Exit Plan

Kankai Irrigation System

August 1, 2017

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Acronyms

AMIS	Agency Managed Irrigation System
AMP	Asset Management Plan (same as CMP)
BC	Branch Canal
BCC	Branch Canal Committee
CMP	Canal Management Plan (same as AMP)
COP	Canal Operation Plan
C/R	Cross Regulator
DOI	Department of Irrigation
DTO	Direct Tertiary Outlets
ESI	Essential Structure Improvements
GA	General Assembly
H/R	Head Regulator
H/W	Headworks
IMT-B	Irrigation Management Transfer Project, Component B of IWRMP
IMTA	Irrigation Management Transfer Agreement
ISF	Irrigation Service Fee
IWRMP	Irrigation Water Resources Management Project
KIS	Kankai Irrigation System
MC	Main Canal
M&E	Monitoring and Evaluation
0&M	Operation and Maintenance
OPD	Office of the Project Director
SC	Secondary Canal
SC	Secondary Canal Committee
SMU	System Management Unit (DOI branch office)
TC	Tertiary Canal
ТСС	Tertiary Canal Committee
TOR	Terms of Reference
ТОТ	Training of Trainers
WUA	Water User Association
WUC	Water User Committee

1. Project Background

a. History

The Kankai Irrigation System was constructed under loan assistances from Asian Development Bank (ADB) in two phases. The construction works commenced in 1971 and the first phase was completed in 1981 developing the irrigation networks in about 5000 ha. The second phase was commenced in 1980 and completed in 1991 with the extension of the infrastructures in about 2000 ha area out of a targeted 3000 ha. The remaining areas are developed partially as was observed from the secondary canals S-17 to S-21 having earthen works only. The tertiary canal networks are not built in this undeveloped area. The sizes of the tertiary canal and the secondary canals have varying service areas from 5 ha to more than 700 ha. There are 31 direct outlets from the main canal with varying sizes. Uniform tertiary unit design as adopted in SMIP, Narayani, and Mahakali Irrigation Systems provide for rotation and equitable distribution. But uniform tertiary designs are not adopted in Kankai so rotation and equitable distribution is difficult. At present the WUAs and the office field staff decide with mutual understanding regarding the rotational delivery of the water sources during water scarcity. As reported from the field the irrigation water is delivered during spring season with one-year rotation between the phase-I and the extension portion. Similarly during winter season rotational practices are scheduled in days among these two main canal sections and also among the secondary canals. It was surprising to note that they get water according to the rotational period; however the farmers felt that it is inadequate for the crop water requirement. Nine secondary canals are handed over by the office to the WUAs, which are maintained and operated by the farmers to some extent. Otherwise the whole maintenance of the system was dependent entirely on the government budget for maintenance.

The maintenance records show that most the budget is spent in the headworks structure due to its massive size of the structure and problems faced due to the river regime. It was reported that the structure was rehabilitated twice in its downstream floors due to the retrogression of the river. The floor length of the structure was extended and a cutoff wall was built in the second phase of the construction. At present the structure is intact and working satisfactorily.

b. Infrastructures Developed

i. Headwork and Settling Basin

The headworks structure is a conventional type comprised of a weir, under sluice, and head regulator structure. The span of the vertical fall type weir is 126m, with a vertical fall of 1.85m in height. The under sluice has three bays with a total span of 16.5 m width. A typical trapping structure is built just upstream of the head regulating structure to divert the floating debris in the river. This structure is a typical one, has functioned quite well, and can be replicated on such type of structures in other places. The location of the headworks structure lies at the foothill of the Churia range just upstream of the outwash to the Terai plain area. The location of the headworks site is beautiful with forest and green environment. At present the structure is intact and sound, however threats from the retrogression of the Kankai River remains in the future. For the last five years there has been no significant degradation.

The settling basin to flush the sediment is built at 1.65 km from the headworks site. The flushing of the sediments is carried out regularly one day a week to the adjacent Sardare Khola.





ii. Canal Networks

The total canal network has been divided in to five reaches of main canals. The extension main canal is considered as Reach-5, and other four reaches of the main canal are considered in the Phase-I main canal sections. The total length of the Phase-I main canal is 22.4 km and that of extension main canal is 13.6 km, giving a total length of 36 km. The two main canals are bifurcated at chainage 9+886 km from the headworks site on the Phase-I main. The Phase-I main canal bifurcates further downgradient 14.1 km into Reach–3 and Reach-4 sections. Summaries of the canal networks details are illustrated in the **Table 1**.

Main Canal Reach	Chainage in Km from H/W site (H/R of settling basin as O+000)	Secondary Offtakes	Direct Tertiary Outlet Offtakes from MIC (Nos.)	Remarks
Reach-1, MC R-I	0+000 to 11+500	S-0, S-2, and	To-1 to To-6; (6	MC R-V offtakes at Ch.9+886,
(11.5 Km)		S-3	nos.)	extension MC.
Reach-2, MC R-II	11+500 to 14+100	S-4, S-5	To-7 to To-12; (6	
(2.6 Km)			nos.)	
Reach-3, MC R-III	14+100 to 16+900	S-6, S-7, S-8	TA-1 to TA-6; (6	
(2.8 Km)			nos.)	
Reach-4, MC R-IV	14+100 to 19+600	S-9, S-10, S-	TB-0 to TB-12;	
(5.5 Km)		11, S-12,	(13 nos.)	
Reach-5, MC R-V	9+886 to 21+286	S-13, S-14,	T _E -1 to T _E -23; (23	
(11.4 Km)		S-15, S-16,	nos.)	
Extension part	21+286 to 23+486	S-17, S-18,	None	Undeveloped portion, only SC
Undeveloped	Tail	S-19, S-20,		essential structures are built.
(2.2 Km)		S-21,		Missing turnouts.

Table 1 illustrate details regarding the number of off-take points from the MC. The MC has bifurcations at two places, one at 9.886 km for the Reach-5 Phase II part, and another at 14.1 Km for Reach-4. The details regarding the tertiary canals off-taking from the secondary canals will be illustrated in the following chapters.

iii. Main Canals

As illustrated in the canal networks, the MC has total 36-km length up to the tail structure of the extended part. Previous consideration of the MC length was 33.8 km up to the escape cum head regulating structure of S-17, S-18, and Te-24 with escape and circular stilling pool at its upstream side. It is reported that altogether 97 structures exist in the MC, with 50% of its gates having defective mechanical systems. About 20% of the canal section is assumed to be silted up reducing the flow rate in the canal bed.

iv. Distribution System

Total 22 numbers of secondary canals are built, out of which only 17 nos. have their tertiary system for water distribution. The remaining 5 nos. have not been developed for its water distribution structures, S-17 to S19 secondary canal have some structures VRB and others, but the turnout structures are missing. At the S-20 and S-21 secondary canal the earth works only are complete and no structures are built. The farmers have transplanted paddy crops in the canal bed of S-21. Total 86.69 km. Length of the secondary canals were built, with 54 nos. of sub-secondary canals. Total 199 nos. of tertiary canals were constructed with total length of 110 km. Density of the distribution canal is 28 m/ha, which is in the low level of water delivery efficiency. The indicator is not representative for undeveloped portion. Altogether 684 nos. of structures are built in the main, secondary, and 199 nos. of tertiary canals. Total 86.69 km length of secondary canal and 110 km length of tertiary canals were constructed.

c. WUA Structure

Kankai Water User Association, Jhapa, consists of three level organizations: MC, SC committee and TC committee (TCC). The WUA of KIS was formed and registered in 1st December 1993 under the Water Resources Act (1993). It has three tiered organizations, which are structured as follows:

- Tertiary Canal Committee (WUC) at the tertiary canal level.
- Secondary or Branch Canal Committee (SCC/BCC) at the Secondary or Branch canal level.
- Main Canal Committee (MCC) to work at the whole system level.

In Kanakai altogether 181 tertiary canal committees (upasakha and prasakha) are formed among the ISF paid and membership holder farmers of the tertiary. In total the 5777 membership holding farmers participated in WUA formation process.

i. Tertiary Canal *Committee (TCC)*

Among the committee, the tertiary committee (prasakha and upasakha) is the lowest significant unit of the WUA. These committees have 7 members having Chairman, Vice-chairman, a secretary, and treasurer and 3 members.

There are altogether 225 GA members representing from 181 tertiary Committees and each elects one member representative to the and 44 from BCCs. In the GA the 225 members elect a Chairman, Vice Chairman, Secretary and Treasurer and 10 members of the main committee.

ii. General Assembly (GA)

The GA is the sole authorized body represented by the users from the very lowest level of WUA. It has full power to make and amend rules and regulations regarding the operation and maintenance of the system including water management.

iii. Secondary or Branch Canal Committee (SCC/BCC)

Tertiary users committee elect 3 representatives for a BC Sabha from each tertiary to form the SCC. Twenty-two (22) BCCs have been formed among the members of the BCS Sabha. Nine-member BCCs have been formed for each BC including Chairman, Vice Chairman, Secretary, Treasurer and 5 members.

iv. Main Canal Committee (MCC)

The formation of the MCC of the WUA takes place as follows:

- Each of the farmer sabhas under the TCC selects 1 representative as a GA member for the formation of the MCC.
- Each of the BCCs selected two representatives as GA members for the MCC.
- In total 225 GA members have elected the posts of Chairman, Vice Chairman, Secretary, Treasurer, and 10 members of the MCC. The ex–chairman of the WUA also is selected as a member of the MCC. This makes a total of 15 WUA members that form the MCC.

Figure A-1, Annex A shows the KIS canal network. The various branches of the network identify the locations in the system of the different WUA members listed in **Table 2. Table 2** gives the name of the BC, members of BC, No. of TC Committee, selected GA member from TC, selected BC Sabha member from TC, selected GA member from the BC and total members of the TCC. **Figure A-2, Annex A** shows the WUA organization chart.

v. Inventory of Water User's Committee Members

Table 2 shows the number of WUC members, and **Figure 3** is a WUA organogram. S-17 to S-21 have not formed any TCs, but are represented by one member each in the GA and the MCC.

Branch	TC no.	BCC Members	TCC Members	GA TC Members	BC TC Sabha Members	GA BC Members	Total TCC Members
S0	11	9	7	7	21	2	49
S1	12	9	11	11	33	2	77
S2	20	9	11	11	33	2	77

Table-2: Inventory of Water User Committee Members

Branch	TC no.	BCC	TCC	GA TC	BC TC Sabha	GA BC	Total TCC
		Members	Members	Members	Members	Members	Members
S3	18	9	10	10	30	2	70
S4	21	9	16	16	48	2	112
S5	16	9	6	6	18	2	42
S6	7	9	5	5	15	2	35
S7	6	9	5	5	15	2	35
S8	15	9	7	7	21	2	49
S9	15	9	10	10	30	2	70
S10	12	9	8	8	24	2	56
S11	9	9	5	5	15	2	35
S12	16	9	7	7	21	2	49
S13	17	9	11	11	33	2	77
S14	24	9	12	12	36	2	48
S15	22	9	9	9	27	2	65
S16	22	9	11	11	33	2	77
S17	8	9	8	8	24	2	56
S18	5	9	5	5	15	2	35
S19	6	9	5	5	15	2	35
S20	7	9	7	7	21	2	49
S21	4	9	4	4	12	2	28
Total	294	198	181	181	540	44	1262

d. Irrigation Management Transfer in KIS

The overall objective of the IMT-B is to improve irrigation service performance to KIS farmer irrigators through the completion and consolidation of Irrigation Management Transfer (IMT) to the KIS WUA. The component was designed to address problems such as below capacity performance, poor O&M, low cost recovery, and inadequate maintenance funds availability.

i. The Key Activities of IMT

- Completion/consolidation of the Management Transfer Plan, including streamlining and strengthening of WUAs;
- Essential structural improvements;
- Repair, upgrading, or procurement of buildings, information systems, transportation, and maintenance and information technology equipment;
- Institutional development through capacity building of WUAs and the DOI.

ii. Expected Primary Outputs of IMT

- Efficient and equitable service delivery by WUAs;
- Financially and institutionally sustainable WUAs;
- Improved physical performance of the irrigation schemes;
- Reliable bulk water delivery by the DOI, according to the IMT Agreement with the respective WUAs.

The activities under IMT are envisaged to be completed in all respects, in all sectors by the targeted project completion date of 30 June 2018. In the remaining time period of 10 months all the outputs need to be achieved. Despite rigorous efforts during the project, several of the supporting activities may

not be fully completed and need to be continued after project to realize long term sustainable benefits. Considering this fact, an Exit Plan that formally assigns the KIS system to the mother institutions for future ongoing support for completing project outcomes, is essential. It is with this view that this Exit Plan for KIS has been prepared.

2. Objectives of Exit Plan

The general objective of this Exit Plan is to sustain project benefits and best practices of the completed and ongoing project schemes by institutionalizing them in the related mother institutions. Specific objectives are listed below:

- Review the Irrigation Management Transfer Agreement (IMTA) against the program requirement and justify the relevance of these activities for the future reference and evaluation of the implementation process;
- Document project achieved input status against planned inputs for each component;
- Document project component tasks against outputs, status and their level of utilization;
- Segregate completed tasks by outputs, inputs and performance to be achieved;
- Prepare post-turnover support plan including necessary tasks to be completed during the IWRMP project implementation period;
- Document applied processes and best practices to be followed by the departmental mother institutions, and;
- Provide and introduce to the mother institutions all manuals, processes, and guidelines developed during project operation through an orientation workshop.

3. Sectorial reports

a. Institutional Development Program

To achieve the main outcome of financially and institutionally sustainable WUAs, the outputs targeted are a) WUAs become self-governing, self-financing, and self-regulating organizations b) Improved arrangements and instruments for O&M of AMISs, and b) Completion of IMT to designated WUAs, with WUAs assuming all expected responsibilities. For these targeted outputs, the main activities planned according to Irrigation Management transfer agreement were listed in **Table B-1**, **Annex B**.

i. Activities Planned and Progress Achieved

The activities planned and progress achieved on Institutional Development Activities in KIS, are as tabulated in **Tables B-2**.

Output Achieved

- During the implementation of institutional development activities, a total of 140 different type
 of events with activities for the capacity development of WUA has been completed as of March
 2017. Altogether, 4437 males and 1041 females participated in these events. In total 5478
 WUA's members and users were given awareness about the program and improved their
 knowledge and skill regarding the WUA activities for irrigation management through
 institutional development.
- Remaining activities 2 events of participatory irrigation management and 3 events of internal mobilization of WUAs will be included in an awareness building program under the additional activities.

ii. Remaining and Additional Activities as Planned in Butwal Workshop

• Remaining as well as additional activities planned in review workshop at Butwal on 22-24, 2016 and on December 15, 2016 in second progress review meeting at KIS

S.N.	Activity Name	Target Events	Completed Events	Trainees	Target Group	Date			
Additi	Additional Program review workshop, Butuwal								
	Capacity development								
	M&E	2							
1	Rules & regulation	2							
2	Office and financial management	3							
	Awareness program on capacity	5	7	182	WUA,TC	2073/11/8-21			
	development and ISF collection				Members				
3					and users				
	Women's participation in irrigation	2							
4	management								
	Training on canal operation plan	10	4	115	WUA,TC	Up to April 02,			
					Members	2017			
5					and users				
	Total	24	11	297					

Table-6: Plan and Progress of Additional Activities

- Output Achieved in total 11 event (out of 24 event) has been completed by April 02, 2017. Altogether 297 WUA's members and selected farmers participated and improve their knowledge and skill on the ISF collection process, management and water scheduling.
- All together 4737 males and 1041 females participated in 151 events. In total 5775 WUA's members and users participated in different program.

iii. Outcomes of the program

During the discussion and observation of the WUA's during field visit the following outcomes of the program were observed:

WUA Office establishment

- Main committee WUA office and Branch offices have been established with sign board and notice board.
- Regular office operation of main and branch WUA offices with paid staff
- Regular meeting of main WUA and branch WUA office is ongoing
- Establishment of communication process within the WUA, division and users for WUA's activities

Initial Capability Phase

Administration

- Main WUA and branches are conducting regular meetings and keep a register of decision
- Incoming and outgoing register (Darta and Chalani) is maintained
- Establishment of a filing system and maintaining inventory records of ISF paid farmers, and amount collected.
- WUA main and branch committees have established record keeping system

Financial

- Financial record keeping has been established within main and branch committees such as incoming, expenditures, audit and ISF collection records etc.
- Branch committees have develop ISF collection process within the upasakha and prasakha
- Resource collection activities is ongoing

Advance Capability

- COPs are prepared for the implementation
- COP training has been completed
- M&E mechanism has established by main committee for quality control of construction work
- Conflict management process has implemented by main and branch committees
- TCs have been cleaned and maintain by users themselves under the branch. TC committees have developed a plan for TC cleaning and maintaining

iv. Issues

Some prominent issues that need to be addressed efficiently and effectively to sustain the institution.

- 1. There is a lack of database software in WUA to compile data (update beneficiary records, revised land inventory records, and irrigation service fee entries). Due to urbanization, increased remittance sales, and day by day increasing purchases of land, the WUA has an outdated land inventory record.
- 2. There is lack of parcellary maps for supporting collection of accurate and exact ISF.
- 3. WUA now has their own human resource (TOT personnel's) and experience other human resources to implement different types of training and involve in other WUA activities.
- 4. There is insufficient budgetary provision to strengthen the capacity of the numbers of quite newly elected WUA members in different levels of committees (1253).
- 5. To make the WUAs into self-sustainable, self-regulating, and resourceful institutions, they need training in proposal writing.

v. Recommendations

To make WUA self-sustainable, self-functioning and resourceful following support and assistance from IWRMP/ DOI as well as from District Irrigation Division must necessary.

- 1. Support provision of database software to WUAs.
- 2. IWRMP/DOI needs to support and provide Parecellary map to BC level tertiary canal committee as soon as possible.
- 3. Provide budget to strengthen the capacity through training and workshop to quite new elected 1253 WUA members in different tire of committee.
- 4. Provide proposal writing training to enable WUAs to generate resources.

Concluding Observation

The KIS WUA has been established as an effectively functioning WUA. MC and BC committees have their own buildings with office materials and regular operational staff. WUAs have initiated several activities after receiving trainings. These include establishment of WUA, initiating ISF collection, resource mobilization, inventory records management, communication process, conflict settlement, leadership development, good governance, monitoring and evaluation, financial record keeping, preparation of annual plan, quality control of construction work, tertiary canal maintenance by users, audit and general assembly meetings are on-going.

S N Voar		Collected NPs	Labor Contribution		
	Collected NKS	Days	Value (NRs)		
1	2066/067	170,000 before IWRMP	NA	NA	
2	2067/068	436,668 after IWRMP start	NA	NA	
3	2068/069	373,502	5,777	1,444,250	
4	2069/070	645,062	8,954	2,238,583	
5	2070/071	724,407	11,554	2,888,500	
6	2071/072	1,152,295	11,554	2,888,500	
7	2077/073	1,342,687	11,554	2,888,500	
8	2073/074	1,175,000 (collection on-going)	NA	NA	

Table-7: Status of ISF Collection

The yearly ISF collection target and collected amount is increasing. Seven years ago at the start of the IWRMP the ISF collected amount was 169,999.53. Since the start of the IWRMP the rate of annual collected ISF has increased. Therefore, increasing rate of the ISF is symbol of sustainable. The strategy for ISF collection and mobilization, use of equipment, and labor mobilization in maintenance work needs to be improved.

b. Water Management Program

To achieve the two main outcomes of improved water management practices such as; a) an improved COP and b) improved O&M practices that need to be adopted by the WUAs, the outputs targeted are a) measured, controlled and scheduled seasonal bulk water delivery by DOI to all WUA BCs, b) standard and qualitative irrigation service delivery to users by WUA and c) approved AMPs ready for implementation. For these targeted outputs, the main activities planned are:

i. Canal Operation Plan (COP)

Although irrigation systems are planned, designed and constructed with certain operating rules, it has been observed that the systems do not always behave as designed because of global change in environment, change in cropping pattern, crop water requirement and increase in sectoral uses of water resource. This requires updating previously designed operation plans to cope with the current needs of water requirement. This means that periodic monitoring and updating of present operation plans is required.

- Crop data collection (crop calendar, cropping pattern and cropped area) for all the crops grown in the command area
- Calibration of flow control structures at strategic locations
- Gauge painting for water allocation and distribution as planned
- Preparation of COP for all season crops
- Knowledge and skill development trainings for WUAs and Government staff for effective implementation of COP

ii. Asset Management Plan (AMP)

The AMP is the main activity in component B to assess the value of the infrastructure for management transfer, and the required basic requirements for the management of the systems. This will ensure timely and effective maintenance through optimum participation of all the concerned stakeholders.

- Inventory of canal systems/subsystems and other assets owned by WUA under component-B
- Preparation of AMP (canal maintenance plan)
- Knowledge and skill development trainings for WUAs and Government staff for adoption of efficient maintenance practice

iii. Activities Planned and Progress Achieved

The activities planned and the progress achieved on water management activities in KIS are as tabulated below in **Table 8**:

Table-8: Status of ISF Collection

Status of Achieved Water Management Activities, KIS						
Category	Process and Activities	Total Plan	Completed	Remaining	Remarks	
		(Events)	Events	Events		
А	Irrigation Canal Operation Plan (COP)					
	Main Activities					
A.1	Preparation of MC COP	1	1	0		
A.2	Implementation of MC COP, M&E	3	3	0		
A.3	Preparation of BC COP	22	22	0	underway	
A.4	Implementation of BC COP, M&E	22	0	22		
A.5	Calibration of flow Control Structures	19	19	0		
A.5	Use of rating tables both at MC & BC	19	19	0		
В.	Irrigation maintenance plan (CMP/AMP)					
	Main Activity:					
B.1.	Update inventory of irrigation structures and other assets of MC	1	1	0		
B.2.	Update inventory of irrigation structures and other assets of BC	22	22	0		
B.3.	Estimate maintenance cost of MC	1	1	0		
B.4.	Estimate maintenance cost of BC	22	22	0		
B.5.	MC annual maintenance plan/budget	1	1	0		
B.6.	BC annual maintenance plan/budget	22	22	0	report	
					prepared	
B.7.	Implement MC maintenance plan	1	0	1		
B.8.	Implement BC maintenance plan	22	0	22		
B.9.	M&E at MC level	1	0	1		
B.10.	M&E at BC level	22	0	22		

Output Achieved

The MC COP and distribution schedules for all 22 branch canals have been completed. Implementation the MC COP for all three crop seasons was carried out but preliminary analysis was made only for last spring season, so a detailed analysis for all the three seasons is expected to be carried out in upcoming seasons along with all other incomplete supporting activities mentioned in Table-1 above.

Regarding Asset Management Plan, draft report of main canal and all the branch canals are in process of review and supposed to be completed by the end of June of 2017. Implementation, monitoring and evaluation will be carried after finalization of these plans.

Future Plan/Exit Plan

The projects under IWRMP are envisaged to be completed in all respects, in all sectors in targeted by the end of the project on 30 June 2018. In the remaining of the project all the outputs need to be achieved. Despite rigorous effort some of the supporting activities may not be completed due to some

unavoidable circumstances, but they need to be continued even after project to harvest benefit for long term in sustainable manner. Considering this fact, a need of an exit plan linking the irrigation system with mother institution for future ongoing support till the project outcome achieved, is highly important.

Accordingly, a field visit was made on 2 May 2017 to assess the status of water management activities to date and identify the issues hindering the output/outcome of water management program in KIS.

iv. Issues

After open discussion with Division Chief, SMU and WUA of Main and Branch Committees, a field visit of sample branches referred by WUA were carried out. The issues related to water management program identified are as follows;

- Lack of rating table and gauge to deliver planned discharge through branches d/s of S16.
- Water level during low flow were found below than crest of few MC DTOs forcing concerned tertiary farmers to lower the downstream X-regulator fully, thus hindering the smooth operation of main canal as per the plan.
- TCs are not well developed in branches S17-S21. As a result the command area under irrigation is reduced. Only 65% of required TCs are planned to be constructed in the present contract.
- In middle of S20, there is insignificant seepage from the canal hindering availability of water in tail of S20.
- At the junction of S19, S20 and S21 canals, outlet structures constructed are not compatible for equitable sharing of available water.
- In absence of parcellary maps, the actual areas under irrigation could not be accurately assessed as per current conditions.
- C/R and H/R Gates are not in order and in many places gates are missing resulting, in ad hoc operation of canals.
- Lack of adequate knowledge and skill to adopt improved water management practices such as use of COP, rating table, AMP.
- Lack of division boxes in canals S17-S21
- Lack of proper maintenance (desilting) of TC and other canals

Plan to June 30, 2018

To ensure the project outputs are achieved by the end of the project, the activities to be completed are as tabulated below:

Table-9: Plan for Remaining Water Management Activities

Plan for Remaining Water Management Activities, KIS						
Category	Process and Activities	Total Planned (Events)	Remarks			
A	СОР					
	Main Activities					
A.2	Implementation of MC COP, M&E	3				
A.3	Preparation of BC COP	22	Distribution Schedule prepared but write-up is remaining			
A.4	Implementation of BC COP, M&E	22				
A.5	Use of rating tables both at MC & BC	19				
В.	Irrigation Maintenance Plan (CMP/AMP)					
	Main Activity:					
B.3.	Estimate maintenance cost of MC	1				
B.4.	Estimate maintenance cost of BC	22				
B.6.	MC annual maintenance plan/budget	22	Draft report prepared			
B.7.	BC annual maintenance plan/budget	1				
B.8.	Implement BC maintenance plan	22				
B.9.	M&E at MC level	1				
B.10.	M&E at BC level	22				

v. Recommendations

Though the output will be achieved through implementation of above activities, to achieve the outcome as envisaged in the project document support needs to be continued through linking WUA organizations to their mother institutions. Activities left or missed during early identification that are beyond the capacity of users, or activities for coping with the new technologies need to be continued through mother institutions till the organization evolve to a self-sustainable level.

During field visits and discussions with users several issues were identified as noted above but all issues such as level of crest of tertiary outlets, calibration of DTO and S17-S21 canals, TC developments, construction of division boxes are not included as Exit Plan remaining activities as these are not included in TA's TOR. Whatever is under scope of the project will be completed by the division office during the project period, and remaining activities need to be completed by the mother institutions. The preparation of COPs and AMPs are in progress and expected to be completed by the end of June 2018.

• Implementation of Planned Activities

There is no cost allocated to any activities as these are either a part of TA or SMU/WUA regular activities. The responsibility of the implementing authorities is as presented in **Table-10** below. Additionally, some training activities on water management included under Institutional Development activities are not included in this estimate.

Irrigation Management Activity Responsibilities							
Category	Process and Activities	Total Plan (Events)	Remarks				
Α	Irrigation Canal Operation Plan (COP)						
	Main Activities						
A.2	Preparation of MC COP	3					
A.3	Implementation of MC COP, M&E	22	ТА				
A.4	Preparation of BC COP	22	SMU, WUA and TA				
A.5	Implementation of BC COP, M&E	19	SMU, WUA and TA				
В.	Irrigation maintenance plan (CMP/AMP)						
	Main Activity:						
B.4.	Update inventory of irrigation structures and other assets of MC	22	ТА				
B.6.	Update inventory of irrigation structures and other assets of BC	22	ТА				
B.7.	Estimate maintenance cost of MC	1	SMU and WUA				
B.8.	Estimate maintenance cost of BC	22	SMU and WUA				
B.9.	MC annual maintenance plan/budget	1	SMU and WUA				
B.10.	BC annual maintenance plan/budget	22	SMU and WUA				

Table-10: Water Management Activity Responsibilities

c. ESI development

i. Objectives of Essential Structure Improvements (ESI)

ESI works includes the civil works required for the improvement of the schemes to functional stage, with better conveyance efficiency and equitable distribution of water. ESI only covers crucial maintenance/rehabilitation needs, which is bottleneck for the performance of irrigation schemes.

- Qualitative improvement of physical infrastructures (Construction, Improvement, Maintenance) with the cost optimization
- Improvement of performance of canal network, water control & measuring structures
- Inclusion of ESIs which are operable and manageable at farm level.

ii. Methodology for ESI works

A Rapid Appraisal was carried out to assess the present performance of the canal networks and asset inventory was prepared that covered infrastructures' conditions and functionality. ESI was prepared under Asset Management Plan (AMP). Based on the ESI works included in Asset Management Plan, the System Management Unit (SMU) and WUA jointly conducted walk through survey of all canals of the irrigation system to identify Structural Improvement works. SMU and WUA together prioritize the identified Structural Improvement Works. Based on this prioritization, ESI Works were finally planned and Estimated within the allocated budget as per prioritization during walkthrough.

iii. Implementation of ESI works at KIS

- The ESI works was implemented by SMU after the approval of cost estimates by DOI.
- Supervision of ESI works was carried out jointly by SMU and WUA
- A work plan was prepared and ensured that ESI works to be completed within stipulated time

iv. Outcome of ESI

On 2 May 2017, a field study was carried out by TA-team for the observation of completed ESI works in Kankai Irrigation Scheme. A consultation meeting with SMU/WUA/OPD was held on 3 May 2017; TA-team enquired with WUA if any crucial issues were not addressed during ESI implementation, WUA informed about some issues about lined canal damage, gate operation and division boxes/outlets. On 3 May 2017, the TA-team made a field visit and had the following observations;

The MC & 22 off-taking canals were functional, & it was found that the canal networks were able to deliver water to their tail end.

TA-team inspected the junction of off-take (junction of S19, 20 & 21) that was not working properly and recommended technical solution to resolve that matter.

Canal siltation has obstructed the network to carry full (design) discharge that needs to be regularly cleaned by the WUA with their resources instead of asking SMU to do that.

Several Division Boxes/outlets need to be constructed by SMU if some savings from contract or additional funding is available.

It was found that under ESI, most of the demands are for canal lining and river training works, it is regular and never ending process. Since lining and river training works are relatively simple and costly, tendency to recommend such works should be discouraged. It is recommended that other crucial maintenance works should be carried out within the regular maintenance budget of DOI.

4. General Issues Identified

Following the 2 May 2017 field study, the following is a summary of Achievements, and Issues and Findings:

a. Achievements:

- WUA office building and setup of office equipment.
- Various trainings to WUA for their overall capacity development

- Preparation and Implementation of Rules and Regulations (Administrative and Financial Rules, ISF Collection, Canal Maintenance rules, etc. in main canal)
- ESI works being carried out effectively in main, secondary and branch canals.
- S (17-21) construction being carried out.
- Supply of water as per the calibration done in S(0-16).
- Started implementation of Canal Operation Plan.

b. Issues and Findings:

- ISF collection, Canal Maintenance, Economic and Financial rules is still not implemented in secondary canals.
- There are lesser number of trainees who received ToT so problems in water management sector are being felt. Thus, ToT should be provided to a maximum number of trainees.
- Due to the unavailability of exact records of the land holders, ISF collection target has become a problem to be reached. So, it would be helpful if IWRMP take procedures in fixing irrigated and non-irrigated area with updated parcellary maps.
- It is important to carry out maintenance in S (17-21).
- Demarcation of all the SCs need to be done.
- COP of 54 TCs must be made.
- A major issue has been found in regulating and distributing water from MC to SCs. As the SCs are
 at greater elevation than the MC, the MC needs to be blocked to raise the water up to the SC
 which results in the destruction of MC.

5. Annexes

Annex A – MIS-I System Details







Figure A-2: WUA Organization Chart

Annex B – Institutional Development Details

Table-B-1: Institutional Development Activities

S.N	Name of the Activity	Target Event						
1	IMT Program Orientation	10						
2	Office and Financial Management	5						
3	Observation Tour	3						
4	Training of Trainers (TOT)	1						
5	ISF Collection and Resource Mobilization and Management	7						
6	Computer Training	1						
7	Leadership Development/ Good Governance	4						
8	Construction Management and Quality Control	2						
9	Financial Management	5						
10	Canal Operation and Maintenance	5						
11	Participatory Irrigation Management	2						
12	Internal Mobilization of WUA	3						
13	Water Management and Irrigation Service Distribution	2						
14	Women's Participation Irrigation/ empowerment	2						
15	construction of WUA Office Building	1						
16	Agriculture Production and Management	3						
17	Brochure Preparation for WUA activities							
18	Website Design and Radio Program							
19	Participatory Monitoring and Evaluation	2						
20	WUA Asset Management Plan	1						
	Total	59						
Additio	nal Program planned by SMU/WUA during 2012							
1	Off Seasons Vegetables	4						
2	Fertilizer Management	13						
3	Structural Calibration and Water Scheduling	5						
	Total	22						
Additio	Additional Program planned in review workshop, Butwal, 2016							
	Capacity development							
	M&E	2						
1	Rules & regulation	2						
2	Office and financial management	3						
3	Awareness program on capacity development and ISF collection	5						
4	Women's participation in irrigation management	2						
5	Training on canal operation plan	10						
	Total	24						

S.N	Name of the Activity	Target Event	Completed Event	Participants			Target Group	Date
				Male	Female	Total		
							SMU, WUA	
							Members	
1	IMT Program Orientation	10	27	1659	95	1754	and Farmers	Up to Aug 2015
	Office and Financial							Dec 2009 to
2	Management	5	18	475	87	562	MC, BC, TC	May 2015
3	Observation Tour	3	5	100	48	148	MC, BC, TC	Up to June 2014
							Selected WUA	
4	Trainers of Training (TOT)	1	1	20	4	24	Members	June 2012
	ISF Collection and Resource							
	Mobilization and						BC, TC,	2010 to
5	Management	7	22	560	57	617	Members	June 2013
							Selected WUA	
6	Computer Training	1	1	7	1	8	Members	2011
							Executive	
7	Leadership Development/	4	C	140	00	475	Members of	
1	Good Governance	4	0	146	29	1/5	MC, BC, TC	Up to Dec 2015
	and						Member of	
8	Quality Control	2	7	155	19	174	WUA MC BC	2010 Feb 2015
0		2	,	100	10	174	Women	20101 00 2010
9	Financial Management	5	5	-	34	132	Members	June, 2011
	Canal Operation and						WUA Members	,
10	Maintenance	5	6	150		150	and Farmers	2073/03/13-24
	Participatory Irrigation							
11	Management	2	-					
12	Internal Mobilization of WUA	3						
	Water Management and							
	Irrigation Service	_	_				WUA selected	
13	Distribution/Scheduling	2	3	85		85	members	2073/12/11-18
	Women's Participation	•	-					
14	Irrigation/Empowerment	2	5					
15	Construction of WUA Office	1	1					
10	Agriculture Production and	1	1					
16	Agriculture Froduction and Management	3						
10	Brochure Preparation for	0						
17	WUA activities							
	Website Design and Radio							
18	Program							
	Participatory Monitoring and						MC-BC	
19	Evaluation	2	1	24	1	25	Members	2072/12/21-22
	WUA Asset Management							

Table-B-2: Status of Institutional Development Activities

Total
Additional Program

Plan

1				1		1		
1	Off Seasons Vegetables	4	4	-	105	105	Women Members of Users	June, 2012
2	Fertilizer Management	13	13	176	184	360	Male/Female Members	June, 2012
3	Structural Calibration and Water Scheduling	5	8	191	26	217	SMU, WUA, MC, BC	May, 2014 Feb 2015
4	Parcerally Map Review	1	1					
5	Mid- term progress review	1	2	69	6	75	WUA	May, 2011
6	Conflict Management	1	1	23	4	27	V.C.P. of MC, BC	Dec, 2015
7	On and of Farm Water Management	4	3	69	8	77	WUA, MC, BC and Dhalpa	Dec 2015 to Feb 2013
	Total	29	32	528	333	861		
Grand total		88	140	4437	1041	5478		•