



KARNATAKA NEERAVARI NIGAM LTD

&

**ADVANCE CENTRE FOR INTEGRATED WATER RESOURCES
MANAGEMENT**

**KARNATAKA INTEGRATED AND SUSTAINABLE WATER
RESOURCES MANAGEMENT INVESTMENT PROGRAM**

ADB LOAN No. 0085-IND/LOAN No. 3172

Quarterly Progress Report (Q1Y2)



June 2016

Project Management Unit, KISWRMIP

Karnataka Neeravari Nigama Ltd (KNNL)

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ABBREVIATIONS & ACRONYMS

AC-IWRM	Advanced Center for Integrated Water Resource Management
ADB	Asian Development Bank
BRP	Bhadra River Project
BRRBC	Bhadra Reservoir Right Bank Canal
CADA	Command Area Development Authority
CDTA	Capacity Development Technical Assistance
CPM	Community Participation Management
CWC	Central Water Commission
DATC	District Agriculture Training Centre
DPO	Direct Potential Outlet
DPR	Detailed Project Report
DSS	Decision Support System
EA	Executing Agency
EARF	Environmental Assessment Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FAM	Facility Administration Manual
FAO	UN Food and Agriculture Organisation
FFS	Farmer Field School
FIDIC	International Federation of Consulting Engineers
GEO	Geotechnical Engineering Office
GoK	Government of Karnataka
HAMPI	Hampi World Heritage
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IEC	Information Education and communication
IEE	Initial Environmental Evaluation
INGO	International Non-Government Organisation
IWRM	Issues in Water Resource Management
KERS	Karnataka Engineering Research Station Karnataka Integrated and Sustainable Water Resource Management Investment
KISWRMIP	Program
KNNL	Karnataka Neeravari Nigam Limited
KVK	Krishi Vigyan Kendra (Agriculture Science Centre)
LBHLC	Left Bank High Level Canal
LBMC	Left Bank Main Canal
MASSCOTE	MApping Systems and Services for Canal Operation TEchniques
MD	Managing Director
MFF	Multi-tranche Finance Facility
MIS	Management Information System



MOM	Management Operation & Maintenance
MOU	Memorandum of Understanding
MTR	Mid Term Report
NCA	Net Command Area
NEP	National Environment Policy
NGO	Non-Government Organisation
O&M	Operation and Maintenance
OJT	On the Job Training
PALMS	Productive Agriculture Linkages and Marketing System
PCC	Program Co-ordination Committee
PD	Project/Project Director
PIO	Project Implementation Office
PMIS	Program Monitoring Information System
PMMS	Program Monitoring Management System
PMU	Project Management Unit
PPMS	Program Performance Monitoring System
PPTA	Project Preparation Technical Assistance
PRA	Participatory Rural Appraisal
PSC	Project Support Consultant
QCBS	Quality Cost Based System
QPR	Quarterly Progress Report
RBC	Raya Basava Canal
RBHLC	Right Bank High Level Canal
RBLLC	Right Bank Low Level Canal
RFP	Request for Proposal
RICM	Regional Institute of Cooperative Management
RMP	Risk Management Plan
SC	State Steering Committee
SGoK	State Government of Karnataka
SHG	Self-Help Group
SMEC	Snowy Mountains Engineering Corporation
SPS	Safeguard Policy Statement
SRI	System of Rice Intensification
SST	Support Services Team
TLBC	Tungabhadra Left Bank Canal
TNA	Training Needs Assessment
ToR	Terms of Reference
TPRM	Tripartite Review Meeting
TRBC	Tungabhadra Right Bank Canal
VFG	Virtual Finance Group
VNC	Vijayanagara Channels



WALMI	Water And Land Management Institute
WBADMIP	West Bengal Accelerated Development of Minor Irrigation Project
WIS	Water Institution Specialist
WRD	Water Resource Department
WRIS	Water Resources Information System
WRS	Water Resources Specialist
WUA	Water Users Association
WUCS	Water Users Co-operative Society



1 PROJECT BACKGROUND

1.1 Introduction

Karnataka State (the State) is water stressed with increasing inter-sector water demands. Irrigation sector is the major user of water resources for agriculture. Due to competing demands, there will be appreciable decline in agriculture demand. Meeting the anticipated rise in competing demands, particularly industry, domestic and ecosystem services, is a major challenge. This, if unmet, may constrain sustainable economic growth of the State. Water stress in the State is exacerbated by uneven spatial and temporal distribution of water resources and the predicted impacts of climate change. Poor coordination between various water users (like industry, domestic and power) contributes to sub-optimal management of limited water resources. Adopting an IWRM approach that promotes coordinated development and management of water, land and related resources will improve equitable economic and social welfare, while ensuring sustainability of the environment.

With the assistance of the Asian Development Bank (the Bank), the State Government of Karnataka has launched the Karnataka Integrated and Sustainable Water Resources Management Investment Program (the Program), which is expected to improve water availability for competing water demands in select river basins by implementing integrated water resources management (IWRM) and improving irrigation services delivery in the State. It will support increased water use efficiency to provide economic opportunities, particularly to women and improve rural incomes. The Program will focus on the Krishna Basin ([Figure 1](#)), and specifically within the Tungabhadra Sub-basin for implementation of physical works. The IWRM activities will be implemented State-wide.

The multi-tranche financing facility (MFF) for the Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP) and the periodic financing request (PFR) for Project-1 were approved by ADB on 25 September 2014 and 17 October 2014 respectively. The total cost of the investment program over 2014-2021 is expected to be \$225 million equivalent, with ADB financing amounting to \$150 million. Project 1, estimated at \$48 million, is expected to be completed by September 2018. Project 1 financing comprises \$31 million from ADB's ordinary capital resources, \$16.6 million from the Government of Karnataka (GOK), and \$400,000 of beneficiary contribution. The loan is effective from 13 July 2015 and loan closing is scheduled for 31 March 2019.



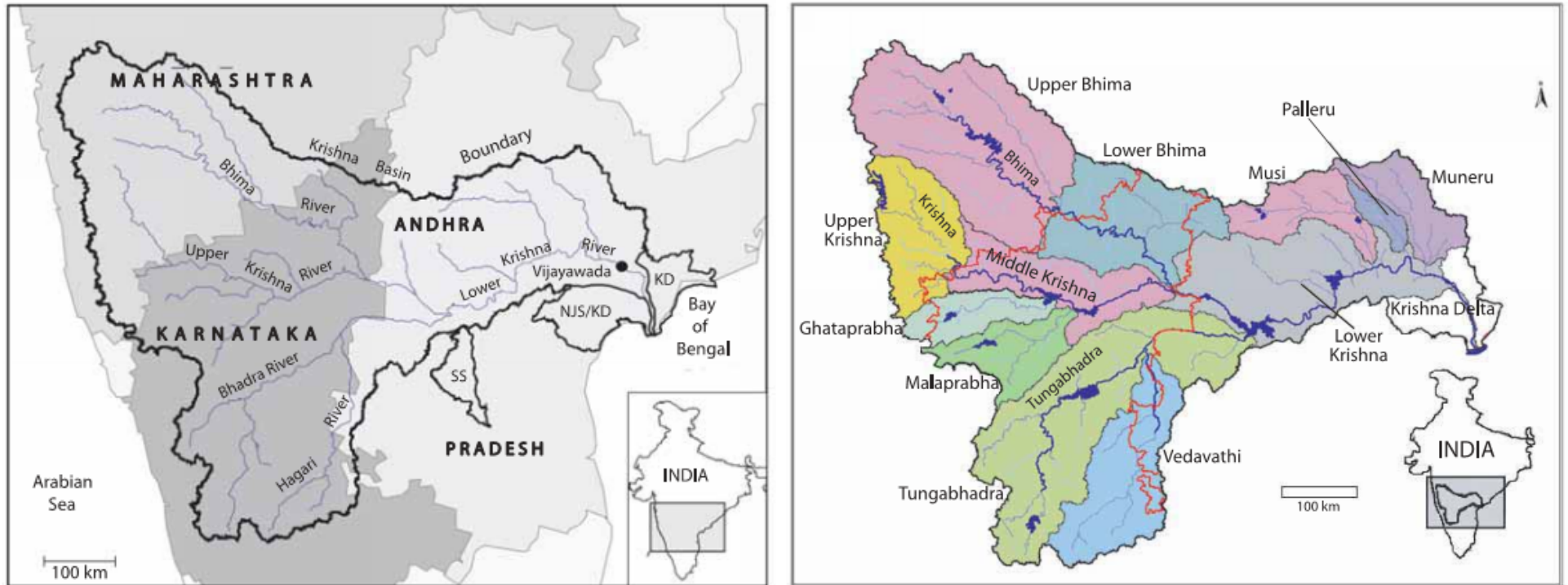


Figure 1: Krishna River network and sub-basins



The Program will be implemented in two tranches (or projects) with 4-year Tranche-1 followed by 6-year Tranche 2 expected to commence after one year of Tranche-1 implementation. The Program comprises of the following three outputs:

Output 1: State and basin institutions strengthened for IWRM

The output will strengthen institutional capacities of the Water Resources Department (WRD) and the Advanced Centre for IWRM (AC-IWRM) to implement IWRM in select river basins in Karnataka. This will include: (i) development and implementation of river basin plans to better manage water resources, (ii) capacity building and certification of the WRD (including its associated agencies like Karnataka Neeravari Nigam Limited [KNNL]) in IWRM with 30% of trainees being women, and (iii) improved water resources information systems.

Output 2: Irrigation system infrastructure and management modernized

This output will include: (i) modernization of irrigation infrastructure including installation of telemetry for canal flow measurement of three irrigation subprojects within the Tungabhadra Sub-basin (Gondi Subproject under Tranche 1, and Vijayanagara Channel (VNC) and Tungabhadra Left Bank Canal (TLBC) under Tranche 2); (ii) strengthening asset management and main system operation and maintenance (O&M); and (iii) capacity building of inclusive water user cooperative societies (WUCS), with women representation, for improved operation, maintenance and water management within their respective command area.

Output 3: Program management systems operational

This output will focus on delivery of the above two program outputs on time and within budget.

1.2 KISWRMIP Subprojects Selected for Modernisation

The KISWRMIP is to include modernization of 3 irrigation areas: (i) Gondhi Irrigation system, which is a sub-area of the Bhadra Irrigation System (Tranche 1), (ii) Vijayanagara (VJN, Tranche 2) and (iii) part of Tungabhadra Left Bank Canal (TLBC, Tranche 2 and 3).

1.2.1 Gondhi Irrigation System

The Gondhi Anicut was built across the Bhadra River near Gondhi Village about 11.56 km from Bhadravati Town, Shivamogga. It is located about 14.50 km downstream of the Bhadra Dam. It lies within the larger and more recent Bhadra Irrigation System but has its own supply from the Gondhi Anicut ([Figure 2](#)). The construction of Gondhi Anicut started in 1916 and completed in 1926. The Gondhi Right Bank Canal was commissioned in 1927, whereas the Gondhi Left Bank Canal started in 1951 and commissioned in 1954. There are 20 tanks within the right bank command area. Some of these are in-line storage where the canal crosses a valley on an embankment but most are within the command area.

There are about 150 pipe outlets directly from the main canals. Some of these have gates but they are never operated. The other outlets have no gates at all. The result is uncontrolled release of water which may be in excess of irrigation requirements. There is an access track on the side of the canal adjacent to the command area.

The Culturable Command Area (NCA) of the Gondhi System is about 4,600 ha. Some of relevant salient features of the system are given in [Table 1](#).



Under Tranche -1 Gondhi modernisation, the intervention envisaged under the system comprise of the following components:

1. Improvement of canals including provision of canal lining to suit future water delivery requirements. . Lining is by concrete paver lining.
2. Repair / replacement of all canal structures to support the future operational objectives.
3. Supply and installation of telemetry-based flow measurement at about 20 locations.
4. Command area development works - 4,600 ha provided with Command Area Development works.
5. Capacity development of system operations staff and water users to enable them to effectively use the flow measurement system and provide a better water distribution service.

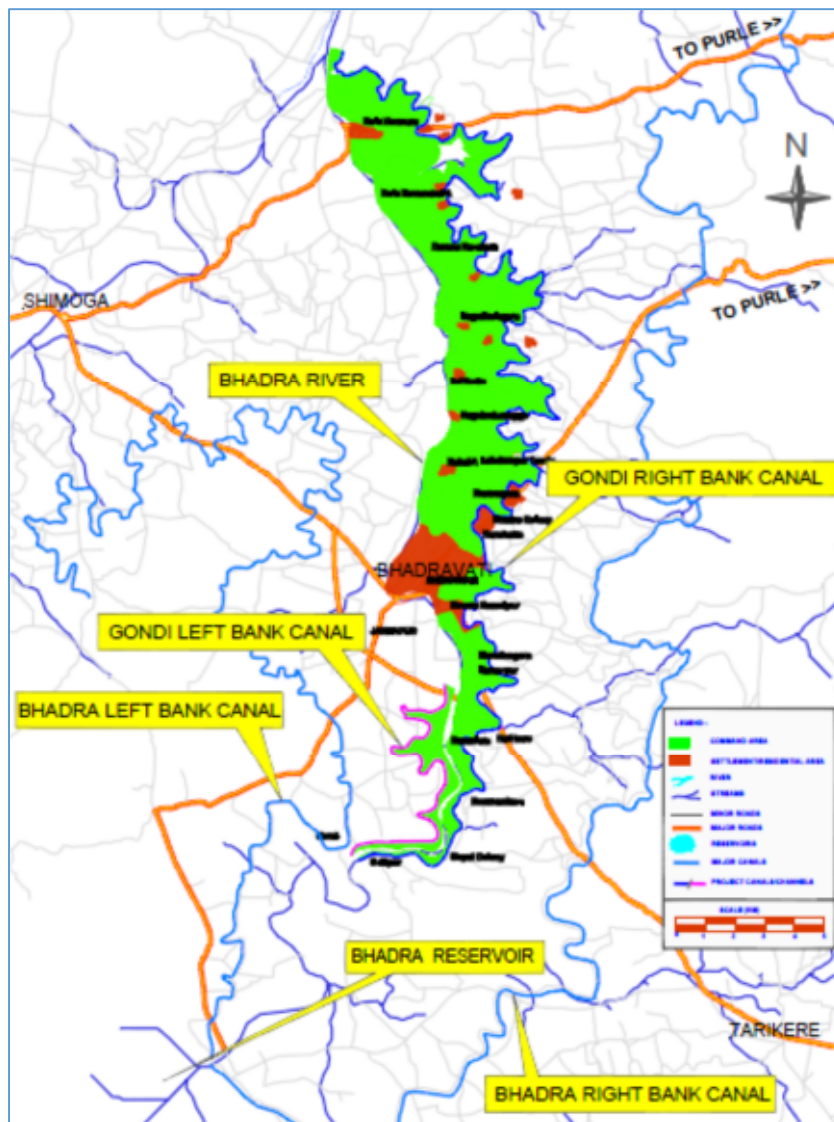


Figure 2: Bhadra Irrigation System along with Gondhi Irrigation System (PPTA, 2013)

Table 1: Relevant salient features of Gondhi Irrigation System

Particulars	Left Bank Area	Right Bank Area	Total
CCA (ha)	220	4380	4600
Main canal length (km)	14.7	74.4	89.1
Distributaries	0	16 No. / 34km	16
Cart bridges	20	86	106
DPOs on main canal	20	130	150
DPOs on distributaries		52	52
Drainage inlets	2	51	53
Relieving weirs	3	22	25
Escape sluices	0	6	6
Aqueducts	0	3	3
Tanks	0	20	20
Channel section	unlined	unlined	
Main canal alignment	contour	contour	

1.2.2 Vijayanagara Channels (VNC)

This system comprises 16 canals, most of which were originally constructed during the Vijayanagara Empire about 400 years ago. Most of the canals have their own diversion structures on the river and many of the canals are interlinked. The total command area is reported as 11,154 ha (but has probably been reduced by urbanisation) with command areas of individual canals ranging between 210ha and 2,220 ha (Figure 3).

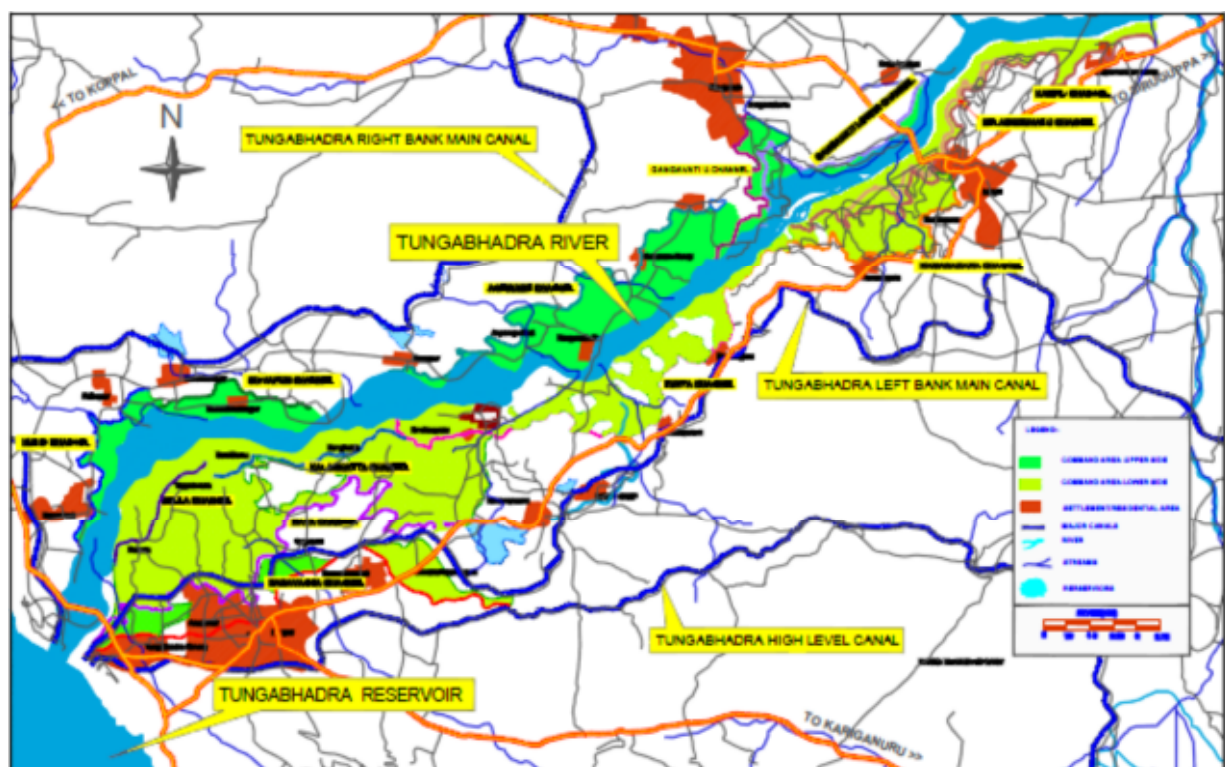


Figure 3: Vijayanagara upstream channels (PPTA, 2013)

1.2.3 Tungabhadra Left Bank Canal (TLBC)

Construction of dam across Tungabhadra River (i.e. Tungabhadra Dam) was taken up during 1944 by the erstwhile States of Madras and Hyderabad Governments from opposite banks on Right and Left side banks respectively near Mallapuram village to impound 133 TMC of water in the reservoir. The 1.739 Km long dam, with its two saddles on the left side impounded the monsoon flow up to 491.62 m (1613 ft) level in the year 1953 and water was let in to the canals on both banks on 1st July 1953. However, erection of spillway gates, bridge, road on top of dam etc was completed by June 1958. As the reservoir submerged the Valvapur and Hosakote Anicuts constructed by the Rayas, a sluice was provided on right side of the dam with a lead channel to connect the old Raya and Basavanna canals to provide irrigation for 11 months. Similarly the old Koregal Anicut (Left flank of Valvapur Anicut) and its channel got submerged in the reservoir. So a channel has been connected to the first distributary of left bank main canal to serve the old Ayacut.

The project comprised of construction of dam across Tungabhadra River near Mallapuram with masonry dam length of 1040 m including spillway of 701m, composite dam of 546.8 m and earthen dam of 152.40 m totalling to 1739.20m. The Tungabhadra dam has 5 canals taking off from sluices located in it. These are:

1. Right Bank High Level Canal (RBHLC)
2. Power canal on right side which is named as Right Bank Low Level Canal (RBLLC) beyond 21.09 Km
3. Raya Basava Canal (RBC on right side)
4. Left Bank Main Canal (LBMC) also called as **Tungabhadra Left bank canal (TLBC)**
5. Left Bank High Level Canal (LBHLC)

The TLBC system has a command area of 244,000 ha supplied from the Tungabhadra dam via a 227 km long main canal. Construction commenced in the 1960s and was envisaged as a system to supplement erratic rainfall during the kharif season. Tungabhadra Left Bank Main Canal with total length of 226 Km (141 Miles) was originally designed with a head discharge of 7000 Cusecs up to Right outfall sluice (ROFS) located at Ch 0+430 m beyond which the canal carries 4100 cusecs.

1.3 Implementation Arrangement

The Program implementation arrangement has been portrayed by illustration given in [Figure 4](#). Accordingly, the existing State Steering Committee (SC) for IWRM, chaired by Chief Secretary of the State and comprising representatives from all relevant departments, will provide policy direction and strategic guidance on matters relating to IWRM in Karnataka. This IWRM SC will also oversee the coordination of IWRM programs in the State and between agencies. The Program Coordination Committee (PCC) chaired by the Principal Secretary, Water Resources Department (WRD) will provide overall program and policy guidance.

The Program Management Unit (PMU) is located within the KNNL in Bangalore, and has day-to-day responsibility for implementing KISWRMIP. The Managing Director (MD), KNNL is the Program Director (PD), who is responsible for implementing the overall program under the guidance of the State IWRM Steering Committee and the Program Coordination Committee (PCC), with the support of the Project Support Consultant (PSC).

A Project Implementation Office (PIO) is established within the Advanced Centre for IWRM (AC-IWRM), which will be responsible for implementation of all IWRM related activities of Output 1. For Output 2, each irrigation subproject to be modernized a dedicated PIO. The PMU working



with the relevant PIO and PSC will monitor overall program execution and will be responsible for monitoring and reporting. PSC will provide technical support for project implementation.

There are two main packages, one for each tranche (or project) of the overall program. It is the implementation of the Tranche-1 subproject i.e. Gondhi modernisation that SMEC International Pty Ltd (The Consultant) has been commissioned for. Furthermore, according to the guidelines provided in the Facility Administration Manual (FAM) for KISWRMIP, SMEC will prepare the feasibility study reports of Tranche-2 subprojects (i.e. Vijayanagara Channel and Tungabhadra Left Bank Canal) and support the relevant PIOs to prepare Detailed Project Reports (DPRs).

For the implementation of field outreach program in the Gondhi Subproject, the PSC will also include support services teams (SSTs) for training, capacity building and hand holding support to the Water User Cooperative Societies (WUCS), and will be based in PIO, Shivamogga. For the second tranche due to involvement of large number of WUCS's, the KNNL (in conjunction with PSC) will recommend the most appropriate mechanism for field outreach program in VNC and TLBC command areas.

1.3.1 Project Management Unit

Karnataka Neeravari Nigam Limited (KNNL) is the Executing Agency for Implementation of ADB assisted Karnataka Integrated and Sustainable Water Resources and Management Investment Programme (KISWRMIP).

This is the second Quarterly Progress Report (QPR) of the Executive Agency for Karnataka Integrated and Sustainable Water Resources and Management Investment Programme (KISWRMIP) and first quarterly report for 2016 covering the periods January to March 2016, detailing the various tasks initiated by the consulting team deployed.

The main objective and purpose of this 2nd quarterly report is to highlight the main achievements, key challenges and targets achieved during this quarter and also enable the Asian Development Bank, Program Coordination Committee, to monitor the project progress and become aware of the issues and assess the immediate project objectives in the implementation of the sub-project under the KISWRMIP.

The QPR also lists the important meetings that the project team were engaged in, the background documents referred, the reports submitted, training conducted, public consultations organized, and other information that have a bearing on the execution of this assignment.

Project Management Unit is headed by the Project Director and Managing Director, KNNL with its Headquarter at Bengaluru. Project Implementation Office (PIO) is headed by Chief Engineer of Upper Tunga Project Zone, Shivamogga for Project -1 and Chief Engineer of Irrigation Central Zone for Project -2 at Munirabad.



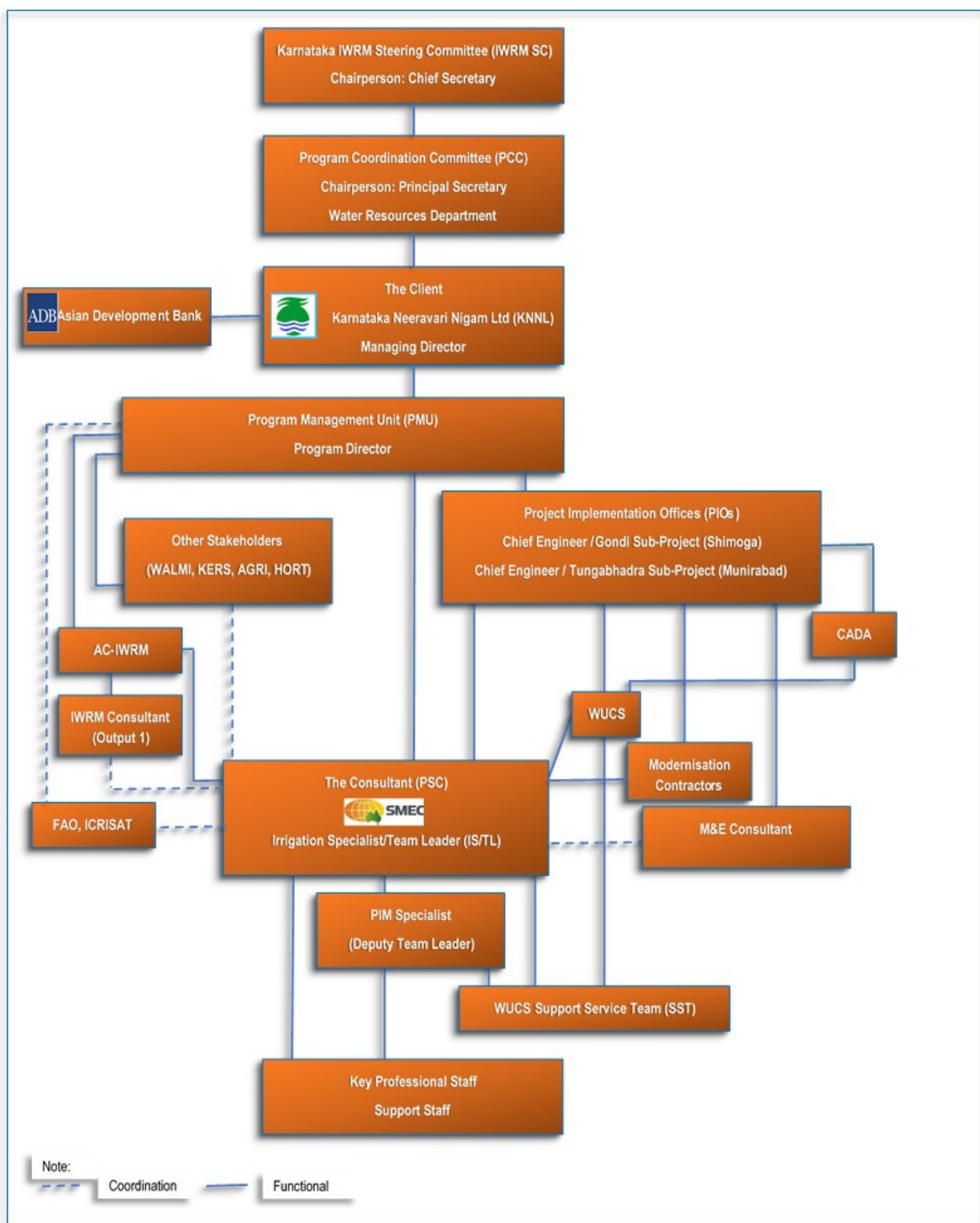


Figure 4: Implementation arrangement for KISWRMIP

M/s SMEC International Pty. Ltd., Australia has been contracted by the Executing Agency (Karnataka Neeravari Nigam limited) as the Project Support Consultants to provide consultancy services for the Tranche -1 of KISWRMIP. The consultant's time based contract has commenced in December 2015 and is due for completion in 2019.

A complete list of PMU project staff that has been involved with the project since its inception is shown in Table 2.

Table 2: List of PMU Staff

#	Name	Designation
1.	R. Rudraiah	Program Director
2.	M.G.Shivakumar	Superintending Engineer
Budget/ Administration Cell		
3.	N.Ravindran	General Manager (Finance)
4.	Nagaveena	Asst. General Manager (Finance)
5.	Rajiv Patil	Manager (Finance)
6.	Praveen Reddy	Finance Assistant
Monitoring Management Cell		
7.	Eswara Chandra K.S.	Program Officer (Part Time)
8.	-	MIS & GIS Communication Expert
Irrigation Management Cell		
9.	C.S. Nagendra	Executive Engineer (Designs)
10.	Manjunath S.	Executive Engineer (I/c)-(Project Branch)
11.	Eswara Chandra K.S.	Technical Assistant
12.	Deepa K.	Assistant Engineer
13.	C. B. Niranjan	Assistant Engineer
14.	P.R.M. Sharma	EAP Consultant (Part time)

1.3.2 Project Basic Data

The basic project data for Project-1 are provided in Table xx.

Table 3: Project basic data for Project -1

Project Basic Data		
1	Name of the Project	Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP)
2	Project Number	MFF 0085: Loan 3172 IND
3	Sector	Agriculture & Natural Resources
4	Financial Plan for MFF 2014-2021	ADB \$150 million, GoK\$ 75 million= \$225 million (ADB Rs.750 Cr : GoK Rs 375 Cr = Rs.1125 Cr)@Rs. 50/\$
5	First Tranche 2014-2019	ADB \$31 million, GoK\$ 17 million= \$48 million (ADB Rs.155 Cr: GoK Rs 85 Cr= Rs.240 Cr) @Rs. 50/\$
(i)	Loan Signed on	07 May 2015
(ii)	Loan effective from	13 July 2015
(iii)	Loan Closing Date	31 March 2019



Project Basic Data										
(iv)	Executing Agency	Water Resources Department of Karnataka through (Karnataka Neeravari Nigam Limited)								
(v)	Implementing Agencies	Advanced Centre for IWRM & Karnataka Neeravari Nigam Limited								
6	Goals & Objectives	The Project aims to manage and sustain the increasingly scarce water resources in the selected river basins in Karnataka								
7	Activities involved	(i) State and basin institutions strengthened for IWRM,- (AC-IWRM) (Strengthening the relevant institutions, specifically the Advanced Centre for IWRM (AC-IWRM) for advancing policy review, river basin management, water resources information systems establishment)								
		(ii) Irrigation system infrastructure and management modernized,(KNNL) Modernization of irrigation system infrastructure and management in the Gondi sub-project, including strengthening of water user cooperative societies (WUCS). Flow Measurement and Telemetry supply and Installation in the Tungabhadra sub basin.								
		(iii) Project and management systems operational. (KNNL & AC-IWRM).								
8	Outcomes of the project	Improved water resources management in the Tungabhadra sub basin in Karnataka (Institutional Strengthening , International Best Practice, Sub-basin Planning, Decision Support systems etc.)								
9	Status of Physical Progress of Procurements									
(i)	Modernization of Gondi Main Canal and Distributaries	Contract Awarded- Work under Progress Tender Value: Rs. 112,21,88,261.00								
(ii)	Flow Measurement & Telemetry System	Contract Awarded- Work Under Progress Tender Value: INR 2,81,50,161.00 + Euro 1,945,020.00								
(iii)	Project Support Consultants	Contract Awarded- Work Under Progress Tender Value: INR 10,42,79,758.00 + AUD 644,392.00 + USD 602,051.00								
10	Projections for CY 2016									
	Contract Awards					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
	11.820	0.030	0.030	1.831	13.711	0.518	0.586	3.437	1.083	5.624
	<i>*As agreed during the TPRM, Jaipur, held on 30-31 Jan 2016.</i>									
11	Status of Projections for CY 2016									
	Contract Awards					Disbursements				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
	12.668	-	-	-	12.668	-	-	-	-	-



Project Basic Data		
#Note: the Q1 contract award is due to award of Gondhi package @ 1\$ = INR 65.5540		
Review meetings of the Project Progress		
12	Tripartite Review Meetings	a) 7 Dec 2015, Delhi. b) 30-31 Jan 2016, Jaipur
13	Dates of ADB Missions	a) Special Project Administration Mission – 27 to 28 July 2015 b) Loan Inception Mission - 6 – 10 Nov 2015 c) Loan Review Mission - 26 – 5 May 2016
14	Project Coordinating Committee (PCC)	Constituted Vide Govt Order Number WRD 51 MBI 2015 (P1) Dt 27 Nov 2015
15	External Aided Project Monitoring Committee meeting under the Chairmanship of Additional Chief Secretary to Govt.	a) 1 st Meeting held on 6th Aug 2015 b) 2 nd Meeting held on 7th Jan 2016 c) 3 rd Meeting held on 30th May 2016
16	Meetings under the Chairmanship of Addl. Chief Sec/ Principal Secretary/ Secretary Water Resources Department	a) Meeting held on 25 th Feb 2016. b) Meeting held on 10 th Jun 2016.

1.3.3 Utilisation of Funds

1.3.3.1 Cumulative Contract Awards

The contract awards and their status under the Project -1 is given in [Table 4](#).

Table 4: Contract awards under Project-1

Procurement Item	Amount	Date of Award	ADB Financing
Gondhi NCB-1 Main Canal and Distributaries, Earth work lining, structures and flow measurement devices.	Rs. 112,21,88,261.00	26-02-2016	74%
ICB-2 Flow Measurement, Telemetry – Supply & Installation (FMT-ICB-2)	Rs. 2,81,50,161.00 + Euro 1,945,020.00	23-11-2015	82%
PSC-1 Program Support Consultants (including WUCS strengthening support)	Rs. 10,42,79,758.00 + AUD 644,392.00 + USD 602,051.00	20-11-2015	85%
EFFM 5	Action to recruit Effects Monitoring		



Effects Monitoring	Consultants is initiated.	
Gondi DC Multiple Lots Command Area Development works	30 Contracts of value less than USD 30,000.00 to be awarded by Dec 2016.	74%

1.3.3.2 Cumulative Disbursements

The status of disbursements under the Project -1 is given in **Table 5**.

Table 5: Status of disbursement under Project -1

Description	Currency	Expenses Booked	ADB Financing %	Disbursement Status		Remarks
				WA submitted	ADB Disbursement	
Gondhi NCB-1 Main Canal and Distributaries, Earth work lining, structures and flow measurement devices	INR	6,45,00,000	74%	4,77,30,000	-	
ICB-2 Flow Measurement, Telemetry – Supply & Installation	Euro	194,502	82%	155,602	-	
	INR	28,15,016	82%	22,52,013	-	
PSC-1 Program Support Consultants (including WUCS strengthening support)	INR	98,44,802	100%	98,44,802	-	
	USD	-	-	-	-	
	AUD	64,439	85%	-	-	
EFFM 5 Effects Monitoring	-	-	-	-	-	
Gondi DC Multiple Lots Command Area Development works	-	-	-	-	-	
AC-IWRM	INR	67,19,387	Varied %	52,83,835	-	
	USD					
TOTAL					-	

Re estimated costs to completion: Nil



1.3.4 Implementation Progress

KNNL has three major activities under KISWRMIP Project-1, namely:

- a) Modernisation of Gondi Main Canal & Distributaries in Shimoga District of Karnataka (Gondi-NCB-1)
- b) Flow Measurement & Telemetry-Supply & Installation (FMT-ICB-2): Procurement of equipment from Germany is in advance stages.
- c) Project Support Consultant Services (PSC-1) - Have been mobilised. The activities of the PSC are detailed from Chapter-2 onwards of the report.

Status of the activities during the present quarter:

- (i) Modernisation of Gondi Main Canal & Distributaries in Shimoga District of Karnataka (Gondi-NCB-1): Work will be started in the June Closure period
- (ii) Flow Measurement & Telemetry-Supply & Installation (FMT-ICB-2) Procurement of equipment from Germany is in advance stages.
- (iii) Project Support Consultant Services (PSC-1): Have been mobilised. The activities of the PSC during the present quarter are detailed from Chapter-2 and onwards of the report.



2 PROJECT PROGRESS

2.1 Progress Made in Reporting Period (Jan-Mar 2016)

2.1.1 Inception Report

The draft inception report was submitted to PMU in February 2016 providing technical approach and methodology for individual tasks of the assignment, and detailed work program and organisation arrangement to accomplish the intended tasks under the assignment. The comments and suggestions were obtained from PMU on the draft submission. The final submission was prepared by incorporating these comments and suggestions and submitted in March 2016.

2.1.2 Quarterly Progress Report

The progress report was prepared and submitted in February 2016 for Quarter 4 of 2015 (Q4 Yr 1) by summarising all the activities carried out during the reporting period (i.e. December 2016).

2.1.3 Program Monitoring Management System (PMMS)

The development of KISWRMIP PMMS is underway by PSC and is due by the end of June 2016. Both PMMS architecture as well as the current progress have been discussed here. PMMS will consist of two main components:

- 1 Program Performance Management System (PPMS)
- 2 Program Management Information System (PMIS)

2.1.3.1 Program Performance Management System (PPMS)

PPMS will include of a MIS database consisting of information on:

- 1 Physical Progress
- 2 Financial Progress
- 3 Milestones and Activities

Physical Progress

The physical progress of the Program will mainly be assessed based on the output and outcome indicators given in Design and Monitoring Framework (DMF) of KISWRMIP. The current DMF status for Project 1 as assessed during the ADB Loan review mission, April 26-May 5, 2016 is as given in [Table 6](#).



Table 6: Status of DMF for Project 1 (ADB Aide-Memoire April-May 2016)

Item	Performance Targets and Indicators with Baselines	Status as of 3 May 2016
Outcome	Target	Status
River basin plan for Krishna-8 (K-8) sub-basin successfully implemented	<ul style="list-style-type: none"> Institutional arrangements for river basin management in the K-8 sub-basin are established. 	<ul style="list-style-type: none"> Not due
Outputs	Target	Status
(i) State and basin institutions strengthened for IWRM	<ul style="list-style-type: none"> At least 200 WRD staff (of which about 75 are women staff) are certified in IWRM (baseline = 0) 	<ul style="list-style-type: none"> UNESCO- IHE faculty visited KISWRMIP on 14-16 December 2015. Discussions were held on application of an IWRM accreditation program to KISWRMIP. UNESCO-IHE cannot provide accreditation; discussions are ongoing with a suitable alternative local institution to fulfil this role. UNESCO-IHE will contribute training peer-review, advisors, and possibly training material.
(ii) Irrigation system infrastructure and management modernized	<ul style="list-style-type: none"> 123 km of irrigation canal upgraded at Gondi irrigation subproject to serve 4,600 hectares command area Gondi irrigation subproject main-system asset management (operation and maintenance) plan developed (baseline = 0) Telemetry systems operational for at least 100 locations within the sub-basin At least 7 WUCS operating and maintaining transferred systems (baseline = 0) 	<ul style="list-style-type: none"> The Gondi Civil works contract (GONDI-NCB-1) is awarded on 26th Feb 2016 to M/s RPP Infra Projects Ltd. for ₹ 112.22 Cr.
(iii) Project and management systems operational	<ul style="list-style-type: none"> KNNL approves annual work plan within 30 days of receipt PMU is operational Contract award and disbursement project versus actual 	<ul style="list-style-type: none"> PMU is operational Contract award and disbursement at-risk however annual projections remain on-track.

PPMS will consist of DMFs for MFF, Project 1 and Project 2. The program performance will be monitored accordingly.

Financial Progress

Moreover, PPMS will consist of the originally planned expenditure, loan disbursement and contract award as well as revised ones to the current status. PPMS will have functionality to input expenses on monthly basis so that the financial progress will be tracked against the planned expenditure and disbursement. This will also include the planned contract awards versus the completed contracts.

Milestones and Activities

The major milestone and activities will be identified for MFF, Project 1 and Project 2 and included into MIS Database. A monitoring system will be developed to track the progress. Currently these activities for Tranche1 are as given in Table 7, as per the ADB Aide-Memoire.

Table 7: Milestones and activities for Tranche 1 (ADB Aide-Memoire, May 2016)

Activity	By whom	Due Date
Output 1: State and basin institutions strengthened for IWRM		
Submit draft contract documents for River Basin Modeller and Hydrologist to ADB for prior approval	ACIWRM	15 Jun 2016
Mobilize outstanding contractual staff	ACIWRM	30 Jun 2016
Submit draft contract document for Policy and Institutions Consultant to ADB for prior approval	ACIWRM	15 Jun 2016
Mobilize Policy and Institutions Consultant	ACIWRM	30 Jun 2016
Publish website	ACIWRM	31 May 2016
Submit Submission 0's to ADB for prior approval for the Climate Change Specialist and Monitoring and Evaluation Expert	ACIWRM	31 Jul 2016
Complete design and accreditation of IWRM training program	ACIWRM	31 Dec 2016
Output 2: Irrigation system infrastructure and management modernized		
Submit draft SST subcontract to ADB for review and prior approval	KNNL	7 May 2016
Submit first draft CAD works package to ADB for review and prior approval	KNNL	30 Jun 2016
Award of at least 30 CAD packages to WUCS	KNNL	31 Dec 2016
Submit first Safeguards Monitoring Report to ADB	KNNL	31 Jul 2016
Output 3: Project and management systems operational		
Loan amendment to be signed and made effective	KNNL, WRD, DEA	30 Jun 2016
PCC meetings held every quarter and minutes included within QPR	PCC	Quarterly
QPR to be submitted one month after reporting period; first QPR for 2016 to be submitted to ADB	ACIWRM, KNNL	15 May 2016
PPMS and PMIS made operational	KNNL	30 Sep 2016
Recruitment and mobilization of MIS and GIS Communication Expert	KNNL	30 Jun 2016
Timely submissions of withdrawal applications to CAAA, one month prior to quarter end	KNNL	Quarterly
Second withdrawal application submitted to CAAA	KNNL	7 May 2016
APFS for 2015-2016 submitted to ADB	KNNL	30 Sep 2016



Activity	By whom	Due Date
Updated Facility Administration Manual submitted to ADB	KNNL	31 May 2016
Preparation of Tranche 2		
Obtain CWC's final approval of the VNC and TLBC DPR	KNNL	30 Sep 2016
Submission of draft VNC feasibility study	PSC	30 Jun 2016
Submission of draft VNC bid documents to ADB for review and prior approval	KNNL	31 Dec 2016
Submission of draft TLBC feasibility study	PSC	30 Nov 2016

2.1.3.2 Program Management Information System (PMIS)

Apart from the MIS databases for PPMS, there will be a set of thematic MIS databases prepared for various themes that can be used for the program impact and further planning. A menu-based query system will also be developed to analyse the data and produce outputs in graphical and tabular forms. These themes may be but not limited to:

1. WUCS Institutionalisation
2. Subproject Socio-Economic Profile
3. Environmental Effects
4. Improved Agriculture Practices
5. Water Management

Indicators for each theme will be identified and base values determined as the values of these indicators in prior-to-modernisation scenario. For example, [Table 10](#) provides the indicators for benchmarking of the WUCS institutionalisation. Through the participatory approach, this benchmarking will be carried out initially to set the baseline status. The capacity building of WUCS will be planned accordingly over the years to monitor the institutional status.

Also, as the part of PMIS, PSC developed a web page for the KISWRMIP as the part of main KNNL website and uploaded to the main KNNL website ([Figure 5](#)). This site provides the major ongoing project activities and also archives all program reports and documents for further references.





Figure 5: Webpage for KISWRMIP as the part of KNNL main website

2.1.4 Capacity Building

The major tasks to be carried out in this regard are:

- ✚ Assess the training domains and capacity of potential training providing institutions such as WALMI, RICM, ATI, KERS, etc
- ✚ Identify the bottlenecks if any to deliver the trainings within their domains
- ✚ Carry out Training Needs Assessment (TNA) of WUCS, KNNL and CADA
- ✚ Develop training modules and cost-based training plan including exposure visits, and
- ✚ Implement the training plan

2.1.4.1 Visit to WALMI, Dharwad

In order to assess the training domains and capacity of potential training providing institutions, PSC WIS has planned to visit these institutions. In this regard, WIS visited WALMI Dharwad on 26-27/02/2016 and discussed in details with the relevant officers about the training provided to the government officers and WUCS officials. WIS collected the organogram of Dharwad and status of staffing, training modules, etc, and also discussed the major obstacles in delivering the designed roles and responsibilities of WALMI.

Other institutions such as RICM, ATI, KERS, etc will be visited the earliest possible before the TNA workshop is conducted in Shivamogga.

2.1.4.2 Quality Control Workshop

The preparation of a detailed capacity building training plan for KNNL, CADA and WUCS is yet underway. The Contractor for Gondhi modernisation civil works has already been mobilised to the site. For this reason, the PSC with due approval from PIO Shivamogga conducted a one-day training workshop on Construction Management and Quality Control for KNNL, CADA, and Contractor engineers on 27/02/2016 at Shivamogga, where about 50 engineers participated in the training. In the training, generic construction management and QAQC processes for civil



works were discussed in detail using the (or state of the start) audio-visual media and communication system.

- ✚ Irrigation Specialist/TL presented the work scope of the PSC.
- ✚ PIM/DTL presented the importance of social safeguard compliance in the project implementation.
- ✚ Environmental Specialist presented the importance of environmental safeguard compliance.
- ✚ CMS presented the generic construction management and QAQC processes for civil work.

The participants were provided with the soft copies of Power Point presentations of all themes including a QA/QC Manual prepared by SMEC for similar canal modernisation works. Training feedbacks from the participants were also collected. A separate training report is being prepared for future references and will be submitted to PMU for training cost reimbursement.



Plate 1: Workshop inauguration by lighting lamp



Plate 2: Workshop participants

2.1.4.3 MASSCOTE Training

In order to achieve the following objectives, a detailed training proposal has been prepared with assistance from ACIWRM and PMU for carrying out MASSCOTE exercises for VNC and TLBC:

- 1 Develop the irrigation management modernisation strategy for VNC and TLBC and thereby incorporate the recommendations of canal improvements and management in the feasibility studies; and
- 2 Build the internal capacity of KNNL/WRD engineers to conduct similar exercises in other projects.
- 3 Benchmarking of VNC & TLBC for comparison with other projects and to know the improvements after modernisation.

Major Activities

The major activities to be carried out during the training sessions are:

- A MASSCOTE exercise of Tungabhadra Left Bank Canal (TLBC) with command area of 244,000 ha, and Vijayanagara Channels (command area of 11,000 ha) including capacity building of WRD engineers (2 weeks);
- Finalisation of assessment of all MASSCOTE elements of the two projects by local team under the supervision of MASSCOTE expert;
- A Workshop to validate the Vision and Strategy for Irrigation Management Modernization in Tungabhadra project; and
- Output of this exercise including recommendations to be included in the Feasibility Report of Tranche 2 investments.

Suggested Participants at the Training Workshop: 50 engineers from KNNL and other Nigams including engineers from ACIWRM and CADA.

Duration and Venue of the Training Workshop: The training will be conducted from 22 August to 03 September 2016 at the Kannada University, HAMPI campus, Hospet.

Faculty & Resource persons

- 1 Dr. Daniel Renault, International MASSCOTE Expert
- 2 Mr. M. G. Shivakumar, Superintendent Engineer, KNNL, Bangalore
- 3 Dr. P. S. Rao, Director (Technical), ACIWRM, Bangalore
- 4 Mr. K.G. Mahesh, Superintending Engineer, KBJNL
- 5 FAO trained Six (6) KNNL engineers from Government of Karnataka

Training Cost

Based on the surveys and discussions with the Kannada University, Hampi by PSC staff and logistics requirement including the remuneration of international expert and mobilisation expenses, a tentative cost estimate has been prepared, and is estimated to be **Rs 3,601,938** (is under revision as per ADB comments). A tentative program of events of the training workshop is shown in [Table 8](#).

Table 8: Tentative program of events of the Training Workshop

Time	Activities	
	<u>DAY 1 Monday 22nd August</u>	<u>Speaker</u>
09:00	Opening Ceremony Keynote addresses by Officials	
10:10	Coffee break	
10:30	Introduction and Overview of Workshop Purposes	
11:00	Keynote presentation by Chief Engineer, Tungabhadra Project	
11:30	Modernization: Concepts and Vocabulary and principles of Service Oriented Management (SOM)	
13:30	Lunch	
14:30	Modernization: (continued)	
16:00	MASSCOTE Introduction to FAO tools for developing Modernization plans.	
	<u>DAY 2 Tuesday 23rd August</u>	<u>Lecturer</u>
8:30	IRRIGATION STRUCTURES	
	- Hydraulic principles- control levels and flows	
	- Basic Structures: orifice and overflows, free flow -submerged	
10:00	Coffee-break	
10:30	Sensitivity Analyses and Performance	
14:30	SYSTEM OPERATION	
	Flow control Organisation: Upstream control - Downstream Control – Procedures for scheduled and unscheduled operation	
	Operation organisation: from structures to systems	
16:00	WATER MANAGEMENT	
	Network - Water Balance – Perturbations - Multiple Roles of	



Time	Activities	
	Irrigation Systems	
	MASSCOTE : Services-Demand-partitioning	
	<u>DAY 3 Wednesday 24th August</u>	<u>Facilitator</u>
8:30	RAP: Rapid Appraisal Procedure	
10:30	Detailed Review of RAP worksheets	
11:30	Results of preliminary analysis on External Indicators	
14:30	RAP Project Office Interviews with Management Staff	
15:00	RAP Site visit to Main Canal headworks, and main structures and transfer to field site accommodations (4 or 5 groups).	
	<u>DAY 4 Thursday 25th August FIELD VISIT</u>	
7:00	RAP Visit: 3/4 groups and visit to the Main Canal	
	- Travel down the main canal stopping at all cross regulators	
	- Interview main canal operators	
14:00	RAP Visit of secondary and sub-secondary canals: (3/4 groups) Interviews with operations staff and tour of control structures	
	<u>DAY 5 Friday 26th August FIELD VISIT</u>	
7:00	RAP Visit of secondary and tertiary canals: (3/4 groups)	
	Visit to Water User Associations - Interviews WUA personnel	
	Evening Return to workshop venue	
	<u>DAY 6 Saturday 27th August</u>	
Morning	Each_GROUP: RAP Completion of the RAP worksheets, Computer entry (4 groups) of the collected data	
Afternoon	MASSCOTE a 10 step process: Presentation of the methodology	
Evening	Each Group finalise RAP sheets	
	<u>DAY 7 Sunday 28th August DAY OFF</u>	
	<u>DAY 8 Monday 29th August</u>	
Morning	<u>RAP Completion</u>	
Afternoon	MASSCOTE First short round of MASSCOTE steps in 4 or 5 Working Groups	
	MASSCOTE STEPS	
	<u>DAY 9 Tuesday 30th August</u>	
	Step 2 (Capacity and sensitivity)	
	Step 3 (Perturbations)	
	Step 4 (Network Water Balance)	
	Step 7 (Partitioning)	
	<u>DAY 10 Wednesday 31st August</u>	
	Step 5 (Cost)	
	Step 6 (Services)	
	<u>DAY 11 Thursday 1st September</u>	
	Agreement on a vision for water management strategy, service to users, management set-up, operators and objective of	



Time	Activities	
	management, on water scheduling and targets for canal operation. Start Steps 8, 9, 10	
	DAY 12 Friday 2nd September	
	Partitioning, Canal Operation demand and improvement strategies.	
	Consolidation of the MASSCOTE approach results: mapping a tentative plan and the required steps to be carried out to prepare the short-term (next season) and medium term interventions.	
	DAY 13 Saturday 3rd September	
Morning	Consolidation of the MASSCOTE approach and preparation of the presentation.	
Afternoon	<u>Official closure of the workshop.</u> Presentation of MASSCOTE-RAP outcomes	

2.1.4.4 Other Capacity Building Activities

The PSC experts have been in regular contact with the KNNL, CADA and Contractor engineers and other specialists, and have been discussing and advising on various project issues such as civil work designs, construction management, and quality control, environmental and social safeguard compliance, etc.

2.1.5 Participatory Irrigation Management (PIM)

2.1.5.1 WUCS Gram Sabha for Gondhi LBC

A Gram Sabha meeting involving the water users of the Gondhi Left Bank Canal was organised at Doddagopenahalli on 22.03.2016 to discuss the relevance of WUCS participation in the Gondhi system modernisation. The representatives from PSC, KNNL and CADA highlighted the importance of WUCS involvement in the modernisation and sustainable operation and maintenance of the irrigation system in the overall IWRM concept. The representatives also highlighted that the Gondhi LBC water users urgently constitute the WUCS and register the society under the Karnataka Cooperative Societies Act.

The promoters expressed their willingness to constitute the only WUCS for the Gondhi LBC the earliest possible. The constitution of WUCS will be expedited with mobilisation of WUCS Support Service Team (SST), which is expected to be mobilised from July 2016.





KNNL Engineer briefing about scope of
Gondhi modernisation civil works



CADA Cooperative inspector highlighting
WUCS role in Gondhi modernisation

Plate 3: Gondhi LBC Gram Sabha at DBhalli

2.1.5.2 Gondhi Sub-Project Level WUCS Meeting

A Gondhi Sub-Project Level one-day meeting was organised by the PSC at the CADA Bhadra office on 20.04.2016, wherein the presidents and secretaries of all nine WUCS and representatives of Gondhi LBC participated. The scope of works of Gondhi modernisation was presented by the PSC Irrigation Specialist/TL, PIM/DTL, and Agriculture Specialist, the KNNL Engineer and CADA Senior Cooperation Inspector. The meeting was also attended by the Bhadra CADA administrator and Bhadra CADA Chairman.

The WUCS representatives expressed their willingness for full participation in Gondhi modernisation and for the registration of WUCS that have not been registered so far.



Gondhi Level WUCS meeting inauguration



PSC Agri Specialist making
presentation about potential
agriculture interventions in Gondhi



Bhadra CADA Chairman highlighting the importance of WUCS in Gondhi modernisation



PSC IS/TL discussing about equitable distribution of water



Farmers sharing these issues and views



KNNL Engineer sharing the scope of civil works in Gondhi modernisation



CADA Senior Cooperation Inspector responding to the farmers' queries

Plate 4: Gondhi level WUCS meeting

2.1.5.3 Delineation of WUCS Areas in VNC

The stakeholder consultation was carried out during the PPTA which includes interaction with WUCS wherever formed and with farmers of VNC. The intensive interaction with the WUCS and farmers of VNC carried out during field work, it was discovered that there exist 2 WUCS in VNC



one each in Anegundi and Siruguppa Channel. Later, the cross verification of the records at CADA revealed that the WUCS formed under Anegundi Channel is in the ledger maintained by CADA. However, the WUCS formed in Siruguppa Channel is still not traced in the CADA files at Munirabad office.

One of the significant features of all the Channels studied shows that there is a potential to establish successful and sustainable WUCS. The focused group discussion in these channels, gathered large number of farmers who were primarily discussing issues like crop productivity, requirement of extension services, equitable distribution of water and enhancing net income.

During the focused group discussion with the farmers and the representatives of WUCS, there is interest to form into WUCS and engage in water management activities. The probable number of WUCS that may be formed under 16VNC are 26 of which 2 already exists (Table 9).

Further, the area under each WUCS could vary from the standard size recommended by CADA (range of 350 – 500 ha), this is because, the social, economic and political complexities varies depending on the channels. In addition, there are channels with the Ayacut of less than 250 ha and farmers of such channel express practical difficulties when combined with other WUCS of other Projects. Thus, there could be small relaxation in the area under each WUCS (some cases less than 350 ha and in some above 500 ha).

PSC PIM/DTL discussed in detail with the KNNL Munirabad officers with regard to delineate the WUCS area based on the hydrographic boundary, where water will be shared among the members of a particular WUCS through a particular distributary or minor. The delineation of the WUCS boundaries will be completed soon.

Table 9: Probable WUCS under Vijayanagara Channel

No.	Name of the Channel	Area (ha)	Existing WUCS & Area (ha)	Probable No of WUCS
Kamalapura Subdivision (Right Bank)				
1	Basavanna	1240.00		3
2	Raya	2226.00		5
3	Bella	600.00		1
4	Kalaghatta	237.00		1
5	Turtha	931.00		2
6	Ramasagara	673.00		1
7	Kampli	620.00		1
8	Belagondahala	210.00		1
Vaddarahatti Subdivision (Left Bank)				
9	Anegundi	789.15	1(522.36)	2
10	Shivapur	403.48		1
11	Hulagi	265.07		1
12	Upper Gangavathi	774.53		2



No.	Name of the Channel	Area (ha)	Existing WUCS & Area (ha)	Probable No of WUCS
13	Lower Gangavathi	666.91		1
	Siruguppa Subdivision (Right Bank)			
14	Siruguppa	764.00	1(764)	1
15	Deshnur	477.91		1
	Manvi Subdivision (Left Bank)			
16	Bichal	276.00		1
	Total	11154.05		26

2.1.5.4 Benchmarking Indicators for WUCS and Irrigation System

Benchmarking is a systematic process for securing continual improvement through comparison with relevant and achievable internal or external norms and standards. Draft Benchmarking Indicators have been developed for both WUCS administration and Irrigation System, and will be used for the monitoring of WUCS institutional strengthening and irrigation system performance.

2.1.5.4.1 Benchmarking Irrigation System Performance

Benchmarking of Irrigation System will be carried out for monitoring of improvement in sub-project performance. Draft indicators have been developed against which the performance of modernised irrigation sub-projects will be assessed. MIS database will be created with these indicators, and relevant data will be collected for each year.

Grouping of Indicators

System Performance

- ✚ Water delivery capacity Index
- ✚ Total annual volume of irrigation water supplied
- ✚ Field application efficiency
- ✚ Annual relative irrigation supply index
- ✚ Annual irrigation water supply for unit command area
- ✚ Annual Irrigation water supply per unit irrigated area

Agricultural Productivity

- ✚ Output for unit command area
- ✚ Output for unit irrigated area
- ✚ Output for unit irrigation water supply
- ✚ Output for unit crop water demand

Equity Performance

- ✚ Equity has two dimensions – horizontal in regard to water distribution to farmland and vertical in terms of productivity differences between farm categories.



- ✚ Equity in the distribution of irrigation water differed between abundant and scarce water supply conditions.
- ✚ Analysis of vertical equity shows that small farms are more efficient than large ones in increasing productivity through use of irrigation facilities.
- ✚ Although the 'high efficiencies' scenario achieves a slightly higher overall production than 'equity' scenario, it does so in a much less equitable manner.
- ✚ Improving water allocation equity is also a way to raise water productivity.

Financial aspects

- ✚ Cost recovery ratio
- ✚ Total O&M cost per unit area.
- ✚ Total cost per person employed on O&M works
- ✚ Revenue collection performance
- ✚ Revenue per unit volume of irrigation water supplied.
- ✚ Maintenance cost to revenue ratio.
- ✚ Staff numbers for O&M per unit area
- ✚ Total O&M cost per unit of water supplied

Environmental aspects

- ✚ Average depth of water table
- ✚ Land damage index
- ✚ Water quality
- ✚ Salt balance

Advantages

- ✚ Increase in the productivity per unit of water utilized in the command area.
- ✚ Reduction in O&M expenditure of the project.
- ✚ Bringing of additional area under irrigation and diversification of crops.
- ✚ Equitable distribution of water and thereby increase in the efficiency.
- ✚ Formulation and implementation of new policies for the improvement of the project will be easier.
- ✚ As the per capita availability of water is being reduced year by year, efficient use of water is possible by Bench Marking.
- ✚ The seepage losses are reduced and the land degradation adjacent to the irrigation channels is minimized.
- ✚ Reduction in the area affected by "Salinity" due to the regulated supply of the water to the crops.
- ✚ The improvement in the institutional capabilities makes the irrigation sector self-sufficient.

Indicators selected for Benchmarking

- ✚ Annual irrigation water supply for unit irrigated area.
- ✚ Potential utilized and created
- ✚ Output for unit irrigated area
- ✚ Output for unit of irrigation water supply
- ✚ Cost recovery ratio
- ✚ Total O & M cost per unit area



- ✚ Total O & M cost per unit water supply
- ✚ Revenue for unit water supply
- ✚ Assessment recovery ratio
- ✚ Land damage index
- ✚ Equity performance
- ✚ Man days for O & M per unit area.

2.1.5.4.2 Benchmarking WUCS Administration

Draft benchmarking indicators for WUCS administration have been developed and given in Table 10. SST will carry out the participatory assessment of all WUCS administration every year. MIS database will be created where data for all these indicators will be collected every year.

Table 10: Draft WUCS administration benchmarking indicators

Sl. No	Particulars	Yes	No	Remarks
1	WUCS office			
2	WUCS board			
3	WUC Bylaw			
4	Paid Secretary			
5	Hydraulic particulars like sluice			
6	Cadastral map			
7	Total Farmers list			
8	Actual Members List			
9	Women farmers list			
10	Crop particulars details list			
11	Registration Certificate			
12	Governing Body Members list			
13	General Body Meeting Minutes Register			
14	Governing Body Meeting Minutes Register			
15	Meeting Notice File			
16	Cash Book			
17	Annual Audit Report			
18	Income and Expenditure Register			
19	Letter Head			
20	Receipt Book			
21	Inward and Outward Register			
22	Water Budget			
23	One time functional grant			
24	Conditions of FIC			
25	Works taken up by WUCS			
26	Sluice wise Ayacut details			
27	Is Bylaw amended as per latest provision			
28	Governing Body attended training			
29	Receive water bill (volumetric supply)			
30	Collecting water charges			
31	PAN Card			
32	TIN			
33	Soil testing			



2.1.5.5 WUCS SST Team Mobilisation

Recruitment of the WUCS Support Services Team (SST) for all four positions is under process and is expected to be completed by July 2016.

2.1.5.6 Constitution of PIOs

The Project Implementation Offices (PIOs) have been constituted for both Tranche 1 and Tranche 2 subprojects. Lists of members of PIOs for Gondhi, VNC and TLBC have been given in Final Inception Report. A WhatsApp group has been prepared for Gondhi PIO members for quick message communication among the members.

2.1.6 Improved Agriculture Practices

PSC Agriculture Specialist presented to the Gondhi System level WUCS meeting held at Bhadra CADA office on 20/02/2016 a set of all improved agriculture interventions that are expected to be promoted in the Gondhi subproject area during this KISWRMIP. The potential interventions include:

- ✚ System of Rice Intensification (SRI)
- ✚ Crop Diversification
- ✚ High Yielding Varieties of Crops
- ✚ Irrigation Scheduling & Technologies
- ✚ Integrated Pest Management
- ✚ Soil Tests
- ✚ Integrated Nutrient Management
- ✚ Contract Farming
- ✚ Study Tours
- ✚ Farmer Field Schools

The specialist also highlighted the relative advantage of these improved agriculture practices and suitability for their implementation in the Karnataka agro-climatic contexts. The presentation is provided in Appendix A for reference.

The specialist will prepare a cost-based implementation plan for each intervention in consultation with WUCS, CADA and KNNL and submitted to PMU for approval before proceeding for implementation.

2.1.7 Monitoring of Safeguard Compliances

PSC Social Development & Gender Specialist and Environmental Specialist are carrying out regular visits of the Gondhi subproject areas since the Civil Contractor has started the civil works to assess the safeguard compliance. The WUCS have been consulted with regard to any issue with the construction activities. Based on the discussion with Bhadravati EE office, the Contractor has not yet submitted the EMP for civil works implementation so the EE office has been advised to get the Contractor's EMP the earliest possible.

Recently PSC specialists visited the Gondhi canal civil works from Kagehalla to Sanyasikodmagge area and found that the civil works are so far mainly limited to clearing the vegetation and trees from the Canal right-of-the-way area for making the construction sites accessible (Plate 5).

The specialists consulted the communities in the area where the Contractor is carrying out the vegetation clearance and did not find any complaints with regard to this; however, there is the common view among the communities that there should be more consultation with KNNL, Contractor and WUCS to discuss the expectation of the farmers before the main civil works



begin. An exclusive report on the monitoring of safeguards in the Gondhi system will be submitted by 31 July 2016.



Plate 5: Vegetation clearance for site access in Sanyasikodmagge area of Gondhi System

2.1.8 Feasibility Studies for Tranche 2 Subprojects

The DPR for VNC prepared by the KNNL ICZ office has been reviewed by the PSC and advised certain changes in the document. Accordingly, the revised documents will be made available to PSC. Building on this document, PSC has already initiated the preparation of initial draft feasibility study report for VNC. This is due by end of June 31, 2016. However, final draft FSR will be submitted by 31 October 2016 after completion of MASSCOTE exercises for VNC and TLBC to be organised from 22 Aug to 03 September 2016.

DPR for TLBC containing only the parts of the works that are to be included under the Tranche 2 has been requested from the KNNL ICZ office. This will be made available to the PSC soon as per the discussion held during the monthly review progress meeting held in KNNL Registered Office Bangalore on 19/05/2016.

A set of field visits for VNC have been carried out by the PSC specialists such as PIM/DTL, Environmental Specialist and Social Development & Gender Specialist to appreciate with the issues with canal infrastructures and water allocation and distribution procedures and collect necessary primary and secondary data for the preparation of IEE and social management framework for VNC implementation.



PSC team crossing Tungabhadra River Downstream view of Anegundi intake diversion Anegundi System intake to assess the weir condition of intake diversion weir



PSC PIM/DTL and Env specialist visiting VNC Raya Channel in Hampi World Heritage area PSC IS/TL visiting Bella Channe intake site

Plate 6: VNC field visits

2.1.9 Gondhi Civil Works

Gondhi canal modernisation civil works contract became effective from 26.02.2016 and expected to be completed by 26.02.2018. Most civil works are expected to be constructed during the canal closures over two years. So far, PSC IS/TL and CMS including KNNL site engineer visited the Contractor's office in Bhadravati. The Contractor has already established the office including the Concrete Batching Plant in the office premise. Only limited quality control laboratory equipments were seen at the site office. A detailed assessment of laboratory arrangement adequacy will be carried out when the Contractor later updates about the progress of the laboratory establishment.

Physical Progress:

So far, the civil works limited to only vegetation clearance have been carried out to prepare access road to the construction site. About 14.5 km and 74.7 km of LBC and RBC has been cleared.

Financial Progress:

Agreed contract value is INR 112.22 crores. A mobilisation advance of Rs. 6.45 Cr. has already been paid to the contractor against a Bank Guarantee.

2.1.10 Flow Measurement and Telemetry System

The contract for flow measurement and telemetry- supply and installation has been awarded to M/s HydroVision GmbH in JV with Canary's Automation Pvt Ltd on 23.11.2015. The Contract period is 24 months for supply and installation plus 5-year operation and maintenance.

The proposed distribution of flow measurement installations for installation in Tranche 1 is listed in [Table 11](#).

Table 11: Summary of locations of telemetry for flow measurement in Tungabhadra Sub-basin

Scheme / Canal	Number of Installations	Remarks
Bhadra Right Bank	52	Head regulator, heads of distributary 1 to 22 and other major locations
Bhadra Left Bank	4	Head regulator and 3 sub-division boundaries
Tunga Canals	5	Head regulator and division boundaries
Singatalur Lift Irrigation	2	One at head of each main canal
Tungabhadra Left Bank	7	Outlet from dam, division boundaries plus heads of distributary 54 and 76
Tungabhadra Right High Level (in Karnataka)	4	Outlet from dam, sub-division boundaries
Tungabhadra Right Low Level (in Karnataka)	5	Outlet from dam, sub-division boundaries
Raya / Basavanna	1	At outlet from dam
Gondhi irrigation system	20	Head regulators, selected points on main canals and on drainage system

Physical Progress:

All 100 locations for installation have already been identified in the Tungabhadra basin including 20 locations in Gondhi system. The telemetry equipments are ready in Germany for dispatch to India. A KNNL Quality Inspection Team is scheduled to visit Germany towards the end of May 2016.

Financial Progress:

The agreed contract value is INR 2.81 crore and Euro 1.94 million. A mobilisation advance of Rs. 28 Lacs and Euros 194,502 has already been paid to the contractor against a Bank Guarantee.



3 PROJECT STAFF MOBILISATION

3.1 Mobilisation in Reporting Period

Most of relevant staff were mobilised during the reporting period; however, their inputs were relatively less than planned. This is largely due to their prior engagements in other projects. Details of inputs of individual specialists mobilised in the reporting period are given in [Table 12](#).



Table 12: Staff mobilisation details

Sl. No.	Position Key Experts	Name	M/M Contract	M/M upto Dec 2015	M/M between Jan to March 2016	M/M till March 2016	M/M Balance
1	Team Leader / Irrigation Specialist	Dr. Ashok Raut	20	0.81	2.23	3.04	16.96
2	PIM Specialist (Deputy Team	Doraiswamy. R	42	1.00	3.00	4.00	38.00
3	Operation & Maintenance	Dr. M.K. Khaishagi	32	-	0.58	0.58	31.42
4	Water Institutions Specialist	Dr. A. Rajagopal	32	0.13	1.56	1.69	30.31
5	Agriculture Specialist	Dr. Virendra Pratap	20	-	0.55	0.55	19.45
6	Environment Specialist	Srinath N. Anekal	8	-	0.23	0.23	7.77
7	Social Development and Gender	Dr. K. Balachandra	24	-	1.46	1.46	22.54
8	Construction Management	Sambasiva Rao	9	-	-	-	9.00
9	Construction Management	Pushendra Srivastava	9	-	0.21	0.21	8.79
10	Communication Specialist	Gopala Rao B S	8	-	-	-	8.00
11	MIS Specialist	Jitendra Kumar Agrawal	8	0.23	0.72	0.95	7.05
12	Procurement Specialist	Shreeshail V.	12	-	-	-	12.00
	Non Key Experts/Staff						
12	MIS /IT Support (1 Nos.)	Mr. SaiRamulu Saidugari	42	0.57	3.00	3.57	38.43
13	Site/Design Engineer (1 Nos.)	Deepak Kumar G.N.	42		2.80	2.80	39.20
14	AutoCAD Draftsman (1 Nos)	TBN	12	-	-	-	12.00
15	Office Manager (1)	Mr. Giridhar A.G.	42	0.80	3.00	3.80	38.20
16	Computer operator (1)	Mr. Naveen Kumar S.P.	42	0.60	3.00	3.60	38.40



3.2 Overall Mobilisation

Overall staff mobilisation so far has been an issue and assessed to be significantly less than planned (Figure 6). So far, most common reason for poor mobilisation has been the engagement on other projects; however, PIM/DTL specialist resigned recently from this assignment for another position in ACIWRM, and WIS due to family reasons. The replacement proposals are being prepared and submitted for PMU’s review and approval.

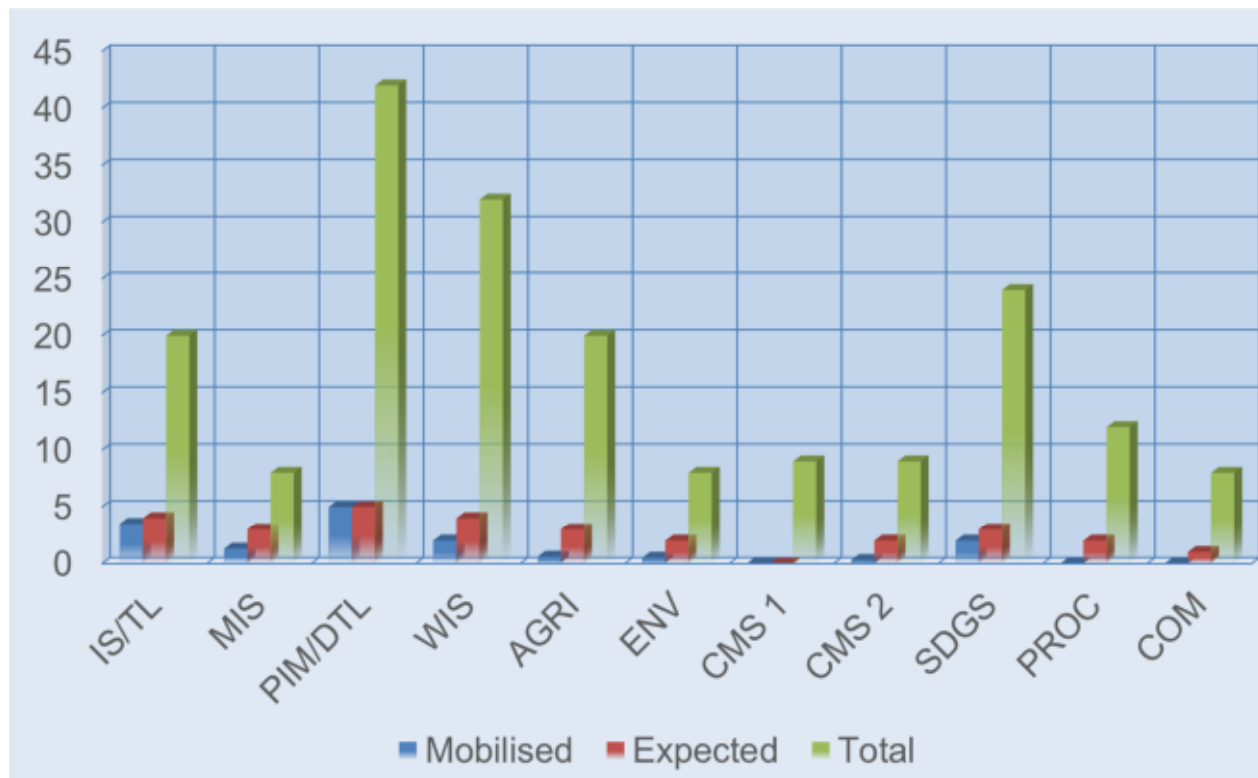


Figure 6: Overall staff mobilisation by end of April 2016

3.3 Expected Mobilisation in Next Reporting (Apr-Jun 2016)

In fact, most subject experts are expected to be mobilised in the next reporting period to develop individual work plans and carry out necessary field works and consultations with relevant stakeholders to gather necessary data and feedbacks. This is also required to expedite the activities related to the feasibility studies of Tranche-2 subprojects i.e. VNC and TLBC.

4 MAJOR WORKS IN NEXT REPORTING PERIOD (APR-JUN 2016)

- ✚ Updated FAM by June 2016
- ✚ Program Monitoring Management System (PPMS) by June 2016
- ✚ Initial Draft for VNC Feasibility by June 2016
- ✚ Draft CAD Works Package by June 2016
- ✚ WUCS awareness material printing by June 2016
- ✚ ToR for effects monitoring consultancy



5 PROJECT CHALLENGES AND ISSUES

5.1 Project Challenges

Modernisation of the selected subprojects (i.e. Gondhi, VNC, and TLBC) cover a large geographical area involving large community with varied ethnic, political and social backgrounds. The Project stakeholders are scattered across the State and outside such as Bangalore, Shivamogga, Munirabad, Dharwad, etc. Also, the selected subprojects in themselves are varied technical issues requiring innovative solutions. As a result, the Consultant expectedly foresee several challenges; some of them will be more evident as the Project progresses. Some of major challenges that are evident at this stage are briefly outlined here.

5.1.1 WUCS Mobilisation

As per the requirement of the project selection criteria, the WUCSs in Gondhi need to be sensitised and made them conversant with the project requirements and their roles and responsibilities before the physical CAD works will start. In a similar manner, the water users of VNC and TLBC need to be mobilised and sensitised to form WUCS and endorse their commitment to share the modernisation cost for CAD works. These are pre-requisite for the finalisation of feasibility studies of these subprojects.

This is indeed a challenging task, and will require full support from respective CADA offices and KNNL field offices in order to complete the feasibility studies and implementation of physical CAD works in time.

5.1.2 Consultation with Stakeholders

As mentioned earlier, the Project covers a large geographical area with large community with diverse ethnic, socio-economic and political backgrounds. Also, the other project stakeholders are scattered across various locations in the State and outside. Consulting all of them as and when required will be an obvious challenge. The PSC will need the significant facilitation in this regard from KNNL operations at various operation levels.

5.2 Project Issues for PSC

5.2.1 Staff Mobilisation

As of now, the staff mobilisation has been poor due to various reasons. The most common reasons are:

- ✚ Moving to new assignment in more accessible areas such as Bangalore
- ✚ Family reasons
- ✚ Prior engagement
- ✚ Difficult to find suitable local specialists for replacement

However, this situation is expected to improve with the replacements of the specialists as SMEC has discussed in greater detail with individual consultants proposed for new replacement about the premature termination of the contracts.



6 ACTIONS ON COMMENTS AND SUGGESTIONS OF THE CLIENT AND OTHER STAKEHOLDERS

6.1 Inception Report

The comments and suggestions were received from KNNL on the draft inception report. These were addressed in the final submission.

6.2 MASSCOTE Training Proposal

The MASSCOTE Training proposal was prepared with help of PMU and ACIWRM and submitted for PMU review and approval.

6.3 ToR for GIS/MIS Specialist

PSC prepared ToR for GIS/MIS specialist required for PMU.



ADVANCED CENTRE FOR INTEGRATED WATER RESOURCES MANAGEMENT (AC-IWRM)



7 OUTPUT-1: STATE AND BASIN INSTITUTIONS STRENGTHENED FOR IWRM

7.1 Introduction and Basic Data

The Government of India (GOI), Government of Karnataka (GOK) and Asian Development Bank (ADB) have agreed to implement the Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP).

The concept underlying the KISWRMIP is shown in the following diagram. While the major program investment is in irrigation infrastructure, the greatest return to cost will be by establishing an effective ACIWRM. This will result in strong and sustainable water resources management including, aware and involved communities; allocation and sharing of water between users and uses; water moving to high value uses over time; droughts, floods and climate change that are managed proactively; Nigams that move from basically construction agencies to water service providers focussed on operations and maintenance and with a service orientation; and conservation of the water environment.

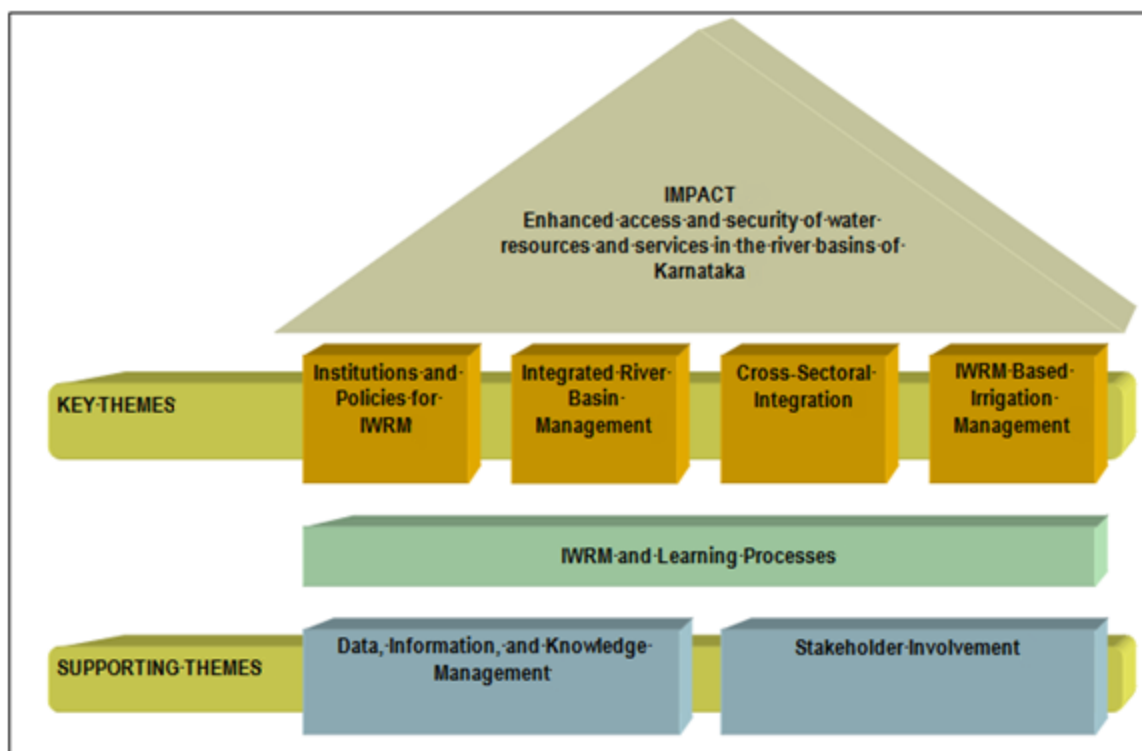


Figure 7: KISRMIP Framework

7.2 Scope of KISWRMIP Project 1

Key aspects of the KISWRMIP are specified in the Program's Facility Administration Manual (FAM, August 2014) as:

7.2.1 Impact and Outcomes

The impact of KISWRMIP is improved sustainable water security in selected river basins in Karnataka. The expected outcome will be IWRM successfully implemented in selected river basins in Karnataka.

Project 1 of KISWRMIP comprises three outputs:

- (i) Output 1 – State and basin institutions strengthened for IWRM,
- (ii) Output 2 – Irrigation system infrastructure and management modernized, and
- (iii) Output 3 – Project and management systems operational.

Project 1, will support actions to introduce integrated water resources management (IWRM) by (i) commencing the strengthening of relevant institutions, specifically the Advanced Centre for IWRM (AC-IWRM) for advancing river basin management, water resources information systems establishment, policy review and (ii) modernization of irrigation system infrastructure and management in the Gondi sub-project, including strengthening of water user cooperative societies (WUCS).

The executing agency (EA) is the State of Karnataka acting through the Karnataka Neeravari Nigam Limited (KNNL) and Advanced Centre for IWRM (AC-IWRM).

Output 1 - State and basin institutions strengthened for Integrated Water Resources Management (IWRM)

Activities under this output include:

- (i) Operationalize Advanced Center for IWRM (AC-IWRM),
- (ii) prepare an initial training and capacity building plan,
- (iii) commence the IWRM certification process with UNESCO-IHE,
- (iv) develop an IWRM based water resource information and knowledge system,
- (v) prepare initial inventory of river basins in Karnataka,
- (vi) prepare a river basin plan for Tungabhadra River Basin, and
- (vii) develop and pilot concepts and build understanding of water productivity, water use efficiency, crop and agricultural productivity.



7.2.2 BASIC DATA

➤ **ADB loan number, project title, borrower, executing agency(ies), implementing agency(ies);**

MFF 0085 : L 3172 – IND

Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP)

Government of Karnataka, India

The Executing Agency (EA) is the State of Karnataka acting through the Karnataka Neeravari Nigam Limited (KNNL) and ACIWRM

KNNL – UTP Zone / Munirabad Zone and ACIWRM

➤ **Total estimated project cost and financing plan**

The total cost of the investment program over 2014 - 2021 is expected to be US\$ 225 million equivalent, with ADB financing amounting to US\$ 150 million.

Project 1, estimated at US\$ 48 million, is expected to be completed by September 2018. Project 1 financing comprises US\$ 31 million from ADB's ordinary capital resources, US\$ 16.6 million from the Government of Karnataka (GOK), and US\$ 400,000 of beneficiary contribution.

➤ **Status of project financing including availability of counterpart funds and co-financing; for Output-1 Project-1**

Government of Karnataka made provision in the budget for the financing of KISWRMIP under Externally Aided Projects (EAP) both for the reimbursable component and the state component.

The GoK budget Head of Account is 4701-80-800-0-10 (Plan).

The funds provision in FY 2015-16 is INR 22.58 crores or USD 4.516 mln @

1USD = INR 50

➤ **Dates of approval, signing, and effectiveness of ADB loan;**



The multi-tranche financing facility (MFF) for the Karnataka Integrated and Sustainable Water Resources Management Investment Program (KISWRMIP) and the periodic financing request (PFR) for Project 1 were approved by ADB on 25 September 2014 and 17 October 2014 respectively.

The loan agreement was signed in May 2015 and the loan was declared effective on 13 July 2015.

➤ **Original and revised (if applicable) ADB loan closing date and elapsed loan period based on original and revised (if applicable) loan closing dates; and**

The original loan closing for project-1 is scheduled for 31 March 2019.

➤ **Date of last ADB review mission.**

July 2015 - Review Mission

November 2015 - Inception Mission

B. Utilization of Funds (ADB Loan, Cofinancing, and Counterpart Funds)

➤ **Cumulative contract awards financed by the ADB loan, co-financing, and counterpart funds (commitment of funds to date), and comparison with time-bound projections (targets);**

Expressions of interest (EOIs) for the six contractual government staff¹ positions have been called for, and applications shortlisted and processed. Four staff for Water Resources Specialist (Deputy Director), Principal Coordinator - Engineers Capacity Building, Land and Water Management specialist and Principal Coordinator - Communications and Farmers Capacity Building are finalized including financial negotiations. After due approval from government the same will be mobilized immediately.

EOIs for the two International Short-term experts - Hydrologist and River Basin Modeler, and one National short-term expert - Policy and Institutional specialist are called for and short list prepared and submitted to ADB as Submission-1. Non-committal enquiries were issued and financial proposals received, processed, negotiated and Submission-1 for all three positions are submitted to ADB for

¹ Deputy Director, Principal Coordinator for Engineers, Principal Coordinator for Farmers, Land and Water Management Specialist, Hydrology and Irrigation Systems expert, and River Basin Management Specialist



clearance. After due approval from government the same will be mobilized immediately.

One Assistant Executive Engineer from WRD/KNNL was deputed to ACIWRM to support the implementation of the program activities.

One GIS Assistant is recruited to support the data collection from various departments and convert into the GIS layers for further use in implementation of the activities.

The contractual staff position for River Basin Management specialist and Hydrology & Irrigation specialist are re-advertised as we did not receive suitable applications earlier.



LOAN/GRANT NO. SEGMENT NO. FUND SOURCE COUNTRY (Acronym)

(Month, Year)

Ref. Line No.	Category ^{1/}	CONTRACT/COMMITMENT ITEM ^{1/}	Contract s Awarded on Previous Year(s)	QUARTER 1					QUARTER 2					QUARTER 3					QUARTER 4					TOTAL PROJECTED FOR THE YEAR 20__ (YP)=(QA) + (QP)			
				Jan, Feb, Mar 2016					Apr, May, Jun 2016					Jul, Aug, Sep 2016					Oct, Nov, Dec 2016					Contract Value/ Commitment (9)=(1+3+5+7)	Disbursement Amount Related to the Contract/ Commitment (10)=(2+4+6+8)		
				Month, Year Contract Awarded	Q P	Month Awarded/ Committed or To be Awarded/ Committed	QP	Disbursement Amount Related to the Contract/ Commitment (2)	Q P	Month Awarded/ Committed or To be Awarded/ Committed	Q P	Disbursement Amount Related to the Contract/ Commitment (4)	Q P	Month Awarded/ Committed or To be Awarded/ Committed	Q P	Disbursement Amount Related to the Contract/ Commitment (6)	Q P	Month Awarded/ Committed or To be Awarded/ Committed	Q P	Disbursement Amount Related to the Contract/ Commitment (8)							
					QA				QA				QA				QA				QA						
Contract Value (Bank Finance d)	Q P	Contract Value/ Commitment (1)	QA	QA	Q P	Contract Value/ Commitment (3)	QA	QA	Q P	Contract Value/ Commitment (5)	QA	QA	Q P	Contract Value/ Commitment (7)	QA	QA											
TOTAL (Carried Forward) FROM PREVIOUS PAGE ___ OF ___ PAGES																											
1	Equipment & Supplies	0.121	0.092			0.029			0.028															0.029	0.029		
2	Training-Karnataka*	1.596	0.004			0.145			0.023			0.122			0.359			0.06			0.19			0.504	0.395		
3	Surveys, Design & Studies	3.683				0.024			0.024			0.427			0.115			0.312			0.626			0.338	1.077	0.789	
5	International consultants	0.636	0.524						0.03			0.112			0.076			0.076			0.076			0.076	0.112	0.258	
6	National consultants	0.36	0.004			0.093			0.004			0.004			0.004			0.004			0.085			0.093	0.097		
7	Consultancy support (cost support)	0.138	0.008			0.042			0.01			0.01			0.011			0.011			0.011			0.042	0.042		
TOTAL OF THIS PAGE 1 OF 1 PAGES (To be carried on next page)		6.534	0.632			0.333			0.119			0.539			0.327			0.359			0.464			0.626	0.7	1.857	1.61

^{1/} In accordance with the allocation of loan proceeds as defined in the loan documents, or any other detailed breakdown if found useful.

NOTES AND REMARKS:

QA = Quarterly Actual (already awarded/committed/disbursed, when projections are prepared).

QP = Quarterly Projected (to be awarded/committed/disbursed), when projections are prepared).

- **cumulative disbursements from the ADB loan, co-financing, and counterpart funds (expenditure to date), and comparison with time-bound projections (targets); and**

ACIWRM prepared expenditure statements for Output-1 component and the reimbursement claims submitted to CAAA through the PD, KISWRMIP & MD, KNNL. However the same was returned by CAAA citing the requirement of a minimum of USD 100,000 value of claims per currency. Hence no disbursement was possible from the loan.

Karnataka Integrated and Sustainable Water Resources Management Investment Program – Project 1, AC-IWRM

ADB Loan

No: 3172-IND

Amt in INR

Component wise Expenditure for the Period from March 2015 TO 31/03/2016

Component No.	Project Component	Expenditure for the Period	Eligible Expenditure for the Period	%	Claimable Expenditure for the Period
1	State and basin Institutions strengthened for IWRM	28,502,201	6,719,387*		5,283,835**
2	Irrigation System infrastructure and Management modernized				
3	Program and Management Systems Operational				
	Total :	28,502,201	6,719,387*		5,283,835**



**Karnataka Integrated and Sustainable Water Resources Management
Investment Program – Project 1, AC-IWRM**

ADB Loan No: 3172-IND

Amt in INR

Category wise Expenditure for the Period from March 2015 TO 31/03/2016

Category Number	Category Item	Expenditure for the Period	Eligible Expenditure for the Period	%	Claimable Expenditure for the Period
1	Civil Works			74%	0
2	Equipment & Supplies	2,796,102	2,796,102	80%	2,236,881.6
3	Training	200,183	200,183	90%	180,164.7
4	Support Service Team for WUCs			95%	0
5	Surveys and Studies				0
5A	Monitoring and Evaluation			90%	0
5B	Survey, Design and studies			64%	0
6	Support Consultants				0
6A	International Consultants	4,458,861		100%	0
6B	National Consultants			88%	
6C	Consultancy Support	3,723,102	3,723,102	77%	2,866,789
7	Unallocated				0
8	Staff Cost	17,323,953			0
	Total	28,502,201	6,719,387		5,283,835

*Note: Payment made to International Consultant in terms of dollars, claimed separately in application No 2/15-16

➤ **Re-estimated costs to completion, need for reallocation within ADB loan categories, and whether an overall project cost overrun is likely.**

During the review mission in July 2015, the EA discussed with ADB a proposed reallocation of loan funds. This was forwarded to DEA.



Revised Detailed Cost Estimates by Year for Output-1 Project-1									
ver. 18 Nov 2015									
'000 US \$									
				2015	2016	2017	2018	2019	Total
I. Investment Costs									
	A. Civil Works			0	0	0	0	0	
	B. Equipment and Supplies			115	36	0	0	0	151
	C. Consultancy Services & Training								
		1	Training	3	439	485	521	324	1,772
		2	Support Services Team for WUC's	0	0	0	0	0	0
		3	Surveys and Studies						
			a. Monitoring and Evaluation	0	0	0	0	0	0
			b. Survey, Design and Studies	0	1,233	1,798	1,451	1,273	5,755
			Subtotal Surveys and Studies	0	1,233	1,798	1,451	1,273	5,755
		4	Support Consultants						
			International Consultants	28	258	120	120	110	636
			National Consultants	0	154	244	178	24	600
			Consultancy Support	13	52	50	50	15	180
			Subtotal Support Consultants	41	464	414	348	149	1,416
			Subtotal Consultancy Services & Training	44	2,136	2,697	2,320	1,746	8,943
	D. Staff Costs			368	708	1,066	1,078	556	3,776
Total BASELINE COSTS				527	2,880	3,763	3,398	2,302	12,870
	Physical Contingencies								0
	Price Contingencies (incl. in above figures)								0
Total PROJECT COSTS				527	2,880	3,763	3,398	2,302	12,870
	Taxes								313
	Foreign Exchange								3,478



C. Project Purpose

The Tungabhadra sub-basin (TB), the main pilot area for this project, lies within the Krishna river basin and largely within Karnataka. Annual rainfall ranges from 300 cm in the south (Western Ghats), to less than 50 cm in the northeast. Droughts are frequent. About 70% of the annual rainfall, falls during the southwest monsoon of June to September. The average annual runoff from the sub-basin is about 6.6 km³.

The average annual yield of the rivers of the Karnataka has been roughly estimated as 98,406 Mcum (3,475 TMC) which is about 6 per cent of the India's surface water resources. About 40 percent of the state's water is in the east flowing rivers and the remainder flows to the west.

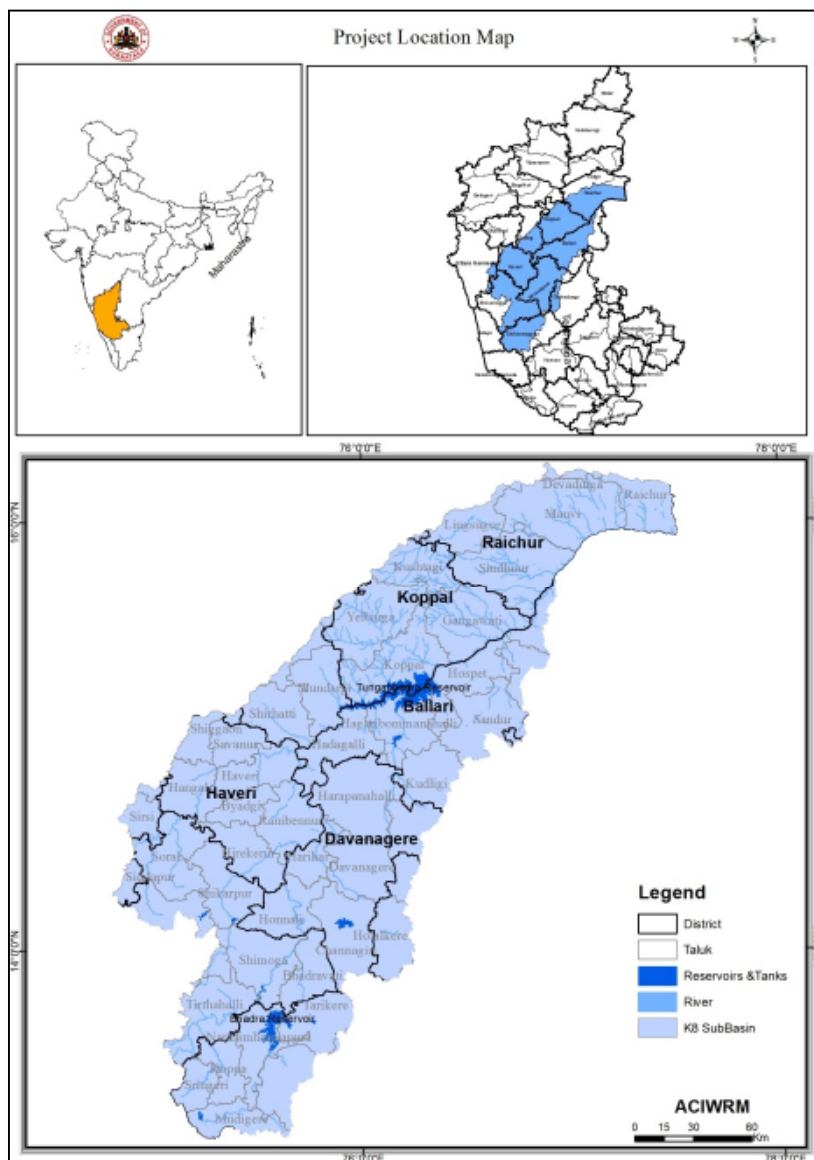


Figure 8: Project location

There are seven river basins (Figure 9) with which their tributaries drain the state. The Krishna basin accounts for 28% of the State's total annual yield. The master river basin plans indicate that total economically utilizable water potential for

irrigation likely under major, medium and minor irrigation projects using surface water is 48,000 Mcum (1,690 TMC).

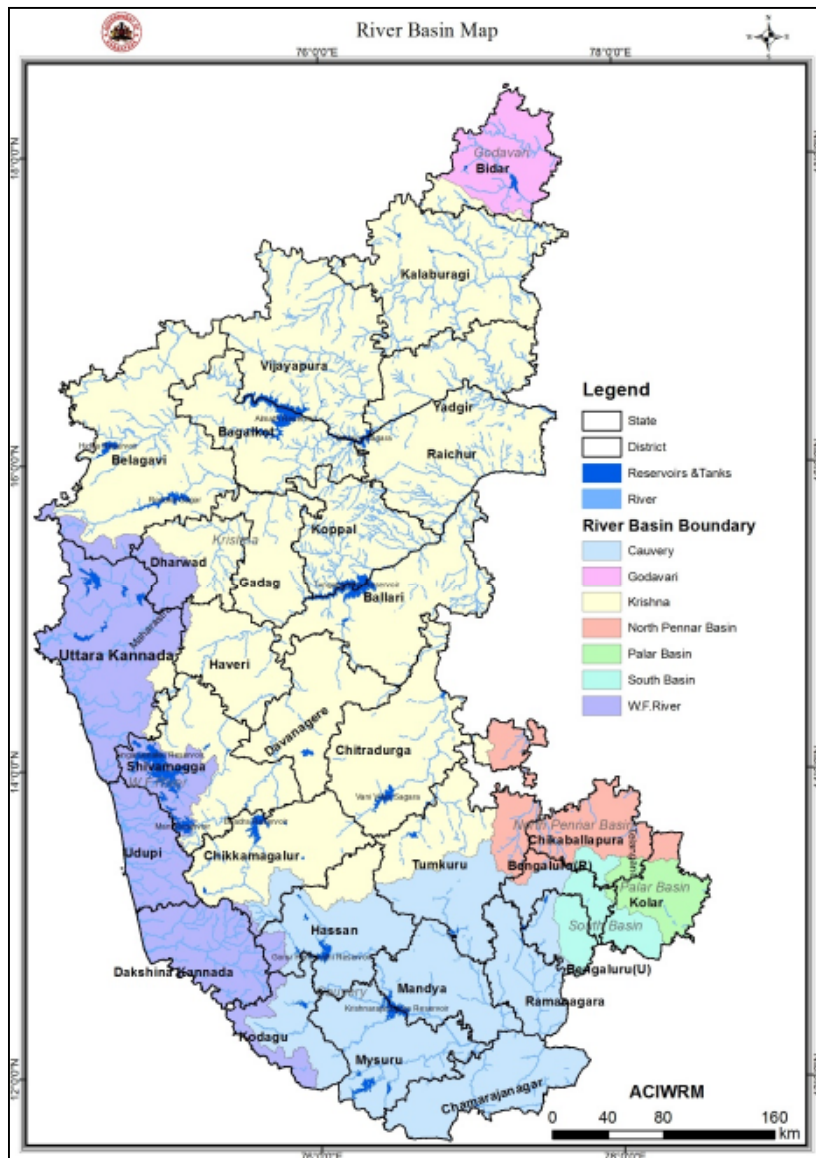


Figure 9: River Basins of Karnataka

The State is one of the most water-stressed in India, with about 61% of the State, the 5th highest percentage, in drought prone areas or desert development programs in 2003. Irrigation water use is important as Karnataka has limited water resources (1,608 m³/person/year overall and approximately 1,072 m³/person/year in eastward flowing rivers).

Irrigated agriculture is the largest water user and accounted for about 84% of water diversions in 2000 and with estimated water demands increasing by 40% from 2000 to 2020. The demand for water by non-agriculture sectors is increasing rapidly and industrial demand is expected to almost triple from 2000 to 2025. However, agriculture will remain by far the largest water user and the major source of employment for about 55% of the total population and about 75% of the rural population.



Groundwater sources that include open wells and bore wells is the major source of water irrigating 45% of the net irrigated area in 2004; other sources being from tanks and river abstractions.

Groundwater is showing a decreasing trend due to very large increases in the numbers of wells and of groundwater abstractions. Groundwater use increased by 150% from 1992 to 2004 and by 2009 there were over 730,000 tube wells as well as 244,500 dug wells which had decreased in number by 40%. The storage of groundwater has reduced by 10% from 1992 to 2004 as a result of over extractions.

The number of Taluks with groundwater categorised as either “semi-critical”, “critical” or “over exploited” have increased as shown in the following table with more than 50% of the 220 having such status by 2011.

Table 13: Taluks with impaired groundwater conditions

Condition	2011	2009	2004
Over exploited	63	35	22
Critical	21	3	
Semi critical	34	10	

Consistent data on irrigated areas and the sources of water is difficult to find. Of a total irrigated area of about 3.6 million ha; groundwater is the source for 1.43 million ha; canals for 1.33 million ha and tanks 0.6 million ha although some areas receive water from multiple sources.

7.3 The Tungabhadra River Basin

The Tungabhadra River is an eastern-flowing river and is the chief tributary of the Krishna River. It is formed by the confluence of two rivers, the Tunga and the Bhadra, and flows east across the Deccan Plateau for a distance of 530 km, joining the Krishna River in Andhra Pradesh.

Annual rainfall ranges from more than 300 cm in the south (Western Ghats), to less than 50 cm in the northeast and droughts are frequent. The basin receives on average about 70% of the annual rainfall during the south west monsoon with September being the highest rainfall month. The variations in the annual rainfall from year to year are large. The average annual runoff from the sub-basin is estimated at about 6.6 km³.

Water sharing in the basin is based on the Krishna Water Dispute Tribunal (KWDT) award which prioritizes drinking water as first followed by irrigation, industries and environment. Total water allocation across the sectors is 230.31 TMC out of which, agriculture sector gets the major share of 94.3%, 3.72% for industrial usage and 1.96% for drinking water use.

Climate Change studies of Karnataka have indicated with a high degree of confidence that the area affected by drought will increase and there is a long term warming trend



and negative trend in rainfall for Karnataka.

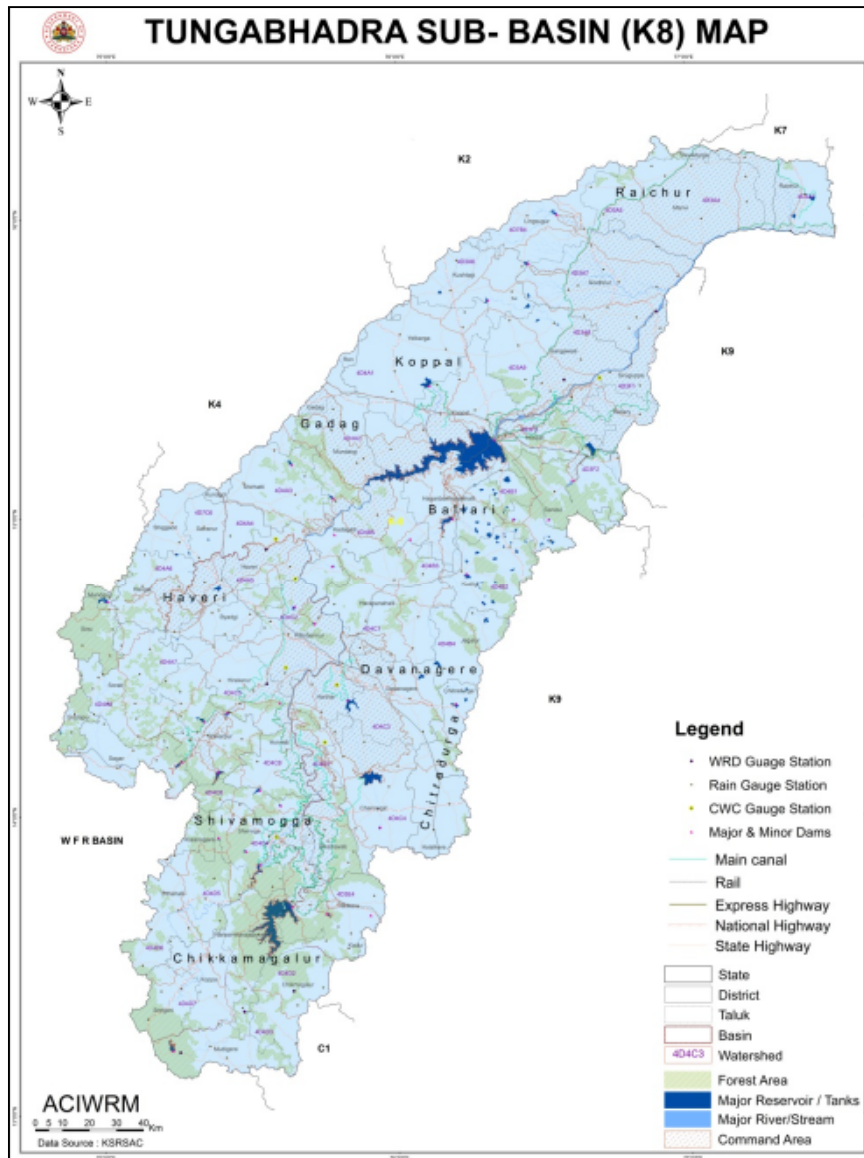


Figure 10: Tungabhadra map

Water shortage, lack of awareness by water users, and challenges in regulating water use is also taking a serious human toll on life, health and condition which is regularly reported in newspapers.

Karnataka has its State Water Policy (2002) and it has a draft State Water Policy 2015. The GOK agreed a range of initiatives including its "Vision 2020," which shifts focus from yield per acre to yield per unit of water consumed; declaring 2011 to 2020 the irrigation decade, and the Karnataka State Water Policy. These policies and plans however fell short of establishing water governance arrangements and actually managing water resources.

Institutionally, water resources management in Karnataka is extremely fragmented with more than 12 separate departments/Ministries having responsibilities for policy and management of aspects of water resources and more than 23 organisations involved when service delivery organisations are considered.



7.4 The Advanced Centre-IWRM

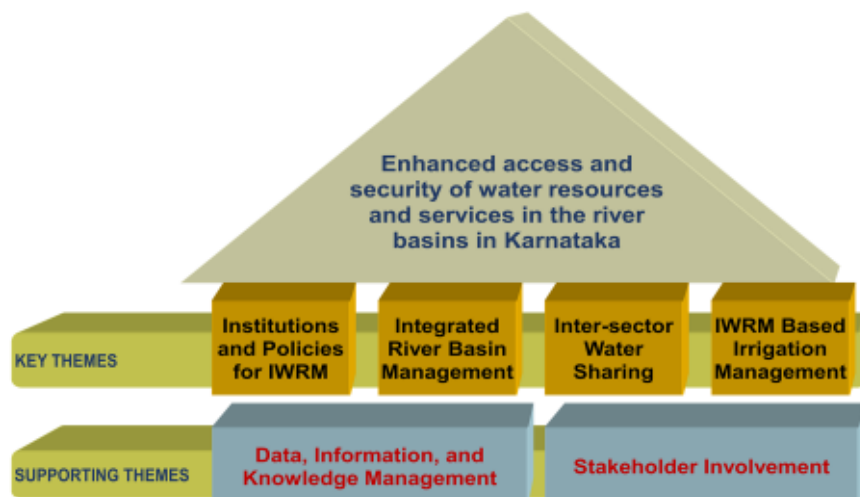
In recognition of the enormous challenges and deteriorating water resource and human conditions, the GOK determined that a new approach to water resources management is needed and that this should build upon international best practice.

In recognition of the need to better manage these challenges, as well as to introduce and adapt international best management practices, the Government of Karnataka (GOK) established the AC-IWRM in 2012 under the Karnataka Societies Registration Act. Its purpose is to engage in policy analysis and research, develop an updated water sector knowledge base, and, assist the Water Resources Department (WRD) in introducing IWRM into Karnataka.

To this end, the GOK requested financing from the Asian Development Bank (ADB) to enhance water security in selected basins where there is increasing water stress due to rapid economic growth and future competing needs for water supply and to support the establishment and operations of the ACIWRM.

The activities to be undertaken are detailed in the IWRM road map and the design and monitoring framework (DMF) of the FAM. In summary these are to include:

The Framework for the ACIWRM activities are captured in the following diagram:



The activities to be undertaken are detailed in the IWRM road map and the design and monitoring framework (DMF) of the Facility Administrative Manual (FAM) of Gol-GoK-ADB loan agreement. In summary these are to include:

Table 14: KISWRMIP Roadmap Activities

Key IWRM Theme	Output 1 Activity
1. Integrated River Basin Management	<ul style="list-style-type: none"> (i) Establishment of effective river basin management arrangements; (ii) Preparation of State River Basin Inventory; (ii) Development and implementation of river basin plans in selected river basins; (iv) Preparation of pilot, community based, integrated Land and Water Management Plans; (ii) Operational management systems to implement basin water plans and (vi) Implementation of public awareness, information education and communication systems and campaigns on relevant water sector issues.
2. Institutions and Policies for IWRM	<ul style="list-style-type: none"> (i) Organizational alignment for IWRM with interim river basin management arrangements (ii) Organizational capacity building for IWRM, (iii) Alignment and implementation of legislative framework (iv) Preparation of a State IWRM Strategy (v) Consideration and development of regulations where appropriate (vi) Institutional development for participatory irrigation management (PIM) (this will be undertaken by Component 2 in the project areas however Component 1 will promote this at a state wide level (vii) Capacity building of staff of agencies including IWRM Certification Program
3. Data, Information, and Knowledge Management	<ul style="list-style-type: none"> (i) Preparation and implementation of a Water Resources Information System (WRIS) Strategy and Plan; (ii) Training and application of decision-support tools for river basin planning and water resources management; and (iii) Data collection of water resources and related data to support river basin; (iv) Hydrological monitoring in the K-8 and other priority river basins; (v) Research to increase IWRM knowledge and evidence based policy
4. IWRM Based Irrigation Management	<p>Component 2 will undertake major investment programs to modernise irrigation systems and to establish and develop the capacity of WUCS in irrigation management. Component 1 however will support this through the activities described in the</p>



Key IWRM Theme	Output 1 Activity
	other themes, particularly development of institutions and policies for IWRM; water use efficiency and stakeholder participation
5. Water Use Efficiency and Water Productivity	(i) Development of the concepts and understanding of water productivity, water use efficiency, crop and agricultural productivity (ii) Basin scale assessments of water use efficiency and water productivity (ii) Improving WUE and Irrigation Systems by undertaking comprehensive assessments of irrigation systems
6. Stakeholder involvement and capacity building	(i) Education, awareness raising, and capacity building of communities and individuals; and (ii) Community involvement in river basin management, irrigation modernisation, and Land and Water Management Plans.

The output-1 will be implemented by the AC-IWRM which will be the implementing agency. Specialist support in IWRM will be provided by international and national consulting services which will be recruited as individual consultants to provide specific expertise in topics like river basin planning, basin modelling, communications etc.

The intended outcome is for IWRM to be successfully implemented in selected river basins in Karnataka with (i) from 2018, systems established for quantitative water use by sectors and (ii) by 2021, State water resources management strategies institutionalized.

The indicators for this output are, by 2021:

- at least 3 river basin plans are developed and implemented,
- about 600 WRD staff (of which about 200 are women staff) are certified in IWRM, and
- State water resources information systems established.

The main activities to be undertaken (target dates are as identified in the loan documents) will include:

- i. Establishment of offices and appointment of staff for AC-IWRM (Nov 2014);
- ii. Institutional/capacity assessment (WRD/KNNL/AC-IWRM) (Nov 2014);
- iii. IWRM certification program in implementation (Sep 2015);
- iv. River basin resources inventories prepared (May 2017);
- v. State IWRM strategy endorsed by IWRM steering committee (May 2019);
- vi. Water Resources Information System established and under use for river basin planning (September 2020);
- vii. Pilot projects completed for land and water management, remote sensing of water consumption, water use efficiency and water productivity (March 2021); and
- viii. River basin plans prepared and under implementation in 3 sub-basins (August 2021).



- **Status of project scope/implementation arrangements compared with those in the report and recommendation of the President (RRP), and whether major changes have occurred or will need to be made;**

7.4.1 Revised Output 1 Results Schedule

The Facility Administration Manual (FAM) scheduled dates for key deliverables are based on a January 2014 mobilisation and commencement. The loan became effective on 13 July 2015 (19 months after the mobilisation indicated in the Gant charts of the FAM) and mobilisation commenced from late August 2015 (effectively start of September 2015) which is 21 months later than originally planned.

The scheduled key dates have been revisited and the schedules planned (refer to later sections). Proposed revisions are shown in the following table although these may be adjusted further once ACIWRM staff are mobilised and detailed planning undertaken.

Table 15: KISWRMIP Deliverables

Key Deliverable	FAM (mobilisation date Jan2014)	Proposed Revision Loan effect date = FAM+19 mo Mobilisation date = FAM+21 mo
Establishment of offices, appointment of staff for AC-IWRM	Nov 2014	Mar 2016 (FAM+16 mo)
Institutional capacity assessment	Nov 2014	Sept 2016 (FAM+22mo)
IWRM certification program in implementation	Sep 2015	Jun 2016 (FAM + 9 mo)
River basin resources inventory prepared	May 2017	Jan 2018 (FAM + 7 mo)
State IWRM strategy endorsed by IWRM steering committee	May 2019	May 2019 (= FAM)
Water resources information system established and under use for river basin planning	Sept. 2020	Sep 2020 (= FAM)
Pilot projects completed for land and water management, remote sensing of water consumption, water use efficiency and water productivity	Mar 2021	Mar 2021 (= FAM)
River basin plans prepared and under implementation in 3 sub-basins	August 2021	August 2021 (= FAM)



- **An assessment of the likelihood that the immediate development objectives (project purpose) will be met in part or in full, and whether remedial measures are required based on the current project scope and implementation arrangements**

From the table shown in the earlier sub-section with revised target dates there is every likelihood that the immediate development objective will be met in full by the end of the MFF period.

However, the period of tranche-1 may have to be revised and extended as the activities could not be taken up before the loan agreement signing and after the loan negotiations were concluded due to various unforeseen reasons and the lack of full understanding of the provisions of retro-active financing at the implementing agencies end.

- **An assessment of changes to the key assumptions and risks that affect attainment of the development objectives; and**

Not applicable at this stage or for this period.

- **Other project developments, including monitoring and reporting on environmental and social requirements that might adversely affect the project's viability or accomplishment of immediate objectives.**

Not applicable.

D. Implementation Progress

- **Assessment of project implementation arrangements such as establishment, staffing, and funding of the PMO or PIU;**

For ACIWRM, responsible for Output-1, Government staff deputed for positions of Registrar, Dy. Registrar, Asst. Registrar, two Section officers, a data entry operator and an assistant. Another Assistant Executive Engineer from KNNL is deputed to ACIWRM.

New Principal Secretary, WRD ex-officio Director General, ACIWRM has taken charge on 1 March 2016. A note was prepared and presentations made to PS, WRD & DG.

Chief Technical Advisor (CTA) mobilised end of August 2015 & Director (Technical) mobilised early September 2015. Other core staff are recruited and will be mobilised soon after the necessary approvals are obtained.

A budget provision of funds is made INR 22.58 crores or USD 4.516 million.

An office space for ACIWRM in the Karnataka State Finance Corporation (KSFC) building has been recently renovated and furnished. Required furniture is purchased &



Purchase of Computers & software is initiated. Moved into the new office premises on 8th Jan. 2016.

➤ **Information relating to other aspects of the EA's internal operations that may impact on the implementation arrangements or project progress**

A Project Coordination Committee (PCC) was setup by the WRD in December 2015 and this will enable coordination between all the three components and various agencies involved in the implementation of the program.

➤ **Progress or achievements in implementation since the last progress report**

IWRM TRAINING: ACIWRM will implement the IWRM capacity building program in partnership with the local professional universities and other agencies. The Certification and Accreditation of the IWRM training is funded through a parallel ADB financed regional technical assistance on Knowledge and Innovation Support for ADB's Water Financing Program (RETA 6498).

In consultation with the UNESCO-IHE the CTA and Director (T) prepared the broad course modules, course contents and the design of the course.

A number of discussions were held with the local professional universities individually, such as, Indian Institute of Science (I.I.Sc.), University Visvesaraya College of Engineering (UVCE) and Visvesvaraya Technological University (VTU), to elicit their interest in the course, assess the feasibility of such a course, understand the capacity of the local institutions and discuss about the certification and accreditation process.

A one day workshop was held on 11th March 2016 with all possible local universities, post-graduate Engineering Colleges, WRDO staff representatives, Nigam's staff representatives and ACIWRM staff to discuss the course vision, IWRM training course modules, course contents, the methodology and the duration of the course. All participants appreciated the design and the contents of the IWRM training course and expressed interest in implementing the same.

The accreditation emerged to be a challenge and unclear. Local accreditation systems were discussed, however, they are applicable only for long term courses leading to award of a diploma/degree.

Continuous discussions were held with IHE-UNESCO on the IWRM training course and they made it clear that they cannot offer accreditation and will be willing to do the quality and standard check and if required, provide a ToT to the local institutions.

WATER RESOURCES INFORMATION SYSTEM: A number of data requirements for the WRIS are identified and their source is noted. Discussions initiated with various data



providers and some data is being collected and will soon be converted into spatial layers for ready use.

The current existing, if any, data base systems are being identified and assessed for easy accessibility of the data. Discussions are ongoing with KRSAC for data support from various other works which they carried out earlier.

MASSCOTE for Tungabhadra LBC and Vijayanagara Channels: A complete concept note, detailed schedule, data requirements, etc. is prepared by ACIWRM in consultation with KNNL to carry out a MASSCOTE exercise for TLBC and Vijayanagara Channels. The same is shared with the PSC and TB engineers at the review meeting. The resource person is identified and logistics detailed out including the budget estimations.

This will support in enhancing the capacity of engineers in preparing an assessment and modernization proposals and will contribute to the preparation of the feasibility report for tranche-2 of the program by PSC.

COORDINATION WITH THE NATIONAL HYDROLOGY PROJECT (KARNATAKA): Both CTA and Director (T) along with Registrar attended the one day workshop conducted by NIH, Roorkee for Training Needs Assessment (TNA) and Purpose Driven Studies (PDS) for the Hydrology Project. This enabled to share our training program planning and ensure complementarity.

NATIONAL GROUNDWATER MANAGEMENT IMPROVEMENT PROGRAM (NGMIP): ACIWRM participated in the inter-departmental discussions on NGMIP and contributed to the scoping of the program. A note was prepared highlighting the need for integration of surface water and groundwater domain programs and the emerging requirement for enhanced coordination between both the agencies. A number of discussions were held with the officers of the Ministry of Water Resources, River Development & Ganga Rejuvenation, GoI, CGWB staff, State Groundwater Directorate and the staff of World Bank related to the NGMIP.

REVIEW MEETINGS: ACIWRM attended Progress review meetings held by the Additional Chief Secretary, WRD and Secretary, WRD; External Aided Projects (EAP) review meetings held by the Additional Chief Secretary & Development Commissioner, GoK.

ACIWRM also attended all the PSC review meetings held by the Project Director, KISWRMIP and MD, KNNL.

WORKSHOPS/CONFERENCES: ACIWRM staff represented at the Jal Manthan - 2 workshop organised by the MoWR, RD&GR, GoI at New Delhi during 22-23 Feb. 2016; Attended the CII Water Conference held at Bengaluru on 11th Feb. 2016; Attended the DRIP conference organised by CWC in partnership with WRDO, GoK during 12 -13 Jan. 2016.

WEBSITE: Discussions were held for scoping the ACIWRM Website and work will soon commence on the same.

NARBO staff visited ACIWRM on 13 Jan. 2016 for exchanging information on activities and explore the possibilities of cooperation in the area of river basin management.



The consultants from the urban IWRM program funded by ADB had discussions with ACIWRM to understand the IWRM approach being followed in this program. They are invited for consultations from time to time.

A number of scoping discussions held with various potential agencies and personnel for setting up a group to steer and strengthen the capacity in the area of River Basin Modelling.

➤ **Assessment of the progress of each project component, such as recruitment of consultants and their performance**

Four staff for Water Resources Specialist (Deputy Director), Principal Coordinator - Engineers Capacity Building, Land and Water Management specialist and Principal Coordinator - Communications and Farmers Capacity Building are finalized including financial negotiations. After due approval from government the same will be mobilized immediately.

EOIs for the two International Short-term experts - Hydrologist and River Basin Modeler, and one National short-term expert - Policy and Institutional specialist are called for and short list prepared and submitted to ADB as Submission-1. Non-committal enquiries were issued and financial proposals received, processed, negotiated and Submission-1 for all three positions are submitted to ADB for clearance. After due approval from government the same will be mobilized immediately.

One Assistant Executive Engineer from WRD/KNNL was deputed to ACIWRM to support the implementation of the program activities.

One GIS Assistant is recruited to support the data collection from various departments and convert into the GIS layers for further use in implementation of the activities.

The contractual staff position for River Basin Management specialist and Hydrology & Irrigation specialist are re-advertised as we did not receive suitable applications earlier.



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