

**Policy Workshop on**

“Co-learning Opportunity for the Water, Energy, Food and Ecosystems (WEFE) Nexus in Nepal”



*Photo: Santosh Nepal, IWMI*

June 19-20, 2022

Dhulikhel Resort, Dhulikhel, Nepal

**Prepared by**

Department of Water Resources and Irrigation, Ministry of Energy, Water Resources and Irrigation  
International Water Management Institute



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## Acknowledgement

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In addition, the generous support and contribution of all the participants from the Nepal Agriculture Research Centre (NARC), Water Resources Research and Development Center (WRRDC), Department of Agriculture (DOA) and Ground Water Resources Development Board (GWRDB), including all the members of the CGIAR team (national and international), are deeply acknowledged.



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## Background

Within Nepal, Water, Energy, Food, and Ecosystems (WEFE) are vital resources not merely for the current generation, but also for future ones, especially to satisfy the demands of a growing population and to respond to socio-economic changes. WEFE are highly interconnected systems critical to food and nutrition security, livelihoods, climate change adaptation and mitigation, and environmental health. The WEFE nexus approach realizes that the management of water, energy, food, and ecosystems must be undertaken in a holistic way. Internalizing such 'nexus thinking' is key to achieving the objectives of the CGIAR's NEXUS Gains Initiative as well as the Sustainable Development Goals (SDGs) for Nepal.

Nevertheless, governments, investors, and other stakeholders face challenges in the management of WEFE resources in a holistic way, particularly in the face of climate change. Notably, a lack of coordination in utilizing such resources can be a source of potential conflict in many areas. Being vulnerable to climatic changes, the impact area is cross-sectoral and therefore better management of these interconnected resources is essential.

On June 19 and 20, 2022, the International Water Management Institute (IWMI) and the Department of Water Resources and Irrigation (DWRI) co-organized a co-learning workshop to discuss the challenges and opportunities of integrated management of WEFE resources using the nexus thinking approach in Nepal. The workshop was part of CGIAR's NEXUS Gains Initiative, which aims to improve the integrated management of water, energy, food, land, biodiversity, and forests for inclusive sustainable development in a climate crisis.

## Technical session

During the 1.5-day event, over 25 national and international experts and stakeholders from DWRI, Department of Agriculture (DOA), National Agriculture Research Council (NARC), Water Resources Research and Development Centre (WRRDC) and Ground Water Resources Development Board (GWRDB), among others, engaged in dialogue through presentations and interactive group discussions (Figure 1). The workshop helped foster learning and understanding of the WEFE nexus among participants representing the WEFE sectors in Nepal. The details of the participants and the agenda are enclosed in Annex I and II respectively.



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FIGURE 1. Participants of the Co-learning Policy Workshop on WEFE in Nepal, Dhulikhel Lodge Resort, Dhulikhel.

In her inaugural speech, Dr. Manohara Khadka, Country Representative of IWMI Nepal, highlighted the increasing pressure on WEFE resources due to climate change, hindering the sustainable management of water and food security. She added, “DWRI is revising the Irrigation Policy (2013) in view of the implementation of federalism in Nepal. Therefore, a co-learning workshop providing details of WEFE resources management concepts using nexus thinking and approaches is timely. This discussion intends to provide an opportunity to learn about the WEFE nexus and incorporate relevant approaches into relevant policies.”

Mr. Susheel Chandra Acharya, the Director General of DWRI remarked, “Water resources are the major entity for food security, natural and ecosystem balance, and energy, and are the foundation for Nepal’s economic and social development. Water resource availability is enough in Nepal, but its timely and adequate delivery and its governance are a challenging task.” He added, “Based on international research and practices, I am expecting this workshop to be a good knowledge-sharing platform. Irrigation Policy is in formulation stage and the discussions during the workshop will help to realize nexus between irrigation and other sectors, which would ultimately help the development of Nepal.”

While briefing the participants about the program overview, Dr. Santosh Nepal, Researcher of Water Resources and Climate Change, IWMI, elaborated: “This workshop is a co-learning opportunity with experts from WEFE sectors in Nepal as we would have equal opportunity to learn from each other, to learn together, and to work together.”

Ten presentations were delivered by a range of renowned nexus experts and water management professionals; they provided unique inputs on the WEFE nexus and its significance for resource-related policies. Participants gained a general understanding of the approach, including opportunities and challenges related to its implementation. Insights into the value of WEFE nexus approach to ensure water,





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energy, and food security in Nepal's most vulnerable regions were further shared, setting the scene for the rest of the workshop.

Dr. Tafadzwanashe Mabhaudhi (Research Group Leader – Sustainable, and Resilient Food Systems) noted the implications of irrigation modernization and nexus-friendly irrigation modernization pathways for different climatic zones, distinguishing the performance of silo-based irrigation systems from integrated nexus performance. He concluded, “Drip irrigation is a more sustainable irrigation technology in terms of optimizing water, energy, and food efficiency and the best transition is moving from drip followed by furrow and sprinkler in a tropical climate.” Dr. Stefan Uhlenbrook, Leader-CGIAR NEXUS Gains initiative described the nexus approach: “IWRM (Integrated Water Resources Management) is a water-centric approach which has linkages to navigation, energy, tourism, ecosystem, cities, and food production. But a nexus approach is different. It puts water, energy, food, and ecosystems on the same footing. It is not about optimizing water management only but at the same time understanding the synergies and trade-offs with other sectors: optimizing food and nutritional security, energy security, and environmental health and biodiversity at the same time. They are all equally important so we should move on from a water-centric approach to a much more systems approach.”

Participants were divided into two groups, conducting interactive group discussions on Strengths, Weaknesses, Opportunities, and Threats (SWOT) of existing policies for incorporating nexus thinking and approaches (Figure 2). The Irrigation Policy and National Agricultural Policy were used as examples of potential areas of nexus approach integration within different sectoral policies. The discussion was facilitated by Dr. Devendra Gauchan, Senior Research Fellow, Alliance of Bioversity International and CIAT. It allowed the groups to identify a provision for Gender Equality and Social Inclusion (GESI), multipurpose irrigation projects, and strengthening Water User Associations (WUAs) concepts as strengths, while climate change and lack of WEFE nexus concept and tariff collection were ascertained to be major weaknesses of the Irrigation Policy 2070. Similarly, for National Agricultural Policy 2061, ecosystem conservation, food, and agricultural productivity concepts, including GESI provisions, were recognized as major strengths, but a lack of thorough focus on water and energy, linkages to crops, and post-harvest processes were seen as significant weaknesses. In addition, the group found that Policy, Energy, and Ecosystems are the specific areas where nexus thinking in Nepal can be internalized. The specific context to be added to the irrigation policy is water productivity enhancement targeted over the irrigated area, the need for an irrigation ecosystem, and institutional strengthening of WUA (i.e., who is doing what). In the energy sector, multiple uses and targeted subsidy mechanisms for smallholders should be highlighted. Lastly, issues of land restoration, linkages between soil conservation and irrigation, and compensation for water-induced disasters are a few of the major aspects to be considered in the ecosystem.



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FIGURE 2. Group Discussion on SWOT analysis of existing policies for integrating nexus thinking.

Subsequently, Dr. Manohara Khadka and Ms. Gitta Shrestha (Researcher, IWMII), set forth the opportunities and challenges for gender-just and socially inclusive management of the WEFE nexus in Nepal. During this session, participants examined the gender continuums which best described their ongoing work. Participants of the first group found Community Managed Irrigated Agricultural Sector Project (CMIASP-AF) to be a 'gender-responsive' project. In the second group, the Priority River Basins Flood Risk Management Project (PRBFRMP) was noted to be 'gender-responsive', and the Prime Minister Agriculture Modernization Program (PM-AMP) (Banana Zone) was identified to be a 'GESI transformative' program.

Marking the end of the first day, Mr. Sunil Singh (Senior Agri-Economist, DOA) highlighted the departments' five plans of action for sustainable agriculture: a) Management and Coordination, b) Linkages and Communications, c) Implementation support and facilitation, d) Enabling Environment, Policy, and Institutions, and lastly, e) Technical Support. In addition, his presentation also notably touched upon the Smart Village Program Model.

The second day of the workshop was commenced by Mr. Sanjeeb Baral, Deputy Director General (DDG) of DWRI. His presentation highlighted the revised irrigation policy, along with the need for a new policy — one where the three tiers of government emphasize the development of large, multipurpose, and basin diversion projects in a sustainable way. This is aimed to address water security issues, promote energy-based irrigation development with irrigation management, and safeguard and guarantee water rights.



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Some of the highlights of the discussion included the goal of irrigation to be energy-efficient to increase production and productivity with less environmental pollution.

Similarly, Dr. Nirman Shrestha and Ms. Labisha Uprety from IWMI Nepal elucidated the challenges within agricultural water management in Nepal as well as opportunities for irrigation development, noting distinct sets of opportunities and barriers from a biophysical and socio-economic perspective. Elements of policy and governance, public and private sector interventions and GESI in irrigation must be considered together to create an ecosystem for inclusive and sustainable farmer-led irrigation development. The subsequent discussion looked at the challenges and opportunities of agricultural water management. The workshop participants highlighted several hindering factors such as limited data on surface water, upstream and groundwater, use of older technology and software manuals, and lack of land/water ownership as the major barriers. The main opportunities identified included a climate adaptation plan, a new irrigation policy, and water harvesting and conservation scaling for the rainfed system.

Finally, Dr. Claudia Ringler from the International Food Policy Research Institute (IFPRI), co-lead of NEXUS Gains, underscored the importance of policy coherence for the nexus approach. She augmented the discussion by illustrating the example of the Eastern Nile on trade-offs and synergies for regional cooperation.

At the end of the workshop, Dr. Manohara Khadka remarked that the workshop was a base to understand the degree of WEFE thinking among the relevant stakeholders; he appreciated the nexus-centered conversation to create momentum and drive interest. Mr. Pradeep Thapa (Deputy Director General, DWRI) highlighted the significance and novelty of nexus thinking. He observed that the workshop allowed the department to be sensitized about WEFE, with the feedback received from the two days to be incorporated in the upcoming policy. The workshop concluded with the participants expressing their interest in joining further comprehensive training in the future, engaging with the sustainable development of the WEFE nexus.



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## ANNEX I: Details of the participants

### Workshop on

### Co-learning Opportunity for the Water, Energy, Food and Ecosystems (WEFE) Nexus in Nepal

Date: June 19-20, 2022 (1.5 days)

Venue: Dhulikhel Lodge Resort, Dhulikhel

#### List of Participants

SN	Name	Designation	Office	Email
1.	Mr. Susheel Chandra Acharya	Director General	Department of Water Resource and Irrigation	acharyasusheel@gmail.com
2.	Mr. Pradeep Thapa	Deputy Director General	Department of Water Resource and Irrigation	erpradth@gmail.com
3.	Mr. Churna Bahadur Oli	Deputy Director General	Department of Water Resource and Irrigation	cbwali69@gmail.com
4.	Mr. Sanjeeb Baral	Deputy Director General	Department of Water Resource and Irrigation	sanjeeb.baral@gmail.com
5.	Mr. Tika Ram Baral	Project Director	CMIASP-AF	baral.tikaram@gmail.com
7.	Dr. Santosh Kaini	Project Director	Sikta Irrigation Project	santoshkaini@yahoo.com
8.	Mr. Naveen Chandra Adhikari	Project Director	Babai Irrigation Project	adhikarinc@gmail.com
9.	Mrs. Ezee G.C.	Senior Divisional Engineer	Department of Water Resource and Irrigation	gcezee@gmail.com
10.	Mrs. Alka Subedi	Senior Divisional Engineer	Department of Water Resource and Irrigation	alka.subedi@gmail.com
11.	Mrs. Suchana Acharya	Senior Divisional Engineer	Department of Water Resource and Irrigation	acharyasuchana@gmail.com
12.	Mrs. Jigyasha Rai Yangkhurung	Senior Divisional Engineer	PRBFRMP	jigyasharai9@gmail.com
13.	Mr. Bishnu Belbase	Executive Director	Ground Water Resource Development Board	bishnubelbase@gmail.com
14.	Mr. Dinesh Parajuli	Senior Divisional Engineer	Water Resources Research and Development Center	Parajulidinesh2016@gmail.com
15.	Dr. Rewati Raman Poudel	Director General	Department of Agriculture	Poudelrr2014@gmail.com
17.	Mrs. Samjhana Maharjan	Civil Engineer	Department of Energy, Water Resources, and Irrigation	Samjhanamaharjan123@gmail.com





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19	Mrs. Manju Kawan	Senior Divisional Engineer	Department of Water Resource and Irrigation/KUWAIT Fund	Kawan.Manju@gmail.com
20.	Mr. Sunil Singh	Senior Agri-Economist	DOA	Sing_Sunil@yahoo.com

#### CGIAR and NARC

1	Dr. Shreemat Shrestha	Principal Scientist	NARC (Shreematsrestha@yahoo.com)
2	Dr. Devendra Gauchan	Honorary Research Fellow	Alliance Bioversity - CIAT
3	Dr. Manohara Khadka	Country Representative	IWMI Nepal
4	Dr. Santosh Nepal	Researcher	IWMI Nepal
5	Dr. Nirman Shrestha	Researcher	IWMI Nepal
6	Mrs. Manju Adhikari	Consultant	IWMI Nepal
7	Ms. Labisha Uprety	Sr. Research Officer	IWMI Nepal
8	Mr. Om Acharya	Office Manager	IWMI Nepal
9	Ms. Gitta Shrestha	Researcher	IWMI Nepal



## ANNEX II: Agenda for the co-learning workshop

Time	Agenda	Resource persons
<b>Day One (June 19, 2022, Sunday)</b>		
09:30 - 10:00 AM	<b>Opening session</b> <ul style="list-style-type: none"> <li>Welcome remarks (5 mins)</li> <li>Opening remarks (5 mins)</li> <li>Overview of the co-learning workshop (10 mins)</li> <li>Participants' introduction and expectation (10 mins)</li> </ul>	Dr. Manohara Khadka, Country Representative, IWMI, Nepal  Mr. Susheel Chandra Acharya, Director General, Department of Water Resources and Irrigation, Nepal  Dr. Santosh Nepal, Researcher, IWMI, Nepal
10:00 - 10:45 AM	Conceptual understanding of Water-Energy-Food-Ecosystems (WEFE) nexus <ul style="list-style-type: none"> <li>Introduction to the WEFE nexus approach</li> <li>How does the WEFE nexus approach complement Integrated Water Resources Management (IWRM)?</li> <li>Why sectoral integration is important for managing the WEFE nexus?</li> <li>How is the NEXUS Gains Initiative addressing these issues?</li> </ul>	Prof Dr. Stefan Uhlenbrook, Leader, CGIAR NEXUS Gains Initiative, and Strategic Program Director, Water, Food and Ecosystems, IWMI, Sri Lanka
10:45 - 11:00 AM	<b>Group Photo and Tea break</b>	
11:00 - 11:40 AM	WEFE nexus in Nepal: Opportunities and challenges	Dr. Santosh Nepal, Researcher, IWMI, Nepal
11:40 AM - 12:20 PM	<ul style="list-style-type: none"> <li>NEXUS relevance for sustainable irrigation and the agriculture sector</li> <li>Global examples of nexus thinking in sustainable irrigation technologies</li> <li>Importance of the WEFE nexus in a climate change context</li> </ul>	Dr. Tafadzwa Mabhaudhi, Research Group Leader, Sustainable and Resilient Food Production Systems (SuRF), IWMI, Ghana
12:20 - 12:50 PM	Opportunities and challenges for WEFE nexus thinking and practice in Nepal: Findings from a scoping study	Dr. Marlene Buchy, Consultant, NEXUS Gains initiative
12:50 - 01:45 PM	<b>Lunch break</b>	
01:45 - 02:45 PM	<b>Interactive group discussion</b> <ul style="list-style-type: none"> <li>What are the strengths, weaknesses, opportunities, and threats of the existing policies for integrating nexus thinking and approaches?</li> <li>What are the possible areas where we can internalize nexus integration among different sectoral policies (e.g., water and irrigation)?</li> </ul>	Facilitator: Dr. Devendra Gauchan, Alliance Bioversity - CIAT  The participants will be divided into two groups and will discuss the questions



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	<ul style="list-style-type: none"> <li>What sort of capacity development and institutional support is needed to practice the WEFE nexus in Nepal, in general, and in the water resources, irrigation and agriculture sectors, in particular?</li> </ul>	
02:45 - 03:15 PM	Reporting back on group work	
03:15 - 03:45 PM	<b>Tea break</b>	
03:45 - 04:30 PM	Gender Equality and Social Inclusion (GESI) in the WEFE Nexus	<p>Dr. Manohara Khadka, Country Representative, IWMI, Nepal</p> <p>Ms. Gitta Shrestha, National Researcher, IWMI, Nepal</p>
04:30 - 05:00 PM	Sustainable agriculture in Nepal: Why water, energy, food, and ecosystems matter	Department of Agriculture
04:30 - 04:40 PM	Reflection of the day	Dr. Manohara Khadka, IWMI
<b>Day Two (June 20, 2022, Monday)</b>		
09:00 - 09:30 AM	<ul style="list-style-type: none"> <li>Irrigation policy highlights</li> </ul>	Mr. Sanjeeb Baral, Deputy Director General, Department of Water Resources and Irrigation, Nepal
10:00 - 10:30 AM	<ul style="list-style-type: none"> <li>Agricultural water management in Nepal: Challenges and opportunities</li> </ul>	Dr. Nirman Shrestha and Labisha Uprety, IWMI Nepal
10:30 - 10:45 AM	<b>Tea break</b>	
10:45 - 11:15 AM	Achieving policy coherence through the WEFE nexus	<p>Dr. Claudia Ringler, Deputy Division Director, Environment and Production Technology Division, International Food Policy Research Institute, USA</p> <p>Dr. Tafadzwa Mabhaudhi, IWMI, Ghana</p>
11:15 - 11:30 AM	<p>Closing remarks</p> <ul style="list-style-type: none"> <li>Summary of the event</li> <li>Looking ahead</li> <li>Vote of thanks</li> </ul>	<p>IWMI, Nepal</p> <p>Department of Water Resources and Irrigation, Nepal</p>
11:30 - 12:30 PM	<b>Lunch break</b>	
12:30 PM Onwards	Departure to Kathmandu	