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**PROGRAM NAME: SUSTAINABLE, JUST AND
PRODUCTIVE WATER RESOURCES DEVELOPMENT IN
WESTERN NEPAL (DIGO JAL BIKAS)**

Annual Report - MAIN REPORT

Reporting Period – 1 April, 2017 to 31 March, 2018

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EXECUTIVE SUMMARY

The “Sustainable, Just and Productive Water Resources Development in Western Nepal” project (hereafter “Digo Jal Bikas” or “DJB”) started in April 2016. The overall goal of the project, led by the International Water Management Institute (IWMI), is to promote sustainable water resources development in Western Nepal by balancing economic growth, social justice, and healthy, resilient ecosystems. The project contributes directly to IR2.3 of the USAID Nepal Country Development Cooperation Strategy (2014-18), focusing on means of increasing the resilience of targeted natural resources and consequently improving the livelihoods on which they depend.

Six core and two supporting Work Packages (WPs) were designed to address the project goal. The activities in Year 1 (April, 2016 – March, 2017) and Year 2 (April, 2017 – March, 2018) were implemented as per the work plan approved at the beginning of each respective year. The project is on track to complete all planned deliverables by the end of March 2019. The WP-specific summaries for Year 2 are provided hereunder.

WP1 – Basin Characterization: In Year 2, the River Basin Database was updated with spatial and temporal biophysical data, which included climate and river flow data, land cover maps, digital elevation maps, soil maps, information on basin policies and governance processes, and maps on power relations, among others. Due to budget cuts (approx. USD 500,000), the plan to prepare an online, project-specific data portal was canceled. The data from the project will be uploaded and made publically accessible after the end of the project to IWMI’s Water Data Portal <http://waterdata.iwmi.org/>.

Well-calibrated and validated hydrological models for Karnali-Mohana and Mahakali river basins have also been developed. The analysis on the impact of future climate change on basin hydrology has been completed. Four scientific papers are being prepared to report on the analysis from the hydrological and climate change models. Additionally, a manuscript titled “Hydrological response of Chamelia watershed to climate change” has been accepted by the international journal, *The Science of the Total Environment*. A report on policy and institutional analysis has been prepared and a scientific manuscript based on the report has been accepted to be published in *Geoforum Journal*. In terms of power-relation mapping, a set of interviews with available stakeholders has been completed. Further interviews will be carried out in Year 3 and at least one scientific paper will be produced.

WP2– Environmental Flow Assessment and Tool Development: In order to document the livelihood and cultural/religious benefits of rivers, a two-hundred and sixty (260) household survey, 34 key informant interviews, and 11 focus group discussions were conducted. The analysis from the surveys have been completed and a report on livelihood and cultural benefits from rivers has been prepared. A journal paper will be produced in Year 3.

An inventory of bio-indicator invertebrate taxa to serve as control for different conditions was also collected and laboratory analyzed. Potential biotic metrics have been identified for assessing the impacts of the stressors in the river ecosystem. Data interpretation and report writing is slightly delayed and expected to be completed by the end of April 2018. Due to this delay,

development of a desktop tool has been shifted to Year 3. To promote incorporation of e-flows in policy and practice, an e-flows workshop was organized on August 22, 2017 and attended by sixty-seven participants from different government and other organizations. Feedback and recommendations from stakeholders during this workshop were incorporated into further project planning.

WP3 – Basin-scale Development Scenarios: Relevant planning documents were reviewed, including the irrigation, groundwater, and hydropower master plans; water, environmental, forestry, and irrigation national policies; project-specific documents for various sectors; and water use master plans (WUMPs). Based on the review, a database of development plans as well as trends in water resources use and access in Western Nepal was prepared. Based on the review, a few scenarios for future water resources development in Nepal were outlined and shared with stakeholders during the trade-off arena workshop held on 1st August, 2017. Based on input from stakeholders, a set of scenarios that reflect local and national priorities was finalized as input for the hydro-economic model. A report describing the finalized scenarios from the trade-off arena workshop was also developed and shared with all the participants. In addition, a report on the hydro-economic modelling framework has been prepared, and is now in the process of being published as an IWMI working paper. An additional paper highlighting different visions for development is also in preparation.

WP4 – Local Water Governance and Management: A report mapping local water availability and access was produced in May 2017. Local political economy analysis is underway and will be completed in Year 3. An assessment of different rights systems in relation to decision-making processes in water resources management has been delayed due to staff turnover and will also be completed in Year 3.

Three representative pilot sites in the study were identified for designing and implementing new water management interventions. A socio-economic survey (664 households in total) of three pilot intervention sites was carried out and the baseline report was completed. Based on the local conditions, a set of interventions was designed, considering their physical, social, and economic feasibilities. A report on identified interventions along with their justifications was produced. A radio dialogue, prepared in collaboration with PAANI, to share learnings from the interventions was broadcasted in the last week of April 2018.

WP5 – Gender: Gender is a cross-cutting WP that aims at mainstreaming gender analysis across all the WPs as well as the water sector in Nepal. As planned, differences in perceptions of water resources development and access across gender, caste, and ethnicity were analyzed through a basin-wide socio-economic survey and situation analysis from the three pilot sites. Similarly, a report titled “Gendered characteristics of water governance decision-making structures and processes” has been finalized. Based on the analysis, a preliminary draft of policy recommendations has been prepared and included in the draft political analysis report prepared in February 2018. In all the project-related events/workshops, attempts were made to increase participation of women by identifying relevant female stakeholders. Despite significant efforts, a low number of female participants actually joined the events. For example, in trade-off arena workshop, 30 women were invited, however, only 8 could finally attend the workshop. Finally, a dialogue on masculinities in the water sector, which was planned for Year 2, was shifted to early May 2018.

WP6/WP7 – Integrated Policy and Practice Guidelines and Knowledge Management/Dissemination: The project is developing a knowledgebase that provides a basis for the PAANI project to develop integrated policy and practice guidelines. In addition, we have provided valuable inputs to the Water Resources Management Policy drafted by the Water and Energy Commission Secretariat (WECS). We are continuously updating the project website that was developed in Year 1 with the latest lessons learned, best practices, and project activities. In Year 2, we produced seven (7) blogs/newspaper articles, and made 10 presentations at national and international conferences and workshops. Preliminary drafts of two journal articles were also prepared in Year 2.

ABBREVIATIONS AND ACRONYMS

8ARC	8 TH Asian Regional Conference
ADB	Asian Development Bank
AGU	American Geophysical Union
AIT	Asian Institute of Technology
CV	Contingent Valuation
DADO	District Agriculture Development Office
DDC	District Development Committee
DHM	Department of Hydrology and Meteorology
DJB	Digo Jal Bikas
DOED	Department of Electricity Development
DoI	Department of Irrigation
DOLIDAR	Department of Local Infrastructure Development and Agriculture Roads
DSCWM	Department of Soil Conservation and Watershed Management
DTU	Denmark Technological University
DWIDM	Department of Water-Induced Disaster Prevention Management
EF	Environmental Flows
FECOFUN	Federation of Community Forest Users Group Nepal
FGD	Focal Group Discussion
GESI	Gender Equity and Social Inclusion
GESI	Gender and Social Inclusion
GoN	Government of Nepal
HH	Household
ICID	International Commission on Irrigation and Drainage
ICIMOD	International Center for Integrated Mountain Development
IFC	International Finance Committee
IMD	Indian Meteorological Department
INGO	International Non-Governmental Organization

IPPAN	Independent Power Producers' Association Nepal
IWMI	International Water Management Institute
M&E	Monitoring and Evaluation
MoFSC	Ministry of Forest and Soil Conservation
MoPE	Ministry of Population and Environment
MOSTE	Ministry of Science, Technology and Environment
NAST	Nepal Academy of Science and Technology
NEA	Nepal Electricity Authority
NGO	Non-Governmental Organization
NNWWW	Nepal National Water and Weather Week
NWCF	Nepal Water Conservation Foundation
PANI	Program for Natural Aquatic Resources Improvement
RCM	Regional Circulation Model
RVWRMP	Rural Village Water Resources Management Project
SWAT	Soil and Water Assessment Tool
TAC	Technical Advisory Committee
USAID	United States Agency for International Development
VDC	Village Development Committee
WECS	Water and Energy Commission Secretariat
WP	Work Package
WUMP	Water Use Master Plan
WWC	World Water Council
WWF	World Wildlife Fund

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	i
ABBREVIATIONS AND ACRONYMS.....	iv
TABLE OF CONTENTS.....	vi
1. PROGRAM OVERVIEW/SUMMARY	1
2. REVIEW OF M&E TARGETS	5
3. IMPLEMENTATION STATUS/PROGRESS.....	16
3.1 Work Package 1: Basin Characterization	16
3.2 Work Package 2: Environmental Flow Assessment and Tool Development	21
3.3 Work Package 3: Basin Scale Development Scenarios	25
3.4 Work Package 4: Watershed / Village Water Governance and Management	31
3.5 Work Package 5: Gender	36
3.6 Work Package 6: Integrated Policy and Practice Guidelines	40
3.7 Work Package 7: Knowledge Management and Dissemination.....	40
3.7.1 Publications	40
3.7.2 Dissemination	42
3.7.3 Project Organized Workshops/Meetings	44
3.7.4 Contribution in Organizing Asian Regional Conference of ICID (Co-organized by USAID)	44
3.8 Work Package 8: Project Management	45
3.8.1. Regular Project Meetings	47
3.8.2 Participation in USAID-Organized Meetings	51

I. PROGRAM OVERVIEW/SUMMARY

Program Name:	Sustainable, Just and Productive Water Resources Development in Western Nepal (“Digo Jal Bikas”)
Activity Start Date and End Date:	1 April 2016 – 31 March 2019
Name of Prime Implementing Partner:	International Water Management Institute (IWMI)
[Contract/Agreement] Number:	AID -367-IO-16-00002
Name of Subcontractors/Sub-awardees:	Duke University Kathmandu University Nepal Water Conservation Foundation (NWCF)
Major Counterpart Organizations	Department of Irrigation(Dol) Water and Energy Commission Secretariat (WECS) National Planning Commission (NPC)
Geographic Coverage (landscape, province(s) and countries)	Karnali, Mahakali and Mohana Basins
Reporting Period:	1 April 2017 – 31 March 2018

The overall goal of the “Sustainable, Just and Productive Water Resources Development in Western Nepal” (hereafter, Digo Jal Bikas or DJB) project, led by the International Water Management Institute (IWMI), is to promote sustainable water resources development in Western Nepal through balancing economic growth, social justice and healthy, resilient ecosystems. The project contributes directly to IR2.3 of the USAID Nepal Country Development Cooperation Strategy (2014-18), focusing on means to increasing the resilience of targeted natural resources and consequently improving the livelihoods on which they depend.

The geographic focus of this project will be the basins and sub-basins in the Mid-Western and Far-Western Development Regions of Nepal, with a particular focus on the Karnali River Basin, including the Mohana sub-basin in the Terai, and the Mahakali River Basin (See Fig.1).

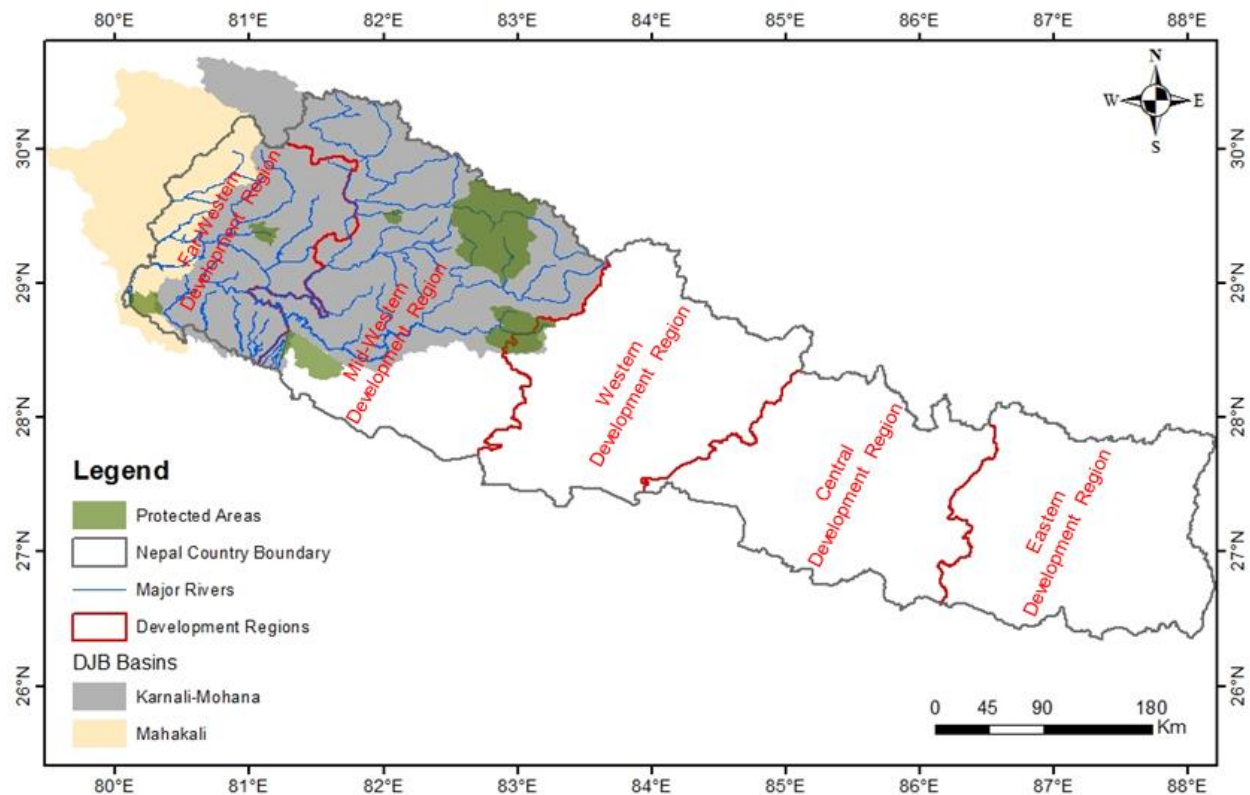


Figure 1. The study region - Karnali and Mahakali river basins. The Mohana sub-basin is a part of the Karnali River Basin. DJB is “Digo Jal Bikas”.

Three objectives are proposed to achieve this goal:

1. Construction of a sound knowledgebase on the current state and use of water resources and impacts of climate change as well as other drivers of future change in the Western Nepal to identify key information and knowledge gaps. This includes a comprehensive database that captures the socio-economic, biophysical, and hydro-climatic (current and future) characteristics of the three basins; and mapping of all water-related infrastructures. This objective will help establish key knowledge and information gaps and provide datasets that will be useable for future and diverse analyses and planning purposes.
2. The development and application of tools, models and approaches (including opportunities and risks) for sustainable water resources development under current state and future scenarios at the basin

and local community scales. In particular, tools will be developed to simulate hydrology and environmental flows (E-flows) necessary to maintain the integrity of ecosystems and their services. This information will then be used for hydro-economical modelling at basin scale to explore water allocation under future scenarios, including climate change, of different water resources development options and the resulting trade-offs. The multi-scale approach (i.e., basin, sub-basin, and local community) for improved water management and water governance will be explored.

3. Support the development of integrated policy and practice guidelines on options and technologies for sustainable water infrastructure development for government and local communities. These guidelines will be designed to promote best practice in water-related infrastructure development (e.g. hydropower, irrigation, water storage) at different scales, which supports local communities and protects the resilience of ecosystems and their services. The aforementioned knowledgebase, tools, models and approaches will underpin these guidelines, which will be developed with input from government and community stakeholders, as well as donors and investors. The policy and practice guidelines will be formulated in collaboration with the PANI program.

To address the project objectives, and guided by the above research questions, six core Work Packages (WP) and two supporting WPs have been developed (Table 1)

Table 1. Work packages (WPs).

Core work packages	
WP1	Basin characterization
WP2	Environmental flow assessment and tool development
WP3	Basin-scale development scenarios
WP4	Watershed/village water governance and management
WP5	Gender
WP6	Integrated policy and practice guidelines
Supporting work packages	
WP7	Knowledge management and dissemination
WP8	Project management

The following stakeholders are envisioned as important groups to engage with during this project. They represent both next and end users of the project's products, tools and knowledge.

- Public and private sector agencies and multilateral investors who evaluate, design and implement water resources development projects and investment programs
- National, provincial, and local level water and energy management agencies, e.g. Ministry/Department of Irrigation, Ministry/Department of Agriculture, dam/barrage operation agencies, Ministry of Energy, Ministry of Forests and Soil Conservation, Water and Energy Commission Secretariat and the Department of Soil Conservation and Watershed Management Ministry of Science Technology and Environment (MOSTE), Ministry of Federal Affairs and Local Development and Department of Local Infrastructure Development and Agricultural Roads (DOLIDAR), Department of Water Induced Disasters and Prevention (DWIDP), District Development Committees (DDCs) and Village Development Committees (VDCs).
- Conservation groups that want to establish environmentally sustainable water resources planning and management.
- Women and men in farmer and fisher communities that will be affected by climate change and water management decisions in the basin.

2. REVIEW OF M&E TARGETS

A review of achievements against targeted M&E indicators are provided in Table 1

Table 1: Target against achievement as per the M&E plan

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
Outcomes		FY17/18		
1. A sound knowledge base on the current state and use of ecosystems and their services in West Nepal evidentially used by relevant parties	C. Changes in ecosystems knowledge and practice by key stakeholders (% of stakeholders)	-	<p>-CKAP (Capacity, Knowledge, Attitude, Practice) baseline survey carried out in year-1. The CKAO survey will be repeated in Year 3.</p> <p>-The hydrological models developed in the project for the Karnali and Mohana basins will be used for the National Irrigation Master Plan developed by DOI</p> <p>-The project team has contributed to the water resources policy document and highlighted several issues</p>	On track
2. Environmental flow allocations are integral part of	D. EFs integrated into water resource	-	CKAP (Capacity, Knowledge, Attitude, Practice) baseline	On track

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
river management practice informing future water resource planning and development	planning and development		survey carried out in year-1. The CKAO survey will be repeated in Year 3. Environmental Flows will be assimilated in the National Irrigation Master Plans developed by DOI	
3. Increased and improved knowledge of tradeoffs in water resource development opportunities resulting from the application of hydro-economic models	E. Governments and other key stakeholders demonstrate knowledge of model strengths and limitations and capacity	-	CKAP (Capacity, Knowledge, Attitude, Practice) baseline survey carried out in year-1. The CKAO survey will be repeated in Year 3.	On track
	I. Number of institutions with improved capacity to assess or address climate change risks supported by USG assistance (USAID CC Adaptation Indicator EG11.2)	3 (DOI; DoED; WECS)	54 institutions, including DOI, DoED, and WECS have participated in the DJB events aimed at improving capacity (e.g., e-flows workshop, tradeoff arena workshop, etc.)	Overachievement-the e-flows workshop initially planned in year-3 was conducted in year-2; we collaborated with PAANI (for pooling resources) in conducting the events and therefore could reach to many organizations than planned originally.
4. Local communities in the project study area adopt practical technologies and land/water management approaches that improve water productivity, protect ecosystems and achieve more equitable	F. Adoption levels of key technologies (% or number of people adopting new technologies)	-	Water management interventions have been established in 3 pilot intervention sites/villages. Water user groups have been set up in pilot intervention sites/villages.	On track

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
water governance, which enable them to cope with and adapt to future climatic and socioeconomic pressures	G. Number of people using climate information or implementing risk-reducing actions to improve resilience to climate change as supported by USG assistance (USAID CC Adaptation Indicator EG11.6)	75	79 (based on participants attending DJB events-workshops seminars etc.)	Overachievement-the e-flows workshop initially planned in year-3 was conducted in year-2; we collaborated with PAANI (for pooling resources) in conducting the events and therefore could reach to many people than planned originally
5. Greater awareness and capacity of key stakeholders in the water sector to consider and address unequal capabilities to benefit from and influence water resources planning and management across gender, caste, class and ethnicity at local and basin levels.	H. Evidence of gender and equity targeting in key policies, plans and implementation strategies	-	CKAP baseline survey carried out in year-1 which will be repeated in year 3 Gender specific input has been provided in the National Water Resources Policy under preparation by WECS	On track
6. Improve the knowledgebase to develop integrated policy and management guidelines	I. Number of institutions with improved capacity to assess or address climate change risks supported by USG assistance (USAID CC Adaptation Indicator EG11.2)	6 (WECS; DoED; DoA; DDC/VDC; TU; KU)	54 institutions, including DoI, DoED, and WECS have participated in the DJB events aimed at improving capacity (e.g., e-flows workshop, tradeoff arena workshop, etc.)	Overachievement-the e-flows workshop initially planned in year-3 was conducted in year-2; we collaborated with PAANI (for pooling resources) in conducting the events and therefore could reach to many organizations than planned originally.

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
Key Outputs				Deviation narrative for under/over achievement of each indicator's target
1.1. Updated database collating all relevant spatial and temporal data on freshwater ecosystems in the study basins, including both natural characteristics and artificial structures and practices, to feed into online system	1.1.1 Database developed 1.1.2 Number and type of users of database (nos of people visiting the database page?)	Database developed (in year-1) -	Database is developed and being updated continuously The database is not yet available publicly	
1.2. Fully calibrated and validated hydrological model of the 3-basins (Karnali, Mohana, Mahakali)	1.2.1 Calibrated and validated hydrological model	Calibrated and validated models	Fully calibrated and validated models for Karnali-Mohana and Mahakali rivers are developed. It is adopted by DoI for developing river basin master plans.	Overachievement- Already achieved major outcome as the models developed under the project are being used by DOI for the National Irrigation Master Plan. The team working on the Irrigation Master Plan decided that our model set up was extremely detailed and up-to date so they requested if they can use it rather than trying to redo it themselves. This outcome was not planned in the project deliverables.
1.3. Report on hydrological model set-up, model performance, and current	1.3.1 Report completed	Report produced	Report on modeling is completed. Currently preparing journal papers.	

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and future status of water resources				
1.4. Final report on policy review and institutional analysis at the basin	1.4.1 Report comprised of systematic policy clusters and institutional analysis	Report produced	The report is produced in Year-1 and a journal article based on the review has been published.	
1.5. Final report on power-relation mapping	1.5.1 Report prepared	Report produced	Most of the interviews were completed. Interviews with political leaders are scheduled in April, 2018. The report will be produced in Year-3	Delayed due to local elections. It was difficult to make appointments for interviews with members of political parties. The interviews were conducted after the elections.
1.6. Nepal hydropower development discourse	1.6.1 Report prepared	-	This will start in year-3. Due to local elections, it was hard to conduct the interviews before the elections.	Delayed due to local elections. It was difficult to make appointments for interviews with members of political parties. The interviews were conducted after the elections.
1.7. Report with policy recommendations for improved basin governance based on political economy analysis, governance and institutional reviews focusing on the intersection of land-water-energy-environment, and incorporating gender issues	1.7.1 Report prepared / Inclusiveness of policy recommendations 1.7.2 Effectiveness of policy recommendations	- -	This will be completed in year-3 Due to local elections, it was hard to conduct interviews before the elections.	Delayed due to local elections. It was difficult to make appointments for interviews with members of political parties. The interviews were conducted after the elections.

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
2.1. A report with an inventory of livelihood, cultural/religious benefits from the river inhabitants of the basin as well as recommendation for incorporating various needs in water allocation planning	2.1.1 Report / supportive database produced	-	Draft report is prepared in year-2. A journal paper will be published in year-3	
2.2. An Inventory of the bio-indicator invertebrate taxa to serve as control for different conditions	2.2.1 Inventory with relevant recommendations 2.2.2 Biotic index tool functional and evidence of use	Samples analyzed and interpreted Biotic index tool produced	Samples are collected, analyzed, and interpreted. Reporting will be completed in the first quarter of year-3. The tool will be produced in year-3. The delay was due to taking more time than expected for laboratory analysis	Delayed due to inability to find research assistants who are trained in taxonomy. Species identification had to be done by one person, which took longer than originally planned. The task will be complete in year 3
2.3. A desktop tool to calculate E-flows in Nepal and illustration of its application in west Nepal which will include relationships between water flows and river typologies, indicator species and assemblages, and cultural and livelihood metrics.	2.3.1 Desktop tool functional and evidence of use 2.3.2 Utility of tool in its application in West Nepal	Desktop tool produced	The desktop tool (e-flow calculator) will be produced in year-3. The delay was due to taking more time than expected for laboratory analysis	Delayed due to results from lab. analysis being late. The output is on track to be completed by year 3
2.4. Workshop(s) focused on E-flow tool, their application in Nepalese context, and appropriate institutional set-	2.4.1 Workshop carried out successfully	Workshop report	Workshop was held on 22 nd August, 2017, the report was prepared, and shared with all the stakeholders/ participants.	

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
up to implement E-flow allocations in Nepal	2.4.2 Institution set-up established			
2.5. Recommendations for incorporating environmental water allocations into national water resources planning and on institutional arrangements for implementation	2.5.1 Report with relevant recommendations	-	Final report with all the recommendations will be produced in year-3.	Over Achievement-E-flows have been added to the National Irrigation Master Plan-Already achieved a major outcome. Irrigation master plan is expected to be completed before Oct 2018.
3.1. Database of development plans	3.1.1. Database developed	-	The option database was developed in year-1	Overachievement-the database was already developed in year 1
3.2. Trend database (including constraints/limits to those trends) and report	3.2.1. Trend database produced		The trend database was developed in year-1	Overachievement-the database was already developed in year 1
3.3. Scenario database	3.3.1. Scenario database prepared with 3-4 detailed scenarios outlined	Scenario report produced	The scenarios report with a set of scenarios was produced after tradeoff arena workshop held on 1 st August, 2017.	
3.4. Working paper on hydro-economic modelling framework; Hydro-economic model database	3.4.1. Working paper on framework developed 3.4.2. Hydro-economic dbase developed	IWMI Working Paper produced Complete database	The draft paper was developed in year-1 and updated and processed for publishing as IWMI working paper in year-2 Database is developed and available in the project's internally shared drive	
3.5. Proceedings/Report of the workshop	3.5.1. Workshop effectively carried-out	Workshop report	tradeoff arena workshop was held on 1 st August, 2017,	

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
			report was produced and shared with stakeholders	
3.7. Hydrology and infrastructure scenario analysis for predicting economic impacts (including distributional) on sectors and households in an options database.	3.7.1 Options paper prepared 3.7.2 Quality/veracity of scenarios	- Scenarios are verified	Will be prepared in year-3 The scenarios were verified/modified after the tradeoff arena workshop	
3.8 Development of hydro-economic models (HEMs) to explore resource development options.	3.8.1 Models developed 3.8.2 Relevance and quality of models	- Model quality is verified	The model development is progressing well, and will be completed in year-3. We have plan to share the preliminary results to verify quality of model in May, 2018	
4.1. Comprehensive report on the facilitating as well as constraining factors on access/use of different water resources within the community	4.1.1. Report on the biophysical, social and cultural challenges to water access within the study sites	Final report produced	Final report is produced	
4.2. A report on political economy analysis at local level	4.2.1. Report produced	Report produced	Draft report is produced in March, 2018	
4.3. A status report on right systems within a wider context of agrarian structure	4.3.1. Report assessing the different rights systems in relation to decision making system/processes in WR management	Report produced	This report is still pending due to change in staffing. The draft report is expected in May, 2018.	Delayed due to staff turnover. IWMI is in the process of hiring a new social scientist
4.4. A report with mapping of existing institutional	4.4.1. Comprehensive assessment of (water)	Report produced	Preliminary analysis is done. It will be a part of Output 4.3	

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(formal/informal) arrangements and their power relationship at different scales	governance structure and processes at local government level			
4.5. Situation analysis / baseline report of three case study villages	4.6.1. Report of baseline in three target villages produced	Baseline report produced	Pilot sites were selected in Year-1 and baseline analysis report produced in year-2	
4.6. Feasibility analyses of local level pilots: new efficient pumping technologies; farmer cooperatives who jointly invest in irrigation equipment; drip and sprinkler systems to reduce water use per season	4.7.1. Effectiveness of pilots	Interventions are implemented and monitoring started	A set of interventions as designed and implemented in year-2; monitoring of impact has started; final report will be produced at the end of year-3	
5.1. An analytical framework to analyze and integrate gender across scales in the water sector	5.1.1. Analytical framework produced	-	GESI plan and analysis framework developed in year-1	Overachievement –The GESI plan was already completed in year 1
5.2. Other WP consider inequalities by gender, caste, ethnicity and class in roles, responsibilities, impacts and trade-offs for women and men in water access and water resource planning and development processes	5.2.1. Number of project outputs with clear gender analysis	-	GESI analyses are incorporated in other WP outputs.	

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
5.3. Increased participation of women in the multi-stakeholder participatory process for exploring WR development pathways and trade-offs	5.5.1. Percentage of female participants in activities/event	15%	Women participation in e-flows and tradeoff arena workshop was 19%.	
5.4. Radio programmes with a specific session on gender	5.4.1. Radio program report	Report produced	Due to budget-cut, this event was planned jointly with PAANI and facilitated by NEFEJ. Due to NEFEJ's schedule it is planned in April, 2018.	
5.5. Dialogues on masculinities in the water sector organized in Kathmandu	5.6.1. Documentation of dialogues	Report produced	Due to unavailability of resource person, the masculinities workshop is scheduled in May, 2018 (year-3)	The workshop was held in May, 2018 due to the time unavailability of resource person
5.6. Gender-specific recommendations for sustainable water resource development planning in Nepal under current and future conditions.	5.3.1. Set of policy recommendations	-	A report titled "Gendered characteristics of water governance decision-making structures and processes" is prepared in January, 2018. Also a draft of policy-brief is prepared	Overachievement-Provided gender related recommendations to the National Water Resources Policy Draft being prepared by WECS, which can be documented as a major impact
5.7. Mainstreaming gender in the integrated policy and practice guidelines (WP6)	5.8.1. Evidence of mainstreaming	-	It is to be done in collaboration with PAANI. We are providing inputs as and when required.	
5.8. Research report and peer-reviewed paper	5.9.1. Report on a selected topic on gender	-	The research is ongoing. Report and peer-reviewed	

<i>Narrative Summary</i>	<i>Indicators</i>	<i>Year-2 Targets</i>	<i>Status (as of March, 2017)</i>	<i>Deviation narrative for under/over achievement of each indicator's target</i>
			paper will be produced in year-3	
6.1 Publically available website hosted by a government department and database consisting of datasets and maps, e-flow calculator, analysis reports, and other outputs from each of the work packages	6.1.1 Website online and being used	Visitors to website increased by 20%	Project website (http://djb.iwmi.org/) was developed in year-1 and regularly being updated.	
6.2 Presentation of scientific information in popular forms for targeted dissemination: community-based materials, videos, training materials, sourcebooks.	6.2.1 Number of different forms of popular presentation of scientific information	5	Published seven (7) blogs/newspaper articles, and 10 presentations at national/international conferences/ workshops	Overachievement- year 2 target was 5. We published 7 blogs and made 10 presentations in national/international conferences/workshops. The over-achievement was due to availability of communication personnel pooled from other resources and support from IWMI's communications team from HQ.

3. IMPLEMENTATION STATUS/PROGRESS

Implementation in the last year was based on the Year-2 work plan submitted in April, 2017. Following sub-section summarizes implementation status of each of the output proposed specified in the Year-2 work plan.

3.1 Work Package 1: Basin Characterization

Intermediate Result: A sound knowledgebase on the current state and use of ecosystems and their services in western Nepal evidentially used by relevant parties

Output	1.1	Updated database collating all relevant spatial and temporal data on freshwater ecosystems in the study basins, including both natural characteristics and artificial structures and practices
Indicator	1.1.1	Database updated and functional
Annual Progress		<ul style="list-style-type: none"> The database developed during Year-1 is further updated with addition of simulated discharge, water balance, and climate projection data. The data are still in internal share-drive.
Implement-ation challenges		<ul style="list-style-type: none"> Due to budget-cuts, we could not prepare an online project specific database. The project data is being continually uploaded into the IWMI water data portal (http://waterdata.iwmi.org/). Currently, only project members have access. At the end of the project, the database will be accessible to the general public.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Department of Hydrology and Meteorology (DHM, Government of Nepal) – for hydro-meteorological data Indian Meteorological Department (IMD) – for meteorological data of Indian side of the Mahakali Basin Local communities at three pilot sites (Kuti, Mellek and Punebata) – for socio-economic data Key Informants, participants of focal group discussion (FGD) and respondents of household survey questionnaire – for socio-economic characteristics of the basin obtained from basin-wide survey Department of Electricity Development (DoED) – their web-based database for location and details of hydropower projects

		<ul style="list-style-type: none"> Department of Irrigation (DoI) – their website as well as officers (e.g., Dr. Rajan Bhattarai, Mr. Bashu Dev Lohane, etc.) for details of irrigation projects
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Output	1.2	Fully calibrated and validated hydrological model of the 3-basins (Karnali, Mohana, and Mahakali)
Indicator	1.2.1	Calibrated and validated hydrological model
Annual Progress		<ul style="list-style-type: none"> Two hydrological models (one for Karnali-Mohana and another for Mahakali) are set-up, calibrated and validated in SWAT (Soil and Water Assessment Tool) (https://swat.tamu.edu/) platform. The model set-up, calibration and validation are described in Annex-1. The models are already adopted by Department of Irrigation for Irrigation Master Plan Development.
Implementation challenges		<ul style="list-style-type: none"> The model development process took a bit longer time than expected as we opted to adopt multi-site calibration strategy for better representation of spatial heterogeneity
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Data was collected from various sources. They include, DHM for hydro-meteorological data; DoI for location and details of irrigation projects; DoED for location and details of hydropower projects; ICIMOD for land use/cover data; and IMD for meteorological data of Indian side

Output	1.3	Report on hydrological model set-up, model performance, and current and future status of water resources
Indicator	1.3.1	Report completed
Annual Progress		<ul style="list-style-type: none"> Report on hydrological model set-up, and evaluation of model performance is completed for both the hydrological models (Annex-1) Projected future climate under various scenarios are assessed by evaluating available RCMs (Annex-2) and bias-corrected time-series are prepared for feeding with SWAT model for climate change impact assessment. Running the calibrated/validated model with projected future climate data is also completed.

		<ul style="list-style-type: none"> • A manuscript based on modeling of Mahakali basin, focusing on Chamelia sub-watershed, is under review with an international journal “The Science of Total Environment”. • Basin level data analysis and reporting on spatio-temporal distribution in water availability has been completed and was presented at various national and international platforms (please refer to the sub-section titled “Presentations” under Work Package 7). Further analysis for submission in a scientific journal e.g. Climate Change, is under progress and expected to be completed in May, 2018
Implement- ation challenges		<ul style="list-style-type: none"> • Reporting on status of future water resources is delayed as we opted to use better approach for future climate characterization than originally thought. It took some additional time than estimated. Rather than adopting traditional approach of using ensemble of selected multiple Regional Circulation Models (RCMs), we opted to design three possible scenarios (e.g., best case; the most likely case, and worst case) based on suitable set of criteria. Then number of RCMs projecting those conditions were ensemble to project likely future climate under those scenarios. Details are provided in Annex-2.

Output	1.4	Final report on policy review and institutional analysis at the basin
Indicator	1.4.1	Report prepared
Annual Progress		<ul style="list-style-type: none"> • The report is already completed (Annex-3). • National policy documents are reviewed by clustering into four groups – Water, Agriculture, Energy, Environment, Climate change and Disaster Risk Management, and Transboundary • Eight government agencies are reviewed for understanding institutional landscape and sector decision-making process • Following (journal papers) are prepared: i) The politics of river basin planning and state transformation processes in Nepal, Geoforum Journal (under re-review); ii) River basin planning: An imaginary bureaucratic territory (Sustainable Water Future Programme blog) • Input was provided to a new water resources policy, being developed by WECS through sending additions/ comments to the written draft as well as attending national and regional stakeholder consultation meetings. Based on this input WECS has agreed to complement the proposed policy reform with institutional analysis for cross-sectoral tasks and responsibility division

Implement- ation challenges		<ul style="list-style-type: none"> • N/A
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • In-depth interviews were conducted with the following 22 persons from various organizations: Ratna Sansar Shrestha (Expert in Water/Energy sector of Nepal); Rabindra Chauktary (Nepal Electricity Authority, NEA); Purusotam Acharya, (Department of Electricity Development, DoED); Prachanda Pradhan (Farmer Managed Irrigation Promotion Trust, FMIST); Madhu Bhetuwal (Investment Board of Nepal, IBN); Hirendra Pradhan (National Planning Commission, NPC); Surendra Shrestha (Groundwater Resources Development Board, GWRDB); Manoj Ghimire (Department of Water Supply and Sewerage, DWSS); Basu Lohani (Department of Irrigation, DoI); Madhav Belbase (Water and Energy Commission Secretariat, WECS); Pradeep Manandhar (Department of Water Induced Disaster Management, DWIDM); Prakash Thapa (Department of Soil Conservation and Watershed Management, DSCWM); Ram Hari Pantha (Ministry of Population and Environment, MoPE); Ratan Bhandari; Sunita Shrestha (FECOFUN); Dipak Gyawali (Nepal Water Conservation Foundation, NWCF); Khadga Bisht (Independent Power Producers Association, IPPAN); Vivek Sadevra (GMR); Basudev Timilsina (DWIDM); Arnaud Cauchois (Asian Development Bank, ADB); Purna Bahadur Chhetri (World Bank); Bed Byas Lamichhane (FEDWASUN); Pravin Aryal (Ministry of Energy, MoE); Pem Kandel (Ministry of Forest and Social Conservation, MoFSC)

Output	1.5	Final report on power-relation mapping
Indicator	1.5.1	Report prepared
Annual Progress		<ul style="list-style-type: none"> • A set of interview with available stakeholders are completed. Interviews with political party's representatives and hydropower companies are scheduled in early May, 2018 • Following journal paper is prepared: i) Putting power and politics central in Nepal's water governance (under preparation for submission to Natural Resources Forum in August 2018). The paper will be prepared once interviews are completed and the data are analyzed. It's expected to be completed by the end of August, 2018
Implement- ation challenges		<ul style="list-style-type: none"> • Due to national and local elections, suitable leaders of the political parties were not available for interview

Stakeholder involvement in delivery	<ul style="list-style-type: none"> • Political party leaders, representatives of the government agencies, etc.
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Additional indicators gathered for annual report	
Linkages	<ul style="list-style-type: none"> • Findings from policy and institutional analysis need to be linked to modeling work, as well as case study analysis under WP4, and gender mainstreaming overall. • The basin hydrology model will be used to develop the hydro-economic model in WP3
Changes and Lessons	-
Gender	<ul style="list-style-type: none"> • Covered above under linkages.
Sustainability	<ul style="list-style-type: none"> • No information at this stage.
Environmental Compliance	<ul style="list-style-type: none"> • N/A
Policy and Governance Support	<ul style="list-style-type: none"> • We are working closely with various government agencies to identify their policy and governance needs and provide additional support if applicable e.g. The new Water Resources Policy, The irrigation Master plan
Local Capacity Development	<ul style="list-style-type: none"> • Following master students were trained as intern in Year-2: i) Ms. Nisha Tripathy from Water Engineering and Management Field of Study at Asian Institute of Technology (AIT); who worked in future climate projection of Mohana River Basin; ii) Miss Lara Kristin from Denmark Technological University (DTU); who is developing hydro-economic model of entire Nepal considering agricultural value-chain as well.
Public Private Partnerships or Global Development Alliance (GDA) partnerships and impacts	<ul style="list-style-type: none"> • Mapping of hydropower projects from various viewpoints (e.g., location in the study area, proposed installed capacity, status, etc.) are preformed and the maps are shared with various stakeholder through presentations at various national platforms detailed in Presentations sub-section under Work Package 7
Science, Technology and Innovation issues and impacts	<ul style="list-style-type: none"> • Spatially distributed hydrological models of the Karnali-Mohana and Mahakali basins are developed for the first time in Nepal. The basin hydrology models are used as hydrological inputs in the Irrigation Master Plan, which is being

	developed by the Department of Irrigation, Government of Nepal. The Master Plan is expected to set up a road map for the future of irrigation development in Nepal.
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3.2 Work Package 2: Environmental Flow Assessment and Tool Development

Intermediate Result: Environmental flow (E-flows) allocations are an integral part of river management, informing future water resource planning and development

Output	2.1	A report with an inventory of livelihood, cultural/religious benefits from the river inhabitants of the basin as well as recommendation for incorporating various needs in water allocation planning
Indicator	2.1.1	Report/Supportive database produced
Annual Progress		<ul style="list-style-type: none"> Conducted a field trip in February 2018, where two teams travelled separately to 3 locations each in the Karnali Basin, covering Accham, Dailekh, Bajura, Bajhang and Kailali. A total of 260 surveys, 34 KIIs and 11 FGDs were conducted. Data entry along with transcriptions have been completed. Analysis of livelihood and cultural benefits of rivers are completed. Draft report is attached as Annex-4. The report will be refined further in Year-3 based on feedback from other members in the project team.
Implementation challenges		<ul style="list-style-type: none"> Issues with accessibility meant we could not cover the upper mountainous region of the basin in order to get a more heterogeneous sample.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> A survey has been conducted with river basin communities to incorporate social/cultural information for setting E-flows. Details are provided in Annex-4

Output	2.2	An Inventory of the bio-indicator invertebrate taxa to serve as control for different conditions
Indicator	2.2.1	Inventory with relevant recommendations
Indicator	2.2.2	Biotic index tool functional and evidence of use

Annual Progress		<ul style="list-style-type: none"> • Field trip and Sample collection: We completed ecological field trip for baseflow season (April and May 2017). Over 400 Benthic macroinvertebrates samples were collected from 45 sites of 29 streams and rivers in Mahakali, Karnali and Mohana basins. • Laboratory analysis: All the macroinvertebrate samples including baseflow and pre-monsoon seasons are sorted. Sorted samples have been identified to different taxonomic level such as family/genus. • Data preparation and Publication: Data collected during entire field works (post-monsoon, baseflow and pre-monsoon seasons) has been entered into analytical software. Post monsoon data were analysed based on which an extended abstract has been submitted to the 8th Asian Regional Conference of International Commission on Irrigation and Drainage (ICID) during 2-4 May, 2018 • Potential biotic metrics have been identified for assessing the impacts of the stressors in the river ecosystems. Please refer Annex-5 for details.
Implementation challenges		<ul style="list-style-type: none"> • Due to lack of human resources (single person mostly) for processing/sorting and in identification of benthic macroinvertebrates, preparation of inventory list took longer than expected. • Biotic index exists, however, the index was developed to address the impacts of organic pollution in running water bodies. Therefore, effectiveness of the method to flow alteration may likely underrepresent the current scenarios of flow altered river stretches. Flow alteration has occurred in most stretches so might need to use values from literature for reference conditions.

Output	2.3	A desktop tool to calculate E-flows in Nepal and illustration of its application in west Nepal which will include relationships between water flows and river typologies, indicator species and assemblages, and cultural and livelihood metrics.
Indicator	2.3.1	Desktop tool produced
Indicator	2.3.2	Utility of tool in its application in Western Nepal
Annual Progress		<ul style="list-style-type: none"> • Identification of all benthic macroinvertebrates samples from all seasons nearly completed. • Potential candidate metrics have been identified for assessing the impacts of flow alteration in the river systems of Karnali and Mahakali river basins.

	<ul style="list-style-type: none"> • Till date, biotic metrics have been applied for ecological assessment of rivers that are mainly influenced by organic pollution in Nepal and has not been tested purely under hydro-morphological alteration. • Integration of results of benthic macroinvertebrates into E-flow tool and development of desktop tool will be carried out in Year-3.
Implement- ation challenges	<ul style="list-style-type: none"> • Existing biotic index provides 5 river quality classes such as High, Good, Fair, Poor and Bad. Modification of the classes into the Environmental Management Classes A to F, as defined in hydrology-based E-flows, would be challenging.

Output	2.4	Workshop(s) focused on E-flow tool, their application in Nepalese context, and appropriate institutional set-up to implement E-flow allocations in Nepal
Indicator	2.4.1	Workshop carried out successfully
Indicator	2.4.2	Institutional set-up established
Annual Progress		<ul style="list-style-type: none"> • E-flow workshop was organized on 22 August 2017. A total of 67 participants from different governmental and private organizations attended the workshops. During the workshop, researchers/representatives from IIFC international, Australian Embassy to Nepal, NWDCE, CMDN, WWF-Nepal, Kathmandu University and IWMI shared their research outputs of ongoing and past E-flow projects. After a technical session, a group discussion was carried out focusing on following three themes – 1) Expanding the Knowledge Base; 2) Putting Knowledge into Action; and 3) Challenges and Opportunities. The group discussion was followed by a panel discussion. The workshop was designed to disseminate current e-flow activities of the project and also identify concerns of stakeholders. During Q&A time, the stakeholders urged to address the social-cultural aspects while designing/developing e-flow assessment tool in Nepal. • The workshop report is available in Annex-6. • Recommendations to include social/cultural indicator for E-flows assessment was stressed by relevant stakeholders during the workshop. Although this was not in the original plan, a survey was designed to collect social/cultural information to include in the development of the E-flows calculator. Details of this study can be found in Annex-4
Implement- ation challenges		<ul style="list-style-type: none"> • Continued interactions with stakeholders to meet socio-cultural flow demands in streams/rivers of Nepal

Stakeholder involvement in delivery	<ul style="list-style-type: none"> Stakeholders represented in the workshop were from diverse sectors such as irrigation, environment and population, energy, forestry, fishery development, donors, universities, private sector etc.
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Additional indicators gathered for annual report	
Linkages	<ul style="list-style-type: none"> The outcomes together with modeling results from WP1 will potentially be linked/used for mapping of basin scenarios under WP3 and formulation of guidelines for sustainable water management under WP6.
Changes and Lessons	<ul style="list-style-type: none"> Benthic macroinvertebrates processing/ sorting and identification of the samples have been underestimated both in terms of time and skilled human resources.
Gender	<ul style="list-style-type: none"> Gender is a crucial issue in environmental flows. The aspect is incorporated in output 2.1
Sustainability	<ul style="list-style-type: none"> The main purpose of the EFs assessment is to collect data that will quantify water flow requirements in the river to maintain the rivers at ecologically acceptable levels. It aims towards sustainable utilization of resources by maintaining river health and aquatic biodiversity.
Environmental Compliance	<ul style="list-style-type: none"> This is the objective of developing the E-flow tool. The tool designed will ensure protection of river ecosystem and maintenance of ecosystem health.
Policy and Governance Support	<ul style="list-style-type: none"> Will be relevant in future stages
Local Capacity Development	<ul style="list-style-type: none"> Graduates and Undergraduate students are involved in ecological sample/data collection. Local assistants are involved in socio-cultural survey. These activities has enhanced field knowledge and familiarized them on aquatic biodiversity.
Public Private Partnerships or Global Development Alliance (GDA) partnerships and impacts	<ul style="list-style-type: none"> Not relevant at the current stage
Science, Technology and Innovation issues and impacts	<ul style="list-style-type: none"> Benthic macroinvertebrate based Environmental Flow tool will be developed for the first time in Nepal

3.3 Work Package 3: Basin Scale Development Scenarios

Intermediate Result: Increased and improved knowledge of tradeoffs in water resource development opportunities resulting from the application of hydro-economic models

Output	3.1	Database of development plans and report
Indicator	3.1.1	Database of development plans produced
Annual Progress	3.1.1	<ul style="list-style-type: none"> • We have amassed and reviewed relevant planning documents for the Mahakali and Karnali River Basins including irrigation, groundwater, and hydropower master plans; water, environmental, forestry, and irrigation national policies; project-specific documentation for some irrigation and hydropower projects; national- and district-level statistical information outlining current conditions (economic, agricultural, planning, etc.) in western Nepal; and Water Use Master Plan (WUMP) reports documenting VDC-level water resource planning. • Data taken from these documents have been used as inputs for the hydro-economic modeling database (see output 3.4.2). Please refer Annex-7 for further details. • From basin-wide survey, results on contingent valuation (CV) are analyzed and a draft report is prepared (Annex-8), which will be refined further after getting inputs from other members in the project. The paper will be submitted to an international scientific journal in June/July.
Implement-ation challenges		<ul style="list-style-type: none"> • Many of the documents reviewed are somewhat old and outdated. While still being used for planning purposes, some information from documents written in the 1990s is no longer relevant for resource management today. • Additionally, there is limited information regarding many proposed and planned hydropower and irrigation projects. Some projects have feasibility and environmental-impact reports, but this level of detail is not accessible for the majority of projects. This makes it difficult to prioritize among projects. • A final challenge is that the coverage of the WUMPs is only partial. Assumptions about VDCs not covered by these WUMPs should be discussed.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • Stakeholder interactions provided access to many of the resources discussed in the output indicators above, particularly project-specific documentation of irrigation and hydropower projects.

Output	3.2	Trend database (including constraints/limits to those trends) and report
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Indicator	3.2.1	Trend database produced
Annual Progress		<ul style="list-style-type: none"> Data on parameters needed for the hydro-economic model were collected during the entire reporting periods (with particular emphasis during May-August 2017). As part of this data collection effort, major documents outlining priorities and policies of the Government of Nepal (including master plans for irrigation and hydropower and national water policies) were read, and necessary data were extracted. Additionally, we reviewed and extracted data from Water User Master Plans (WUMPs) from RVWRMP and Helvetas to obtain a local perspective of trends and priorities in water resource use. Finally, we analyzed relevant data from the basin wide survey implemented in June-July 2017. Based on all of these data sources, we compiled a section outlining trends in water resource use and access in Western Nepal which is included in the draft of the "Visions of Development in Western Nepal: Insights for the Karnali and Mahakali River Basins" paper (Annex-9).
Implementation challenges		<ul style="list-style-type: none"> The trends are based on evaluation of documents from both national and local perspectives, but they are limited by the documents accessible. For instance, while we were able to evaluate 65 WUMP reports, they are not representative of the entire Karnali and Mahakali River Basin area. Similarly, while we obtained irrigation and hydropower planning reports commissioned by the Government of Nepal, some reports are several decades old, disallowing for thorough evaluation of current trends.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> We worked with NWCF in implementation of the basin-wide survey (used in analysis of current natural resource use, reliance, and access); we worked with RVWRMP and Helvetas to obtain the WUMP reports; and some documents (ex. planning documents for irrigation projects) were obtained from interactions with individuals at the Department of Irrigation.

Output	3.3	Scenario database
Indicator	3.3.1	Scenario database prepared with 3-4 scenarios outlined
Annual Progress		<ul style="list-style-type: none"> The development scenarios have been outlined in the report written and distributed to stakeholders based on the Trade-off Arena Workshop, during which feedback on visions for development among local and national stakeholders was elicited. The plans have also been summarized in the draft of the "Visions of Development in Western Nepal: Insights for the Karnali and Mahakali River Basins" paper (Annex-9) completed based on the review of national plans and policies, feedback from stakeholders from the Trade-off workshop, and

		<p>analysis of data collected in the basin-wide survey. These scenarios are also based on local and national priorities as outlined in planning documentation.</p> <ul style="list-style-type: none"> The next step includes using these scenarios in the hydro-economic model to evaluate water resource access trade-offs associated with different development plans. At this time, subject to discussion with the broader team and with stakeholders, we envision exploring the three planning visions discussed in the paper draft (which are consistent with ideas expressed in the first stakeholder workshop): the first based around large infrastructure; second based on smaller tributary-based infrastructure; and the third related to a conservation-focused vision.
Implement- ation challenges		<ul style="list-style-type: none"> Stakeholder input on development plans is largely based on stakeholders able to attend the Trade-off Workshop held in Kathmandu on August 1, 2017. While efforts were made to arrange for travel for local stakeholders and invite stakeholders representing many different sectors, it remains the case that interactions with stakeholders following the workshop have been limited. The next stakeholder interaction workshop is going to be planned at both the central and regional levels.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Stakeholders were involved in the Trade-off workshop, which formed the basis of our development plan database. Furthermore, stakeholders received a workshop report that included a description of the development visions compiled from the workshop. Both local and national stakeholders representing energy, forestry, irrigation, environmental services, fisheries, transportation, tourism, gender/vulnerable populations, and research were involved in this workshop.

Output	3.4	Working paper on hydro-economic modelling framework; Hydro-economic model database
Indicator	3.4.1	Working paper on framework developed
Indicator	3.4.2	Hydro-economic modeling database developed
Annual Progress		<ul style="list-style-type: none"> The working paper is completed and was shared as Annex-5 of Progress Report submitted in October, 2017. The database is completed. Additional changes may be made as hydro-economic modeling continues

Implement- ation challenges		<ul style="list-style-type: none"> • At this point, the working paper has not yet been included in IWMI's working paper series. • Some data are unavailable, so assumptions must be made for some parameters.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • This database is used in the hydro-economic model. It will be continuously updated throughout the iterative modeling process.

Output	3.5	Proceedings/Report of the workshop
Indicator	3.5.1	Workshop carried out effectively
Annual Progress		<ul style="list-style-type: none"> • The workshop took place in Kathmandu on August 1, 2017. A report on the workshop was written and distributed to stakeholders following the workshop. It was shared as Annex-4 of the Progress Report submitted in October, 2017.
Implement- ation challenges		<ul style="list-style-type: none"> • While the invitation list was quite expansive, there were many fewer women at the workshop than men, which made it challenging to distinguish visions for development based on gender. Additionally, as the workshop was in Kathmandu, stakeholders from the Mid- and Far-West regions had to travel for the workshop. While the project helped with travel arrangements and costs, this may have deterred some local participants.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • Stakeholders met in Kathmandu on August 1, 2017 for the Trade-off Arena Workshop. Stakeholders representing diverse sectors (energy, irrigation, health, education, watershed management, environment, forestry, transportation, industry, etc.) and planning perspectives (central and local interests) were in attendance. Several community leaders, user group representatives, and project or national park managers traveled from western Nepal to attend the workshop. Sessions during this one-day workshop included small group discussions of visions for development in western Nepal, a preference-ranking survey to elicit individual trade-off prioritization, and a panel to provide development planning perspectives ranging from comments from a member of the National Planning Commission, a representative from WOCAN, and an official from WECS, among others. The workshop was designed as a starting point of communication with key stakeholders which will continue as we develop the hydro-economic model.

Additional indicators gathered for annual report

Linkages	<ul style="list-style-type: none"> • WP3 has collaborated with WP1 on hydro-economic modeling as some of the inputs (hydrological) for the hydro-economic model are from the SWAT model developed by WP1. WP3 has collaborated with WP4 on implementation of the basin-wide survey and anticipates further collaboration on analyzing data from this survey. WP3 has collaborated with WP5 on gender-based analysis from the trade-off workshop and in planning the basin-wide survey..
Changes and Lessons	<ul style="list-style-type: none"> • In addition to hydro-economic modeling, WP3 has been involved in analysis from the basin-wide survey (draft of paper on contingent valuation section of survey and planned coordination of additional analysis efforts by other WPs) as well as compiling development trends and visions from a variety of data sources--national plans/policies, WUMP reports, basin-wide survey, Trade-off Workshop--into a development visions paper. Furthermore, stakeholder input is an important component of the hydro-economic modeling process, and input from the trade-off workshop helped to shape our establishment of scenarios for modeling. Finally, given the novel structure of the hydro-economic model, we have encountered some challenges in getting the coding to be consistent, but are making progress in revising it using a stepwise approach that adds complexity in a systematic fashion.
Gender	<ul style="list-style-type: none"> • Gender is an important component to include in data analysis and modeling. For example, gender was considered in analysis completed for the basin-wide survey data as well as included in the trade-off workshop reporting. Additionally, efforts were made to ensure women were represented at the trade-off workshop, although we did fall short of our goal of 30 percent female attendance. WP5 conducted additional surveys with women who were invited but could not attend the workshop to improve the representation of women in our reporting of visions and priorities.
Sustainability	<ul style="list-style-type: none"> • Sustainable development and policy-relevant research were two guiding principles in the planning for the trade-off workshop. Representatives with backgrounds in environmental conservation and sustainable development were invited to the workshop to ensure this perspective was included in the workshop discussion. Additionally, components of sustainability will be included in the development scenarios for the hydro-economic model based on from the workshop.

Environmental Compliance	<ul style="list-style-type: none"> • The environmental module of the hydro-economic model incorporates environmental services and other environmental components into the optimization problem. Additionally, as stakeholder emphasized environmental priorities, we will model a scenario with limited development to analyze the resource allocation associated with an environmentally-focused development vision.
Policy and Governance Support	<ul style="list-style-type: none"> • The development of the databases of hydro-economic model inputs was completed in a way to prioritize modeling scenarios that will be applicable and informative for central and local policy makers. Communications with relevant government offices have provided data necessary for the hydro-economic model. Such communications will continue to shape the design of the development pathways in the hydro-economic model, which will assist with the government stakeholders taking ownership of the process and results. Support back to government and policy will be provided from the hydro-economic model and water information systems as analyses are completed throughout the project. By itself, the process of discussing options and development plans provides policy support through dialog on the issues.
Local Capacity Development	<ul style="list-style-type: none"> • Local representatives attended the trade-off workshop. They will also be included in stakeholder interactions moving forward to ensure local interests are represented in the hydro-economic model. WP3 was also involved in enumerator training for the basin-wide survey during this reporting period; local enumerators were hired to complete the fieldwork for the survey. Focus group discussions were also conducted during this reporting period to include additional local perspectives into our research process.
Public Private Partnerships or Global Development Alliance (GDA) partnerships and impacts	<ul style="list-style-type: none"> • The scenarios results from the hydro-economic model will be of interest to the private hydropower developers
Science, Technology and Innovation issues and impacts	<ul style="list-style-type: none"> • The hydro-economic model presents opportunity for innovation and advancement of tools for scientific evidence-based options analysis. This model will be tested and verified once data collection has been completed. Water Information Systems apply technology to fill information gaps that restrain

	decision making. By making information more visible and transparent, knowledge and capacity is built around sustainable resource planning.
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3.4 Work Package 4: Watershed / Village Water Governance and Management

Intermediate Result: Local communities in the project study area adopt practical technologies and land/water management approaches that improve water productivity, protect ecosystems and achieve more equitable water governance, which enable them to cope with and adapt to future climatic and socioeconomic pressures.

Output	4.1	Comprehensive report on the facilitating as well as constraining factors on access/use
Indicator	4.1.1	Report on the biophysical, social and cultural challenges to water access within the study sites
Annual Progress		<ul style="list-style-type: none"> • A report titled “Water availability and access mapping for irrigation in the proposed local intervention sites”, that features most of the aspects of water availability and access/use, was prepared in May, 2017. It was included as an Annex in the report submitted in October, 2018 • A paper focusing on facilitating as well as constraining factors on water access/use is underway. The latest draft is inserted as Annex-10.
Implementation challenges		<ul style="list-style-type: none"> • Need more interviews of local stakeholders and we are expecting their cooperation in this regard
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • Local stakeholders in the western Nepal

Output	4.2	A report on political economy analysis at local level
Indicator	4.2.1	Report produced
Annual Progress		<ul style="list-style-type: none"> • Draft report was prepared in March, 2018. It will be refined further in Year-3 with additional inputs. The draft is available in Annex-11.
Implementation challenges		<ul style="list-style-type: none"> • None

Stakeholder involvement in delivery		<ul style="list-style-type: none"> Following 12 persons were interviewed from the three pilot sites: Krishna Bahadur (Social Mobilizer, Dol, Kailali); Ram Govinda Arya (DYSCO, Kailali); Sundar Devi Chaudhari (Vice chairperson DCC, Kailali); Surya Bahadur Thapa (Chairperson DDC, Kailali); Chaya Devkota (Deputy Mayor, Bhajani NP, Kailali); Sanu Maya Limbu (Assistant WDO, Womens Development Office, Doti); Bishnu Raj Joshi (Dy. Executive officer, Dipayal NP); Shiv Raj Khadka (Dy. Mayor, Dipayal NP); Ek Giraj Batta (Admin, Irrigation Development Division, Doti); Badri Kumar Karki (District Forest Officer, Doti); Damodar Ayer (DYSCO, Doti); and Tapendra Shah (DADO, Doti)
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Output	4.3	A status report on right systems within a wider context of agrarian structure
Indicator	4.3.1	Report assessing the different right systems in relation to decision-making system/process in WR management.
Annual Progress		<ul style="list-style-type: none"> This is still pending due to delay in receiving disaggregated data from NWCF, the partner of this project. It will be prepared, refined and finalized in Year-3, most likely within May, 2018.
Implementation challenges		<ul style="list-style-type: none"> It took quite some time for disaggregated data, which delayed the report
Stakeholder involvement in delivery		<ul style="list-style-type: none"> The socio-economic survey of the pilot intervention sites (3 sites) collected response from 644 households (HHs)/respondents. They included 220 HHs in Kuti (Kailali), 245 in Melekh (Doti) and 179 in Punebata (Doti)

Output	4.4	A report with mapping of existing institutional (formal/informal) arrangements and their power relationship at different scales
Indicator	4.4.1	Comprehensive assessment of (water) governance structure and processes at local government level
Annual Progress		<ul style="list-style-type: none"> These aspects are included in the Output 4.3. However, to align it in-line with national-level analysis, additional information is required, which will be collected in Year-3, and the report will be updated.
Implementation challenges		<ul style="list-style-type: none"> None

Stakeholder involvement in delivery		<ul style="list-style-type: none"> Planning to meet at least 2 representatives from major political parties – Nepali Congress, UML, CPN, RJP, Bibeksheel Sajha Party in May 2018. At local level, planning to meet local community members in Rakam Karnali, Dailekh
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Output	4.5	A summary report detailing those dialogues and variation in understanding of different stakeholders of the different values, farming and trade-offs related to WR development and subsequent impacts on ecosystem and their livelihoods
Indicator	4.5.1	Report to include details of dialogues at the district and sub-basin level on community radios
Annual Progress		<ul style="list-style-type: none"> The planned radio dialogue together with PANI, and facilitated by NFEJ, was delayed. It's now scheduled in the last week of April. The report will be prepared in Year-3.
Implementation challenges		<ul style="list-style-type: none"> Delay due to conflicting schedule of other collaborators (PANI, NFEJ)

Output	4.6	Situation analysis/baseline report of three case study villages
Indicator	4.6.1	Report of baseline in three target villages produced
Annual Progress		<ul style="list-style-type: none"> The situation analysis/baseline report of the three case-study sites was completed and inserted as an Annex in the October 2017 report.
Implementation challenges		<ul style="list-style-type: none"> None
Stakeholder involvement in delivery		<ul style="list-style-type: none"> The socio-economic survey of the pilot intervention sites (3 sites) collected response from 644 households (HHs)/respondents. They included 220 HHs in Kuti (Kailali), 245 in Melekh (Doti) and 179 in Punebata (Doti)

Output	4.7	Feasibility analysis report of identified interventions for improving water productivity
Indicator	4.7.1	Report of feasibility analysis of existing water sources for maximizing water availability produced
Indicator	4.7.2	Report of feasibility analysis of various form of distribution system to minimize loss produced
Annual Progress		<ul style="list-style-type: none"> Finalization of interventions in three sites based on physical, social, and economic feasibility. Potential ponds identified in Mellekh and Punebata to be repaired for the community.

		<p>Introduction of solar pumps in Kuti as a low cost, efficient technology. Introduction of collective farming approaches to share resources and minimize costs to benefit overall community.</p> <ul style="list-style-type: none"> • The final report on identified interventions, and their justification is available as Annex-12 of this report.
Implement- ation challenges		<ul style="list-style-type: none"> • High level of community expectations regarding the potential interventions to be piloted in the sites.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • Meetings with local farmers to identify ponds and location of pumps. Meeting with service providers, traders to purchase equipment.

Output	4.8	Evaluation report with a clear model of improved land/water governance for upscaling and its dissemination
Indicator	4.8.1	Evaluation report produced
Annual Progress		<ul style="list-style-type: none"> • Intervention package prepared based on the initial situation analysis conduct in all three pilot sites--Mellekh, Punebata, Kuti. The intervention package was designed keeping both the sociocultural feasibility with physical feasibility in mind. Feedback from WP5 was also incorporated in the package. • A construction manual (Annex-13) is also prepared to guide construction activities • Five farmers group established in all three sites followed by farmers training and seed distribution. • Establishment of three research plots in Punebata (one) and Kuti (two) to perform comparative assessment of water productivity using different irrigation techniques • Regular monitoring of bio-physical and socio-economic-intuitional aspects of interventions • Collection of weather data • Evaluation report will be prepared in Year-3 after nearly one year of monitoring.
Implement- ation challenges		<ul style="list-style-type: none"> • Farmers are willing to participate in the application of new technology and will be able to take ownership of the project

Stakeholder involvement in delivery	<ul style="list-style-type: none"> • Meetings held with local level leaders to inform of our project objectives. Meetings held with government officials from Agriculture and DHM to explore synergies and linkages in pilot sites
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Additional indicators gathered for annual report	
Linkages	<ul style="list-style-type: none"> • Linkages with WP5 to ensure community engagement of interventions is gender and socially inclusive
Changes and Lessons	<ul style="list-style-type: none"> • No major changes. Continued engagement with local elected members. Potential to explore linkages with Department of Hydrology and Meteorology (DHM) to handovers weather instruments placed in three sites
Gender	<ul style="list-style-type: none"> • Farmers group comprise of both female and male farmers who expressed interest in joining and practicing collective farming approach. Coordination with WP5 will continue to monitor inclusive access to ponds and pumps provided by the project.
Sustainability	<ul style="list-style-type: none"> • Interventions just started, the community engagement and ownership of our interventions will be key to the sustainability of the pond and pumps provided.
Environmental Compliance	<ul style="list-style-type: none"> • No issues so far.
Policy and Governance Support	<ul style="list-style-type: none"> • Communicating with local government agencies as well as other NGOs working in water sector in the area to provide insight and share lessons learned.
Local Capacity Development	<ul style="list-style-type: none"> • Local field assistant employed in each site is currently involved in the intervention process in the pilot sites. They have been oriented to measure, collect and record temperature, rainfall, humidity and evapotranspiration data.
Public Private Partnerships or Global Development Alliance (GDA) partnerships and impacts	<ul style="list-style-type: none"> • N/A
Science, Technology and Innovation issues and impacts	<ul style="list-style-type: none"> • Interventions just started. The monitoring work during Year 3 will provide further insights.

3.5 Work Package 5: Gender

Intermediate Result: Greater awareness and capacity of key stakeholders in the water sector to consider and address unequal capabilities to benefit from and influence to water resources planning and management across gender, caste, class and ethnicity at local and basin levels.

Output	5.1	In basin-level report of political economy analysis in WP1: Elucidate gender/caste/ethnicity differences in perceptions of WR development and access to resources of stakeholders
Indicator	5.1.1	Political economy analysis report
Annual Progress		<ul style="list-style-type: none"> • Draft report prepared in February, 2018 (Annex-11)
Implement-ation challenges		<ul style="list-style-type: none"> • The collected sample (number of female respondents) too small to elucidate gender differences in perceptions. • In respect to the preference ranking survey, given the dominance of men in general, and in senior positions in particular, in the water sector, it was challenging to find suitable respondents with similar age, education and position so that we can compare the perceptions of men and women stakeholders with similar backgrounds. • The preference ranking survey was complex and lengthy. It was a challenge to convince the respondents to fill it.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • 27 additional female water stakeholders were identified and were requested to participate in the preference ranking survey. • 11 female water stakeholders of different caste, age and positions filled the survey form.

Output	5.2	In policy and institutional analysis report of WP1: Gendered characteristics (including implications for women, men and caste) of water governance decision-making structures and processes focused on the intersection of land-water-energy
Indicator	5.2.1	Policy and institutional analysis report
Annual Progress		<ul style="list-style-type: none"> • A report titled “Gendered characteristics of water governance decision-making structures and processes” is prepared in January, 2018. (Annex-15)
Implement-ation challenges		-

Stakeholder involvement in delivery		<ul style="list-style-type: none"> Male and female stakeholders working in the water sector from different layers of decision making were interviewed. WP5 also conducted joint interviews with WP1 with high level water stakeholders. Altogether 31 men and women respondents were interviewed.
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Output	5.3	Policy recommendations to address identified gaps in current policy and institutional set up in terms of gender issues such as male out-migration and feminization of agriculture, etc.
Indicator	5.3.1	A set of policy recommendations
Annual Progress		<ul style="list-style-type: none"> The policy recommendations are included in the political analysis report (draft) prepared in February, 2018 (Annex-11)
Implementation challenges		<ul style="list-style-type: none"> Opportunities - Nepali version of the policy brief could help in wider outreach.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Interviews with stakeholders (men and women) at different decision making levels; Interviews with farmers in three pilot areas.

Output	5.4	In workshop dialogues and radio program in WP4, specific sessions on gender will be included
Indicator	5.4.1	Workshop/Activity report(s)
Annual Progress		<ul style="list-style-type: none"> There is no progress to report as of now as the dialogue is planned for April, 2018
Implementation challenges		<ul style="list-style-type: none"> Challenge - No budget to conduct radio dialogue. Risks - Venue and low budget could limit participation of farmers from the pilot sites. Opportunities - Collaboration with PANI to organize dialogue on gender and water issues.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> The dialogues will gather mostly farmers, representatives of civil society organizations, line agencies and elected government officials ensuring inclusion of individuals of different age, gender, caste and ethnicity.

Output	5.5	Increased participation (at least 30%) of women in the multi-stakeholder participatory process for exploring WR development pathways and trade-offs
Indicator	5.5.1	Number of female participants in activities/events

Annual Progress		<ul style="list-style-type: none"> Relevant female stakeholders were identified by our team and invited to every relevant project workshop in coordination with the concerned work packages. In trade-off workshop, 30 women were invited. Only 8 could make it to the workshop.
Implementation challenges		<ul style="list-style-type: none"> Given the dominance of men in general, and in senior positions in particular, it is a challenge to find women stakeholders in the water sector to ensure equal participation.
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Female stakeholders working in different layers of decision-making in the water sector (I/N/GOs) were invited in the workshop/ and were requested to participate in the tradeoff survey

Output	5.6	Dialogues on masculinities in the water sector organized in Kathmandu
Indicator	5.6.1	Documentation of dialogue
Annual Progress		<ul style="list-style-type: none"> The dialogue is planned for Year-3 (Apr 2018 – Mar 2019)
Implementation challenges		-
Stakeholder involvement in delivery		-

Output	5.7	In a comprehensive report on facilitating as well as constraining factors on access/use of different water resources within the community in WP4: Implications of current gender and caste relationships on access and use of different water resources are assessed
Indicator	5.7.1	Report produced
Annual Progress		<ul style="list-style-type: none"> Fieldwork was completed in May 2017, data analysis in August 2017. Draft report was reviewed by WP leader and was finalized in December 2017.
Implementation challenges		<ul style="list-style-type: none"> Covering all three field sites, which are large and diverse communities, relatively spread out was a big challenge.

Stakeholder involvement in delivery	<ul style="list-style-type: none"> The report was based on in-depth interviews, key informant interviews and focus group discussions with 54 male and 107 female farmers of different age and from different caste across the three pilot sites.
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Additional Indicators gathered for annual report	
Linkages	<ul style="list-style-type: none"> WP5 provided inputs for WP1: on FGD checklist, conducted FGDs and contributed inputs to the large basin wide survey questionnaire, including the ecosystem valuation. WP5 helped WP2 to develop social e-flow survey questionnaire, FGD and KII guidelines, conducted survey, FGD and KII in three districts, collected 137 responses. WP5 contributed to identify relevant stakeholders (notably women) to participate in the scenario visioning. WP5 conducted additional surveys with women to improve the representation of women in WP3 reporting of visions and priorities. WP5 provided inputs to WP4 to assess potential interventions from a social and gender equity perspective. WP5 also contributed in WP4 report on agrarian structure.
Changes and Lessons	
Gender	<ul style="list-style-type: none"> WP5 is all about gender
Sustainability	<ul style="list-style-type: none"> Nothing to report specifically on this as WP5 consists of supporting other WPs with ensuring GESI and primary data collection that does not affect the sustainability of the studied social ecological systems.
Environmental Compliance	
Policy and Governance Support	<ul style="list-style-type: none"> Several outputs (5.8, 5.3) will contribute to support policy and governance by providing policy recommendations.

Local Capacity Development	<ul style="list-style-type: none"> The organization of dialogues in districts will contribute to increased local capacity development in terms of greater awareness of gendered roles and responsibilities and of gender as a social construct.
Public Private Partnerships or Global Development Alliance (GDA) partnerships and impacts	
Science, Technology and Innovation issues and impacts	<ul style="list-style-type: none"> Social and cultural issues will be for the first time incorporated in IWMI's global E-flows calculator

3.6 Work Package 6: Integrated Policy and Practice Guidelines

Intermediate Result: Improve the knowledgebase to develop integrated policy and management guidelines. This project's results/findings will be inputs to the integrated policy and practice guidelines that PANI project is developing.

3.7 Work Package 7: Knowledge Management and Dissemination

KCAP survey report was finalized. Website (<http://djb.iwmi.org/>) is being updated regularly. Presentations at various platforms are performed and publications of articles in national newspapers and/or blogs are carried out

3.7.1 Publications

Here is a list of publications related to DJB work in year-2.

Clement F., Corey O.H. (2018). It's A Rocky Road To Power For Rural Women. NPR, Goats and Soda, 8TH March, 2018. Available online at: www.npr.org/sections/goatsandsoda/2018/03/08/591658610/its-a-rocky-road-to-power-for-rural-women.

Clement F. Shrestha G., Drown P. (2018). Gender in water policies and institutions in Nepal: Policy Recommendations on Gender for Nepal's water Sector. Policy Brief. IWMI [Under Publication Process]

Dhaubanjhar S., Drown P, Bharati L. (2018). Over and under the pond? The Kathmandu Post, 23RD March, 2018. Available online at: <http://kathmandupost.ekantipur.com/news/2018-03-23/over-and-under-the-pond.html>

- Dhaubanjhar S., Drown P, Karki E. (2017). What's a river worth? The Kathmandu Post, 15TH December, 2017. Available online at: <http://kathmandupost.ekantipur.com/printedition/news/2017-12-15/whats-a-river-worth.html>
- Dhaubanjhar S., Pandey V.P., Bharati L. (2018). Representative Climates Futures for Water Resources Management in Western Nepal based on CORDEX-South Asia Regional Climate Models (Under Preparation, expected to be submitted in June, 2018)
- McCartney M., Dickens C., Bharati L., Nicol A. (2018). Water Crises are hitting our economies: Time to hit back with natural infrastructure. Thomas Reuters Foundation News. 21ST February 2018. Available online at: <https://news.trust.org/item/20180221150159-vjq6b>
- Pakhtigian E.L., Jeuland M. (2018). Valuing Environmental Quality: Evidence from Western Nepal. (Under Preparation).
- Pakhtigian E.L., Jeuland M., and Others (2018). Visions of Development in Western Nepal: Insights for the Karnali and Mahakali River Basins. (Under Preparation)
- Pandey V.P., Dhaubanjhar S., Bharati L., Thapa B.R. (2018). Hydrological response of Chamelia watershed in Mahakali Basin to Climate Change. Science of the Total Environment (Under Review).
- Pandey V.P., Dhaubanjhar S., Thapa B.R., Bharati L. (2018). Climate change impacts on water availability in Karnali-Mohana Basin (Under Preparation, expected to be submitted in Science of the Total Environment in June, 2018)
- Paul L.G. Vlek, Asia Khamzina, Hossein Azadi, Anik Bhaduri, Luna Bharati, Ademola Braimoh, Christopher Martius, Terry Sunderland and Fatemeh Taheri (2017). Trade-offs in multi-purpose land use under land degradation. Sustainability 9 (12), 2196
- Shrestha G. (2018). Should we still focus on woman farmers? The Kathmandu Post, 16TH March, 2018. Available online at: <http://kathmandupost.ekantipur.com/news/2018-03-16/should-we-still-focus-on-woman-farmers.html>
- Shrestha G., Clement F. (2018). Unravelling gendered practices in Nepal water bureaucracies. (Under preparation for submission in a suitable journal in May, 2018).
- Shrestha G. Clement F., Drown P. (2018). Unacknowledged Irrigations. The Kathmandu Post, 8TH February, 2018. Available online at: <http://kathmandupost.ekantipur.com/news/2018-02-08/unacknowledged-irrigators.html>
- Suhardiman D. (2017). River basin planning: An imaginary bureaucratic territory. Blog. Sustainable Water Future Programme (<http://water-future.org/blog/river-basin-planning/>).
- Suhardiman D., Bastakoti R., Karki E., Bharati, L. (2018). The politics of river basin planning and state transformation processes in Nepal, Geo Forum Journal (under re-review)
- Suhardiman D., Bastakoti R., Karki E. (2018). Putting power and politics in Nepal's water governance analysis (under preparation for submission to Natural Resources Forum in August 2018)

3.7.2 Dissemination

A summary of dissemination of DJB activities/results through presentation as well as participation in various meetings are listed below:

SN	Event	Date (Venue)	Presentation Title	Presenters/Attendee
1	National Seminar on Nature for Water organized by Nepal Academy for Science and Technology (NAST) as an event of NNWWW 2018	Mar 28, 2018 (Mahendra Nagar, Nepal)	Climate change and water availability in Western Nepal	Vishnu Prasad Pandey
2	The 8 TH World Water Forum organized by the World Water Council (WWC)	Mar 18-23, 2018 (Brasilia, Brazil)	Participated as a speaker and panelist in several sessions	Luna Bharati
3	World Water Day celebration, Resources Himalaya Foundation, Nepal	Mar 22, 2018	E-Flow in DJB	Ram Devi Tachamo Shah, (as a panelist)
4	SDG Confab: Synergizing efforts towards achieving SDGs, as an event of Nepal National Water and Weather Week (NNWWW), 2018	Mar 21, 2018 (Hotel Himalaya, Kathmandu, Nepal)	Research to support informed decision-making	Vishnu Prasad Pandey (as a panelist)
5	Celebrating March as International women's month organized by Martin Chautari	March 11, 2018 (Martin Chautari Kathmandu, Nepal)	Panel speaker in the panel titled "Doing gender: what does a gender and/or feminist perspective mean in research and advocacy?"	Gitta Shrestha

6	WRPPF Consultation Workshop for collecting feedback on Irrigation Master Plan (organized by Department of Irrigation)	Feb 2, 2018 (Hotel Himalaya, Kathmandu, Nepal)	The irrigation master plan has used results from our Hydrological Models	Vishnu Prasad Pandey, Bhesh Raj Thapa
7	2017 American Geophysics Union (AGU) Fall Meeting	Dec 11-15 (New Orleans, USA)	Climate change and hydrology of a snow-fed watershed in Western Nepal	Vishnu Prasad Pandey
8	Side event session titled “ <i>It’s getting hot in here: Biodiversity and ecosystems in climate change</i> ” during COP 23	Nov, 2017 (Bonn, Germany)	Ecosystem Based Adaptation in Mountain Eco regions.	Luna Bharati
9	Sanford School of Public Policy Graduate Research Workshop (GRW)	Nov 3, 2017 (Duke University, Durham, NC USA)	Valuing Environmental Quality: Evidence from Western Nepal	Emily Pakhtigian
10	i) Kurita Water and Environment Foundation: 20 TH Anniversary Commemorative Ceremony; ii) Guest lecture for researchers and students at University of Yamanashi, Japan	Aug 2017 (Tokyo, Japan)	Multi-perspective analysis of river basins in Western Nepal (Digo Jal Bikas Project)	Vishnu Prasad Pandey
11	National Irrigation Seminar 2074 “Climate Smart Innovation for the Sustainable Irrigation Development”	Jun 1-2, 2017 (Hotel Country Villa, Nagarkot, Nepal)	Sustainable irrigation development: Knowledge generation for Karnali-Mohana basins	Vishnu Prasad Pandey

3.7.3 Project Organized Workshops/Meetings

During the second year (Apr 2017 – Mar 2018) of the project, Digo Jal Bikas (DJB) project organized following two workshops with the aim of disseminating progress as well as collecting stakeholders' feedback to make the project outputs useful to the stakeholder.

A) Trade-off Arena Workshop: Hydro-economic model of the DJB area will focus on trade-offs of water resource allocation, taking a multi-sectoral approach to evaluating potential development scenarios in the basins. DJB compiled the development scenarios for hydro-economic modeling taking into account the development options and priorities as specified by stakeholders and planning documents. The trade-off arena workshop was then held on 1st August 2017 as an effort to bring together stakeholders representing a variety of relevant sectors from both central and local planning perspectives to facilitate discussion on the priorities, visions, and trade-offs of water resources management in the Karnali and Mahakali river basins. Nearly 50 stakeholders representing diverse sectors and planning perspectives attended the workshop. The workshop report was submitted as Annex-2 of the progress report submitted to USAID in October, 2017.

B.) E-flows Workshop: A workshop on “Healthy rivers for sustainable economic development in Nepal”, with specific focus on environmental flows (E-flows) was organized on 22 August 2017 at Hotel Yak and Yeti. The workshop was organized together with USAID PANI Program, IFC, and Australian Aid. The workshop was focused on capacity building of stakeholders on E-flows. Over 60 participants from government agencies, academia, NGOs, INGOs, and donor organizations attended the workshop. The workshop report was submitted as Annex-4 of the progress report submitted to USAID in October, 2017.

3.7.4 Contribution in Organizing Asian Regional Conference of ICID (Co-organized by USAID)

The 8TH Asian Regional Conference of International Commission on Irrigation and Drainage (ICID) is scheduled to convene in Kathmandu during May 2-4, 2018. Nepal National Committee of ICID (NENCID) and Department of Irrigation (Government of Nepal) are organizing this event together with USAID as co-organizer. IWMI, particularly, those engaged in DJB, such as Luna Bharati, Vishnu

Prasad Pandey, and Ram C Bastakoti are contributing to the conference as member of the Technical Advisory Committee (TAC).

Luna Bharati was involved in organizing a plenary symposium, together with colleagues from ICIMOD. The symposium is titled “Sustainable Irrigation” and will cover uncertainty and future risks as well as innovative solutions for irrigation development in Asia.

Vishnu Prasad Pandey has provided significant technical contributions on behalf of DJB project (funded by USAID) for drafting the Call for Papers; Designing format of abstracts and full papers; Reviewing abstracts/full papers; and supervising the process of developing proceedings and technical program of the conference. The Asian Regional Conference is expected to be participated by more than 500 participants.

The following seven (7) papers related to Digo Jal Bikas (DJB) project will be presented in the conference.

SN	Title	Presenter	Date/Time
1	Dealing with variations in access to water: An assessment of challenges and coping strategies in Far-western Nepal	Ram C. Bastakoti	2 nd May/ 13:30-13:45
2	Gender differences in water security and capabilities in Far-West Nepal	Gitta Shrestha	2 nd May/ 16:30-16:45
3	Digo Jal Bikas	Luna Bharati	2 nd May/ 15:30-15:45
4	Projected future climate for Western Nepal	Sanita Dhaubanjari	2 nd May/ 15:45-16:00
5	Assessing spatio-temporal variation in water resources availability in Karnali-Mohana River Basin, Nepal	Vishnu Pd. Pandey	2 nd May/ 16:15-16:30
6	Comparative assessment of various water application methods for dry season agriculture in the Eastern Gangetic Plain	Bhesh Raj Thapa	3 rd May/ 10:00-10:15
7	Application of biotic metrics in aquatic ecosystem: Implications to river health assessment for sustainable water resource management in Western Nepal	Ram Devi Tachamo	3 rd May/Morning Session

3.8 Work Package 8: Project Management

Output	8.1	Annual work plan (Year-2)
Indicator	8.1.1	Donor reports submitted and approved
Annual Progress		<ul style="list-style-type: none"> The year-2 work plan was submitted to USAID on 27TH April 2017. The revised/final report after incorporating USAID's feedback was submitted on 12TH May, 2017.
Implement-ation challenges		<ul style="list-style-type: none"> Not applicable
Stakeholder involvement in delivery		<ul style="list-style-type: none"> Not applicable

Output	8.2	Updated document on performance monitoring & evaluation (M&E) plan
Indicator	8.2.1	Online googledocs with M&E plan
Annual Progress		<ul style="list-style-type: none"> For systematic monitoring of performance of outputs, a googledocs with access to relevant people in the project, was prepared (https://docs.google.com/spreadsheets/d/1zQ3kW57Td5UGbUh7RX6q8kA9JdQIPwrL5w_-lEnnHs0/edit#gid=733809508) All WP leaders/representatives used the google doc to update their progress, every six-months
Implement-ation challenges		<ul style="list-style-type: none"> Regular follow-up is required with WP leaders/representatives
Stakeholder involvement in delivery		<ul style="list-style-type: none"> N/A

Output	8.3/ 8.4	Semi-Annual progress report and financial report
Indicator	8.3.1	Donor reports submitted and approved
Annual Progress		<ul style="list-style-type: none"> The semi-annual progress report and financial report was submitted to USAID on 6TH October, 2017.

		<ul style="list-style-type: none"> • The report had 9 annexes to provide adequate details on the progress
Implement- ation challenges		<ul style="list-style-type: none"> • There was delay in submitting some financial reports as we had to wait for information from our headquarters in Sri Lanka
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • N/A

Output	8.5	Annual progress report
Indicator	8.5.1	Donor reports submitted and approved
Annual Progress		<ul style="list-style-type: none"> • The first year's annual progress report (Apr 2016 – Mar 2017) was submitted to USAID on 1st May, 2017. It had 8 annexes • The year-2 annual progress report is this document
Implement- ation challenges		<ul style="list-style-type: none"> • None
Stakeholder involvement in delivery		<ul style="list-style-type: none"> • N/A

3.8.1. Regular Project Meetings

We have conducted regular monthly meeting to review progress and device strategies. Since the project staffs are spread over various countries, some join the meeting in-person at IWMI-Nepal Office and some join via Skype. Here are details on the last year's regular project meetings. Minutes/Discussion notes of each minutes are also available as an evidence.

Date	Attendee
April 6, 2017	<ul style="list-style-type: none"> • Andrew Reckers (IWMI – Nepal) • David A. Wiberg (WP3, IWMI – Headquarter) [on Skype] • Emily Pakhtigian (WP3, Duke University, USA) [on Skype] • Emma Karki (WP1-4, IWMI-Nepal) • Farah Ahmed (WP7, IWMI – India) [on Skype] • Floriane Clement (WP5, IWMI-Nepal)

	<ul style="list-style-type: none"> • Gitta Shrestha (WP5, IWMI – Nepal) • Carolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Nishadi Eriyagama (WP2, IWMI – Headquarter)[on Skype] • Om Acharya (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Ram Devi Tachamo (WP2, Kathmandu University) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Subodh Sharma (WP2, Kathmandu University) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
May 17, 2017	<ul style="list-style-type: none"> • Andrew Reckers (IWMI – Nepal) • David A. Wiberg (WP3, IWMI – Headquarter) [on Skype] • David Rider Smith (WP7, IWMI – Headquarter) [on Skype] • Emily Pakhtigian (WP3, Duke University, USA) • Emma Karki (WP1-4, IWMI-Nepal) • Farah Ahmed (WP7, IWMI – India) [on Skype] • Floriane Clement (WP5, IWMI-Nepal) • Carolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Om Acharya (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Romulus Okwany (WP4, IWMI – Nepal) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Shanker Khagi (USAID) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
June 7, 2017	<ul style="list-style-type: none"> • Andrew Reckers (IWMI – Nepal) • David Rider Smith (WP7, IWMI – Headquarter) [on Skype] • David A. Wiberg (WP3, IWMI – Headquarter) [on Skype] • Diana Suhardiman (WP1/WP4, IWMI – Laos) [on Skype] • Farah Ahmed (WP7, IWMI – India) [on Skype] • Nisha Tripathi (IWMI-Nepal) • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Ram Devi Tachamo (WP2, Kathmandu University) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
July 5, 2017	<ul style="list-style-type: none"> • Emily Pakhtigian (WP3, Duke University, USA) • Emma Karki (WP1-4, IWMI-Nepal) • Floriane Clement (WP5, IWMI-Nepal) [on Skype] • Gitta Shrestha (WP5, IWMI – Nepal) • Carolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Nisha Tripathi (IWMI – Nepal) • Om Acharya (IWMI – Nepal)

	<ul style="list-style-type: none"> • Patrick Drown (IWMI – Nepal) • Ram Devi Tachamo (WP2, Kathmandu University) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) [on Skype] • Shanker Khagi (USAID) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
<p>August 17, 2017</p> <p>[Face-to-Face session @ IWMI-Nepal Office)</p>	<p>From IWMI:</p> <ul style="list-style-type: none"> • David A. Wiberg (WP3, IWMI – Headquarter) • Diana Suhardiman (WP1/WP4, IWMI – Laos) • Emma Karki (WP1-4, IWMI-Nepal) • Farah Ahmed (WP7, IWMI – India) • Floriane Clement (WP5, IWMI-Nepal) • Gitta Shrestha (WP5, IWMI – Nepal) • Luna Bharati (Project Leader, IWMI-Nepal) • Nishadi Eriyagama (WP2, IWMI – Headquarter) • Om Acharya (IWMI – Nepal) • Patrick Drown (WP7, IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal) <p>From Partner Institutions</p> <ul style="list-style-type: none"> • Dipak Gyawali (WP1-WP5, Nepal Water Conservation Foundation) • Emily Pakhtigian (WP3, Duke University) - Skype • Indu Joshi (WP4, Nepal Water Conservation Foundation) • Karolyn Upham (USAID) • Marc Jeuland (WP2, Duke University) - Skype • Ram Devi Tamacho (WP2, Kathmandu University)
<p>October 18, 2017</p>	<ul style="list-style-type: none"> • Akriti Sharma (IWMI – Nepal) • Bhesh Raj Thapa (IWMI – Nepal) • Diana Suhardiman (WP1/WP4, IWMI – Laos) [on Skype] • Dipak Gyawali • Emma Karki (WP1-4, IWMI-Nepal) [on Skype] • Gitta Shrestha (WP5, IWMI – Nepal) • Govinda Pokhrel [NWCF] • Karolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Marc Jeuland (WP2, Duke University, USA) [on Skype] • Patrick Drown (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal) • Emily Pakhtigian (WP3, Duke University, USA) [on Skype]
<p>November 10, 2017</p>	<ul style="list-style-type: none"> • Bhesh Raj Thapa (WP4, IWMI – Nepal) • David Rider Smith (WP7, IWMI – Headquarter) [on Skype] • David A. Wiberg (WP3, IWMI – Headquarter) [on Skype] • Emily Pakhtigian (WP3, Duke University - USA) [on Skype]

	<ul style="list-style-type: none"> • Emma Karki (WP1-4, IWMI-Nepal) • Farah Ahmed (WP7, IWMI – India) [on Skype] • Gitta Shrestha (WP5, IWMI – Nepal) • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Patrick Drown (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Ram Devi Tamacho (WP2, KU - Nepal) [on Skype] • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
December 6, 2017	<ul style="list-style-type: none"> • Akriti Sharma (IWMI – Nepal) • David A. Wiberg (WP3, IWMI – Headquarter) [on Skype] • Emma Karki (WP1-4, IWMI-Nepal) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Om Acharya (IWMI – Nepal) • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Patrick Drown (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Ram Devi Tachamo (Kathmandu University) [on Skype] • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal) • Emily Pakhtigian (WP3, Duke University, USA) [on Skype]
January 12, 2018	<ul style="list-style-type: none"> • Bhesh Raj Thapa (IWMI – Nepal) • Emma Karki (WP1-4, IWMI-Nepal) • Farah Ahmed (WP7, IWMI – India) [on Skype] • Floriane Clement (WP5, IWMI-Nepal) • Karolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Om Acharya (IWMI – Nepal) • Patrick Drown (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Ram Devi (Kathmandu University) [on Skype] • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal) • Emily Pakhtigian (WP3, Duke University, USA) [on Skype]
February 7, 2018	<ul style="list-style-type: none"> • Bhesh Raj Thapa (IWMI – Nepal) • Emily Pakhtigian (WP3, Duke University, USA) [on Skype] • Karolyn Upham (USAID) • Luna Bharati (Project Leader, IWMI-Nepal) [on Skype] • Nishadi Eriyagama (WP2, IWMI – Headquarter) [on Skype] • Netra Narayan Sharma (USAID) • Om Acharya (IWMI – Nepal) • Patrick Drown (IWMI – Nepal) • Ram Bastakoti (WP1/WP4, IWMI – Nepal) • Ram Devi (Kathmandu University) [on Skype] • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)

February 28, 2018; & March 1, 2018	<ul style="list-style-type: none"> • Alan Nicol (IWMI – Nepal) • Bhesh Raj Thapa (IWMI – Nepal) • Diana Suhardiman (WP1/WP4, IWMI – Laos) • Emma Karki (WP1-4, IWMI – Nepal) • Floriane Clement (WP5, IWMI – Nepal) • Gitta Shrestha (WP5, IWMI – Nepal) • Luna Bharati (Project Leader, IWMI – Nepal) • Nishadhi Eriyagama (IWMI – Sri Lanka) • Sanita Dhaubanjari (WP1/WP3, IWMI – Nepal) • Vishnu Prasad Pandey (Project Coordinator, IWMI – Nepal)
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3.8.2 Participation in USAID-Organized Meetings

Following table provide a list of USAID-organized meetings in which IWMI participated.

1	USAID SEED Partner's meeting	Apr 18, 2017 Hotel Radisson, Kathmandu	-	Vishnu Prasad Pandey; Emma Karki; Sanita Dhaubanjari
2	USAID E&E Partners Meeting	Apr 19, 2017 PANI Office, Baluwatar	Updates on Digo Jal Bikas Project	Vishnu Prasad Pandey
3	USAID's Tidy Data Workshop	May 30-31, 2017 USAID Office, Kathmandu	-	Sanita Dhaubanjari
4	USAID Semi- Annual Partners' Meeting	Jun 2, 2017 Park Village Hotel, Kathmandu	-	Vishnu Prasad Pandey
5	Data Quality Assessment (DQA) Meeting	Oct 24, 2017, IWMI Office	-	Luna Bharati, Vishnu Prasad Pandey
6	USAID SEED Partner's Meeting	Feb 8, 2018, USAID Office	-	Vishnu Prasad Pandey
7	USAID SEED Partner's Meeting for Portfolio Review	Feb 23, 2018	-	Vishnu Prasad Pandey
8	Joint field visit of USAID SEED Partners	Mar 25 -30, 2018 (Western Nepal)	Cross learning visit	Vishnu Prasad Pandey, Bhesh Raj Thapa