraisal methods,
3. The Evaluation of WUA Performance should cover the Institutional development of WUA, capacity building of WUA members, water management within the sub-systems, improvement of infrastructures and mitigation measures for social and environmental impacts topics,
4. The Evaluation of WUA Performance report should content color photographs and cover page,

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5. The Evaluation of WUA Performance report should be prepared in English, Nepali and local Tharu language likewise to other standard reports published by DoWRI and other related organization,
 6. The Evaluation of WUA Performance report should follow the following contents in the TOR under the following heading. However, the headings can be changed by the consultant after approval from the client/project.

(I) Institutional (WUA) Capacity Development

A. WUA Office establishment and management

- a. Arrange WUA office building (building, Signboard/charter/SP status/office letter pad/ receipts/voucher/office seal etc.)
- b. Appointment of office support staff (Nos./type/gender/date/salary etc.)
- c. Maintain registers (minute, feedback, outgoing/incoming and WUA asset)
- d. Filing of WUA documents (constitution, certificate, memo etc.)

B. WUA organization, good governance and administration

- a. List of water users based on irrigated land/total land in the command area (updated in each 2 years)
- b. Inclusive and proper WUA formation based on the Constitution Irrigation act, regulation and policy (by 67% of water users, 33% female, 2 dalit, janajati and backward, 11members, one key position of women), (list of WUA executive members)
- c. Registration of WUA in DWRC/IDD and Re-new of WUA with dates
- d. Membership registration/General Assembly/election/Reshuffling of WUA (nos. and dates)
- e. Formation of sub-branch/branch/main committees and their roles and responsibilities (numbers, members and dates)
- f. Role and responsibility of WUA executives and general members implementing properly,
- g. Conduct regular meetings, keep records and implement decisions
- h. Sub-committee formation.

C. WUA Resource Generation and Mobilization

- a. Formulation of rules and regulations (administration, financial, ISF collection and management, resource mobilization, asset management, MoM, Water Allocation and Distribution, Election Regulation, Share System, Conflict Management etc.) and execution,
- b. Preparing plans and program (annual, MoM, resource mobilization etc.) and Implementation, Monitoring & evaluation,
- c. ISF collection (by individual farmers based on the land with receipt,/target/total amount NRs. and achievement) and details of IFS collection by WUA up to date,
- d. Other source of income (type, amount etc.)

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- e. Open Bank account, maintain ledgers,
 - f. financial audit
 - g.
 - h. O&M Fund collection base on irrigated land (cash/kind)
 - i. Farmers contribution for system modernization (% of total project cost)
 - j. Arrangement of Chiragi and Dhalpa etc. (nos/date/salary etc.)

D. WUA Communication

- i. Project information and WUA Activities dissemination among the WUA and water users (net working/inter linkage development among farmers to WUA),
- j. Training knowledge sharing among the water users,

E. WUA Linkage Development

- k. Linkage development and coordination (name of line agencies, date purpose etc.)
- l. Outside support to WUA (by whom, date, type of support etc.),

F. Institutional building/Capacity Development Trainings

- a. Participated in the Irrigation training and Exposure visit and Farmers to farmers training conducted by RJKIP (by types, date, location, budget, nos. of participants etc.)
- b. Participated in the agriculture training, exposure visit and Farmer field school (FFS) conducted by Agriculture Component Implementation Unit (ACIU), (by date, location, budget, nos. of participants etc.),
- c. Participated in the other trainings (by whom, date, location, budget, nos. of participants etc.),

G. WUA Conflict Management

- a. Water right issues
- b. Formulate Water allocation/distribution regulation and implementing
- c. Plan/schedule for rotational water supply system
- d. Land issues
- e. Social issues
- f. Environmental issues,

H. Women's participation in Irrigation

- a. Minimum 33% female involve in WUA executive committee,
- b. Women in executive position (chairperson, vice-chairperson, secretary, treasurer)
- c. No gender discrimination (e.g. same wage for same work etc.)
- d. Women's participation in the meeting, training/exposure visit (nos. and %)

I. System Maintenance Operation and Management (MoM)

- a. Know how about types and numbers of structures and their functions
- b. Formulate Canal Operation and Maintenance Plans (COMP)
- c. Maintenance of canal (duration),
- d. Resource mobilization and record keeping,

J. Legal Aspect of WUA Know how about;

- a. Water Resources Act 2049,
- b. Irrigation Policy 2070,
- c. Irrigation Regulation 2060,
- d. Water Resource regulation 2050
- e. Water Resource Strategy 2059
- f. National Water Plan 2062
- g. WUA Formation & Operation Work Procedure-2072
- h. WUA-Directives-2069
- i. Financial Rules of GoN and
- j. Amendment of WUA Constitution as the time frame,

K. Other Socio-economic information in brief

- a. Physical conditions of the canal systems (Intake, main, secondary, tertiary, regulator, drop, culvert, gauge, drainage etc.)
- b. Migration status (in-out; seasonal/permanent within 5 years)
- c. Employment status (local Gov./none Gov. , India and Overseas)
- d. Agricultural status (% of people involved, main occupation, traditional/modern, inputs, major crops, production)
- e. Health status {major diseases inc. HIV/AIDS, health institutions within the Command Area (CA)}
- f. Educational status (literacy rate, educational institutions within the CA)
- g. Population within the CA (hh, pop, ethnicity/indigenous etc.),

L. WUA Requirements if any

(II) Canal MoM and Water Management

A. Canal operation

- a. Canal Operation, operations targets at different level of irrigation service
- b. functions of water conveyance, controlling and measuring structures
- c. water controlling and distribution structures
- d. sub-branch, branch and main canals operation plan
- e. canal operation-at different water availability situation
- f. canal operation by WUA according to project policy
- g. Normal and emergency canal operation by sub-branch committee
- h. Communication for canal operation
- i. WUA rules for controlling operation of the canal and structures

B. Canal Maintenance

- a. Formation of maintenance group, walk through survey for maintenance need assessment and prioritization.
- b. Preparation of canal maintenance plan and operation schedule and implementation schedule
- c. Preparation of construction work plan and implementation schedule for earth work and structural works mobilizing labor contribution.
- d. Methods of works measurement and labor assessment.
- e. WUA Monitoring of maintenance works
- f. Methods of examination of quality of construction materials.
- g. Sub-branch canal maintenance techniques for higher efficiency

III. Infrastructure Development

- a. Improvement of Infrastructures as mentioned in the CAD and CAP.

IV. Mitigation measures for social and environmental impacts

Following social and environmental issues will be assessed.

A. Social Issues

- a. Loss of private land and immobile assets (including structures, tress, orchards, etc.) requiring involuntary acquisition for widening canal width, head regulator and other structures.
- b. Loss of community resources and structures
- c. Loss of source of income and livelihood
- d. Health (including HIV/AIDS) and safety aspects of the labor and local people
- e. Water rights - equity issue
- f. Elite capture in both decisions making and accessing project benefits
- g. Lack or inadequate consultation and participation
- h. Disparity in accessing project benefits
- i. Wage parity
- j. Issues relating to women, dalits (Schedule Caste), janajatis (Schedule Tribes) and other vulnerable sections
- k. Conflicts and disputes and grievance redress mechanism
- l. Other issues

The consultant should follow the following instructions to finalize the contents:

- Review previous relevant project documents.
- Finalize above proposed Evaluation of WUA Performance contents refer or consult the previous study reports and suggestions from Project and social, Enviromental and Institutional Development unit (SEIDU).

5. Consultants profile and expertise required

The project seeks a consultant with an extensive knowledge and experience in WUA institutional development, preferably in the context of evaluation/performance study of the irrigation systems:

- 1 Senior Institutional Development Specialist -1 (1.5 month-)
- 2 Senior Irrigation/agriculture Engineer -1 (1 month)
- 3 AO /Supervisor -3 (1 months)
- 4 Computer operator -1 (1 month)

5.1. Key Activities of the Specialist

a. Senior Institutional Development Specialist/Team Leader:

He/She should have Master degree in sociology or equivalent academic qualification with at least 10 years of professional experience in irrigation related WUA development field. Experience in the field of irrigation, WUA institutional Development and capacity building will be preferable. The Senior IDS will be responsible to evaluation of WUA performance through review of the institutional development part of WUA and compile reports from the outputs of other team member of this assignment as a team leader. Report present in the meeting among concerned consultants, donor representative and staffs of the client before final approval of the report.

b. Senior Irrigation/Agriculture Engineer

He/She should have Master degree in Water Resources/ Civil/ Agriculture Engineering or equivalent academic qualification with at least 10 years of professional experience in irrigated-agriculture related field. Experience in the field of irrigated-agriculture, WUA institutional Development and capacity building will be preferable. The irrigation/agriculture engineer will be responsible to evaluation of WUA performance through field investigation, field management, coordination among the field institutions especially with ACIU, review of the agriculture part of WUA and assist to TL in compile reports from the outputs of the field assignment as a team member.

SN	Activities	Time Duration of the Work by Week											
		Wk-1	Wk-2	Wk-3	Wk-4	Wk-5	Wk-6	Wk-7	Wk-8	Wk-9	Wk-10	Wk-11	Wk-12
1	Introduction/ Meeting with SEIDU	■											
2	Desk Study/ Review project documents	■											
3	Inception Report Preparation		■										
4	Field Mobilization		■										
5	Desk Study/ Review project documents			■									
6	Meeting with stakeholders and project				■								
8	Field Investigation/ Evaluation Study					■	■	■	■				
9	Data Processing									■			
10	Draft report preparation										■		
11	Incorporation of comments on final report submission										■	■	
12	Translation of summary report in Nepali.											■	■

6. Deliverables, payment mode and language

Deliverables	Inception Report	Draft Report	Final Report
TOT	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 4 weeks from the contract agreement	A final report with deliverable shall be submitted 5 weeks from the contract agreement
WUA Performance Evaluation	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 10 weeks from the contract agreement	A final report with deliverable shall be submitted 12 weeks from the contract agreement
HHs Survey/Census	A brief inception report (mission objectives, working methodologies, outcomes, time schedules etc.) shall be submitted within one week of the commencement of assignment.	A draft final report summarizing all activities carried out with deliverables shall be submitted 4 weeks of the contract agreement	A final report with deliverable shall be submitted 5 weeks from the contract agreement
Payment mode	30% after the submission of inception report	50% after submission of draft report	20% after final report submission
Language	English	English	English