Government of Nepal

Ministry of Irrigation

Department of Irrigation

Irrigation and Water Resources Management Project (IWRMP)

Irrigation Infrastructures Development & Improvement (AF), Component-A

(Word Bank Project ID: P144474)

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Abbreviations

AF	Additional Financing (of IWRMP)
AMIS	Agency- Managed Irrigation System
AO	Association Organizer (Social Worker)
BLGWIMD	Bhairahawa Lumbini Groundwater Irrigation Management Division
CBO	Community Based Organization
CCA	Cultivable Command Area
CI	Cropping Intensity
DADO	District Agriculture Development Office
DDC	District Development Committee
DDG	Deputy Director General
DG	Director General
DHM	Department of Hydrology and Meteorology
DIO	District Irrigation Office
DoA	Department of Agriculture
DoI	Department of Irrigation
DTL	Deputy Team Leader
DTT	District Technical Team
DTW	Deep Tube Well
DWRC	District Water Resources Committee
EIA	Environmental Impact Assessment
FMIS	Farmer Managed Irrigation System
FY	Fiscal Year
GIS	Geographical Information System
GMIS	Geographical Management Information System
GoN	Government of Nepal
GW	Groundwater
GWID	Groundwater Irrigation Directorate
GWIDD	Groundwater Irrigation Development Division
ha	hectare
ICWMP	Integrated Crop and Water Management Program
IDA	International Development Association
IDD	Irrigation Development Division
IDSD	Irrigation Development Sub-Division
IEE	Initial Environmental Examination
IR	Inception Report
ISE	Initial Social Examination
ISEA	Integrated Social and Environment Assessment
ISF	Irrigation Service Fee
IWRMP	Irrigation and Water Resources Management Project
IWRMP-A	Irrigation and Water Resources Management Project, Component A
M&E	Monitoring and Evaluation
MIS	Management Information System
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoI	Ministry of Irrigation

MTR	Mid-Term Review
MWDR	Mid-Western Development Region
NGO	Nongovernmental Organization
NISP	Nepal Irrigation Sector Project
NPC	National Planning Commission
O&M	Operation and Maintenance
OPD	Office of the Project Director
OS	Original Scope (of IWRMP)
PAD	Project Appraisal Document
PBME	Project Beneficiary Monitoring & Evaluation
PC	Project Coordinator
PCR	Project Completion Report
PD	Project Director
PICC	Project Implementation and Coordination Committee
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMU	Project Management Unit
PSC	Project Steering Committee
RAC	Regional Appraisal Committee
RAD	Regional Agriculture Directorate
RD	Regional Director
RfP	Request for Proposal
RID	Regional Irrigation Directorate
RPSU	Regional Project Support Unit
SAC	Sub-project Appraisal Committee
SBD	Standard Bidding Document
SDE	Senior Divisional Engineer
SEA	Social and Environment Assessment
SEMP	Social and Environmental Management Plan
SMU	Sub-project Management Unit
TA	Technical Assistance
ToR	Terms of Reference
WB	World Bank
WUA	Water Users Association
WUG	Water Users Group

1 INTRODUCTION

1.1 Background

The aims of the Irrigation and Water Resources Management Project (IWRMP) are to support the national goal of poverty reduction and to develop Nepalese irrigated agriculture through irrigation development and improved management. The project is being implemented with grant assistance from the World Bank (WB) along with direct contributions from Water Users Associations (WUAs) and the Government of Nepal (GoN).

Component A of IWRMP, Irrigation Infrastructure Development and Improvement, is focussed on improving irrigation water service delivery in selected schemes in the 40 districts of the western regions, including expansion and improvement of groundwater irrigation in the Terai. During the period of Original Scope (OS) of IWRMP (March 2008 to June 2016), a total of 128 farmer-managed irrigation system (FMIS) sub projects, covering 18,312 ha, were improved and developed.

There has been huge pressure from users to undertake more sub projects for implementation. In order to address these demands, the World Bank agreed to a GoN proposal to continue project activities with an Additional Financing (AF) package from March 2014 to June 2018. Under the scope of AF, the project prepared detailed project investment plan to cover the rehabilitation and modernization of 72 FMISs (6,899 ha) and 8 groundwater clusters (6,460 ha), including BLGWP.

With a view to addressing continued demands from farmers, the Office of the Project Director (OPD), with the agreement of the World Bank, subsequently initiated a process to include approximately 25 additional FMISs in the Project, using expected savings under the scope of Additional Funding. The consultant team assisted the field offices in site visits during reports preparation and updating the Detailed Feasibility Study Reports (DFSRs) and Social and Environmental Management Plans (SEMPs) for these additional sub projects.

1.2 Project Management

A number of key national, regional and district level institutions have key roles in project implementation. and institutional structures have been created at various levels from centre to district. At the centre, a high-level Project Steering Committee (PSC) is chaired by the Secretary of the Ministry of Irrigation (MoI). At executive level, a Project Implementation and Coordination Committee (PICC) is chaired by the Director General (DG) of DOI.

The Office of the Project Director (OPD) coordinates all project activities from all implementation agencies at the centre, while the Regional Project Support Units (RPSU) are directly responsible for implementation of the project. Similarly, Subproject Management Units at the irrigation division or sub division level are responsible for individual subproject execution.

2 PROJECT PROGRESS TO DATE

2.1 Report Preparation

The TA team fully worked on updating of draft Inception Report (IR) for IWRMP-A(AF) during the reporting period. Discussions held with OPD largely focused on development of data collection formats, in the form of booklets, and action plans of individual consultants. The aim is to make it easy for tracking the progress of each activity and also to collect meaningful/consistent data on each subproject. At the same time, the team was also engaged in fine tuning the Project Completion Report (PCR) of the OS subprojects and status reports of AF sub projects for the WB mid-term review (MTR) mission in August 2016.

As a result of their heavy data management workload, the centrally-based TA Team members were not able to conduct any field visits during this trimester. Regional TA Team members were able to conduct field visits and prepared field visit, monthly and trimester reports describing progress, issues and findings of sub projects. Some of the TA Team members with intermittent inputs were mobilised as required (see **Section 5**) and prepared brief assignment completion reports at the end of each input.

2.2 DoI Capacity Support

2.2.1 TA Mobilisation

As a part of DoI capacity support, the full-time TA Team members continued working throughout the reporting period in four offices; namely, the DoI central office in Lalitpur and the DoI regional offices in the three development regions covered by this project.

2.2.2 Capacity Development Training

No such training courses or workshops were conducted during the reporting period.

2.3 Project Monitoring

The OPD has overall responsibility for planning and coordinating monitoring and evaluation (M&E) activities of the project. As such, the OPD coordinates M&E activities of the three entities that are involved in data collection and analysis:

i the implementing departments/agencies, including at the regional and district levels;

ii an external M&E agency; and,

iii beneficiary WUAs and other relevant stakeholders.

The PICC functions as an oversight body to monitor overall project implementation on regular basis.

As a part of this monitoring process, OPD officials and central TA Team members started holding fortnightly meetings during this trimester. It was agreed to conduct such meetings between Regional Irrigation Directorates (RIDs) and regional TA Teams also, which will help to update region wise sub-projects status.

Management Information System (MIS) is generally accepted as one of the main monitoring tools. So, in order to bring make the existing GMIS fully operational, the TA Team's GIS/MIS specialist was mobilised for two weeks to establish the current status of the GMIS and to discuss ways operationalising the GMIS and incorporating the requirements of the OPD. It was agreed that a desktop GMIS would be implemented in the IDD/IDSD/GWIDDs of the districts where the project is currently operating.

The TA Team's M&E specialist mobilised twice during the reporting period. His inputs mostly focused on updating the demographic information of both OS and AF sub-projects for use in the PCR of the OS sub-projects, the AF sub-projects status report for the MTR mission, and the IR. He was also involved in establishing an M&E database for tracking and development of data.

2.4 Infrastructure Development

A total 30 AF sub-projects, covering 3,780 ha, were completed by the end of the previous trimester. Tallo Lamahi Phant ISP (Baglung) covering 38 ha, located at hilly belt of western region, is also reported to have been completed during this second trimester. The total number of completed sub-project figures is therefore 31 (3818 ha), with 52 currently ongoing.

With a view to addressing the huge demand from farmers, the OPD, with the agreement of the World Bank, initiated a process to undertake around 25 additional FMISs, using expected savings under the scope of Additional Funding. The consultant team assisted the field offices during field visits in reports preparation stage and in updating the DFSRs and SEMPs for these additional sub-projects.

2.5 WUA Capacity Development

No WUA capacity building training courses were conducted during this second trimester. Previously, 220 training events were conducted in the 104 AF sub-projects up to the end of the previous trimester. In total, 5,859 WUA executive members and key water users have participated in the training programs. Among them 44% were female, 20% were Janjati and 10% were Dalit (see **Table 10**). During field visits in this trimester WUA activities of about 20 sub-projects (completed, ongoing and upcoming) in three regions were assessed from an Institutional Development Framework (IDF).

As part of its system of social safeguards, the WB requested that the OPD to submit documents confirming land donations from beneficiary farmers of the execution of 83 AF sub projects. To date the OPD has received relevant documents for 52 sub-projects (WR:20, MWR:12 and FWR:20). FMISs have been built and managed by farmers for decades and documents received clearly spell out that land donations for these schemes are voluntary and not the subject of any dispute. It is slightly different for GW schemes i.e. WUAs are required to contribute land for pump house, overhead tank and alfalfa valve outlets. Documents received so far show farmers willingly contribution of required lands for DTW schemes.

2.6 Agriculture Extension

The DADO offices of the respective subprojects are responsible for the implementation of ICWM activities. These activities are designed by the Department of Agriculture in close coordination with the respective DADO offices. Extension activities (refer **Section 7.1**) carried out during this trimester were normally focused on seasonal planning, FFSs, demonstrations, income generation for disadvantaged groups, seed multiplication and exposure visits to the beneficiary farmers. Farmers also received training in crop cultivation, plant protection, safe use of pesticides and vegetable cultivation. During this trimester there were 49 events conducted in AF subprojects where participation from female, Janjati and Dalit were 48%, 19% and 6% respectively.

2.7 Project Benefit Trends

Analysis of available data from around 16 AF subprojects indicates that there have been improvements in irrigation services in terms of water delivery. Average productivity of both cereal and cash crops has also increased and cropping intensity reached 230%, against the pre-project level of 159%.

An assessment of data from 13 completed AF subprojects shows that average productivity is highest in vegetable (14.33 t/ha), followed by potato (13.52 t/ha) in cash crops. Similarly, analysis of cereal crop production in 22 completed AF subprojects shows the productivities of 3.15 t/ha and 2.55 t/ha in paddy and wheat respectively. These improvements have been realized through adoption of improved varieties of seeds, expansion of cropped areas, intensive extension program and better irrigation facilities. It is believed that all the subprojects shall gradually achieve its targets upon their completion.

3 SOCIAL & ENVIRONMENTAL MANAGEMENT

SEMPs for all 83 AF subprojects have been prepared and duly reviewed and approved by the OPD prior to the PICC meetings. Since most of the subprojects comprise rehabilitation works, there were no significant social or environmental issues due to the project's interventions. Nevertheless, around 276 mitigation measures were recommended to address 183 social and environmental issues in the 30 completed AF subprojects. An analysis shows that 256 (93%) of the mitigation measures were complied with. The geographic distribution of these SEMP matters is shown in **Table 1**.

Table 1 Summary of SEMP Issues for Completed ISPs

Region / Ecological Belt	Districts	Sub Projects	Issues (Nos)	No of Mitigation Measures		
				Total	Compliant	Not compliant
West						
Mountain	1	1	9	9	7	2
Hill	7	11	78	119	108	12
Terai	1	1	1	6	6	0
Sub Total	**9**	**13**	**88**	**134**	**121**	**14**
Mid West						
Mountain	0	0	0	0	0	0
Hill	3	4	18	29	27	2
Terai	3	5	27	36	36	0
Sub Total	**6**	**9**	**45**	**65**	**63**	**2**
Far West						
Mountain	2	2	12	14	14	0
Hill	3	5	29	38	37	1
Terai	1	1	9	23	21	2
Sub Total	**6**	**8**	**50**	**75**	**72**	**3**
Total (No)	**21**	**30**	**183**	**274**	**256**	**19**
(%)				**100**	**93**	**7**

Similarly, about 713 mitigation measures were recommended to address 430 social and environmental issues in the 53 on-going AF subprojects and 341 (48%) mitigation measures found to have been complied with. **Table 2** presents the geographic distribution of these SEMP matters.

Table 2 Summary of SEMP Issues for Ongoing ISPs

Region / Ecological Belt	Districts	Sub Projects	Issues (Nos)	No of M. Measures		
				Total	Compliant	Not compliant
West						
Mountain	2	2	10	16	7	9
Hill	10	14	132	217	46	171
Terai	3	6	26	29	25	4
Sub Total	**15**	**22**	**168**	**262**	**78**	**184**
Mid West						
Mountain	2	3	13	21	4	17
Hill	5	10	85	165	141	24
Terai	3	5	52	69	41	28
Sub Total	**10**	**18**	**150**	**255**	**186**	**69**

Region / Ecological Belt	Districts	Sub Projects	Issues (Nos)	No of M. Measures		
				Total	Compliant	Not compliant
Far West						
Mountain	2	5	35	59	11	48
Hill	3	5	39	80	32	48
Terai	2	3	38	57	34	23
Sub Total	**7**	**13**	**112**	**196**	**77**	**119**
Total (No)	**32**	**53**	**430**	**713**	**341**	**372**
(%)				**100**	**48**	**52**

4 PROJECT PROGRESS DURING TRIMESTER

The major activities carried out by the TA Team during the reported period were:

i fine tuning the Project Completion Report (PCR) for the OS subprojects;

ii fine tuning status reports for AF subprojects;

iii updating the TA Team's draft Inception Report (IR), incorporating action plans of each expert; and,

iv preparing data collection formats (in the form of "data booklets") for AF subproject.

During the WB Mid Term Review, it was agreed to prepare a detailed proposal for the use of an expected NRs 411 million in savings in the AF programme as a result of tendered pricing, unused contingencies and a fall in the value of the Nepali rupee against the US dollar. In this context, the OPD developed a selection criteria for between 25 and 30 additional sub projects focused on:

i mountain and hill belts;

ii ISPs of around 50 ha;

iii a few GW schemes in terai; and,

iv what is practically achievable in the remaining project period, so projects should in particular be technically simple, socially acceptable, environmentally friendly and not the subject of any disputes

Accordingly, the OPD requested selected IDD/IDSD/GWIDDs to prepare DFSRs for subprojects in line with above criteria.

All three regional TA Teams assisted the respective IDD/IDSD/GWIDDs in preparing the DFSRs and SEMPs of the candidate subprojects. The teams accompanied division/subdivision officials on walk through of some subprojects and assisted them in assessing social, agricultural and technical issues. When requested, the regional TA Teams reviewed the reports sent to Regional Irrigation Directorates (RIDs) and, where necessary, recommended modifications, prior to their submission to the Regional Appraisal Committees (RAC). The TA Team in Lalitpur reviewed the DFSR and SEMP reports of selected subprojects sent to the OPD for approval prior to PICC review and approval.

The additional subprojects are largely spread across the hills and remote mountainous region and are often affected by unfavourable climatic conditions which limit the active working period to 4 or 5 months per year. Their remoteness, contractors' and WUAs' passiveness, unfavourable working environment and inadequate logistic support to the field offices will mean that particular effort will need to be made by the concerned authorities to facilitate the work of the field offices responsible for implementation of the subprojects.

5 TA TEAM INPUTS

Out of a TA team of 20 experts from CMS Engineering Consult Pvt Ltd + Full Bright Consultancy Pvt Ltd J/V, 18 experts (intermittent-4, continuous -14) were mobilised during the reporting period (see **Table 3**). The three region-based sociologists were absent in October 2016. To this end, about 115.08 person-months (home-102.63, field-12.46) have been used up to the end of this trimester, against the total of 447 person-months. with a balance of 331.92 (Home-257.87, Field-74.04) person month. In other words, approximately 26% of the inputs have been used to date.

5.1 Field Visits

During this trimester Lalitpur-based TA Team members did not make any field visits because disruption to construction caused by the monsoon, Dashain and Tihar as well as the need to focus on updating the AF Inception Report, collating status information of the AF subprojects for the WB MTR mission and preparing the PCR for the OS subprojects, as well as because the respective field officers come to the DoI during this period for preparation of annual programme, updating of contract documents, and preparing annual progress reports. However, region-based TA Team members were able to visit some selected subprojects, their respective irrigation field offices, DADOs and WUAs.

Normally the engineer, sociologist and agriculturist from each regional TA Team conducted subproject visits that focused on observing the progress and issues on infrastructure development as well as collection of data and information related to infrastructure, agriculture, social and environment aspects. The TA Team also assisted in training sessions conducted by field offices focused on quality control, capacity building of WUAs, and the ICWMP activities carried out by the local DADOs. Besides AF subprojects, regional TA Team members also visited a number of OS subprojects at the request of concerned field offices. Altogether, they visited 13 AF subprojects, 5 DADOs and 10 IDD/IDSD/GWIDDs. A few subprojects and line agencies were also visited more than once. An overview of the field visits to AF subprojects made by regional TA Teams during this reporting period is given in **Table 4**. Some of the key observations gathered during field visits of sub projects are as follows.

BLGWIP, Rupendehi: Farmers are satisfied with tube well discharge after rehabilitation and they are taking care of O&M. However, they are demanding exemption/waiver of 3% transmission loss charged by Nepal Electricity Authority (NEA). This is under consideration by the Ministry of Energy.

Pokhatar ISP, Gorkha: This subproject was affected by earth quake of April 2015 and construction of a local road by District Development Committee (DDC) has further increased damage along canal alignment for which gabion and bio engineering works along some reaches will be necessary to control landslides.

Lamasera ISP, Pyuthan: The recent monsoon rain has severely affected this ongoing subproject. The intake was washed away and about 200 m of main canal was buried under debris (up to 2 m deep along some reaches) with huge damage to command area. Other damaged parts of main canal can be repaired with normal efforts but about 200 m length at head reach will have to be rebuilt with adequate provision of river training works.

Pidalne Phant ISP, Pyuthan: The same monsoon rain has also severely affected this subproject at completion stage. There was a huge slide just upstream of the intake point resulting in a complete wash out of the intake with bare rocks protruding along approximately 200 m. Restoration of the intake and other damaged portions with provision of adequate budget is necessary to run the system smoothly.

Bela DTW, Dang: After completion of installation of four deep tube wells, construction of overhead tank and distribution network are in progress. Tube well yields are very satisfactory, command area has good road connectivity and settlements with rural electrification, so there is ample room for further tube well development.

Sanoshree DTW, Bardiya: There is problem of low electric voltage in the grid as reported by GWIDD, Nepalgunj. Farmers are not getting the designed discharge from the installed tube wells

and low voltage might be the root cause. This issue needs to be addressed to optimize efficiency of the system and to provide reliable service to the beneficiary farmers.

Kalapani ISP, Kanchanpur: Construction of weir under NCB contract is going on smoothly in coordination of WUA and the physical progress is nearly 50%. Construction material like gravel, sand and cement are stocked at site. Contractor's site management seems satisfactory. On the other part, MOU between WUA and division office is yet to be done.

WUA and farmer training and awareness raising activities covered project cycle/progress, construction supervision and quality of construction materials, importance of proper operation and regular maintenance of canal and structures, and the importance of ISF to meet O&M costs required to maintain the system. Overall quality of construction works observed under NCB and WUA contracts in most of the visited subprojects found to be satisfactory. IDD/IDSD/GWIDDs in general were reluctant to provide the required data and information in prescribed formats in time. One possible reason for their reluctance could be that the field offices are also responsible for implementing other programs in additional to IWRMP with limited manpower and inadequate logistic support.

Table 3 TA Team Inputs

Name of Expert	Position	Total Allocated (PM)			Consumed in 1st Trimester (PM)			Consumed in this Trimester (PM)			Total consumed till 2nd Trimester (PM)			Balance (PM)		
		Home	Field	Total	Home	Field	Total	Home	Field	Total	Home	Field	Total	Home	Field	Total
International																
Liaquat Rabbani	Team Leader	13.50	1.50	15.00	0.99	0.07	1.06	1.53		1.53	2.52	0.07	2.59	10.98	1.43	12.41
Total International		*13.50*	*1.50*	*15.00*	*0.99*	*0.07*	*1.06*	*1.53*		*1.53*	*2.52*	*0.07*	*2.59*	*10.98*	*1.43*	*12.41*
National – Central TA																
Sudhir Man Baisyat	Deputy TL	25.50	2.50	28.00	4.06	0.29	4.35	4.02	-	4.02	8.07	0.29	8.37	17.43	2.21	19.63
Shambhu P. Manandhar	IrrigationEng 1	24.50	3.50	28.00	4.29	0.19	4.48	3.85	-	3.85	8.14	0.19	8.33	16.36	3.31	19.67
Madhav Lal Shrestha	Agriculturist 1	24.50	3.50	28.00	4.19	-	4.19	3.02	-	3.02	7.21	-	7.21	17.29	3.50	20.79
Madhav P. Joshi	TM- Sociologist 1	21.50	4.50	26.00	4.29	0.19	4.48	4.02	-	4.02	8.31	0.19	8.50	13.19	4.31	17.50
Shiva Kumar Upadhyay	Economist/M&E	15.00	3.00	18.00	1.48	-	1.48	3.02	-	3.02	4.50	-	4.50	10.50	3.00	13.50
Dr. Vimal Narayan P. Gupta	Environment	12.00	6.00	18.00	3.29	0.19	3.48	2.52	-	2.52	5.81	0.19	6.00	6.19	5.81	12.00
Sarbagya Man Bajracharya	MIS/GIS	7.50	1.50	9.00	2.29	-	2.29	0.50	-	0.50	2.79	-	2.79	4.71	1.50	6.21
Siddhi Pratap Khan	Hydrogeologist	9.00	2.00	11.00	0.48	-	0.48	2.52	-	2.52	3.00	-	3.00	6.00	2.00	8.00
Dhurba Singh Nepali	Electro-Mech Eng	7.00	2.00	9.00	-	-	-	-	-	-	-	-	-	7.00	2.00	9.00
Damodar Bhattarai	Procurement	10.00	1.00	11.00	1.21	-	1.21	-	-	-	1.21	-	1.21	8.79	1.00	9.79
Total of Central		*156.50*	*29.50*	*186.00*	*25.59*	*0.87*	*26.46*	*23.44*		*23.44*	*49.03*	*0.87*	*49.91*	*107.47*	*28.63*	*136.09*
National – Western Regional TA																
Tark B. Budhathoki	Irrigation Eng 2	21.00	7.00	28.00	3.03	1.45	4.48	3.46	0.56	4.01	6.49	2.01	8.50	14.51	4.99	19.50
Dr. Madhav Joshi	Agriculturist 2	21.00	7.00	28.00	1.45	0.29	1.74	3.73	0.29	4.02	5.17	0.58	5.76	15.83	6.42	22.24
Satya B. Budhathoki	TM- Sociologist 2	21.50	4.50	26.00	3.57	0.92	4.48	2.50	0.52	3.02	6.06	1.44	7.50	15.44	3.06	18.50
Total of Western		*63.50*	*18.50*	*82.00*	*8.05*	*2.66*	*10.71*	*9.68*	*1.37*	*11.04*	*17.73*	*4.03*	*21.75*	*45.77*	*14.47*	*60.25*
National – Mid-Western Regional TA																
Tung Raj Pathak	Irrigation Eng 3	21.00	7.00	28.00	1.18	0.56	1.74	3.20	0.81	4.01	4.39	1.37	5.76	16.61	5.63	22.24
RamanandKurmi	Agriculturist 3	21.00	7.00	28.00	2.86	1.62	4.48	3.20	0.81	4.01	6.06	2.43	8.50	14.94	4.57	19.50
Arjun Kumar Ale	TM- Sociologist 3	21.50	4.50	26.00	1.12	0.37	1.48	2.43	0.59	3.01	3.55	0.95	4.50	17.95	3.55	21.50
Total of Mid-Western		*63.50*	*18.50*	*82.00*	*5.16*	*2.55*	*7.71*	*8.83*	*2.21*	*11.04*	*13.99*	*4.76*	*18.75*	*49.51*	*13.74*	*63.25*

Name of Expert	Position	Total Allocated (PM)			Consumed in 1st Trimester (PM)			Consumed in this Trimester (PM)			Total consumed till 2nd Trimester (PM)			Balance (PM)		
		Home	Field	Total	Home	Field	Total	Home	Field	Total	Home	Field	Total	Home	Field	Total
National – Far-Western Regional TA																
Harish Chandra P. Rauniyar	Irrigation Eng4	21.00	7.00	28.00	1.38	0.36	1.74	3.43	0.58	4.02	4.82	0.94	5.76	16.18	6.06	22.24
AirleyVazirsingh	Agriculturist 4	21.00	7.00	28.00	3.99	0.49	4.48	3.76	0.26	4.01	7.75	0.75	8.50	13.25	6.25	19.50
Nar Bahadur Sawod	TM- Sociologist 4	21.50	4.50	26.00	3.90	0.59	4.48	2.76	0.39	3.14	6.65	0.97	7.63	14.85	3.53	18.37
Total of Far Western		*63.50*	*18.50*	*82.00*	*9.27*	*1.44*	*10.71*	*9.95*	*1.23*	*11.17*	*19.22*	*2.66*	*21.88*	*44.28*	*15.84*	*60.12*
Grand Total		**360.50**	**86.50**	**447.00**	**49.06**	**7.59**	**56.65**	**53.43**	**4.80**	**58.23**	**102.49**	**12.39**	**114.88**	**258.01**	**74.11**	**332.12**

Table 4 Overview of Field Activities

Sub Projects (AF)	Visited Entities	Activities
Western Region Pokharatar, Bakrangbesi, 2023 Sale Kulo, Chisti, TalloLamahi ISPs **Mid Western Region** Lamasera, PindalePhant, Bela DTW, Sanoshree DTW, KharigairaTarachaur ISPs **Far Western Region** Sadepani DTW, Ratipur, Kalapani ISPs	**DADO:** Gorkha, Myagdi, Baglung, Kailali, Kanchanpur **IDD/IDSD:** Gorkha, Myagdi, Baglung, Dailekh, Kailali, Baitadi, Darchula, **GWIDD:** Dang, Bardiya, Kailali,	Sites visited with office staff, WUA members with walk through of some ISPs to monitor construction activities and interact with WUA and NCB contractors. Held discussions with provided training to WUAs in areas covering quality control of construction works, judicial use of organic manure, pesticides and high yield variety seeds. Interaction with officials of respective DADOs were fruitful in terms of ICWM and agriculture extension related activities implemented in IWRMP sub-projects and collection of pertinent data and information. Surkhet TA team visited Lamasera, PindalePhant and KharigairaTarachaur ISPs to observe site specific technical complexities and to explore solutions. Dhangadhi TA team joined MTR mission of the World Bank on a visit to Amarwati ISP (OS) of Kailali. Also participated in annual progress review programme organized jointly by FWRID and MWRID in Nepalgunj. Suggested all field offices to expedite the sub-project works and other activities in order to complete entire AF sub projects on or before June 30, 2018.

6 PHYSICAL PROGRESS

6.1 Infrastructure Improvement and Development

During the reporting period (which included the monsoon season as well as the Dashain and Tihar (festivals), physical construction works were completed on one subproject, Tallo Lamahi Phant, bringing the total completed to date to 31, covering a total command area of 3,818 ha (see **Table 5**).

Table 5 Distribution of Completed AF Sub-Projects

	Development Region							
	Western		Mid-Western		Far Western		Total	
	No of SPs	CCA (ha)	No of SPs	CCA (ha)	No of SPs	CCA (ha)	No of SPs	CCA (ha)
Ecology								
Mountain	1	42	0	0	2	61	3	103
Hill	12	791	4	186	5	217	21	1,194
Terai (Surface)	0	0	4	1,565	1	256	5	1,821
Terai (G/W)	1	460	1	240	0	0	2	700
Totals	**14**	**1,293**	**9**	**1,991**	**8**	**534**	**31**	**3,818**
Approved Estimate (NRs '000)		258,943		337,037		141,708		737,688
Completion cost (NRs '000)		209,010		270,669		96,386		576,064

Progress of the remaining 52 (M:10, H:28, T:14) ongoing subprojects is summarised in **Tables 6 & 7**.

Table 6 Distribution of Ongoing AF Sub-Projects

	Development Region							
	Western		Mid-Western		Far Western		Total	
	No of SPs	CCA (ha)	No of SPs	CCA (ha)	No of SPs	CCA (ha)	No of SPs	CCA (ha)
Ecology								
Mountain	2	75	3	238	5	262	10	575
Hill	13	651	10	549	5	438	28	1,638
Terai (Surface)	5	3,995	3	698	2	967	10	5,660
Terai (G/W)	1	3,000	2	920	1	240	4	4,160
Totals	21	7,721	18	2,405	13	1,907	52	12,033
Approved Estimate (NRs '000)		786,895		544,161		523,032		1,854,087
Expenditure to 15/11/16 (NRs '000)		426,026		134,422		150,898		711,346

With limited construction activities during this reporting period, total expenditure on infrastructure improvement and development increased marginally over the previous trimester by NRs 76.7 million to NRs 1,287.4 million.

Table 7 Overall AF Sub-Project Progress

	Completion of Sub-projects						Total Cost NRs
	Initial	<50%	50%-80%	> 80%	Complete	Total	
to July 15, 2016	1	36	11	5	30	83	1,210,725
to Nov 15, 2016	1	27	14	10	31	83	1,287,410

6.2 Quality Assurance

The project made particular efforts in maintaining the quality of construction in all sub projects, especially in the large subprojects of Terai. The intensive and frequent visits to the construction site by various levels of authorities, TA Team members, carrying out concrete & other tests and intensive supervision by trained WUA members were the key strategies adopted by the project. Further, RIDs prepared an assessment of existing situation of laboratories situated in five irrigation directorates as well as in some large irrigation projects like Mahakali, Sikta, and Sunsari Morang. Based on the findings of the assessments, the capacity of existing laboratories is being gradually improved to meet the testing requirements of the project; including support for procurement of laboratory equipment by the project.

6.3 Financial Progress

As noted in **Table 5**, the total amount spent (including WUA contributions) on the 31 AF subprojects completed to date is NRs 576 million. Of this, 4% as been spent on 103 ha in mountain subprojects, 51% on 1,194 ha in hill subprojects, and 45% on 2,521 ha in the Terai. Of the NRs 256.9 million spent in the Terai, NRs 196.4 million is accounted for by 5 surface schemes and NRs 60.5 million by 2 groundwater schemes.

Overall WUA contributions towards the completed subprojects is 8.29%.

Similarly, total expenditure (including WUA contributions) for the 52 ongoing AF subprojects by the end of the reporting period was NRs 711.3 million. Of this, NRs 53.5 million (8%) has been spent on 10 mountain subprojects, NRs 242.1 million (34%) on 28 hill subprojects and NRs 415.7 million (58%) on 14 Terai subprojects.

6.4 Institutional Development of WUA

Population distribution of AF subprojects, shows the female population greater (52%) than that of male (48%). The demographic features of 83 approved and 31 completed sub projects on ecological basis are summarized in the following tables 8 & 9 respectively. During field visits in this trimester WUA activities of about 20 sub projects (completed, ongoing and upcoming) in three regions were observed from Institutional Development Framework (IDF) point of view and found moderately satisfactory.

Table 8 Demography of AF Sub-Projects

	ISP (Nos)	HH (No)	Population				
			Total	Male	Female	Janjati	Dalit
Mountain	13	2,129	13,132	6,419	6,713	1,385	3,437
Hills	49	7,564	51,185	24,603	26,582	8,209	5,429
Terai (Surface)	15	14,679	79,327	38,332	40,995	18,486	4,197
Terai (GW)	6	6,042	33,459	16,273	17,186	9,611	5,333
Total (No)	83	30,414	177,103	85,627	91,476	37,691	18,396
Total (%)			100%	48%	52%	21%	10%

Table 9 Demography of the 31 Completed AF Sub-Projects

	ISP (Nos)	HH (No)	Population				
			Total	Male	Female	Janjati	Dalit
Mountain	3	340	2,049	1,002	1,047	626	155
Hills	21	3,133	22,354	10,698	11,656	3,709	2,209
Terai (Surface)	5	1,935	11,957	5,682	6,275	3,843	1,039
Terai (GW)	2	1,528	9,144	4,497	4,647	1,785	1,779
Total (No)	31	6,936	45,504	21,879	23,625	9,963	5,182
Total (%)			100%	48%	52%	22%	11%

6.5 Capacity Development of WUA

As a part of capacity development of WUA, training courses conducted by IDD/IDSD/GWIDDs and DADOs cover institutional development, pre-construction, quality control, irrigation service fee collection, fund generation, resource mobilization, canal operation and maintenance, gender empowerment, capacity building, leadership development, office administration, account keeping and agriculture extension.

No training or capacity building activities were carried out during the reporting period, leaving progress to date as reported in the previous trimester report and summarised in **Table 10**.

Table 10 WUA Training Completed to Date

Region	District (No)	ISP (No)	Events (No)	Participants			Ethnicity	
				Male	Female	Total	Janjati	Dalit
West	16	31	82	1283	781	2,064	547	111
Mid West	12	36	64	940	772	1,712	540	191
Far West	9	37	74	1,080	1,003	2,083	90	262
Total (No)	37	104	220	3,303	2,556	5,859	1,177	564
Total (%)				56%	44%	100%	20%	10%

7 PROJECT BENEFITS

7.1 Agricultural Extension through ICWMP

The DADO offices are responsible implementing ICWM activities on IWRMP projects in their respective areas. Progress to date on these activities is summarised in **Table 11**.

Table 11 Progress of ICWM Activities

Activities	Unit	Current Reporting Period			
		West	Mid-West	Far West	Total
Seasonal Planning	Times	5	3	3	11
FFS	Nos	5	0	1	6
Demonstration	Nos	8	3	3	14
Training	Times	3	1	2	6
Income Generation	Nos	4	0	0	4
SP visits to Farmers	Times	1	0	0	1
Coordination Meetings	Nos	5	0	2	7
Seed multiplication	ha	10.61	3.00	2.00	15.61

It is not possible to provide the full range of ICWM activities in every single IWRMP subproject so selected ICWM activities are assigned as per project location and farmers' demands and finalized based on discussions between WUA and DADO officials. A total of 49 different events were conducted during the reporting period (see **Table 12**) in the three project regions and overall participation comprised male (52%), female (48%), Janjati (19%) and Dalit (6%).

Table 12 Participation in Agriculture Extension Activities During Reporting Period

Region	Events (No)	Participants								
		Total(No)	Male		Female		Janjati		Dalit	
			(No)	(%)	(No)	(%)	(No)	(%)	(No)	(%)
Western	31	718	378	53	340	47	153	21	13	2
Mid-Western	7	100	58	58	42	42	20	20	13	13
Far Western	11	229	110	48	119	52	25	11	40	17
Total (No)	49	1,047	546		501		198		66	
Total (%)		100	52		48		19		6	

7.2 Improvement in Irrigation Services

Average annual water supply in 16 of the completed AF subprojects where assessments have been completed as part of the post project monitoring evaluation show and overall increase from 1,052 lps, as recorded in the feasibility reports to 1,837 lps today, as detailed in **Table 13**.

Table 13 Water Delivery in AF Sub-Project

Ecological Belt	ISP Type	Sub Project (Nos)	Annual Irrigation Supply (lps)			Change (%)
			Baseline	Target	Current	
Mountain	Surface	2	107	170	160	50
Hill	Surface	13	805	1488	1327	65
Terai	Surface	1	140	370	350	150
Total		16	1052	2028	1837	75

7.3 Increment in Productivity and Cropping Intensity

7.3.1 Productivity of Cereal Crops

An assessment of productivity in 22 completed SPs of the Mountains, Hills and Terai reveals a pronounced impact of improved irrigation in terms of productivity increment of major crops. The average productivity is found highest in paddy 3.15 t/ha followed by 2.55 t/ha and 2.38 t/ha of wheat and maize respectively. A summary of productivity of cereal crops is presented in **Table 14**.

Table 14 Average Productivity of Cereal Crops

Ecological Belt	ISP Type	Sub Project (No)	Yield (t/ha)					
			Paddy		Wheat		Maize	
			Base	Current	Base	Current	Base	Current
Mountain	Surface	2	2.30	3.40	1.65	2.25	1.95	3.10
Hill	Surface	15	2.22	3.09	1.73	2.65	1.75	2.34
Terai	Surface+GW	5	3.06	3.22	2.08	2.39	2.03	2.22
Average			2.42	3.15	1.80	2.55	1.83	2.38
Increase (%)				30%		41%		30%

7.3.2 Productivity of Cash Crops and Cropping Intensity

Analysis of productivity of cash crops in 13 completed AF subprojects shows significantly increased production compared to the baseline data. The highest recorded average crop productivity is 14.33 t/ha for vegetables, followed by potato at 13.52 t/ha. In other words, the incremental productivity is 53% for potatoes and 73% for vegetables. The average cropping intensity has also increased from 159% to 230%, as given in **Tables 15** and **16**.

Table 15 Improvements in Productivity of Cash Crops

Ecological Belt	ISP Type	Sub Project (No)	Yield (t/ha)			
			Potato		Vegetables	
			Base	Current	Base	Current
Mountain	Surface	2	7.28	15.50	6.60	22.00
Hill	Surface	9	8.81	13.30	8.59	12.71
Terai	Surface	2	10.50	12.50	8.50	14.00
Average	-	13	8.84	13.52	8.27	14.33
Increase (%)				53%		73%

Table 16 Increases in Cropping Intensity

Ecological Belt	ISP Type	Sub Project (No)	Average Cropping Intensity (%)		
			Baseline	Target	Current
Mountain	Surface	2	144	216	250
Hill	Surface	9	168	230	234
Terai	Surface	2	136	235	191
Average	-	13	159	228	230
Increase (%)					45

8 CONCLUSIONS AND RECOMMENDATIONS

It is obvious that data collection, analysis and compilation parts are most essential for different purposes. A mechanism for availability of quality data in time from the cost centres is still to be improved. So, responsive data keeping units at district, region and centre level should be strengthened or established.

Some of the hill irrigation schemes implemented under IWRMP are linked to micro-hydropower and water mills. Farmers of such subprojects are getting more benefits with multiple use of available water, so such approach should be encouraged where possible.

The solar powered micro irrigation is a possibility in the rural hills. Such system can serve small land holders and supplement irrigation water for the tail enders. This could be adopted in some viable upcoming subprojects.

Most of the local farmers are not fully aware of (i) the application of the required dose of pesticide (ii) safety use (iii) safe handling, and (iv) its positive & negative effects. Awareness among farmers should be enhanced through proper training.

Deep tube well irrigation developments have played a vital role in lifting the living standard of farmers in areas of surface water scarcity and deep water table. Due considerations need to be given for the implementation of deep tube well subprojects in such areas.

In case of deep tube well, it is suggested to carry out vertical electrical resistivity sounding at the proposed drilling site so as to estimate the appropriate drilling depth as well as conducting step drawdown tests in order to identify the stage of development of tube well and evaluate well characteristics, and select pump of appropriate capacity and head.

While preparing SEMPs, proposed issues and mitigation measures should be project specific and based on ground reality and that may be addressed through walk through with concerned line agencies.

It is recommended that a formal meeting between the WUA, contractor and concerned field office needs to be arranged prior to commencement of works in order to discuss and clarify issues such as:

i the overall scope of the proposed works;

ii which works are to be carried out by the WUA (payable & contribution);

iii which works are to be carried out by the contractor;

iv responsibilities for supervising construction quality and issuing contractual instructions to the contractor

v (where necessary) how these works will be coordinated; and,

vi cost and completion time.

It is believed that it will maintain transparency and help for smooth implementation of the sub project.

Besides regular monitoring, intensive and timely monitoring from concerned authorities is recommended in case of technically complex ISPs in order to avoid time and/or cost overruns and undue claims due to contractual complications.