IWMI
International Water Management Institute

Country Strategic Roadmap

Nepal

2024–2030

Driving Action • Propelling Change

Credits:

Photography
Front cover: Murray Foubister (CC BY-SA 2.0 Deed)
Page iv: Onion Films/IWMI
Page 8: Nabin Baral/IWMI

Design and layout
Mario Bahar, Gracewinds Advertising

Citation
International Water Management Institute (IWMI). 2026. *Country Strategic Roadmap: Nepal 2024–2030*. International Water Management Institute (IWMI). https://doi.org/10.5337/2026.201.

ISBN
978-92-9090-985-9

© 2026 International Water Management Institute. Some rights reserved. This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

Disclaimer: The boundaries, colors, denominations and any other information shown on maps do not imply any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, on the part of IWMI, its funders, or its partners.

IWMI encourages the use of its material provided that the organization is acknowledged and kept informed in all such instances.

Contents

Acronyms and Abbreviations

ADB	Asian Development Bank
AEPC	Alternative Energy Promotion Center
AWP	Australian Water Partnership
CBO	Community Based Organization
CoP	Community of Practice
COP	Conference of the Parties
CRID	Climate-Resilient and Inclusive Development
CSO	Civil Society Organization
DP	Development Partner
DSS	Decision Support System
DWRI	Department of Water Resources and Irrigation
EU	European Union
FCDO	Foreign, Commonwealth & Development Office
FMIS	Farmer Managed Irrigation System
GEDSI	Gender Equality, Disability and Social Inclusion
ICIMOD	International Center for Integrated Mountain Development
IWC	International Water Center
IWMI	International Water Management Institute
IWRM	Integrated Water Resource Management
MELIA	Monitoring, Evaluation, Learning and Impact Assessment
MOALD	Ministry of Agriculture and Livestock Development
MOEWRI	Ministry of Energy, Water Resources and Irrigation
MOFE	Ministry of Forests and Environment
MOHP	Ministry of Health and Population
MOWCSC	Ministry of Women, Children and Senior Citizens
MOWS	Ministry of Water Supply
NAP	National Adaptation Plan
NARC	Nepal Agricultural Research Council
NDC	Nationally Determined Contributions
NEA	Nepal Electricity Authority
NGO	Nongovernmental Organization
OPI	Organizational Performance Indicator
PPCP	Public-Private-Community Partnership
R4D	Research for Development
RBO	River Basin Office
SME	Small and Medium Enterprise
TFWS	Transformative Futures for Water Security
UNFCCC	United Nations Framework Convention on Climate Change
WASH	Water, Sanitation and Hygiene
WB	World Bank
WECS	Water and Energy Commission Secretariat
WEFE	Water-Energy-Food-Ecosystem
WUA	Water Users Association

Foreword by the Country Representative

Across Nepal's Himalayan mountains, hills, and plains, water systems face rising risks alongside exceptional opportunities. Nearly two-thirds of the workforce depends on agriculture, yet only 39% of irrigated land has year-round water access. Springs, which are the lifeline of the mid hills, are drying, and over 80% of people lack safe drinking water. Climate change intensifies these pressures, disproportionately affecting women, poor households, and marginalized groups. At the same time, Nepal's water resources hold vast potential to drive growth, food security, livelihoods, and resilience.

> **Women comprise 73% of the agricultural workforce, yet still face barriers to assets, technology, and decision-making.**

For four decades, the International Water Management Institute (IWMI) has been Nepal's trusted research partner, bridging science, policy, and practice. Established in the 1980s as the International Irrigation Management Institute, its pioneering work on farmer-managed irrigation informed the Irrigation Master Plan (1990), the Water Resources Act (1992), and major ADB, WB, and UNDP programs. In the 2000s, IWMI advanced river basin management, water modeling, basin planning, and investment design. More recently, it has supported nationally significant processes ranging from consultations on Nationally Determined Contributions (NDC) 3.0 and the Water Resources Bill to applying the water-energy-food-ecosystem (WEFE) nexus and translating science into policy and scalable solutions.

IWMI's partnerships are adaptive and multi-scalar, spanning co-designed research, piloting and developing models, technical support, policy guidance, science-policy dialogues, and capacity sharing. Gender and social inclusion are embedded to ensure innovation and evidence-driven equity. This is vital in Nepal, where women comprise 73% of the agricultural workforce, yet still face barriers to assets, technology, and decision-making.

This roadmap builds on Nepal's vision for prosperity, sustainability, food security, climate resilience, and inclusive development, drawing on IWMI's presence since 1986 and the global CGIAR network. IWMI remains committed to generating insights and fostering innovations that strengthen water security and enable resilient, inclusive, and just national development. By investing in people, institutions, and science-led partnerships, Nepal can harness its water resources to build a prosperous future.

Dr. Manohara Khadka
Country Representative in Nepal

By investing in people, institutions, and science-led partnerships, Nepal can harness its water resources to build a resilient, inclusive, and prosperous future.

1. Context

1.1 Introduction

Nepal, a landlocked mountain country of nearly 30 million people, is marked by social and ecological diversity and a largely agrarian economy. Water underpins agriculture, energy, economy, biodiversity, ecosystems, and climate resilience, yet urbanization and disasters—floods, landslides, droughts, heatwaves, and earthquakes—intensify water stress. Despite minimal global emissions, climate change is accelerating glacial melt and intensifying extremes that threaten development. Water risks disproportionately affect women and girls, who often bear responsibility for water, food, and energy provision, yet have limited resources and voice to adapt. Addressing these challenges requires integrated water management, stronger science–policy linkages, better governance, and investments aligned with national priorities—core to IWMI's mandate on water security, resilience, and just development.

1.2 Water management in Nepal

Water management in Nepal operates within a three-tier federal structure established by the 2015 Constitution, comprising federal, seven provincial, and 753 local governments. The Constitution defines the mandates and jurisdiction of all three tiers of government in managing water resources through exclusive and concurrent powers. The water sector is currently undergoing policy reforms to operationalize these mandates and strengthen subnational policymaking. The Government of Nepal is committed to gender equality, disability, and social inclusion (GEDSI) in water management, as mandated by the Constitution, and sectoral policies. Community institutions remain central, with more than 55% of irrigation command areas managed under farmer managed irrigation systems (FMIS). Although the private sector provides services to FMIS—which are small scale irrigation systems—its role in large scale irrigation remains underdeveloped. Water policies aim to promote growth, food security, socio-economic transformation, integrated water resources management (IWRM), and climate-resilient river basin planning. Yet, gaps remain in policy coherence, institutional capacity, collaborative planning, water data systems, inclusive governance, and innovation in partnerships.

1.3 Development challenges in Nepal's water sector

Nepal's development is constrained by interconnected water, climate, energy, food, and governance challenges that require integrated, systems-level responses. Water availability is highly seasonal, with nearly 80% of rainfall occurring during the monsoon, while climate change intensifies floods, droughts, landslides, and glacier melt. Drying springs and increasingly erratic climate patterns are compounding risks, highlighting the need for resilient development based on strong water data, innovation, and institutions.

Agriculture employs about 65% of the population but remains highly vulnerable due to unreliable irrigation, low productivity, weak agricultural governance, and limited climate-adaptive capacity. According to the Irrigation Master Plan (updated 2024), only 56% of 2.54 million hectares of arable land is covered by irrigation infrastructure, of which 39% receives year-round irrigation. Weak innovation systems, poor coordination, limited conjunctive use of surface and groundwater, slow irrigation modernization, and persistent gender barriers constrain food security and livelihoods, especially for smallholders, women, and youth. Energy–water linkages further deepen vulnerability. Reliance on diesel pumps increases costs and emissions, while solar irrigation is constrained by financing gaps, weak business models, multi-stakeholder partnerships, and fragmented coordination among state and non-state actors.

Governance challenges cut across all water-related sectors. Federal restructuring has created space for locally responsive management, but overlapping mandates, limited institutional capacity, weak coordination across government

levels, and underrepresentation of women hinder effective implementation. Social and spatial inequalities worsen these gaps, as women, persons with disabilities, youth, Indigenous peoples, and marginalized groups face barriers to participation, leadership, and benefit-sharing.

Addressing these interlinked challenges requires science- and innovation-driven integrated water systems management, inclusive governance, climate-resilient technologies, nature-based solutions, and agrifood system transformation.

1.4 Trends and emerging opportunities

Nepal is well positioned to transform its water systems, creating jobs, strengthening livelihoods, and enhancing environmental security, through a Climate-Resilient and Inclusive Development (CRID) pathway. The 16th Five-Year Plan (FY 2024/25–2028/29) aims to increase year-round irrigation coverage from 25% to 50%, reduce food imports, and promote climate-resilient and job-generating agriculture. The Food System Strategic Plan (2024/25–2029/30) prioritizes Water–Energy-Food–Biodiversity–Health nexus solutions, while NDC 3.0 and the National Adaptation Plan (NAP) commit to resilient water management.

Advances in hydrological modeling, climate analytics, and decision-support tools now enable more precise water-risk assessment, future scenarios, and trade-offs across water, energy, food, and ecosystems. Nepal is well positioned to operationalize integrated Water–Energy–Food–Ecosystem (WEFE) solutions by leveraging innovations in climate-resilient farming, digital water data, inclusive business models, and multi-stakeholder platforms. WEFE approaches and public–private–community partnerships (PPCP) can drive action across irrigation. Mobilizing the private sector in agribusiness, particularly by scaling irrigation technologies, is critical for water and food security.

"

Advances in hydrological modeling, climate analytics, and decision-support tools now enable more precise water-risk assessment, future scenarios, and trade-offs across water, energy, food, and ecosystems.

Social transformation is reshaping water and agriculture, with increased participation of women and youth in enterprises and peri-urban farming driven by rural–urban and transnational migration. Men's out-migration has expanded women's roles in agriculture and water management, with female-headed households now exceeding 31%, underscoring the need for inclusive and women-friendly water technologies.

Priority actions include water science- and data-driven planning, climate-resilient water management, localized climate action, blended finance for irrigation innovation, knowledge hubs, groundwater management, spring restoration through nature-based solutions, improved river basin management, and scaling advanced irrigation technologies. Embedding hydrological modeling, climate analytics, and Gender Equality, Disability and Social Inclusion (GEDSI) responsive governance across WEFE systems will accelerate resilient, low-emission water systems across Nepal.

2. Achievements: Our Story of Impact

2.1 Evidence-driven policy processes

For four decades, IWMI has supported evidence-based policy reform and governance. Its early contributions to participatory irrigation management, the Water Resources Strategy (2002), and the National Water Plan (2005) embedded data-driven approaches in national water planning. IWMI's analytical tools, decision-support systems, and groundwater assessments enhanced government capacity to integrate water considerations into policy and investment decisions, addressing abstraction pressures, recharge potential, governance gaps, and equity concerns. At the irrigation-system level, pilots in the Babai Irrigation Project demonstrated how low-cost monitoring and real-time data can improve water allocation, transparency, and efficiency. IWMI's diagnostics have also informed rural water supply and Water, Sanitation and Hygiene (WASH) planning, supporting climate-resilient and equitable water management.

2.2 Water governance and systems transformation

IWMI's interdisciplinary research drives sustained, evidence-based engagement and multi-stakeholder science–policy dialogues that strengthen governance and policy reform to reduce structural inequities in water, land, and energy systems. At the national level, IWMI co-convened policy dialogues that informed revisions to the draft Water Resources Bill, helping integrate key recommendations into later versions. Its cross-sectoral engagement also contributed to embedding water security and GEDSI priorities in Nepal's NDC 3.0, strengthening the foundation for equitable climate investments.

In Madhesh Province, IWMI's groundwater research supported the establishment of a locally led multi-stakeholder platform, formally endorsed through municipal policy to improve coordination and integrated planning for sustainable groundwater management.

IWMI also advances socio-technical innovation that blends technology, institutions, and community engagement. In Indrawati Rural Municipality, a solar-powered water system now delivers over 45,000 liters daily, improving irrigation, boosting productivity, and reducing women's workload. A trained user committee ensures strong local ownership, and the municipality is expanding the system.

Similarly, a grid-connected solar irrigation pilot in Chhipaharmai Rural Municipality in Madhesh Province demonstrated a diesel-free, service-based model, generating 10,936 kWh and enabling year-round irrigation. Together, these interventions position IWMI as a systems integrator advancing inclusive, climate-resilient water transformation in Nepal.

2.3 Strengthening institutional capacity

IWMI institutionalized Nepal's first Water–Energy–Food–Ecosystem (WEFE) nexus curriculum at Tribhuvan University, embedding integrated approaches into higher education. Through targeted capacity building, women and men across WEFE sectors and local government strengthened leadership and negotiation skills in applying the WEFE nexus. Through Water Resilience Tracker trainings, government officials improved climate finance readiness and negotiation skills—enabling more strategic engagement in United Nations Framework Convention on Climate Change (UNFCCC) COP negotiations and access to financing opportunities.

At the local level, farmers have adopted water-efficient and inclusive practices that improved productivity and resource use. Capacity sharing on micro-irrigation technologies, soil-moisture conservation, rainwater harvesting, multiple-use water systems, and water-efficient farming has led to higher yields, more efficient water use, and wider

uptake of climate-resilient practices. Multi-stakeholder agricultural knowledge hubs and farmer trainings strengthened irrigation scheduling, links with service providers, and adoption of micro-irrigation and solar solutions—demonstrating scalable pathways toward inclusive and resilient water and food systems.

2.4 Knowledge base for watershed and basin management

IWMI has established a strong scientific foundation for watershed and river basin management in Nepal. Basin studies in the Indrawati and East Rapti catchments introduced participatory planning approaches and informed national water strategies.

In western Nepal, research in the Karnali, Mohana, and Mahakali basins improved understanding of mountain hydrology, climate impacts, environmental flows, land use, and gender and socio-economic dynamics of water use, directly informing irrigation management strategies reflected in the Second National Irrigation Master Plan (2019) and guiding water-focused development investment.

More recently, Water Accounting Plus (WA+) assessments supported local governments to develop integrated watershed-management plans addressing water security and ecosystem conservation. Springshed mapping in Karnali Province expanded the evidence base for restoring drying springs and protecting recharge zones, while groundwater studies in the Kathmandu Valley and Madhesh Province highlighted critical urban and Terai stress, translating science into investment priorities.

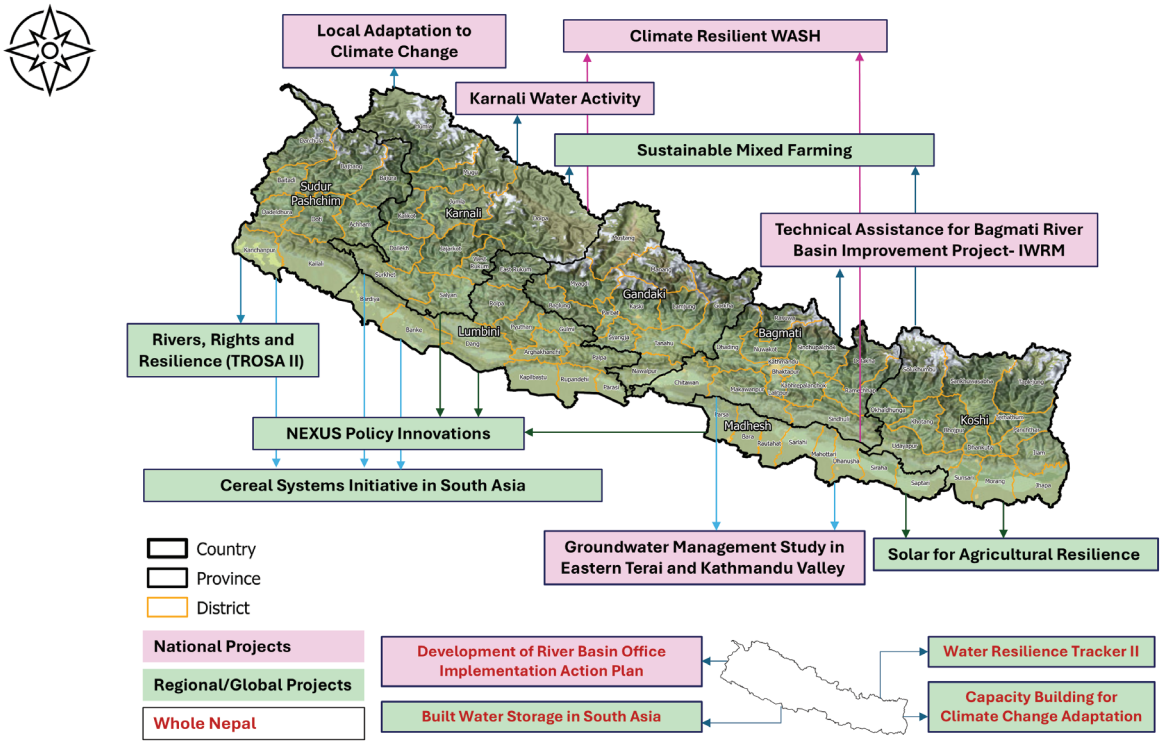

Figure 1. Thematic and geographic focus of IWMI's projects in Nepal over the last five years.

These achievements position IWMI as a trusted partner, dialogue convener, and catalyst for evidence-based solutions. Through research and pilots, IWMI has advanced water security, livelihoods, and inclusive development, mainstreaming gender and social inclusion through participatory governance. While challenges remain, results show that integrated, scalable solutions—backed by strong science and partnerships—can transform Nepal's water, energy, and agrifood systems (Figure 1).

3. Strategic Priorities

3.1 Introduction

IWMI has developed and adopted its strategy for 2024–2030, with three strategic focus areas and four transformational levers (Figure 2). This strategy commits to achieving IWMI's vision of a water-secure world, while contributing to increased water security for those who need it most. For IWMI, aligning research and innovation with Nepal's priorities requires understanding a young federal system, rapid urbanization, and rising climate risk.

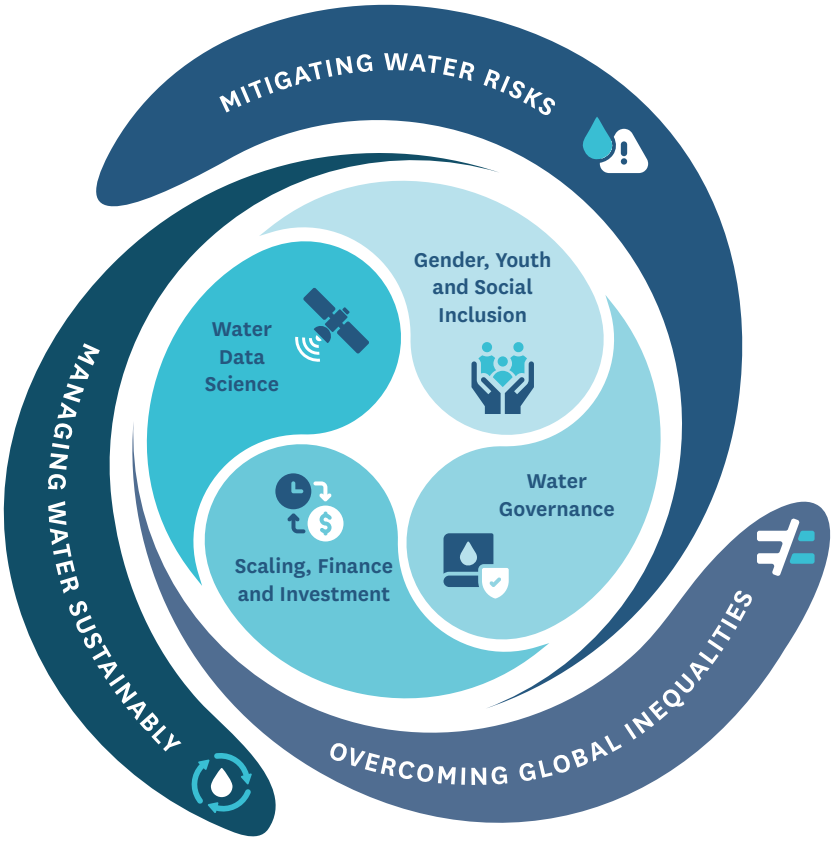

Figure 2. IWMI's 2024–2030 Strategy: Strategic Focus Areas and Transformational levers (IWMI 2024)

Nepal's 2015 Constitution positions water, agriculture, and natural resources as foundations for economic growth, prosperity, and inclusive development. Furthermore, national policies, including the 16th Five-Year Plan, emphasize water and food security, ecosystem conservation, resilience, GEDSI, climate-resilient agriculture, and modernized water management. Through research and partnerships, IWMI will work to achieve global outcomes by aligning country and regional strategic priorities in Nepal.

3.2 Co-design process

The Nepal Roadmap 2024–2030 was developed through an inclusive, multi-stakeholder consultation process involving IWMI staff, national and international partners, experts, and key stakeholders, ensuring alignment with national development priorities and the IWMI Strategy 2024–2030. The process began in 2022 with national and provincial Transformative Futures for Water Security (TFWS) dialogues—held both in person and online—aimed at defining a

mission-driven agenda for managing water amid Nepal's evolving environmental, socio-economic, and political contexts. Four TFWS consultations engaged more than 200 participants (42% women) from national and subnational government, academia, research, the private sector, development partners, Non Government Organizations (NGOs), and civil society groups to identify priority Research-for-Development (R4D) interventions.

These discussions were followed by consultations with IWMI staff and Consultative Committee meetings in 2023, which refined priorities and strengthened links between science, policy, and practice. A validation consultation was held on 28th November 2024, and the finalized priorities were presented to the IWMI Consultative Committee on 27th February 2025. IWMI's longstanding presence in Nepal since 1986 underpins the roadmap with deep contextual knowledge and institutional experience.

3.3 Our strategic priorities for 2024–2030

Aligned with IWMI's global focus and Nepal's national government priorities, IWMI advances knowledge and innovations for water security, fostering resilient, inclusive, and just development through six strategic priorities.

3.3.1 Water systems management and building Nepal's resilience

This priority aims to strengthen climate and disaster resilience by improving water data, tools, and governance. Building on IWMI's modeling, assessments, and decision-support systems for IWRM, it advances adaptation through three areas: (i) stronger scientific data and tools for evidence-based policy and climate planning; (ii) GEDSI-responsive, locally led adaptation strategies; and (iii) improved disaster risk reduction via developing early warning, anticipatory action, and evidence and mitigation strategies for climate-driven water risks.

3.3.2 Energizing water and food systems

Aligned with Nepal's climate, irrigation, and agriculture policies, this priority reduces emissions by scaling climate-resilient water technologies. Building on solar irrigation, lift irrigation, and multiple-use water systems, this priority addresses scaling barriers, inequalities, mitigation, and GEDSI—especially in Terai and water-scarce hills—cutting diesel use, easing women's drudgery, empowering youth and women in agribusinesses, and enabling dry-season farming. Focus areas include (i) developing inclusive business models that bundle solar-powered water services with value chains, finance, and policies, and (ii) co-creating public–private–community partnerships to scale irrigation innovations such as surface, ground, lift, and micro-irrigation systems.

3.3.3 Transformative water and natural resource governance

The third priority strengthens inclusive water and natural resource governance by promoting collaborative decision-making, valuing diverse knowledge, and building institutional capacity within Nepal's federal system to address inequalities. Its research focus includes (i) transforming institutions and governance to advance inclusive policy innovations, community-based water management, and WEFE nexus solutions, and (ii) building capacities for evidence-based, data-smart river basin management with emphasis on inclusivity, transboundary water, and multi-stakeholder governance approaches.

3.3.4 Gender equality, disability, and social inclusion

This portfolio aims to address inequalities embedded in social norms and institutions by integrating GEDSI approaches and interdisciplinary knowledge into water management and related innovations. It will strengthen the inclusion, leadership, and voice of women, youth, and marginalized groups across water governance, technology co-design,

piloting, scaling, and capacity sharing. It focuses on (i) promoting inclusive water solutions while tackling systemic GEDSI barriers through intersectional research and innovation; (ii) linking water security, climate resilience, and livelihoods by co-creating evidence on how climate change, migration, and water scarcity shape gendered vulnerabilities, conflicts, and pathways to inclusive resilience; and (iii) strengthening the enabling environment for GEDSI outcomes across WEFE systems, climate action, and innovation scaling.

3.3.5 Water for agrifood system transformation

Agriculture underpins most livelihoods in Nepal. Yet food and nutrition insecurity remains a challenge. According to the official reports, 12.5% of the population is still food insecure, and 34% of women of reproductive age (15–49) are anemic. Predominantly rainfed, monsoon-dependent farming exposes smallholders to climate risk, while irrigation coverage and productivity remain limited despite 2.5 million hectares being suitable for irrigation. Building on the irrigation policy support program, this priority will strengthen food security and climate-resilient farming through irrigation modernization, farmer-led irrigation, improved on-farm water management, water-crop-aquaculture systems, inclusive partnership models for irrigation services, strengthened links between water user associations (WUAs) and value chains, de-risked finance, and digital innovations integrating GEDSI and WEFE nexus approaches.

3.3.6 Nature-based solutions and integrated river basin management

This priority advances nature-based solutions within integrated river basin management to meet rising freshwater demand in urbanizing cities and water-scarce mountain regions. In Nepal, rapid urbanization, land-use change, and climate extremes threaten water security and biodiversity. Building on IWMI's expertise in IWRM, groundwater, spring hydrology and watersheds, water storage, environmental flow, the WEFE nexus, and resilient WASH, it integrates NbS, circular water economy, and urban water security to strengthen basin resilience and reduce health and environmental risks, including in fragile ecosystems. It will focus on (i) locally led NbS and mountain water management to support livelihoods, nutrition, ecosystems, and biodiversity; and (ii) basin-level IWRM, groundwater management in emerging towns, and municipal strategies for safe wastewater reuse and urban water security.

3.4 Target groups and geographic focus

IWMI's strategic priorities in Nepal are designed to deliver impact across scales, focusing on smallholder farmers; populations disproportionately affected by climatic and non-climatic drivers; water-stressed regions; urban and peri-urban communities facing acute water scarcity and poor wastewater management; as well as financial institutions and agencies responsible for water, agrifood systems, WASH, and climate governance.

3.4.1 Target groups

- Smallholders, lead farmers, and Small and Medium Enterprises (SMEs) reliant on irrigated and rainfed agriculture.
- Federal, provincial, and local governments overseeing water, energy, agriculture, climate, WASH, and other public services.
- Climate-vulnerable rural and urban communities exposed to floods, droughts, landslides, and heat stress.
- Urban municipalities and emerging towns affected by water scarcity and wastewater management challenges.
- Women, youth, and marginalized groups with limited inclusion and voice in water governance.
- Financing institutions—including banks and farmers' cooperatives—supporting agribusinesses.
- Private-sector actors and service providers engaged in irrigation, energy, agribusiness, and WASH.

3.4.2 Geographic focus

Nationally, IWMI focuses on Koshi, Madhesh, Bagmati, Gandaki, Lumbini, Karnali, and Sudurpashchim provinces, collaborating with provincial agencies and municipalities, cooperatives, farmers groups and water user groups to strengthen agrifood systems, climate-resilient water systems, and equitable service delivery.

Regionally, it builds on decades of work in the Eastern Gangetic Plains and South Asia, expanding into the Himalayas to address water security, climate resilience, fragile ecosystems, and livelihoods.

Local engagement is anchored through municipal partnerships in priority provinces, including emerging towns and the Chure Hills, where groundwater depletion, scarcity, pollution, and ecosystem degradation pose urgent challenges.

4. Implementation Roadmap: Nepal (2024–2030)

4.1 Implementation principles/approaches

The implementation approach commits to advance IWMI's role in interdisciplinary water research, evidence-based policy engagement, and impactful research for development. Building on lessons from the previous strategic period, IWMI in Nepal will continue to innovate research approaches and strengthen engagement with policy actors, think tanks, financing institutions, and the private sector to enable scaling of water innovations. Implementation will be tracked through IWMI's Monitoring, Evaluation, Learning, and Impact Assessment (MELIA) system, using indicators on impacts, outputs, partnerships, and knowledge co-production and innovation, aligned with IWMI's Theory of Change, Organizational Performance Indicators (OPI), the GESI Operational Strategy, and the CGIAR results framework. An adaptive management approach will serve as a key guiding principle for implementing this strategic roadmap.

4.2 Risk management

Safety and security, along with risk assessment and response mechanisms, are integral components of the risk management strategy. The country office will update its evacuation and security plans as needed. The country team will participate in annual risk and security training, and Annual Country Portfolio Review Meetings will continue as part of regular oversight. Staff, consultants, and interns will also take part in routine training and orientation sessions organized by the Institute on organizational policies and codes of conduct.

4.3 Transformational levers

Transformational levers such as digital tools, inclusion, governance, and engaging with partners and stakeholders in creating enabling environments for scaling water solutions and innovations are embedded in relevant portfolios. IWMI will continue to apply localized water data, analytics, and decision-support tools for surface and groundwater modeling like SWAT, SWAT+, JAMS-J2000, MODFLOW, Water Accounting+, and climate projection scenarios modeling through customized dashboards to inform local planning and basin management.

4.4 Key interventions

Each priority under IWMI's Strategic Roadmap for Nepal 2024–2030 is translated into actionable interventions aligned with the intermediary outcomes of IWMI's Theory of Change (ToC) relevant to Nepal. Table 1 summarizes outcome-wise interventions across the six priority R4D areas in Nepal, identifies primary partners, and outlines indicative delivery models and timelines, which will be monitored using MELIA indicators.

Table 1. Implementation Roadmap – Nepal, 2024–2030

Outcomes	Key Activities/ Interventions	Region, Country & Target Provinces	Partners (including intended target groups)	Delivery Method and Timeline
Priority 1: Build Nepal's Resilience through Water Systems Management				
Integrating future water-related risks and resilience measures into national and subnational climate adaptation policies, plans, and programs.	- Strengthen water-systems data, and Decision Support System (DSS) tools (Water Accounting+, SWAT+, climate downscaling). - Demand-driven technical support for NDC, NAP, and Global Goal on Adaptation. - Localize adaptation planning and community resilience. - Improve interconnectedness between water and climate in basin plans, national and subnational policies and plans. - Integrate water-system innovations into early-warning and anticipatory-action plans under water-related disaster-management policies.	South Asia/ Himalayan region; Nepal; Karnali and Lumbini provinces.	MOEWRI and departments; WECS; Ministry of Water Supply (MOWS); provincial ministries; municipalities; DRR authorities; humanitarian agencies; Development Partners (DPs such as ADB, WB, DFAT, Finland, and EU); universities; and NGOs. **Target groups:** Government institutions, municipalities, water professionals, community institutions, women, youth, and marginalized groups.	Co-design water-data research with governments (2024–2027); assess, pilot, and integrate in policy and plans (2027–2030); capacity sharing (2024–2030); science-policy dialogues and roundtables (2024–2030); Communities of Practice on water and climate, and WEFE nexus (2024–2030); localized adaptationframework; create water risks to resilience pipelines (2026–2030); and GEDSI integration (2024–2030).
Priority 2: Energizing Water and Food Systems				
Water systems contribute to climate mitigation through adoption of low-emission, climate-adaptive technologies and practices.	- Studies on challenges to the sustainable adoption of solar lift irrigation in the hills. - Develop enabling business models for sustainable scaling of solar-powered water systems. - Promote financing and PPCP models for scaling water-as-a-service and multiple-usesolar-powered water systems. - Pilot agrophotovoltaic systems.	Nepal: national; Madhesh and Karnali provinces.	DWRI; AEPC; NEA; G.I. Solar Ltd.; financing institutions; renewable-energy private-sector; municipalities; DPs; NGOs; and Civil Society Organizations (CSOs). **Target groups:** Governments; investors; private sector; small-holder farmers; SMEs; women; and youth.	Assessment (2024–2027); roundtables, co-design (2026–2027); implement and evaluate business models (2028–2030); innovation scaling (2026–2030); capacity sharing and dialogues (2026–2030); and GEDSI integration (2024–2030).

Table 1 *(continued)*

Outcomes	Key Activities/ Interventions	Region, Country & Target Provinces	Partners (including intended target groups)	Delivery Method and Timeline
Priority 3: Transformative Water and Natural Resource Governance				
Decision-making processes in water management explicitly incorporate diverse knowledge, cultural values, and stakeholder perspectives.	- Strengthen water policies, institutions, and governance in line with federalism. - Advance science–policy dialogues, water diplomacy, and digital decision-support for river basin planning. - Promote inclusive, evidence-based river basin governance using WEFE nexus, citizen science, and GEDSI approaches. - Strengthen multi-stakeholder water-governance models. - Promote community-based water management and leadership of women and youth in water governance. - Pilot AI-enabled digital-twin tools to support climate-resilient water management.	South Asia; Nepal: national; Madhesh, Lumbini, and Karnali provinces; river basins.	MOEWRI; WECS; MOWS; DPs (ADB, WB, DFAT, FCDO); subnational governments; NGOs; Australian Water Partnership (AWP); and International Water Center (IWC). **Target groups:** Governments; investors; Community Based Organizations (CBOs); women; youth; marginalized groups; FMIS; and WUAs.	Assessments and capacity sharing (2024–2030); River Basin Office (RBO) Action Plan (2026–2027); partnership with GEDSI-mandated institutions (2026–2030); engage with policy actors and think tanks, and sub-national governments; transboundary, regional, and national level dialogues (2027–2030); and capacity sharing for policy innovations and water cooperation.
Priority 4: Gender Equality, Disability, and Social Inclusion				
Improved understanding of inequalities in water security informs more equitable water practices.	- Capacity sharing on GEDSI R4D tools and methods. - Research on upstream and downstream linkages with WEFE nexus approach. - Strengthen knowledge base on climate, water, health (waterborne diseases, drudgery), conflict, and migration interlinkages. - Integrate GEDSI approaches in climate policies, plans, and local adaptation planning. - Advance GEDSI in climate-resilient water management, WASH, and irrigation. - Build technical capacities of women and youth working in the WEFE systems.	Nepal: national; Madhesh, Lumbini, Karnali, and Sudurpashchim provinces; and river basins.	MOEWRI; DWRI; WECS; MOFE; MOWS; Ministry of Women, Children and Senior Citizens (MOWCSC); Ministry of Health and Population (MOHP); universities; AWP; IWC; DPs; private sector; and philanthropic actors. **Target groups:** Governments; investors; CBOs; women; youth; persons with disabilities and marginalized groups; and WEFE Community of Practice (CoP).	Interdisciplinary analytical studies; GEDSI guidelines and roundtables; capacity sharing (2024–2030); WEFE nexus capacity sharing (2024–2030); multi-stakeholder dialogues and socio-technical approaches (2024–2030); and partnership with GEDSI-mandated institutions (2024–2030).

Table 1 *(continued)*

Outcomes	Key Activities/ Interventions	Region, Country & Target Provinces	Partners (including intended target groups)	Delivery Method and Timeline
Priority 5: Water for Agrifood System Transformation				
Agricultural water productivity and farmers' livelihoods are improved through scalable innovations in irrigated and rainfed agriculture.	- Advance irrigation modernization through technology innovation and improved irrigation information systems. - Integrate efficient irrigation technologies into rice–maize systems and rainfed agriculture. - Pilot productive water use in collective and cooperative farming and aquaculture. - Establish regional and local knowledge hubs to scale irrigation innovations. - Deploy small-scale irrigation solutions bundled with water-saving technologies, soil-moisture sensors, digital tools, policies, financing, and knowledge support. - Co-develop climate resilient, agro-ecosystem-based innovations using WEFE nexus approaches.	Nepal: irrigated and rain-fed farming areas (Terai, mid-hills).	Ministry of Agriculture and Livestock Development (MoALD); DWRI; provincial ministries; Nepal Agricultural Research Council (NARC); CGIAR centers; DPs; municipalities; finance institutions; NGOs; SMEs; private sector (agribusiness, renewable energy, digital solutions); ICIMOD; universities; and research institutions. **Target groups:** Municipalities; farmers' cooperatives; smallholder farmers; women; youth; SMEs; WUAs; FMIS; financing institutions; and private sector.	Technology pilots and farmer training (2024–2026); PPCP strategy (2026–2027); scaling via microfinance, blended financing and policy support (2027–30); capacity sharing on scaling innovations (2026–2030); integrating results into policies and local plans (2026–2030); and partnership with GEDSI-mandated institutions (2026–2030).
Priority 6: Nature-based solutions and integrated river basin management				
Nature-based solutions (NbS) are effectively scaled, improving biodiversity, ecosystems, and environmental flows.	- Innovate and localize nature-based solutions (NbS) for spring revival to support WASH and livelihoods. - Assess and advance innovations for mountain water security, peace, livelihoods, and ecosystem protection. - Conduct groundwater studies, participatory-monitoring frameworks, and groundwater governance. - Advance integrated river basin management. - Generate evidence and strengthen municipal strategies for wastewater and climate-resilient urban water solutions.	South Asia/ Himalayan region; Nepal: Chure Hills, mid-hills and high mountain watersheds; emerging towns; river basins. Regional: Mountain countries of the Himalayan region.	MOFE; municipalities; provincial governments; Co-Water International; GTK; ICIMOD; DPs (ADB, WB, DFAT, Finland, and EU); and NGOs. **Target groups:** Municipalities; CBOs; FMIS; rural households; Indigenous peoples; women; youth; and SMEs.	Interdisciplinary analytical studies; climate-resilient water analytics (2024–2030); assess and pilot spring restoration (2025–2026); springshed-management guidelines (2027); groundwater studies; demonstration pilots (2024–2028); replication; integration of results into policies and plans (2028–2030).

5. Partners and Funders

Partnerships are central to IWMI's research-for-development mandate and its ability to deliver policy-relevant, scalable impact. Over four decades, IWMI has built trusted partnerships across government, research, civil society, the private sector, and local institutions, enabling the co-design, delivery, and institutionalization of science-based solutions for long-term water-systems transformation.

5.1 Government partners

IWMI works closely with government institutions responsible for water, irrigation, energy, environment, climate governance, and research and innovation. Key federal partners include Ministry of Energy, Water Resources and Irrigation (MOEWRI), Department of Water Resources and Irrigation (DWRI), Water and Energy Commission Secretariat (WECS), Ministry of Forests and Environment (MOFE), Alternative Energy Promotion Center (AEPC), the Nepal Electricity Authority (NEA), and related agencies. Under Nepal's federal system, IWMI also collaborates extensively with provincial and local governments, which play a central role in water-systems transformation, climate resilience, inclusive governance, and environmental sustainability.

5.2 Development partners

IWMI's work in Nepal is supported by a diverse group of longstanding and strategic development partners that prioritize growth, jobs, climate resilience, inclusive development, and evidence-based investment. Core funding partners include the Asian Development Bank (ADB), the World Bank (WB), alongside bilateral partners such as the Foreign, Commonwealth and Development Office (FCDO), the Department of Foreign Affairs and Trade (DFAT), the United States Department of State, USAID, the European Union (EU), and the Ministry of Foreign Affairs of Finland.

5.3 CGIAR, international organizations, and research partners

IWMI collaborates with CGIAR centers to advance research on agricultural innovations, the WEFE nexus, farmer-led irrigation, value chains, and scaling. Regionally and globally, it partners with organizations such as International Center for Integrated Mountain Development (ICIMOD), Oxfam, WaterAid, SNV, Co-Water International, IWC, GTK, and South Asian platforms to address mountain hydrology, climate risks, socio-technical innovation, locally led adaptation, and transboundary basin management. These partnerships also foster South–South and South–North learning, positioning South Asia as a hub for scaling innovations and facilitating policy co-learning across IWMI's regional networks.

5.4 Academia, civil society, and the private sector

IWMI partners with research institutions and universities, NGOs, community-based institutions, and private-sector actors. These include Wageningen University, University of Edinburgh, Tribhuvan University, WUAs, farmers groups, cooperatives, forest users groups, social enterprises, and technology providers engaged in irrigation, renewable energy, and integrated farming systems.

5.5 Strategic convening and partnership platforms

IWMI engages in national, regional, and international platforms—including the Nepal National Glacier, Water and Weather Week (NNGWWW), the Mountain and Climate (Sagarmatha Dialogue), the Early Warning for All (EW4ALL), International Development Partner Working Groups (IDPGs) in Nepal—as well as global initiatives such as the UNFCCC Conference of the Parties (COP) to share evidence, foster innovation, and amplify policy impact.

Through these partnerships, IWMI engages in co-design, piloting, knowledge sharing, scaling innovations, capacity building, and evidence-based policy dialogue across multiple levels of governance.

Looking ahead, IWMI will strengthen engagement with development and commercial banks, financing institutions, humanitarian agencies, philanthropic organizations, and GEDSI-focused organizations, while advancing blended finance and public–private–community partnership approaches to scale solutions such as solar-powered water systems, irrigation modernization, nature-based solutions, and water-as-a-service models.

Key Sources

Department of Water Resources and Irrigation. 2024. *Irrigation Master Plan 2019 (Updated 2024)*. Department of Water Resources and Irrigation, Ministry of Energy, Water Resources and Irrigation, Government of Nepal. https://dwri.gov.np/content/16/irrigation-master-plan-2019---updated-2024/

GoN (Government of Nepal). 2015. *The Constitution of Nepal*. https://lawcommission.gov.np/content/13437/nepal-s-constitution/

GoN. 2019. *National Climate Change Policy, 2076 (2019)*. Office of the Prime Minister and Council of Ministers, Government of Nepal. https://www.mofe.gov.np/content/37/national-climate-change-policy--2076--2019-/

GoN. 2021. *National Adaptation Plan (NAP): 2021–2050*. Government of Nepal. https://unfccc.int/sites/default/files/resource/NAP_Nepal_2021.pdf

International Water Management Institute. 2024. *IWMI Strategy 2024–2030: Research and Innovation for Water Security*. International Water Management Institute (IWMI). https://hdl.handle.net/10568/144127

Ministry of Health and Population, New ERA, and ICF. 2022. *Nepal Demographic and Health Survey 2022: Key Indicators Report*. Ministry of Health and Population, Government of Nepal. https://www.mohp.gov.np/content/118/nepal-demographic-and-health-survey-2022-key/

Ministry of Forests and Environment. 2025. *Nationally Determined Contribution (NDC) 3.0*. Ministry of Forests and Environment, Government of Nepal. https://unfccc.int/sites/default/files/2025-05/Nepal%20NDC3.pdf

NPC (National Planning Commission). 2024. *The Sixteenth Plan (Fiscal Year 2024/25–2028/29)*. National Planning Commission, Government of Nepal. https://www.npc.gov.np/content/6462/the-sixteenth-plan--fical-year-2024-25-2028-29-/

NPC. 2025. *Food System Transformation Strategic Plan (2081/82–2086/87 BS) (2024/25–2029/30 AD)*. National Planning Commission, Government of Nepal. https://www.npc.gov.np/content/6591/strategic-plan-of-food-system-transformation--2081-8-2086/

IWMI
International Water Management Institute

CGIAR RESEARCH CENTER

The **International Water Management Institute** (IWMI) is an international, research-for-development organization that works with governments, civil society and the private sector to solve water problems in developing countries and scale up solutions. Through partnership, IWMI combines research on the sustainable use of water and land resources, knowledge services and products with capacity strengthening, dialogue and policy analysis to support implementation of water management solutions for agriculture, ecosystems, climate change and inclusive economic growth. Headquartered in Colombo, Sri Lanka, IWMI is a CGIAR Research Center with offices in 17 countries and a global network of scientists operating in more than 55 countries.

Vision
A water-secure world

Mission
Research and innovation in partnerships for collective action that advance the transformation of water systems for sustainable, just and climate resilient development.

www.iwmi.org

International Water Management Institute (IWMI)

Headquarters
127 Sunil Mawatha, Pelawatte, Battaramulla, Sri Lanka

Contact IWMI:
https://www.iwmi.org/contact/

Contact IWMI's office in Nepal:
https://www.iwmi.org/contact/nepal-office/

ISBN 978-92-9090-985-9
Published: April 2026