INTEGRATED WATERSHED MANAGEMENT ACTIVITY-NEPAL

FINAL REPORT

FEBRUARY 2018 – FEBRUARY 2020

April 2020

This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID), under the terms of the Integrated Watershed Management Activity (IWMA), Associate Cooperative Agreement No. 72036718LA00001 to Winrock International under Leader Award No. AID-OAA-L-16-00006. The contents of this publication are the responsibility of Winrock and do not necessarily reflect the view of USAID or the United States Government.

CONTENTS

List of Acronyms

AOR	Agreement Officer's Representative
CCA	Climate Change Adaptation
CFUG	Community Forest User Group
CLA	Collaboration, Learning, and Adapting
COP	Chief of Party
COR	Contracting Officer's Representative
DCOP	Deputy Chief of Party
DJB	Digo Jal Bikas
DRR	Disaster Risk Reduction
FEWS	Flood Early Warning System
GESI	Gender Equality and Social Inclusion
GON	Government of Nepal
HB	Hariyo Ban
ICIMOD	International Centre for Integrated Mountain Development
IPs	Implementing Partners
IPM	Integrated Pest Management
IWMA	Integrated Water Management Activity
IWMF	Integrated Watershed Management Framework
KISAN	Knowledge-Based Integrated Sustainable Agriculture in Nepal
LAPA	Local Adaptation Plan of Action
LF	Lead Farmers
MEL	Monitoring, Evaluation and Learning
MUS	Multiple-Use Water System
NMEL	Nepal Monitoring, Evaluation, and Learning
NNSWA	Nepal National Social Welfare Association
NPR	Nepalese Rupee
NRM	Natural Resources Management
NSAF	Nepal Seed and Fertilizer
Paani	Program for Aquatic Natural resources Improvement
PAHAL	Promoting Agriculture, Health and Alternative Livelihoods
SEED	Social, Environmental, and Economic Development
SERVIR HKH	SERVIR Hindu Kush Himalaya
SFM	Sustainable Forest Management
SWP	Sustainable Water Partnership
TOC	Theory of Change
VMF	Village Model Farmer
WASH	Water, Sanitation, and Hygiene
WSI	Water Security Improvement
WUG	Water User Groups
USAID	United States Agency for International Development
USD	United States Dollar

EXECUTIVE SUMMARY

Nepal has abundant water resources, but insufficient water-related infrastructure and limited capacity undermine development efforts and water security throughout the country. Climate change impacts and natural disasters compound these development challenges, particularly in rural communities. USAID Nepal's broad portfolio of water-related activities in Nepal, including work on Multiple Use Systems, disaster risk management, biodiversity, and maternal health, presented an opportunity for increased integration. USAID Nepal's Social, Environmental, and Economic Development (SEED) Office developed an Integrated Watershed Management Framework and partnered with the USAID-funded Sustainable Water Partnership (SWP) to pilot implementation of the framework through the Integrated Watershed Management Activity (IWMA). IWMA's objective was to improve water security through better coordination and integration of USAID Nepal's Feed the Future, Environment and Resilience activities. IWMA aimed to improve coordination, cooperation, and collaboration among selected USAID-funded activities that focus on improving water security and sustainable watershed management.

During this two-year activity (2018 – 2020), IWMA collaborated with ten USAID Nepal implementing partners (IPs) carrying out water security-related projects in the Rangun Khola and Lower Karnali watersheds of the Mahakali and Karnali River Basins in Western Nepal, one of USAID Nepal's priority geographies. Both watersheds have widely dispersed rural populations that depend on small-scale agriculture. The Lower Karnali watershed straddling Provinces 5, 6 and 7 has high agricultural productivity and the largest farmer-managed irrigation system in Nepal, but experiences landslides, riverbank erosion, sedimentation, and flooding. The Rangun Khola watershed in Province 7 is highly vulnerable to droughts and has significant water availability issues due to its topography and remoteness.

WATER SECURITY INTEGRATION PROCESS AND ACTIVITIES

IWMA created a customized five-step water security integration process based on SWP's Water Security Improvement process and USAID Nepal SEED's Integrated Watershed Management Framework. Through this process, IWMA assisted USAID IPs to identify water security integration opportunities in each watershed, develop integration activities, monitor progress, and document lessons learned. IWMA facilitated five workshops with USAID Nepal and the IPs to collaboratively develop Integration and Monitoring, Evaluation and Learning (MEL) plans, which outlined water security risks and opportunities for water security integration activities in each watershed. The IPs implemented these plans using a two-tier coordination platform involving a Central Water Security Integration Committee in Kathmandu and watershed-level working groups in the field. IWMA held regular check-ins with the IPs to discuss progress and challenges, and adjustments needed, and organized a final closeout workshop to collect lessons learned.

Over the course of two years, a total of 25 convening or collaborative events were held among USAID IPs resulting in six jointly implemented field-level water security activities, summarized in Figure 1. IWMA also brought about some unexpected outcomes. First, IWMA reinforced the fact that strengthening coordination does not only mean among projects but also within a project, between professionals in Kathmandu and regional, district, and field offices. Second, successful integration activities under IWMA stimulated IPs to look for ways to collaborate beyond water security activities and beyond the two IWMA watersheds. And finally, IPs working in a particular geographic area realized that an integrated approach would help them to collectively support local governments to formulate and successfully implement integrated plans and actions.

Figure 1: Water security integration activities implemented under IWMA

1. Improving water access and management for agriculture in the Milan Debari Village

Hariyo Ban I, PAHAL

Hariyo Ban II worked with the local government to develop an integrated sub-watershed management plan which recognized that the biodiversity goals could be enhanced through improved irrigation capacity and regional food security in the Milan Debari Village. PAHAL provided funding and technical expertise in agriculture and livelihoods development. PAHAL matched funds from the ward and community, constructed an irrigation tank and system to increase irrigation capacity, demonstrated bioengineering techniques, and built governance capacity with trainings. The IPs also imparted trainings on sustainable forest management and fire-fighting.

OUTCOMES:

- Additional funding secured to increase village irrigation capacity.
- Increased number of USAID beneficiaries received natural resources management and governance trainings.

2. Expansion of agricultural inputs and supply networks to more remote areas

KISAN II, PAHAL, SUAAHARA II

KISAN II needed a local partner to help extend agricultural input and supply networks to more remote areas. PAHAL and SUAAHARA II recommended a local agrovet, which both IPs had independently trained. KISAN II awarded a grant to the local agrovet, which was able to reach more farmers faster by including SUAAHARA II and PAHAL beneficiaries, along with other local farmers, into Farmer Groups to receive agricultural inputs and extension services.

OUTCOMES:

- A small agrovet used its training and experience from USAID Nepal activities to begin building the capacity of local farmers.
- Increased number of USAID beneficiaries received agri-cultural inputs and extension services.
- Farmer Groups increased fresh vegetable yields and were able to work as a group to negotiate better prices at local markets.

3. Improving water access and management for agriculture in the Hamtad Village

PAHAL, SUAHAARA II

Recognizing that local nutrition challenges were linked to limited capacity for agricultural production, SUAAHARA II requested financial and technical assistance from PAHAL. PAHAL matched funds from the ward and community to construct a soil cement tank with six offtakes to run micro-irrigation sprinklers and provided capacity building on climate-smart agricultural techniques and micro-irrigation technology management.

OUTCOMES:

- Additional funding secured to increase village irrigation capacity.
- Increased number of USAID beneficiaries received training on promoting water saving technology and perma-gardening.
- Increased access to irrigation for vegetables and training in climate-smart agricultural tech-niques allowed beneficiaries to improve their nutrition.

4. Mitigating the risks of failure of newly constructed small-scale water infrastructure for communities

KISAN I, PAHAL

PAHAL worked to connect Water User Groups (WUG) and local government with insurance companies, increase regional demand for insurance, and streamline the insurance application process for WUGs. Recognizing the positive impact that small water infrastructure insurance could have on its stakeholders, KISAN II integrated the educational materials developed by PAHAL into its irrigation scheme trainings.

OUTCOMES:

- Increased awareness of small-scale water infrastructure insur-ance products and experiences across IPs.
- Increased number of USAID beneficiaries received training on how to apply for small-scale water infrastructure insurance.

5. Sustainably sourcing tree saplings for two riverbank reforestation activities

Paani, PAHAL

Paani identified the need to carry out reforestation at two sites along the Rangun Khola river. Paani and PAHAL coordinated to source seedlings from a local nursery run by a PAHAL Lead Farmer.

OUTCOMES:

- Paani used locally-sourced native species seedlings to create a productive green space for nearby communities that also prevented erosion.

6. Increasing awareness in two municipalities of a Flood Early Warning System (FEWS)

Paani, Hariyo Ban II

During development of a municipal master plan, Hariyo Ban II requested Paani to develop an inexpensive FEWS and install it on the nearby Aurahi Khola river that had flooded in 2015 and 2018, adversely affecting the local community. Paani completed the request but lacked the funds to conduct capacity building for the flood-impacted communities the system was intended to help. Hariyo Ban II stepped in to support training events in the two communities with technical expertise and funding. The two IPs thus combined their resources to make the communities more flood-resilient.

OUTCOMES:

- Beneficiaries received a low-cost FEWS.
- Additional funding secured to increase FEWS coverage and community awareness.
- Increased beneficiaries from vulnerable communities received trainings on climate change adaptation, disaster risk management, and FEWS, highlighting the cross-sector issues of Gender Equality and Social Inclusion (GESI) and governance.

LESSONS LEARNED

The participatory WSI process, driven by USAID and facilitated by SWP, allowed IPs to take ownership of joint activities and carry on water security integration even after IWMA ended. IWMA was supported by champions within USAID Nepal and the SEED office who empowered the IWMA team to convene and facilitate the IPs directly. This strong support from USAID helped ensure consistent participation of IPs and their commitment to implementing the Integration and MEL Plans. As a neutral facilitator, IWMA provided a clear structure and expectations for IPs which enabled participants to efficiently prioritize activities and define outcome targets. This process encouraged participants to continue implementing integrated water security activities after IWMA ended in February 2020.

Water security integration enabled USAID Nepal and IPs to understand water security risks at the watershed level. Before IWMA, most IPs focused their interventions around specific municipalities. During IWMA, USAID Nepal and IPs began conducting "watershed walks," visiting field sites around the watershed and meeting with local government officials. This approach allowed IPs to understand water security risks at the watershed level.

Integration activities built on synergies among IPs. Water security integration requires a clear understanding of potential synergies among partners to identify opportunities to expand impacts. IWMA helped USAID IPs explore shared needs, capabilities, and data to identify opportunities to jointly scale their impacts. The WSI process often resulted in IPs discovering that they shared relationships with some of the same field-based beneficiaries, communities, and local partners, and that they could build on those relationships to increase their impact.

IPs were motivated when integration activities added value to their projects. IWMA found that IPs were motivated to pursue water security integration activities when the activities contributed to their project's activity indicators and overall project goals; helped fill technical or financial gaps;

presented opportunities for cross-sectoral linkages by leveraging the technical expertise of other IPs; or sustainably expanded the project's impacts, such as the geographic reach and/or the number of people benefiting from USAID assistance.

NEXT STEPS

USAID Nepal is taking steps to build on IWMA's accomplishments. The SEED Office is applying lessons learned and best practices identified by IWMA to improve water security integration within USAID Nepal by:

- Establishing integration working groups led by the acting mission leader;
- Incorporating the water security integration agenda into the new Country Development and Cooperation Strategy;
- Using watersheds as the unit of geographic focus for future water-related projects, and continuing the practice of "watershed walks" with IPs to highlight water security risks;
- Prioritizing collaboration with local governments to build their capacity;
- Developing and incorporating integration/collaboration language to be included in future awards; and
- Sharing a record of collaboration activities among partners to facilitate the design of future integration activities.

INTRODUCTION

On February 15, 2018, USAID Nepal awarded a two-year associate cooperative agreement to Winrock International to implement the Integrated Watershed Management Activity (IWMA). IWMA was an associate award under the Sustainable Water Partnership (SWP), a five-year, Leader with Associates cooperative agreement that supports USAID by promoting water security and increasing resilience to water security risks in basin, sub-basin, catchments, and communities. IWMA focused on the two watersheds of the Lower Karnali and Rangun Khola in Western Nepal.

The objective of IWMA was to improve water security through better coordination and integration of USAID Nepal's Feed the Future, Environment and Resilience activities. IWMA aimed to improve coordination, cooperation, and collaboration among selected USAID-funded activities that focus on improving water security and sustainable watershed management. IWMA assisted USAID implementing partners (IPs) to collaboratively develop Integration and Monitoring, Evaluation and Learning (MEL) plans, which outlined water security risks and presented roadmaps for linked water security integration activities in the two watersheds. These plans were then implemented by IPs with support from IWMA.

This is the IWMA final report, covering the period from February 2018 to February 2020 and presenting IWMA's progress and achievements against its goals and objectives.

IWMA OVERVIEW

BACKGROUND

Nepal has abundant water resources, but insufficient water-related infrastructure and limited capacity undermine development efforts and water security throughout the country. Water is one of the most important natural resources underpinning Nepal's economic growth and is one of the priorities for USAID Nepal's Social, Environmental, and Economic Development (SEED) Office. The SEED Office developed an Integrated Watershed Management Framework (IWMF) with the objective of more effectively integrating their natural resource management (NRM), Feed the Future, and Food for Peace programming to improve water security. SEED identified five main approaches for implementing the IWMF:

1. Identification of opportunities to integrate activities at the watershed level to more effectively address key water management-related issues;
2. Site-level integration to support implementing partners to jointly plan and implement activities to maximize water and development outcomes;
3. Leveraging and learning at the basin and national levels;
4. Wider donor engagement to enhance the implementation; and
5. Long-term planning to utilize learning and results to inform the next USAID Nepal Country Development Cooperation Strategy.

USAID Nepal recognized that the IWMF would benefit from facilitation by an external actor focused exclusively on fostering increased collaboration and coordination on water security among IPs. The SEED Office partnered with SWP to pilot implementation of the framework through IWMA.

The IWMF's definition of water security, *the adaptive capacity to safeguard the sustainable availability of, access to, and safe use of an adequate, reliable and resilient quantity and quality of water for health, livelihoods, ecosystems and productive economies,* aligned well with SWP's Water Security Improvement (WSI) process and its eight guiding principles:

1. Focus on priority water risks;
2. Engage and mobilize water users;

3. Use systems thinking approach;
4. Address uncertainties;
5. Negotiate integrated actions;
6. Design science-based solutions;
7. Support adaptive management and learning capacities; and
8. Build in sustainability measures.

SWP and the SEED Office worked together to translate the IWMF and SWP's Water Security Improvement (WSI) process into a customized process to develop a mechanism for improved coordination and planning among USAID IPs on activities that address water security, and Integration and MEL Plans to address water security challenges and needs identified in the pilot watersheds of Lower Karnali and Rangun Khola.

THEORY OF CHANGE

Integration can be defined as the collaborative planning, design, implementation, and monitoring of activities across a geographic area to ensure the efficient and effective delivery of water security benefits. The goals of integration are to address the development needs of targeted populations, improve health and livelihood outcomes, and achieve sustainable development impact.

IWMA's theory of change is that:

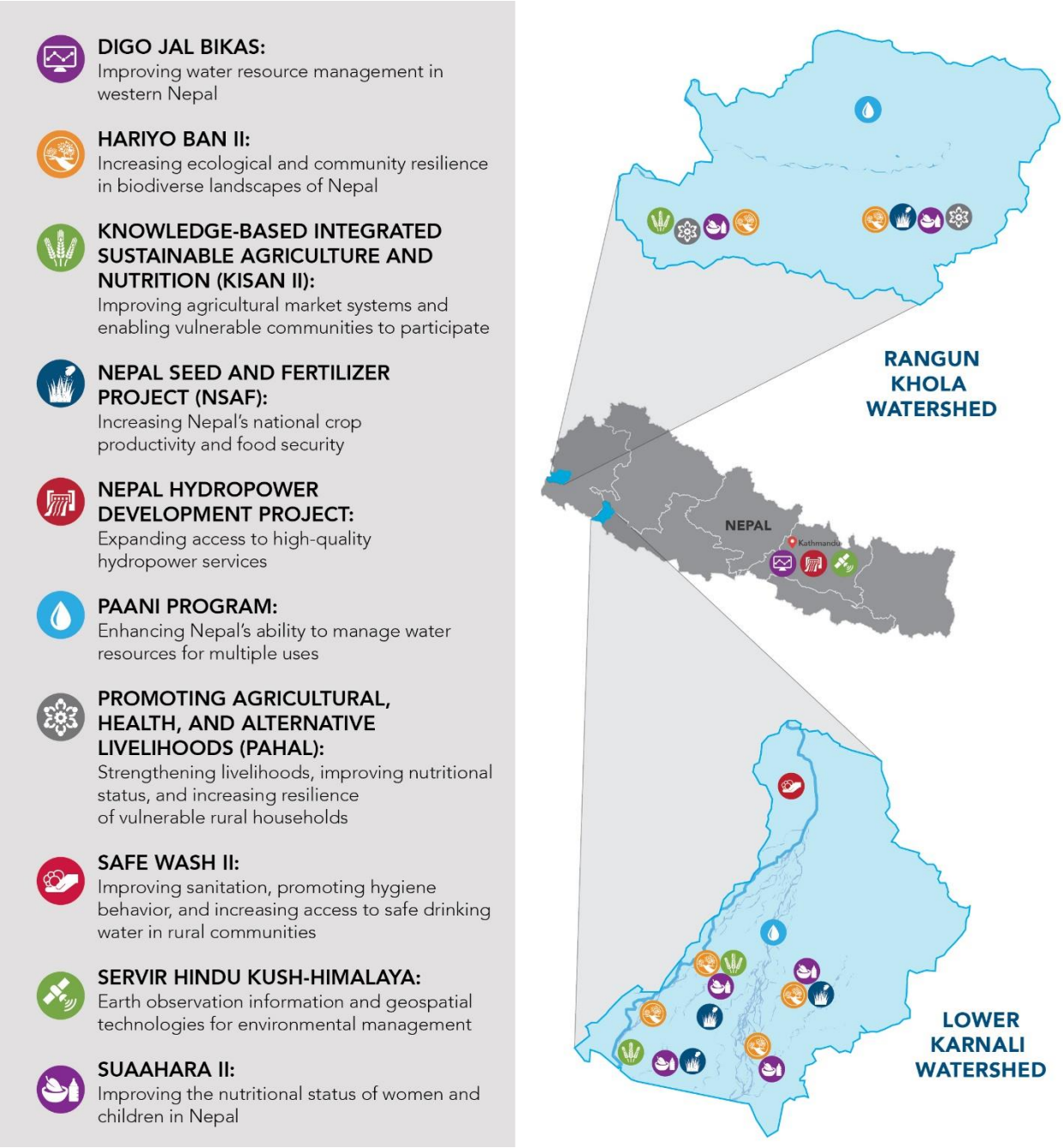
- If there is a mechanism for improved water security coordination and planning among USAID IPs, and
- If Integration and MEL Plans are developed and implemented by USAID IPs to address water security challenges and needs identified in the pilot watersheds of Lower Karnali and Rangun Khola,
- Then:
    - Activities of USAID IPs will more effectively address local water security challenges and needs, and
    - Water security will be improved in the two pilot watersheds.

CONTEXT

IWMA collaborated with ten USAID Nepal IPs (Figure 2) that were implementing water security-related activities in the Rangun Khola and the Lower Karnali watersheds, sub-basins of the Karnali River Basin. The Rangun Khola and Lower Karnali watersheds were selected because they host existing USAID projects that address access to and management of water resources, and they are included in the Feed the Future Global Food Security Strategy Country Plan for Nepal.

The Rangun Khola watershed, a sub-basin of the Mahakali River Basin, is located in Dadeldhura and Doti districts. Forest covers 91 percent of its 688 square kilometers (Paani 2018). The watershed has five major rivers and more than one hundred streams. Sharp elevation changes make the watershed susceptible to floods and landslides, which contribute to high sedimentation downstream and degrade aquatic habitats. Key threats to the watershed include forest degradation, deforestation, and illegal timber harvesting which affect surface water resources; and conflicts over water for drinking and sanitation.

Figure 2: USAID water security-related projects participating in IWMA

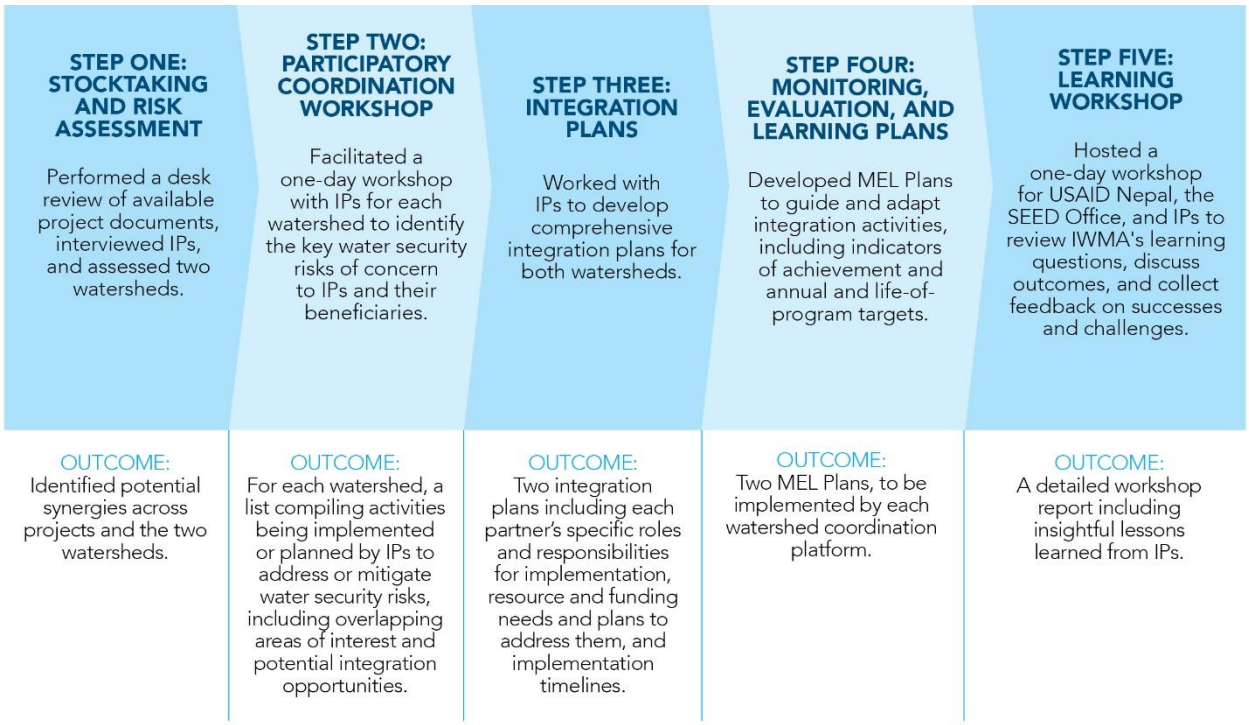


The Lower Karnali watershed falls within Surkhet, Bardiya and Kailai districts, covering an area of 875 square kilometers that stretches from the Siwalik ranges to the Terai. The major river flowing through the watershed, the Karnali River, floods frequently and carries a significant sediment load which supports agriculture but can also lead to erosion and flood damage. 34 percent of the land is used for agriculture and nine percent is covered by water bodies. Residents have identified drought, gravel mining, floods, degradation of aquatic habitats, and maintenance of traditional livelihoods as priority issues (Paani 2018).

WATER SECURITY INTEGRATION PROCESS

IWMA adopted a five-step water security integration process (Figure 3), based on SWP's WSI process and USAID Nepal SEED's IWMF.

Figure 3: IWMA's five-step water security integration process



Through this process, IWMA worked with USAID's IPs to identify water security integration opportunities in each watershed, steward the development of integration activities, monitor progress, and document lessons learned. IWMA facilitated five workshops with USAID Nepal and the IPs to collaboratively develop Integration and Monitoring, Evaluation and Learning (MEL) plans, which outlined water security risks and presented roadmaps for water security integration activities in the two watersheds. These plans were then implemented by IPs with support from IWMA.

STEP ONE: STOCKTAKING AND RISK ASSESSMENT

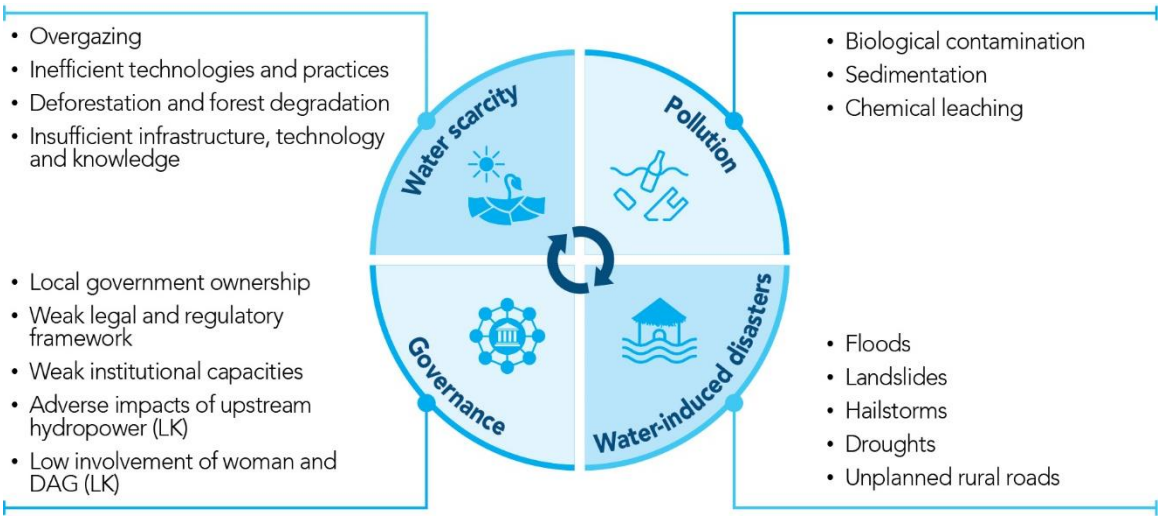
IWMA began with a stocktaking exercise to assess gaps and opportunities for integration among USAID Nepal's IPs. IWMA conducted a desk review and facilitated discussions with the IPs to understand each project's objectives, expected results, ongoing activities and indicators. USAID Nepal and IPs shared key supporting documents such as work plans, annual reports, and MEL Plans, which allowed IWMA to identify water security risks in each watershed and existing efforts by each IP to address the risks. IWMA then analyzed the gaps and opportunities for integration in the two pilot watersheds, which laid the foundation for a participatory coordination workshop with IPs.

STEP TWO: PARTICIPATORY COORDINATION WORKSHOP

IWMA facilitated a one-day participatory workshop with IPs to identify, discuss, and refine potential integration areas and gather inputs for Integration and MEL Plans. IWMA presented an analysis of integration gaps and opportunities and facilitated a discussion to generate inputs and build consensus among IPs around water security issues (Figure 4) and integration opportunities in each watershed. The

IPs defined concrete activities and progress indicators, which were documented in the Integration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Integration



STEP THREE: INTEGRATION PLANS

IWMA worked with the IPs to develop comprehensive integration plans for the Rangun Khola and Lower Karnali watersheds. Each integration plan includes an analysis of water-related risks facing each watershed; discusses each IP's ongoing activities and their relation to water security issues; cites agreed-upon opportunities for integration; delineates specific implementation roles and responsibilities for each IP, along with resource and funding needs and how these will be addressed; and presents an expected timeline for implementation. The integration plans also present a Theory of Change (TOC) for the watershed along with underlying assumptions.

STEP FOUR: MONITORING, EVALUATION, AND LEARNING PLANS

The integration plans include MEL Plans to guide and adapt integration activities. MEL plans are tailored to each Integration Plan and include performance indicators and targets, data quality and management processes and procedures, a learning agenda for collaboration, learning, and adapting (CLA), and guidance on knowledge management. Indicators were drawn from existing MEL Plans or were customized for each integration plan, with the objective of measuring progress toward the overall goal of improving water security through better integration. The learning agendas included learning objectives and specific learning questions to understand how integration activities can support improved water security. During quarterly coordination and learning workshops, IWMA reviewed the progress of field activities, reviewed what was working and what was not in order to inform planning and decision making, evaluated differential impacts across integration activities and watersheds, and reconfirmed stakeholder buy-in and commitment to implementation.

STEP FIVE: LEARNING WORKSHOP

The final, one-day learning workshop (Figure 5) brought together the USAID Nepal SEED Office, IPs, new USAID Nepal activities with water security-related components (Sajhedari – municipal governance, and Tayar Nepal – disaster risk management), USAID's Nepal Hydropower Development Project, and USAID's Nepal Monitoring Evaluation and Learning Activity (NMEL). Participants shared learning from the planning, implementation, and monitoring of the integration process and water security integration activities in the two watersheds. The group reviewed results, shared feedback on successes and

challenges, and made suggestions on how IWMA's collaborative efforts could be further internalized into each IPs' activities. The result was a detailed workshop report and insightful lessons learned that have been included in this report.

Figure 5: Group work during IWMA learning workshop

ACTIVITY ACCOMPLISHMENTS

COLLABORATIVE EVENTS

Over the course of two years, a total of 25 convenings were held among USAID IPs. The initial events resulted in two validated Integration and MEL Plans that identified, described, and prioritized each watershed's water security risks. Nine potential integration opportunities emerged from the Integration and MEL Plans:

1. Water availability
2. Forest vulnerability
3. Efficient on-farm water management
4. Water efficient seeds
5. Irrigation/water system management
6. Building resilience to climate change and disaster risks
7. Dialogue on Gender Equality and Social Inclusion (GESI) issues and innovations in water security activities
8. Grant Programs
9. Internship Programs

IWMA organized and facilitated technical meetings in Kathmandu and Nepalgunj to develop the potential integration activities. To emphasize the importance of fully integrating GESI into the activities, IWMA dedicated a portion of each meeting to discussion of GESI issues. IWMA also held regular check-ins with the IPs to discuss progress and challenges, needed adaptations or adjustments, and learning questions. Two check-in meetings were held in Kathmandu and three rounds of check-in meetings for IP field staff were conducted in each watershed. The field-level meetings were often scheduled in conjunction with meetings with municipal officials to get their feedback.

At the final Learning Workshop in Kathmandu, held on February 14, 2020, there was a general consensus that the integration process was successful in reducing water security gaps and building better rapport among IPs. NMEL presented the findings of its end line assessment of IWMA. Many participants said they initially saw "integration" as a development buzzword in their annual workplans, but after going through the integration process and implementing activities, they understood that the structure and oversight provided by IWMA led to impactful field-level action on water security.

FIELD-LEVEL WATER SECURITY INTEGRATION ACTIVITIES

Each Integration and MEL Plan presented a roadmap for the IPs to work together toward improving water security. Based on these plans, IWMA and the IPs designed integration activities to reduce water security risks and achieve impact at scale. IWMA itself did not directly implement integration, but facilitated their identification and development, monitored their progress, and communicated their lessons learned. IWMA facilitated two categories of activities: **joint implementation** and **leveraging**. Under joint implementation activities, two or more projects contributed technical or financial resources to jointly implement an activity intended to address one or more specific water security risks.

Leveraging activities involved knowledge sharing and data exchange between IPs, where compiled data or information from one project was used to inform activity design or implementation of one or more IP activities.

INTEGRATION ACTIVITY 1: MILAN DEBARI IRRIGATION SYSTEM

Location: Pashuram Municipality, Ward 9, Milan Debari
Watershed: Rangun Khola
Implementing Partners: HB II, PAHAL and KISAN II
Type of Integration: Joint Implementation and Leveraged Inputs/Outcomes/Beneficiaries

IDENTIFYING THE POINT OF INTEGRATION

During theStep Two: Participatory Coordination Workshop, the potential for a HB II and PAHAL integration activity on agricultural water management was identified. The two IPs worked together to select a suitable site for an integration activity in the Rangun Khola watershed, where both IPs had a field presence. The IPs conducted a joint field visit in August 2018 to view HB II's irrigation canal and river protection intervention at Beldangi and Gaibadhne, Jogbuda, and PAHAL's riverbank-focused plantation activities on the Rangun River as well as its Integrated Pest Management (IPM) and permagarden learning center in Gharelu, Alital Rural Municipality.

HB II and PAHAL selected the Milan Debari community in Jogbuda, Ward 9, for a joint activity. Both IPs were working in this small community, with PAHAL building capacity for goat husbandry skills and HB II providing training on climate change adaptation (CCA) and disaster risk reduction (DRR) to Community Forest Users Groups (CFUGs). HB II had also developed the Puntura Khola River Sub-Watershed Management Plan, which was approved by the Government of Nepal (GON). The Plan outlined the area's critical need for better access to water for irrigation and identified a viable water source to supply a new irrigation scheme, but HB II did not have the relevant technical expertise, funding, or project focus to construct the scheme. Using the detailed information from the Plan, PAHAL was able to construct a less expensive irrigation scheme for the community because it did not have to invest in the typical preliminary studies to identify a water supply and measure its capacity.

ACTIVITY DESIGN

PAHAL conducted a mapping process to identify community shocks and stresses and mitigate measures. The mapping process included focus group interviews with stakeholders such as the Aamgaira Irrigation Project, Milan goat group and the Kule Bhaant CFUG. The PAHAL scoping study identified complementary interventions that PAHAL and HB II could implement in parallel with construction of the irrigation scheme to improve community water security in Milan Debari. Interventions implemented included demonstrations of climate smart agriculture techniques and bioengineering (also referred to as *green infrastructure* or *nature-based solutions*), sustainable forest management trainings, and livelihood capacity building (e.g. commercial vegetable farming, sustainable goat rearing, permagardening,[1] and access to financial services).

IMPLEMENTATION

HB II and PAHAL jointly constructed an irrigation tank and system, demonstrated bioengineering techniques, and organized several water security-related livelihood capacity-building interventions for water user groups in Milan Debari Village (Figure 6). The PAHAL District Team conducted a meeting

[1] The permagarden method is designed to maximize production on a small amount of land through sustainable practices that increase biodiversity. It is designed to work in both dry and rainy seasons, and is an approach to home gardening that improves soil fertility and water management to produce nutritious and diverse crops. (USAID TOPS, 2017).

with the local government and debriefed Ward 9 officials about the integration activity. After considering the opportunity, the Ward contributed 2,00,000 NPR ($1,765) in matching funds for the construction of the Milan Debari Irrigation Scheme. In addition to the Ward, the community provided labor and contributed 6,22,150 NPR ($5,492).

Figure 6: Milan Debari irrigation infrastructure and bioengineering constructed by PAHAL

PHOTOS BY LIZ KENDALL AND RESHA PIYA

The irrigation scheme consisted of one intake, three chambers, one suspension crossing[2], one distribution chamber, two soil cement tanks, and 13 offtakes. It provided service to 30 households with 166 people (79 female, 87 male) and expanded irrigation to 105 ropani (13.2 acres) of land. Of the total cost of 15,30,098 NPR ($13,506), 54 percent was paid or financed by the community and GON. To secure the future of the irrigation system and protect a nearby irrigation canal, which irrigated 20 hectares (49.4 acres), the PAHAL team constructed a bamboo fascine[3] that benefitted 25 households with protection from erosion and landslides (PAHAL 2019). Community members received training on bioengineering and participated in a practical demonstration on the construction and maintenance of a fascine, palisade[4] and plantation with support from the Soil Conservation and Watershed Management Office, a local GON institute.

Together the partners carried out demonstrations of agriculture techniques including permagardening, nursery construction and management, greenhouse drip irrigation, and mineral block preparations for goats (Table 1).

[2] Construction technique used to transport water over difficult terrain. The water supply pipe was tied to a steel wire, suspended over the gorge, and anchored on each side.
[3] This bioengineering approach uses living bamboo, a species that roots easily, to protect slopes from erosion (Gidon and Sahoo 2020).
[4] A fence made of wooden stakes fixed in the ground to form an enclosure.

Table 1: Joint training schedule for Milan Debari integration activity

Capacity Building Topic	Days	Number of Attendees	PAHAL contribution	HB II contribution
Institutional Governance and Sustainability Plan Preparation	2	30 (15 female, 15 male) from Kulebhat CFUG	Funds and technical support	Technical support
Sustainable Forest Management and Introduction to Fire Fighting Tools	2	30 (15 female, 15 male) from Kulebhat CFUG	Sustainable forest management technical training	Fire Management Tools technical training and resource access
Introduction to Bioengineering	3	30 (15 female, 15 male) from Kulebhat CFUG	Everything	None
Farmer Group Climate Smart Agricultural Techniques	N/A	20 (17 female, 3 male)	Everything	None

During the second IWMA field trip, KISAN II field officers offered to provide market access support to help Milan Debari farmers secure more competitive prices for their crops. KISAN II followed up by connecting Milan Debari Village farmers with its private sector partner, Tedi Agrovet, which has been supplying them with quality agricultural inputs, production information, technical trainings, and market information dissemination.

OUTCOMES

- PAHAL secured NPR 15,30,098 ($13,506) to increase village irrigation capacity, where PAHAL contributed NPR 7,07,948 ($5,822); the community contributed NPR 6,22,150 ($5,491), and Ward contributed NPR 2,00,000 ($1,765).
- The irrigation scheme provided irrigation service to 30 households and 166 people (79 female, 87 male) and 105 ropani (13.2 acres) of land.
- 62.6 acres of irrigated land were protected using bioengineering to prevent potential damage to the newly installed irrigation system and a nearby canal.
- 50 USAID beneficiaries received natural resource management and governance trainings.
- One agrovet extended its services to the community.

INTEGRATION ACTIVITY 2: TEDI AGROVET

Location: Pashuram Municipality, Ward 12, Jogbudha
Watershed: Rangun Khola
Implementing Partners: KISAN II, PAHAL, and SUAAHARA II
Type of Integration: Leveraged Inputs/Outcomes/Beneficiaries

IDENTIFYING THE POINT OF INTEGRATION

Agrovets are important in rural Nepal as they provide remote farmers access to effective and appropriate agricultural inputs and technologies for improved production, including improved seeds, agrochemicals, climate-smart IPM tools, and veterinary services. Agrovets are key collaborators for IPs in the improvement of regional water security and sustainable livelihoods. At the IWMA coordination workshop KISAN II announced that it was looking for a local agrovet to provide technical support on commercial vegetable production and strengthen supply networks. It turned out that PAHAL and SUAAHARA II had been independently working with the same local agrovet (Tedi Agrovet, Figure 7) to extend agricultural inputs and services to more remote areas of Rangun Khola. PAHAL and SUAAHARA II were able to highly recommend Tedi Agrovet to KISAN II, as they had evidence of Tedi's high quality work and had built the firm's capacity over several years. This recommendation shortened KISAN II's

search process and allowed KISAN II to leverage Tedi Agrovet's network of local farmers built through PAHAL and SUAAHARA II.

ACTIVITY DESIGN

With the two IPs acting as its reference, Tedi Agrovet received a grant from KISAN II in March 2019 to organize local farmers into groups, with the goal of increasing local fresh vegetable yields from 16 MT/ha to approximately 20 MT/ha in Dadeldhura District, Parshuram Municipality. IWMA encouraged Tedi Agrovet to include SUAAHARA II and PAHAL beneficiaries in its capacity-building trainings on setting up commercial vegetable nurseries. Tedi Agrovet also worked with three SUAAHARA II beneficiaries to set up permagarden demonstration sites. IWMA and KISAN II connected Tedi Agrovet to the USAID Nepal Seed and Fertilizer (NSAF) project which has developed and tested nutrient-rich, flood- and drought-resistant seeds.

Figure 7: USAID Nepal, IWMA, and IP meeting with Tedi Agrovet proprietor

IMPLEMENTATION

Under KISAN II, Tedi Agrovet organized 800 local farmers into 33 Farmer Working Groups. Participants included three Village Model Farmers (VMFs) from SUAHAARA II and several Lead Farmers (LFs) from PAHAL. Tedi Agrovet also continued providing services to 100 households supported by PAHAL in Wards 1, 4, 5 6 and 12 of Parshuram Municipality. Tedi Agrovet promoted flood- and drought-resistant seeds recommended by NSAF. Tedi Agrovet and KISAN II leveraged the permagarden technology that PAHAL initially introduced to the Rangun Khola watershed by developing four demonstration sites. In addition to acting as permagarden training sites, these prototype nurseries were constructed with the goal of increasing agri-input sales. Tedi Agrovet provided training to SUAAHARA II Village Model Farmers and PAHAL Lead Farmers on Agriculture Business Training and Multipurpose Nursery Growing.

After receiving its grant from KISAN II, Tedi Agrovet noted the following changes: an increase in customers (service receivers), improved business management (it now has two fulltime employees and a better accounting system), more farmers are relying on it as their primary service provider, and improved coordination with local government and other development organization.

Several LFs and seven groups formed and trained by PAHAL continue to receive extension services from Tedi Agrovet even though the project under which they were mobilized has closed out. Figure 8 profiles one PAHAL LF who has significantly increased his income through support from Tedi Agrovet. As farmers improve their practices and increase their yields, they can benefit from additional services offered by Tedi, such as links to commercial off-takers and introduce new technologies.

Figure 8: Tedi Agrovet success story: Mr. Mani Singh Bohara

As a Lead Farmer under PAHAL, Mr. Mani Singh Bohara of Parshuram, Ward 12, Khajurani, Dadeldhura, learned the skills necessary to make his living growing and selling nursery-raised fruit, fodder and other high-value saplings. When the PAHAL program ended, he no longer had access to technical agricultural support for his growing business. Then he was asked to join the Siddanath Farmers Group, formed by Tedi Agrovet with support from KISAN II. Now he is receiving capacity building from Tedi Agrovet and using their agri-extension and other embedded services. And he is sharing the permagarden techniques he learned from PAHAL with his fellow farmer group members.

Tedi Agrovet supported [me with] inputs like vegetable seeds, pesticides, mico-nutrients, water sprayers and yellow sticky traps. [With its help] I built a [new] vegetable nursery on 0.5 ropani [0.025 ha] of on my own land. Last summer season, I earned 30,000 NPR ($247.34 USD) by selling the seedlings. This is really a profitable agri-business for me. – Mr. Mani Singh Bohara

Using his growing business skills, Bohara has identified demand for chili seedlings. He appreciates Tedi Agrovet for providing the idea to expand into vegetable seedlings and helping him increase his nursery size. While this is only one of his income streams (his multipurpose nurseries earn him 150,000 NPR ($1,236) annually), he is currently planning to scale up his vegetable seedling nursery to a commercial level.

Tedi Agrovet continues to offer stakeholders from current and recent USAID projects the opportunity to grow their permagardens into profitable farms for the foreseeable future. It is interested in expanding its service area to include an additional 400 households in and around Milan Debari for the following reasons:

- Farming households in the Milan Debari area are commercially active as a result of intervention by PAHAL;
- Farmers have had training on permagardening, making them more likely to purchase permagardening inputs; and
- Reliable and expansive irrigation, thanks to the water source rehabilitation as well as construction of intake tanks, makes Milan Debari farmers more likely to purchase agricultural inputs.

OUTCOMES

- Tedi Agrovet built the capacity of 800 local farmers and intends to expand its service area to include an additional 400 households in and around Milan Debari.
- Tedi Agrovet recruited two Junior Technical Assistants and trained them to use a mobile phone platform to provide technical assistance to farmer customers.
- Tedi Agrovet extended its services to 50 farming households in Milan Debari, including supply of quality agricultural inputs, technical assistance for increased productivity, and assistance to sell produce at competitive market prices.
- 100 households formerly supported by PAHAL received agricultural inputs and services for their permagardens.
- A recent household yield assessment conducted by Tedi Agrovet found that vegetable and rice yields increased by 25 and 30 percent, respectively, since Tedi provided training and technical

support. The land area used for vegetable cultivation has nearly doubled, from an average of 0.05 ha to 0.1 ha.

- Tedi Agrovet mobilized three of SUAAHARA II's Village Model Farmers from Wards 6 and 12 of Parshuram Municipality to establish permagarden demonstration sites.

INTEGRATION ACTIVITY 3: HAMTAD VILLAGE SOIL CEMENT TANK

Location: Alital Rural Municipality, Ward 8
Watershed: Rangun Khola
Implementing Partners: PAHAL and SUAHAARA II
Type of Integration: Joint Implementation and Leveraged Outcomes/Beneficiaries

IDENTIFYING THE POINT OF INTEGRATION

During the IWMA coordination meeting, SUAAHARA II shared its work to improve the nutritional status of women and children[5] in the Alital Rural Municipality by addressing water, sanitation, and Hygiene (WASH) and increasing access to nutritious vegetables. SUAAHARA II identified a need for additional water storage to expand home garden irrigation in the village of Hamtad, as home gardening is the most efficient way to access fresh vegetables in remote areas. As a public health project, SUAAHARA II did not have the financial resources, technical expertise, or mandate to support the community's need to increase water storage capacity for irrigation. After learning more about the other IPs, their work, and technical skills at the coordination meeting, SUAAHARA II approached PAHAL to collaborate, as PAHAL was working with a farmer group nearby.

ACTIVITY DESIGN

To ensure sustainability of the integration activity, the community was involved during the feasibility and surveying process and helped select the construction site, to avoid potential land tenure conflicts. A custom soil cement tank was designed to fulfill the demand of the growing community using a popular low-cost technology with a 20-year guarantee if constructed under the supervision of a qualified technician. A micro-irrigation system was added to make more efficient use of the stored water and enable the cultivation of multiple vegetable varieties in the same plot.

IMPLEMENTATION

PAHAL supported the soil cement tank construction (Figure 9) with six offtakes for micro-irrigation sprinklers. The total cost of the project was 2,93,878 NPR ($2,597); PAHAL contributed 1,55,912 NPR ($1,378) and the community contributed 1,37,966 NPR ($1,219). The project serves 16 households with 92 people (44 female, 48 male) and irrigates 18 ropani (2.26 acres) of land. PAHAL complemented its infrastructure contribution with training on climate-smart agricultural techniques, including

Figure 9: Hamtad soil cement tank and offtake

[5] SUAAHARA II focuses on delivering its services to mothers who have children that are 1000 days (2.7 years) old. They call this type of mother a *1000 Day Mother*.

permagardening and micro-irrigation.[6] With the new skills and infrastructure, the community members and local beneficiaries working with SUAAHARA II have the necessary inputs to improve nutrition in the village.

OUTCOMES

- 2,93,878 NPR ($2,597) secured to increase irrigation capacity in Hamtad village (53 percent from USG funds and 47 percent from the community).
- Additional 18 ropani (2.26 acres) of land under irrigation.
- Increased number of USAID beneficiaries received training on promoting water saving technology and perma-gardening.

INTEGRATION ACTIVITY 4: SMALL WATER INFRASTRUCTURE INSURANCE

Location: 22 districts across Pashuram Municipality and Alital Rural Municipality
Watersheds: Lower Karnali and Rangun Khola
Implementing Partners: PAHAL and KISAN II
Type of Integration: Leveraged Outcomes

Insurance is an important tool for mitigating risk of financial loss, especially in a country like Nepal which experiences frequent disasters. While insurance is not new to Nepal, the market has grown considerably and a larger variety of non-life insurance products have become available, especially after the 2015 earthquake. In its mission to assist vulnerable communities to bounce back after shocks and stress**,** PAHAL collaborated with Water User Groups (WUGs) and local governments to explore whether private insurance companies could offer small water infrastructure insurance.

IDENTIFYING THE POINT OF INTEGRATION

PAHAL found that 76 percent of small water systems located in the Rangun Khola watershed were experiencing operational problems and only 24 percent were found to be fully functional five years after construction. WUGs managing this risk would benefit from small water infrastructure insurance. A market assessment found that existing insurance companies already had suitable insurance products but required market aggregation in order to achieve economies of scale, confidence in clients, and proper documentation.

PAHAL supported WUGs to insure nine community water schemes valued at 81,59,325 NPR ($71,652). Twelve additional water schemes in the process of qualifying. The average annual premium on these small water systems is 2,097 NPR ($17.29), or 0.002 percent of the total estimated cost of the scheme. This cost is covered by the WUG's operation and maintenance funds. In addition to raising awareness of small water infrastructure insurance and increasing regional demand, PAHAL also helped streamline the application process for WUGs by obtaining commitments from insurance companies to accept non-traditional forms of collateral.

ACTIVITY DESIGN

IWMA organized two meetings, one in Kathmandu and one during a field visit to the PAHAL Regional office at Nepalgunj (Figure 10), to inform IPs about relevant insurance products, connect them to interested insurance companies, and share their experiences using insurance products to mitigate the risk of their beneficiaries. Having learned about the success of PAHAL insurance activities at an IWMA coordination meeting, KISAN II recognized the positive impact that small water infrastructure could

[6] Together withIntegration Activity 1: Milan Debari Irrigation System integration activity 1, which was carried out with HB II, the PAHAL trainings on climate smart agricultural techniques resulted in 26 households improving their intensive vegetable production on a total of 6.28 hectares (PAHAL 2019).

have on its stakeholders. KISAN II integrated the educational materials developed by PAHAL and information from insurance companies into its one-day repair and maintenance training.

IMPLEMENTATION

From June to October 2019, KISAN II conducted 100 trainings, all of which included a session on small water infrastructure insurance, across the 22 districts where the program had constructed and transferred management of small irrigation schemes to Farmer Groups. In total, 1,878 farmers (1,313 female, 565 male) received information about how to insure their new or renovated irrigation schemes.

Figure 10: Insurance representative presenting to IPs in Nepalgunj

OUTCOMES

- A total of 1,878 farmers received training on how to apply for small-scale water infrastructure insurance. Of these, 601 (391 female, 210 male) were KISAN II beneficiaries within the Rangun Khola and Lower Karnali watersheds.

INTEGRATION ACTIVITY 5: LOCAL SEEDLING SOURCING

Location: Parshuram Municipality and Alital Rural Municipality
Watershed: Rangun Khola
Implementing Partners: Paani and PAHAL
Type of Integration: Leveraged Inputs/Outcomes

IDENTIFYING THE POINT OF INTEGRATION

This activity was identified during a field-level coordination event and a subsequent Paani grantee meeting to which IWMA and IPs were invited. The need was simple: the Nepal National Social Welfare Association (NNSWA), a Paani grantee, had plans to perform reforestation along the banks of the Rangun Khola river.

ACTIVITY DESIGN

Paani and PAHAL coordinated to help NNSWA source tree saplings for reforestation activities from a nearby PAHAL-supported nursery.

IMPLEMENTATION

In July, NNSWA performed reforestation using 3,990 fruit tree, fodder and grass seedlings (Table 2) purchased from Mr. Meen Bahadur Bohara's Multi-Purpose Nursery, a PAHAL beneficiary located in Parshuram Municipality, Ward 10, Beldangi. These seedlings were used to develop:

- One hectare of abandoned land on the northern bank of the Rangun Khola river (Shree Hari Gorakh Smreeti Community Forest area, Parshuram Municipality, Ward 12, Katal) into a productive green space (also referred to as 'plantation' in reports). As part of this initiative, community members of Parshuram Municipality, Wards 4 and 12 were able to benefit from this reforested area in exchange for maintaining it.

- Two hectares on the cutbank of rural roads in Alital Rural Municipality, Ward 3, Raksaun into a plantation site.

Table 2: NNSWA Seedlings Planted

	Location of Planting	Seedling Species		No. of Seedlings
		Local Name	Scientific Name	
1	Parshuram Municipality, Ward # 4 Katal	Amala	*Emblica officinalis*	250
		Epil-Epil	*Leucaena leucocephala*	250
		Lapsi	*Choerosopondias axillaries Roxb.*	250
		Khair	*Acacia catechu*	250
		Teak	*Tectona grandis*	250
		Dale Ghans	*Eragrostic curvula*	250
		Kimbu	*Morus alba*	150
2	Alital Rural Municipality, Ward # 3, Raksaun	Litchi	*Litchi chinensis*	60
		Lemon	*Citrus limona*	30
		Teak	*Tectona grandis*	200
		Amala	*Emblica officinalis*	200
		Khair	*Acacia catechu*	200
		Lapsi	*Choerosopondias axillaries Roxb.*	200
		Dale Ghans	*Eragrostic curvula*	100
		Kimbu	*Morus alba*	100
		Napier	*Penisetum purpureum*	1250
TOTAL				**3,990**

OUTCOMES

- A Paani grantee used 3,990 locally-sourced, native species seedlings to create three hectares of productive green space for nearby communities while preventing erosion.
- A local PAHAL-trained nursery benefitted from a large order.

INTEGRATION ACTIVITY 6: INCREASING AWARENESS IN TWO MUNICIPALITIES OF A FLOOD EARLY WARNING SYSTEM (FEWS)

Locations: Madhuwan and Thakurbaba Municipalities
Watershed: Lower Karnali
Implementing Partners: HB II and Paani
Type of Integration: Joint Implementation and Leveraged Inputs/Outputs/Beneficiaries

IDENTIFYING THE POINT OF INTEGRATION

Given the increasing risk of climate-induced natural hazards in the Lower Karnali watershed, such as floods, river cutting, and inundation, IPs operating there prioritized Climate Change Adaptation (CCA), Disaster Risk Reduction (DRR), and Early Warning Systems (EWS) in the watershed's Integration Plan. Paani had developed a watershed profile and health report for the Lower Karnali, while HB II's scope of work focused on building the capacity of communities and local DRR committees by preparing the 20-year Master Plan for Thakurbaba Municipality and supporting the municipality to implement the plan. Aware of Paani's work thanks to IWMA meetings and resource sharing, HB II approached Paani about collaborating on a Flood Early Warning System (FEWS), which was identified as a need in the Master Plan.

ACTIVITY DESIGN AND IMPLEMENTATION

Paani developed and installed an inexpensive FEWS (Figure 11) on the East-West Highway bridge crossing the Aurahi Khola, a river that feeds the Lower Karnali watershed, to help communities respond to floods and improve available regional data for analysis. Paani registered 26 stakeholders from downstream communities to receive text message alerts and relay the messages in their respective communities. After the installation, Paani orientated the stakeholders on using the system to better prepare for the flood events. Paani asked HB II to support additional training events for two communities that were victims of the 2015 and 2018 floods. Paani and HB II combined their technical knowledge, regional expertise, and instructional materials to train the participants on climate change, its causes, its current and future impacts on the region, its relationship with disasters, and how to manage it now and in the future. The training events were held in Madhuwan Municipality (January 6-7, 2020) and Thakurbaba Municipality (January 8-9, 2020). Each event lasted two days, trained a combined 76 participants on CCA, DRR, and EWS, and produced an action plan for Madhuwan and Thakurbaba Municipalities. In Madhuwan Municipality, there were 35 participants (19 female, 61 male) from Ward 1, which is a high-risk flood zone. There were 47 participants (27 female, 20 male) from Wards 1 and 9 of Thakurbaba Municipality, also high-risk flood zones. In addition to educating participants on pre-disaster preparedness and mitigating climate risks and vulnerabilities, these events supported the municipality's Master Plan.

Figure 11: FEWS gauge on the Aurahi Khola River, Thakurbaba Municipality

OUTCOMES

- $4,100 was leveraged from Paani to install a FEWS covering 2,100 hectares (5,189 acres) of land vulnerable to flooding from the Aurahi Khola river. The FEWS serves 1,000 households from 13 villages in Madhuwan and Thakurbaba Municipalities.
- Funds leveraged from HB II paid for 82 beneficiaries from vulnerable communities to receive training on CCA, DRM, and FEWS, with session dedicated to the cross-sector issues of GESI and governance.

SHARED WATER SECURITY RESOURCES

One of IWMA's goals was to assist IPs to develop and share water security risk management tools, such as technical design guidelines, implementation plans, management practices, data sets, and technology demonstrations. Key resources developed or shared for managing water security risk in the Rangun Khola and Lower Karnali watersheds are profiled below.

RESEARCH AND DOCUMENTS

Paani shared watershed profiles and health reports they had developed for the Rangun Khola and Lower Karnali watersheds. The watershed profiles assessed the status, major challenges and opportunities for water resource and water supply management within the watersheds while outlining contributions needed from local governments, communities, civil society, and private sector stakeholders to balance human development and protect natural resources. The health reports included an assessment of whether each watershed was functioning properly to provide the necessary ecosystem system services to watershed residents. In turn, IPs shared their field-level water security-related data with Paani to help keep these important assessments up to date.

TOOLS

The USAID-supported SERVIR-Hindu Kush Himalaya (HKH) project, which applies satellite data to address water resource challenges, demonstrated its flood forecasting modelling tool to IPs during a Workshop on Applied Science Team Forecasting Tools, hosted by the International Centre for Integrated Mountain Development (ICIMOD) in May 2019. The workshop provided theoretical and practical knowledge in using flow/flood forecasting systems and validating forecasts against actual observations using open-access tools and methodologies.

SERVIR-HKH also demonstrated its online forest fire alert information and risk management system tool, which maps past forest fires. Forest fires are a serious safety concern in Nepal and timely and reliable information about them is vital for saving lives and property. This technology immediately sends text messages and email to government agencies when there is a fire outbreak, so they can take appropriate measures to control the fire and rapidly mobilize resources.

DATA

Paani, PAHAL, HB II and KISAN II were all collecting data on water in the two watersheds; IWMA's goal was for these four IPs to be aware of what data each was collecting, to efficiently exchange relevant data, and to use the shared data for analyses relevant to their projects. For example, Paani was able to share climate data (rainfall and temperature) with HB II for use in its Pantura sub-watershed management plan.

Paani took the initiative to consolidate all the data in one document and share it with the partners, but struggled with data cleaning and management. For example, Paani and PAHAL were both conducting spring source mapping in the Rangun Khola watershed, but were using different methods and collecting different data.[7] All four IPs cited IWMA meetings as an efficient platform for identifying and requesting potentially useful data, and committed to continuing to coordinate data collection.

LESSONS LEARNED

IWMA demonstrated that facilitating the integration of USAID activities is a viable and impactful approach to improving water security. We group our lessons learned into three categories: collaborative events, integration activities, and shared water security resources.

COLLABORATIVE EVENTS

The participatory WSI process, driven by USAID and facilitated by SWP, allowed IPs to take ownership of joint activities and carry on water security integration even after IWMA ended. IWMA was supported by champions within USAID Nepal and the SEED office who empowered the IWMA team to convene and facilitate the IPs directly. This strong support from USAID helped ensure consistent participation of IPs and their commitment to implementing the Integration and MEL Plans. As a neutral facilitator, IWMA provided a clear structure and expectations for IPs which enabled participants to efficiently prioritize activities and define outcome targets. This process encouraged participants to continue implementing integrated water security activities after IWMA ended in February 2020.

[7] In response to this data challenge, it was suggested that IWMA develop standard guidelines for spring source mapping based on the approaches used by PAHAL, Digo Jal Bikas (DJB), and Paani. DJB was leading this task with inputs from Paani and PAHAL; however, upon review by IWMA, it became clear that there was a very small audience for this resource and numerous publications available that IPs could reference.

Inconsistent staff representatives from each IP created challenges. The constantly changing roster of IP representatives at IWMA meetings made participation and follow up difficult for both regular and new participants. Time had to be dedicated at the beginning of each meeting to review IWMA, its purpose, goals, and process for individuals new to the activity.

Regular meetings between local governments and IPs were helpful and appreciated by all participants. Before IWMA, IPs working in the same municipality or ward met with officials and communities independently, which often resulted in duplication of effort. For example, two IPs might provide similar trainings; in one case, IPs provided technical support for two different disaster risk management plans for the same municipality. As part of their participation in the WSI process, all IPs working in the same municipality were required to jointly meet regularly with municipal and ward level officials to provide updates and receive feedback. IPs are now coordinating their efforts to support communities by dividing and defining their respective responsibilities.

The WSI process allowed IPs to use a "learn by doing" approach to water security. Each IP joined IWMA with different levels of awareness of water security. Some IPs were skeptical about the relevance of water security to their project objectives; others were already knowledgeable about the importance of water security. By jointly participating in training, planning, and implementing integration activities, all participating IPs increased their understanding of water security and its value in addressing specific water security risks.

INTEGRATION ACTIVITIES

Water security integration enabled USAID Nepal and IPs to understand water security risks at the watershed level. Before IWMA, most IPs focused their interventions around specific municipalities. During IWMA, USAID Nepal and IPs began conducting "watershed walks," visiting field sites around the watershed and meeting with local government officials. This approach allowed IPs to understand water security risks at the watershed level and see how different field sites were linked hydrologically.

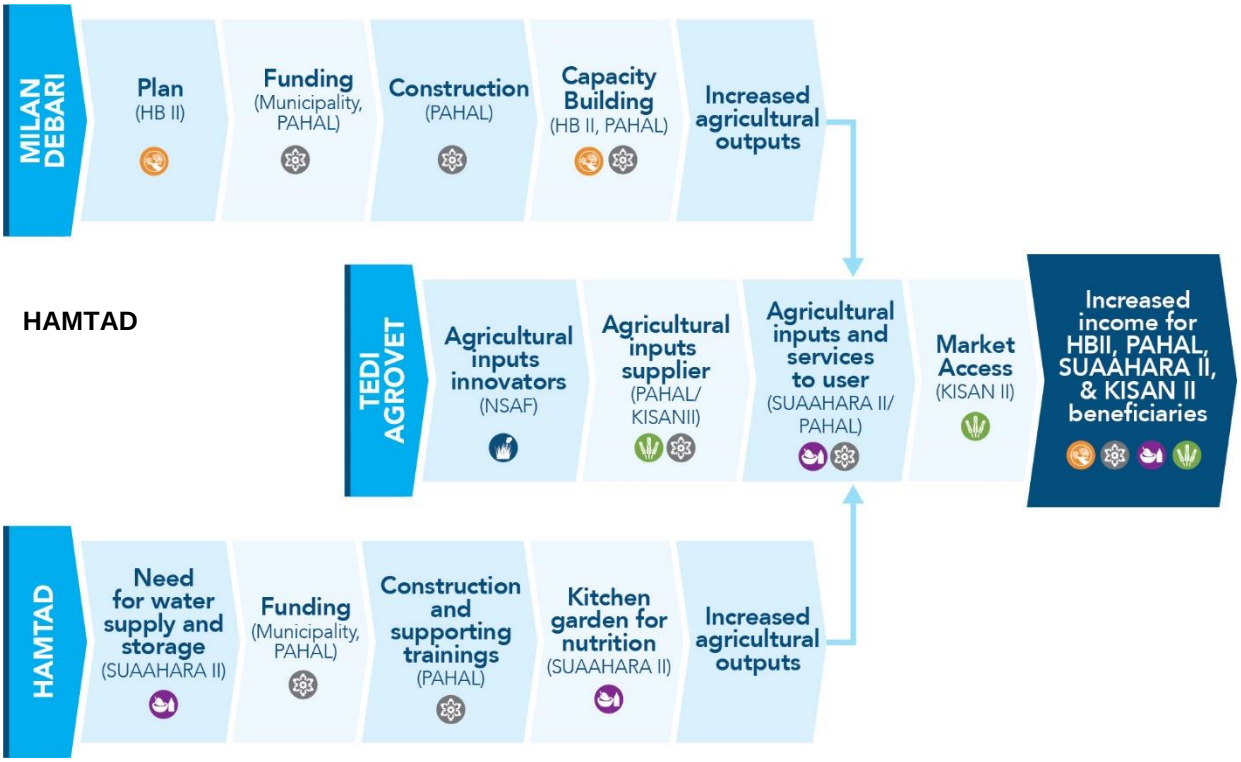
Integration activities built on synergies among IPs. Water security integration requires a clear understanding of potential synergies among partners to identify opportunities to expand impacts. IWMA helped USAID IPs explore shared needs, capabilities, and data to identify opportunities to jointly scale their impacts. The WSI process often resulted in IPs discovering that they shared relationships with some of the same field-based beneficiaries, communities, and local partners (grantees), and that they could build on those relationships to increase their impact.

IPs were motivated when integration activities added value to their projects. IWMA found that IPs were motivated to pursue water security integration activities when the activities contributed to their project's activity indicators and overall project goals; helped fill technical or financial gaps; presented opportunities for cross-sectoral linkages by leveraging the technical expertise of other IPs; or sustainably expanded the project's impacts, such as the geographic reach and/or the number of people benefiting from USAID assistance.

Integration activities enabled beneficiaries to progress to higher levels of skill and income. Integration activities 1, 2, and 3 built on each other to allow beneficiaries to progress to higher levels of skill and income (Figure 12). Under integration activities 1 and 3, PAHAL built irrigation infrastructure and provided community training on improved livelihoods through irrigation. In activity 1, HB II was then able to conduct water source protection training to enable the community to manage their new irrigation water source. In activity 3, the resulting increased access to irrigation allowed SUAAHARA II to implement its nutritious kitchen gardens program. Once beneficiaries were able to manage successful

household permagardens, they were able to join KISAN II-supported farmer groups to work with Tedi Agrovet on converting their permagardens into profitable farms, under activity 2.

Figure 12: Progression of beneficiaries enabled by integration activities



Municipal plans supported by IPs are a good source of ideas for integration activities. Integration activity 1 originated from the GON-supported Puntura Khola Sub-Watershed Management Plan, which was developed with the help of HB II. The idea for integration activity 6 came from the Thakurbaba municipality 20-year Master Plan, also supported by HB II. The IPs included municipal officials in the design and implementation of these integration activities, improving their project management skill as a result.

Integration activities helped to make the "One USAID" approach a reality. Integration activities allowed IPs working in the same area to help local governments and communities understand that USAID projects were working together to deliver benefits. For example, before IWMA, Paani often felt pressure from local government to build infrastructure rather than build capacity and deliver trainings, even though construction was outside its scope of work. IWMA showed the local government and communities that USAID operates as one team, through different projects; as a result, less pressure is being put on Paani to do construction. Paani has developed stronger relationships with the local government, which in turn makes their work easier

The integration process facilitated work in the Raute community. KISAN II, PAHAL, Paani, and SUAAHARA II were working or had plans to work with the Raute community, a khas indigenous ethnic group officially recognized by GON, in Pashuram Municipality Ward 12. Because PAHAL had already built an irrigation system and provided trainings, KISAN II was able to rapidly begin promoting vegetable farming and SUAAHARA II was able to provide technical services. Now that the Raute community understands USAID and how its IPs complement each other, it is more welcoming to USAID assistance.

Field-based and centrally located staff of IPs generated different but equally important ideas for integration. Central staff and field staff of IPs, including grantees and local facilitators, had different perceptions of water security integration. Integration activities identified at the central level related to sharing information, knowledge and learning deliverables, and data, while integration activities identified in the field were focused on implementation. It was important to include both field-based and centrally located staff to capture the full range of integration ideas.

Integration activities allowed IPs to socialize their approaches and innovations with a larger audience. One example of this is that KISAN II was able to take the small water infrastructure materials developed by PAHAL and incorporate them in trainings given to stakeholders when new irrigation schemes are handed over. KISAN II was aware that PAHAL had found it difficult to get communities to acquire small water infrastructure insurance even after providing trainings. However, KISAN II saw their trainings as an opportunity to deliver the behavioral change communications that could open the minds of small farmers and communities to the need for this insurance. By continuing the conversation with insurance companies, KISAN II showed that there is still interest in this insurance product. They identified additional strategies to promote the insurance, such as bundling small water infrastructure insurance with crop insurance to overcome insurance companies' aversion to small and remote infrastructure, which equates to lower revenue in their eyes.

Integration helped IPs to work beyond their thematic area. At first glance, the SUAAHARA II and HB II projects did not seem relevant to water security: HB II focused on natural resource management, while SUAAHARA II focused on the nutrition of 1,000-day mothers. However, they came together under IWMA to train a community in Lamkichuha Municipality that was vulnerable to disasters. The training focused on how social barriers affect 1,000-day mothers, and coping strategies to increase resilience. This topic fit under HB II's GESI and governance theme component, which supported community learning and action centers. The two projects have replicated this training for other communities.

The IWMA integration process has had a "spillover" effect beyond the two watersheds. PAHAL and Paani reported collaborating on integration activities related to bioengineering in the Jhimruk watershed.

SHARED WATER SECURITY RESOURCES

Sharing knowledge products among IPs helps get information to a wider group of stakeholders. By sharing their reports and tools with other IPs, projects can expand their reach to a wider targeted audience of relevant stakeholders and beneficiaries.

Exchange of information and resources led to field-level integration. One example of this is that SUAAHARA II compiled a list of 96 beneficiaries in Dadeldhura district who were ready to be linked with markets to sell surplus commodities. KISAN II used this list to provide market linkage support to 16 of SUAAHARA II's beneficiaries. Three were supported by Tedi Agrovet and 13 were supported by other KISAN II grantees.

MAJOR CHALLENGES AND CONSTRAINTS

- Water security is a broad sector. Under IWMA, USAID partners identified nine working areas for possible collaboration. Given IWMA's short period of implementation, the team was not able to focus on each working area in detail. Partners echoed this concern during the Second Update and Coordination Meeting and suggested IWMA give priority to one or two of the water security working areas.
- It is difficult to collaborate on short term projects (6 months – 1 year); a longer period is required to achieve more collaboration and better results.

- The lack of field-level presence of IWMA and the associate award's limited budget for field visits made it difficult for effective follow-up and monitoring of the IWMA Integration and MEL Plans.
- Partners and their local implementing organizations often do not have written agreements or documentation of the integration activities they are carrying out in the field. This made it difficult to monitor IWMA Indicator 5 (formal agreements).
- Many IPs had specific target groups or geographies that prevented potential integration activities. For instance, Paani was working with a dalit community near Bagariya lake to build their capacity to manage and protect the lake. Paani approached KISAN II to support this community's farming; however, since this group was not included in KISAN II's target stakeholder groups, KISAN II was not able to extend support. Similarly, target geographies were a constraining factor for IPs. Paani worked at the watershed level while other IPs used political boundaries (municipalities, districts) to define their area of operation. In some cases, despite working in the same district, IPs could not collaborate because of limitations in their geographic coverage.
- Budget constraints are another challenge for carrying out integration activities. In some cases, IPs identified integration activities but were not able to implement them because funds had not been allocated in their annual workplans.

RECOMMENDATIONS FOR FUTURE WATER SECURITY INTEGRATION ACTIVITIES IN NEPAL

Incorporate integration into USAID project designs and solicitations. When integration is imposed by an external entity or added after program implementation begins, it requires additional effort, time, and resources to achieve the same or lesser results. When integration is set as a priority during a project's design stage, IPs can more easily develop it as an integral cross-cutting objective.

Improve communications between IPs from the top down and the bottom up. There should be regular meetings among Chiefs of Party so that they own the integration process and are responsible for missed opportunities and redundant interventions. Project leaders should develop a strategy to better disseminate the integration process to field and to collect feedback from field staff to central project managers.

Develop a water security integration indicator to track collaboration between IPs. A dedicated indicator would establish integration as an official project goal, upon which IP performance is evaluated. This would help to make it a priority for IP staff.

Require that reports submitted to USAID have a section dedicated to documenting collaborative efforts or develop a reporting system for integration activities. IPs should report on whether they are planning and/or implementing integration activities. Information about integration implementation and results will allow IPs to improve the integration process and enable IPs to better track collaboration on integration.

Water security integration activities should prioritize relationships with municipal governments. Integration activities benefit from close engagement between Chiefs and Deputy Chiefs of Party with Mayors, Chairpersons and top-level officials from local governments. This courtesy is necessary to build trust and create an enabling environment for leveraging resources from local government and implementing activities. Local governments are interested to collaborate on the development and implementation of Water Use Management Plans, Local Disaster and Climate Resilience Plans, and environment-friendly rural roads policies; rehabilitation of non-functioning irrigation systems; promotion of permagardens through Municipality Agriculture Plans; and developing skills and business incubation for local youth on innovative technologies promoted by USAID and other development partners. During a final IWMA-hosted "watershed walk" in the Rangun Khola watershed,

participating municipal officials and IPs created an updated list of water security risks on which they seek help from USAID:

- Mismanaged sand and gravel extractions
- Deforestation
- Poor design and construction of rural roads
- Floods and landslides
- Animal grazing in forest areas
- Weak implementation of government policies and lack of supervising municipality staff

Similarly, participants from the reciprocal meeting in the Lower Karnali watershed created an updated list of water security risks on which they seek help from USAID:

- Human settlements encroaching on riverbanks in the Karnali river corridor
- Illegal and mismanaged river stone mining
- Deforestation
- Floods and landslides
- Riverbank erosion
- Climate change impacts
- Water pollution from chemical fertilizers, industry waste and sewage
- Over-extraction of natural resources
- Roles are not clearly defined among different levels of government on water security issues
- Trade-offs between development and conservation
- Lack of local government coordination on valuing natural resources, resulting in over-extraction of natural resources

Develop mechanisms for IPs to pursue integration activities not included in their original workplan. If a project has not planned for integration activities and allocated them resources during project design or in its workplan, trying to add them later is often difficult. Adding a new activity requires multiple approvals as well as realigning the budget and human resources and amending grant awards and subcontracts. One way IPs can build in flexibility for future integration activities is to set aside a small sum from their budget for opportunities that may arise.

Include grantees, partner organizations, and subcontractors in the integration process and activities. Integration activities require the buy-in and participation of grantees, partner organizations, and subcontractors. Grantees and subawardees participated extensively in integration activities 2 (Tedi Agrovet – KISAN II), 4 (various – KISAN II), 5 (NNSWA – Paani), and 6 (CARE – HB II). Including them in the integration process is essential to launching new integration activities and expanding existing ones.

MONITORING, EVALUATION AND LEARNING

#	Type	Indicators	Target (Feb 2018-Feb 2020)	Results (Feb 2018 to Sep 2018)	Results (Oct 2018 to Sep 2019)	Results (Oct 2019 to 11 Feb 2020)	Total Achievement
001	Custom	# of tools developed or shared for managing water security risk	8	1	13	1	15

Comments

Feb 2018 to 30 Sept 2018

1) PAHAL demonstrated the Permagarden and Sprinkler in the Hamtad Community in Ward No. 8 of Aalital Rural Municipality

Oct 2018- 30 Sep 2019

2) Insurance companies' relevant policies for small water infrastructure shared with Himalayan Insurance, United Insurance, Prabhu Insurance, PAHAL, HB II, and KISAN II.
3) Paani shared climate data (rainfall and temperature) with HB II for use in Pantura sub-watershed.
4) Paani shared watershed profile and health reports of Rangun Khola and Lower Karnali watersheds with partners.
5) Paani shared Water Resource Data and Water Resource Mapping of both Rangun Khola Watershed and Lower Karnali Watersheds with partners.
6) IWMA compiled and shared list of Local Facilitators of Partners working in the Rangun Khola and Lower Karnali Watersheds with partners.
7) Paani shared list of trained citizen scientists from Kathmandu University with partners.
8) PAHAL and KISAN II shared irrigation technologies/practices with KISAN II, PAHAL, and Paani.
9) PAHAL and United Insurance Pvt. Ltd. shared information on small water infrastructure insurance with KISAN II and Paani.
10) SERVIR-HKH shared modelling tools for flood forecasting with partners.
11) PAHAL shared data of CFUG Executive Committees with membership details, including disaggregation by gender with partners.
12) SERVIR-HKH shared website link of forest fire alert information and risk management system tool with partners.
13) Paani shared pre-monsoon and post-monsoon spring water quality data from Rangun Khola watershed with partners (RK).
14) Paani shared Rajapur Municipality LAPA with partners.

Oct 2019- Feb 2020

15) Paani shared about their grantee program and grantees working in targeted watersheds

***Note**: This indicator exceeded the target by more than 10 percent because of the quantity of IPs, the strong research components that many had, and the advanced stage of many of the projects (with the majority of them being in their second or third year at the start of IWMA).*

#	Type	Indicators	Target (Feb 2018-Feb 2020)	Results (Feb 2018 to Sep 2018)	Results (Oct 2018 to Sep 2019)	Results (Oct 2019 to 11 Feb 2020)	Total Achievement
002	Custom	# of USAID Partners using tools developed under IWMA or by other USAID Partners on water security	5	0	4	4	8

Comments

Oct 2018- 30 Sep 2019

1) PAHAL Irrigation system design shared with HB in Milan Debari. HB II's CFUG members of Milan Debari are using bio-engineering techniques, agriculture techniques, forest management practices and institutional and governance sustainability plan demonstrated jointly by HB II and PAHAL (RK).
2) HB II used data on climate (rainfall and temperature) for Pantura sub-watershed shared by Paani.
3) SUAAHARA II used permagarden and sprinkle technology from PAHAL at Hamtad, Alital Rural Municipality (RK).

#	Type	Indicators	Target (Feb 2018-Feb 2020)	Results (Feb 2018 to Sep 2018)	Results (Oct 2018 to Sep 2019)	Results (Oct 2019 to 11 Feb 2020)	Total Achievement
4) KISAN II has been orienting its farmer groups to consider insurance of installed irrigation schemes together with other their own infrastructure using PAHAL materials. **Oct 2019- Feb 2020** 5) HB II is supporting Department of Forests and Soil Conservation to develop database on forest including information of CFUG. They are using data gather by SERVIR-HKH (ICIMOD) which also include GESI disaggregation. 6) Paani used HB II information on DRM and climate change which HBII used information of Paani on low cost early warning system and GESI inclusion. 7) SUAAHARA II used HB II information on how social barriers affect 1000 days mothers and how they should cope with it 8) PAHAL's Lead Farmer and SUAAHARA's Village Model Farmers got training on planting vegetable nursery from KISAN II ***Note**: This indicator exceeded the target by more than 10 percent because many of the IPs had existing and relevant water security-related tools that were easily mobilized for the beneficiaries of other IPs.*							
003	**Custom**	**# of convening or collaborative events held among USAID Partners**	**29**	**5**	**14**	**5**	**25**
Comments							
Feb 2018 to 30 Sept 2018 1) Initial Coordination Workshop (KTM-1) 2) Validation Workshop (KTM-1) 3) First brainstorming meeting (KTM-1) 4) Second brainstorming meeting (KTM-1) 5) Field brainstorming meeting (RK-1) **Oct 2018- 30 Sep 2019** 6) Technical meeting (Water Source and Use*) (KTM-1) 7) Technical meeting (Small Water Infrastructure Insurance) (KTM-1) 8) First RK Field level coordination meeting (Pashuram-1) 9) First LK Field level coordination meeting (Thakurbaba-1) 10) IWMA Update meeting (KTM-1) 11) RK Interaction meeting (Nepalgunj-1) 12) LK Interaction meeting (Nepalgunj-1) 13) Second RK Field level coordination meeting (Alital-1) 14) Second LK Field level coordination meeting (Rajapur-1) 15) Technical meeting (Irrigation Technologies/ Practices) (Nepalgunj-1) 16) Technical meeting (Field Lever Small Water Infrastructure Insurance) (Nepalgunj-1) 17) Technical meeting (Water Induced Disaster Risk Reduction**) (KTM-1) 18) Update and coordination meeting (KTM-1) 19) Technical meeting (Grant Program) (KTM-1) **Oct 2019- Feb 2020** 20) IWMA Consultative Meeting 30 Dec 2019 (KTM-1)							

#	Type	Indicators	Target (Feb 2018-Feb 2020)	Results (Feb 2018 to Sep 2018)	Results (Oct 2018 to Sep 2019)	Results (Oct 2019 to 11 Feb 2020)	Total Achievement
21) Third RK Field level coordination meeting (Pashuram-1) 22) Third LK Field level coordination meeting (Thakurbaba-1) 23) RK Meeting on Municipality Water Security (Pashuram-1) 24) LK Meeting on Municipality Water Security (Thakurbaba-1) 25) Final Learning Workshop (KTM-1) ***Note**: This indicator achievement fell below the target by more than 10 percent because some technical meetings initially planned to take place separately were combined to be (a) more efficient with partners' time and (b) use resources more effectively. Another notable change is that IWMA chose to dedicate a portion of each meeting to the discussion of GESI issues, as they related to the meeting theme, instead of holding a separate meeting. This was done deliberately to emphasize the importance of fully integrating GESI within and between programs. Finally, one field level "Water Systems Management" meeting was delayed until December 2019 due to scheduling conflict among field implementing partners.* **Merged with "Water Governance in Water Security Activates" Meeting* ***Merged with "Forest Vulnerability Reduction" technical meeting*						
004	**Standard**	**# of people educated on tools, approaches, and/or methods for water security, integrated water resource management and/or water source protection because of USG assistance (HL. 8.3-1)**	**10**	**0**	**23**	**0**	**23**
Comments							
Oct 2018- 30 Sep 2019 1) 4 people from Partners educated on water infrastructure insurance options (2 each from KISAN II and PAHAL) 2) 9 people from Partner educated on Irrigation Technologies/practices 3) 8 people from Partners educated on Small Water Infrastructure Insurance 4) 15 people from Partners and other programs educated on Water Induced Disaster Risk Reduction 5) 7 people from Partners educated on Grant program ***Note**: This indicator exceeded the target by more than 10 percent because of IPs sent new representatives to each meeting, usually choosing a topical specialist relevant to the training to participate instead of the attendee each time. The diversity of tools covered in one educational session also likely led to more diverse attendees.*						
005	**Custom**	**# of partnerships documented among USAID Partners in implementing water security measures**	**6**	**1**	**3**	**2**	**6**
Comments							
Feb 2018 to 30 Sept 2018 1) PAHAL and SUAAHARA II partnered for Hamtad Soil Cement Tank for Irrigation, permagarden and sprinkle irrigation (RK) **Oct 2018- 30 Sep 2019** 2) HB II and PAHAL partnered for Milan Debari irrigation system, erosion control, and capacity building of CFUG (RK). 3) KISAN II, PAHAL and SUAHAARA II partnered to work with Tedi Agrovet (RK).							

#	Type	Indicators	Target (Feb 2018-Feb 2020)	Results (Feb 2018 to Sep 2018)	Results (Oct 2018 to Sep 2019)	Results (Oct 2019 to 11 Feb 2020)	Total Achievement
4) NNSWA (Paani grantee) used tree saplings in their reforestation activities sourced from PAHAL's Multipurpose Nursery in Rangun Khola watershed (RK). **Oct 2019- Feb 2020** 5) HB II and Paani jointly organized two two-day training events on community based EWS, CCA and DRR training in Madhuwan and Thakurbaba Municipality on 6-7 and 8-9 January. 6) HB II and SUAAHARA II jointly organized DRR training for vulnerable communities in Lamkichuha Municipality, with HB II focusing on the social dynamics and natural resource management and SUAAHARA II on the nutrition of 1000 days mothers ***Note**: Many integration/collaboration activities took place between IPs, especially in the field, but were not formalized with agreements or properly documented or communicated to IWMA (See Recommendations section). Examples include:* • *KISAN II and NSAF have collaborated to promote drought resilient and nutrients rich seeds and fertilizers developed by NSAF to KISAN II supported farmers.* • *PAHAL and Paani reported collaborating on integration activities related to bioengineering in the Jhimruk watershed,*						
006	**Custom**	**# of new tools being used by USAID partners on water security**	**7**	**0**	**3**	**5**	**8**
Comments							
Feb 2018- 30 Sep 2019 1) Irrigation system design by PAHAL used by HB II in Milan Debari (RK). 2) Permagarden technology used by SUAAHARA from PAHAL at Hamtad, Alital Rural Municipality (RK). 3) KISAN II used information from PAHAL on small-scale water infrastructure insurance to inform its farmers group about non-life insurance and encouraged them to consider insuring their newly installed irrigation schemes, along with other eligible infrastructures. **Oct 2019- Feb 2020** 4) HB II used SERVIR-HKH (ICIMOD) CFUG data to generate updated database of CFUG including disaggregated data. 5) HB II used Paani FEWS information and GESI to build capacity of their group vulnerable to disaster and climate change 6) SUAAHARA used HBII social dynamics and natural resource management information to make 1000 days mothers more resilient to disaster 7) PAHAL's Lead Farmer (LF) and SUAAHARA's Village Model Farmers (VMF) used information of vegetable nursery plantation from KISAN II 8) KISAN II's grantees used information of group formed by PAHAL and SUAAHARA and information of LF and VMF to promote their business through them.						
025	**Custom**	**# of participants attended in orientation on grant program related to water security measures**	**20**	**0**	**7**	**0**	**7**
Comments							
Feb 2018- 30 Sep 2019 1. 7 people from partners attended in technical meeting on Grant Program held in Kathmandu. ***Note**: Low attendance may have been a result of the meeting's timing. Most IPs had already secured their grantees earlier in their programs and were actively phasing out their grant's mechanism, including Paani and KISAN II. PAHAL had closed out a month prior to the meeting. SUAAHARA II eliminated their grants program entirely before the meeting took place.*							

ACTIVITY MANAGEMENT AND FINANCES

There were no significant staffing changes since the submission of the annual report on October 31, 2019: 1. See the complete list of activity staff:

Position	Name
Senior Strategic Advisor	Suman Basnet
WRM Specialist	Dr. Dilip Gautam
M&E Specialist	Resha Piya
Senior WRM Specialist	Dr. Rodolfo Camacho
Sr. Program Associate	Liz Kendall
MEL Specialist	Lauren Keller

Finances at the end of the project:

Please note that the below costs include some estimated costs as actuals for March of yet to be finalized.

Staff	$64,179.58
Travel & Logistics	$19357.12
Trainings & Workshops	$5,510.75
Consultants	$64,313.29
Other direct costs	$3,518.39
Total direct costs	$156,879.13
Indirect costs	$84,075.87

APPENDIX

RANGUN KHOLA WATERSHED WATER SECURITY INTEGRATION AND MEL PLAN

Rangun Khola Integration and MEI

LOWER KARNALI WATERSHED WATER SECURTIY INTEGRATION AND MEL PLAN

Lower Karnali Integration and MEI

U.S. Agency for International Development

-

www.usaid.gov