

SUPPORTING JUST TRANSITIONS TO A SUSTAINABLE WATER SECTOR IN BOLIVIA

This case study explores what it means to pursue just transitions in the water sector. Water is vital to achieving climate and development goals, yet many countries face water scarcity, if not crises, due to high demand across sectors, combined with the impacts of climate change. Drawing on lessons from projects financed by CIF in Bolivia, the study highlights effective practices and ways to achieve just transitions to a sustainable water sector.

THE IMPERATIVE OF A TRANSITION TO A SUSTAINABLE WATER SECTOR

Social and economic transformations are urgently needed to address climate change around the world, including major changes in how we use and govern natural resources. Careful management is needed, however, to avoid disproportionate impacts on vulnerable individuals and communities. Planning for just transitions has thus become a priority in climate action, to ensure that the resulting transformation is economically and socially fair and inclusive.

Some of the most significant impacts of climate change around the world will involve freshwater systems. The latest assessment by the Intergovernmental Panel on Climate Change (IPCC) projects an increase in the risks of large floods, a decrease in the availability of renewable water resources, and a reduction in raw water quality.¹ This situation is expected to intensify competition for water for different uses—agriculture, ecosystems, settlements, industry, and energy production—and thereby affect regional water, food, and energy security. It may also create tensions between countries over water governance.²

New institutions, technologies, infrastructure, and strategies for water governance are needed to address water crises and enable sustainable and inclusive development. A just transition approach is crucial, as water access today is inequitable, and previous water-related transitions have not always led to sustainable and inclusive outcomes.

- 1 Caretta, M.A. et al. 2022. "Water." In *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by H.-O. Pörtner et al. Cambridge, UK, and New York: Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/>.
- 2 Klare, M. 2020. "Climate Change, Water Scarcity, and the Potential for Interstate Conflict in South Asia." *Journal of Strategic Security* 13 (4). doi:10.5038/1944-0472.13.4.1826.



QUICK FACTS

PUBLICATION DATE

March 2023

RELEVANT COUNTRIES

Bolivia

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BOLIVIA'S TRANSITION CONTEXT

Water is vital to Bolivia's national development and climate goals. Providing universal access to basic services, increasing food security, and decarbonizing the energy sector will all require significant water resources. Yet Bolivia is facing a water crisis, as it has limited water supplies, and demand keeps rising due to population growth and increased water use in agriculture, industry, and energy. The government plans to increase the share of hydropower in the electricity mix from 15 percent in 2019 to 70 percent by 2025 and increase irrigated land from about 520,000 hectares in 2020 to over 1 million by 2030. Plans to develop lithium mining may also require water for extraction and processing.

Meanwhile, climate change is further straining Bolivia's water supplies. In parts of the highlands, valleys, and El Chaco in southeastern Bolivia, water scarcity is a growing problem, as weather patterns are changing, droughts are more frequent, and glaciers are retreating. The lowlands in northeastern Bolivia, on the other hand, are increasingly prone to flooding.

Climate data show the Bolivian Andes are warming faster than the rest of the world, and models suggest the trend will continue and the glaciers will disappear, leaving the highlands without crucial sources of water. Water quality is also jeopardized by mining, deforestation, urbanization, and untreated wastewater. Figure 1 summarizes some of the pressures on Bolivia's water system due to climate change impacts and increased water use resulting from national climate and development goals.

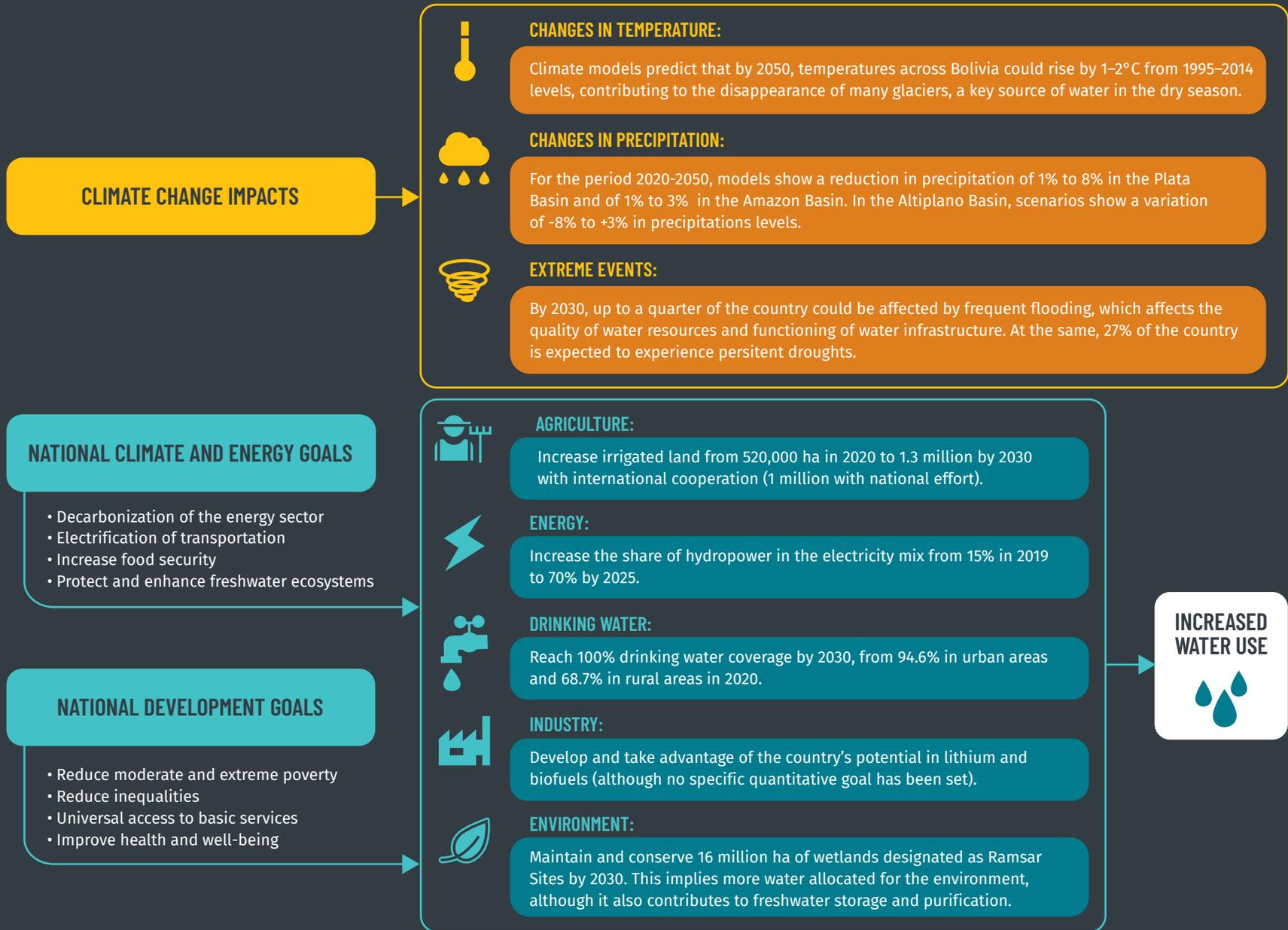
While climate change has increasingly strained water systems across the country, significant changes have been made to Bolivia's legal and institutional water framework in the past two decades. Many of these changes came as a result of Bolivia's "Water Wars" of 2000—a series of demonstrations sparked by water rate hikes after the privatization of Cochabamba's water supply company.³ These changes included the creation of the Ministry of Environment and Water (MMAyA), which oversees water policy at the national level, and the recognition of traditional water management practices.

The Bolivian government also adopted integrated water resource management (IWRM), a widely used approach to decision-making that promotes the coordinated development and management of water, land, and related resources across entire watersheds or river basins. Bolivia adopted a complementary approach as well, integrated river basin management (IRBM), which focuses on the sustainable use of land and other natural resources in a watershed. Under the prevailing policy framework, both IWRM and IRBM are considered key elements for reaching water security.

While the changes to Bolivia's approach to water governance since the Water Wars have helped address some equity, productivity, and sustainability issues, inequalities and challenges remain. There are longstanding issues inherited from past governance systems, as well as new ones that have resulted from the power dynamics created by the current system. A just transitions lens can help identify and address these inequalities and challenges. Table 1 provides an overview of the need for a just transition in the water sector in Bolivia, what it would entail, and the main challenges.

3 Perreault, T. 2008. "Custom and Contradiction: Rural Water Governance and the Politics of Usos y Costumbres in Bolivia's Irrigators' Movement." *Annals of the Association of American Geographers* 98 (4): 834–54. doi:10.1080/00045600802013502.

Figure 1.
CLIMATE-RELATED PRESSURES ON BOLIVIA'S WATER SYSTEMS



Note: the climate, energy and development goals featured have significant implications for the water sector. They are not a comprehensive summary of Bolivia's goals.

Source: Authors' own work, with climate projections from the World Bank's Climate Change Knowledge Portal.

Table 1.
KEY JUST TRANSITION ISSUES IN BOLIVIA'S WATER RESOURCE GOVERNANCE

TRANSITION AREA	THE NEED FOR TRANSITION	THE JUST TRANSITION VISION	THE TRANSITION CHALLENGE
Access to water	<p>Climate change is reducing water supplies through changes in rainfall and glacier retreat.</p> <p>Many households in rural areas and urban peripheries lack access to drinking water.</p> <p>Most farmers have no irrigation.</p> <p>Some water uses, such as for ecosystem services, cultural use, and small-scale fish farming, are deprioritized in the allocation of increasingly scarce water resources.</p>	<p>All Bolivians have access to drinking water, whether they live at high elevations or in urban areas downstream.</p> <p>Farmers can boost their climate resilience through irrigation, with access to infrastructure, training, and technology.</p> <p>Sufficient water is secured for ecosystem services, cultural use, and the livelihoods of disadvantaged groups.</p>	<p>Water delivery systems are fragmented and disparate: from small-scale and community-managed systems, to large-scale and publicly managed ones. This makes it difficult to plan changes together.</p> <p>Disadvantaged groups often lack the assets, access to natural resources, social networks, or education needed to influence decisions, much less drive changes to boost their water security and climate resilience.</p> <p>There is an unmet need for high-quality hydrometeorological data.</p>
Water quality	<p>Pollution from mining, industry, agriculture, and untreated wastewater reduces water quality, with impacts on health, rural livelihoods, and the environment.</p> <p>There are risks that global decarbonization efforts—which are driving growth in lithium and other mining in Latin America—could undermine water security and exacerbate tensions.</p>	<p>Polluting activities, including those driven by clean technology value chains, are stopped, and watersheds are rehabilitated, increasing peoples' access to clean water and boosting their resilience to climate change.</p>	<p>The implementation and enforcement of environmental laws and regulations is limited.</p> <p>Extractive industries are major drivers of economic growth and sources of tax revenues.</p> <p>There is limited awareness of the environmental and social impacts of clean energy value chains, and ethical standards—domestic and international—are inadequate.</p>
Conflict over water resources	<p>Climate change impacts—current and projected—are reducing water supplies, which is likely to exacerbate competition and tension over water resources.</p> <p>Sectoral water use is expected to increase, especially in agriculture, industry, and energy.</p>	<p>Institutional and legal arrangements are in place that enable the fair allocation of water among sectors, user groups, and nature, including during episodes of water crisis.</p> <p>The underlying causes of communities' water and climate vulnerability are addressed, going well beyond purely compensatory approaches.</p>	<p>Bolivia has no recent overarching water law that regulates water use across all sectors in an integrated way.</p> <p>Institutional responsibilities need to be clarified, and better coordination is needed across institutions.</p> <p>Complex historical and structural development gaps in rural areas contribute to tensions over water allocation, requiring broad and deep reforms.</p> <p>Some rural communities use traditional water use customs as a bargaining strategy to influence political decisions within and outside the realm of water management. This makes dialogue and fair reform difficult.</p>
Social inclusion	<p>Community participation in decisions over water resource management is limited, hampering their abilities to make decisions that will strengthen their resilience to climate change.</p> <p>Some disadvantaged groups, such as (but not exclusively) poor families and women in rural areas, remain marginalized from water governance spaces.</p> <p>Communities' local and traditional knowledge is often not recognized in higher-level water decision-making processes.</p>	<p>Disadvantaged groups are included in all water governance spaces.</p> <p>Community organizations are meaningfully engaged in the development and implementation of Watershed Master Plans (PDCs), from defining issues and priorities to monitoring implementation.</p> <p>Local and traditional knowledge is integrated into water-related decision-making.</p>	<p>Structural conditions, such as patriarchal values and multidimensional poverty, pose real barriers to broadening and deepening participation in water governance.</p> <p>There can be overlaps or conflict between integrated water resource management (IWRM) coordination mechanisms and other local governance mechanisms, such as irrigation associations or municipalities.</p> <p>While the institutionalization of traditional water use practices has given some rural residents more agency and control over water resources, there are risks that it can hide inequalities within the Bolivian rural population, as these practices mainly benefit farmers who already have access to irrigation.</p> <p>Lack of climate data and information—and difficulties in accessing it—can hinder effective societal participation in water-related decision-making.</p>

INSIGHTS FROM CIF'S ACTIVITIES IN BOLIVIA

The case study draws out lessons from CIF investments in Bolivia's water sector, focusing on two CIF-funded projects under the Pilot Program for Climate Resilience (PPCR): the IBRD's Climate Resilience–Integrated Basin Management Project and the IDB's Multi Drinking Water and Irrigation Project for the municipalities of Batallas, Pucarani, and El Alto.

The Climate Resilience–Integrated Basin Management Project was implemented between 2013 and 2020, in collaboration with the MMAyA, the National Fund for Productive and Social Investment (FPS), and the Secretariat for River Basin Planning in Cochabamba (SDC). CIF funding totaled US\$36.79 million. The project aimed to strengthen the national government's capacity to integrate climate resilience into public planning and management through improvements to the equipment and software of the national climate and water information system, at both the national and subnational levels. It also aimed to strengthen adaptive capacity in the Río Grande River Basin through the facilitation of participatory integrated watershed management plans in three pilot sub-basins and the design and implementation of infrastructure and non-structural subprojects to increase climate resilience.

The Multi Drinking Water and Irrigation Project, which began in 2015 and is scheduled to end in 2023, has been implemented by the MMAyA through the Environment and Water Executing Agency (EMAGUA), with US\$133 million in expected funding from CIF, IDB, and the Nordic Development Fund.⁴ The aim is to improve water access, accounting for climate resilience considerations, in three highland municipalities: El Alto, which includes the fast-growing city and surrounding communities, and Pucarani and Batallas, which are adjacent to each other and encompass multiple small settlements on the Cordillera Real. Project activities include increasing the availability of drinking water by building, updating, and expanding water systems, improving and expanding irrigation systems, and supporting watershed management measures.

These projects were not developed with an explicit focus on just transitions, so the analysis does not evaluate whether they achieved them. Instead, it applies a just transitions lens to learn from experience and inform future efforts by CIF and others to explicitly support just transitions in the water sector, in Bolivia and elsewhere.

The analysis is based on a framework that considers both the distributional impacts of climate action—whether benefits and harms are fairly allocated—and social inclusion—the recognition and meaningful participation of marginalized groups in shaping transition processes. Both of these dimensions are considered along a continuum of

transformational intent, related to the depth of intended change from reform on one hand to deep systemic transformation on the other. What follows is a summary of key insights from the analysis.

SOCIAL INCLUSION:

Broad and sustained stakeholder engagement: Besides municipal governments, water governance projects engage with a broad set of representatives of stakeholder groups, including farmer, livestock producer, and farmer irrigator organizations; women's organizations; and neighborhood councils, especially at the beginning of the projects. There are challenges and opportunities associated with achieving direct and sustained engagement with more members of these groups, in order to expand the range of perspectives while ensuring accountability and social acceptance throughout projects.

Engaging marginalized groups: Water governance projects may face challenges in involving marginalized groups in project activities. For example, women's participation depends both on their social and economic roles in different communities, and on how the spaces for participation are set up. Formal and informal power structures within communities affect whose voices are heard and whose priorities prevail in decision-making. Resource constraints can also exclude marginalized groups.

Intersectoral collaboration: For water governance projects in Bolivia, the main counterparts at the national and subnational levels are the institutions in charge of water and environmental policy. In practice, during the implementation, other sectoral ministries and agencies are often involved to facilitate agreements between different water users. Some kind of interministerial coordination mechanism would enhance project implementation. This highlights the need for intersectoral collaboration beyond the water and environment sectors to plan and implement IWRM and just transition measures.

Local knowledge: Water governance projects incorporate local knowledge in different ways, and this helps shape activities to make them more relevant to the beneficiaries and avoid unintended consequences. Through this, local actors' capacities and ability to engage in water governance can also be enhanced.

Enabling water sharing agreements: There are political challenges in negotiating water-sharing agreements among water users and defining future water infrastructure governance arrangements. These challenges draw attention to the need to fill development gaps in rural areas to enable water-sharing agreements between upstream and downstream water users across Bolivia. They also highlight the importance of socially inclusive negotiation and coordination mechanisms for water management.

4 IDB. 2015. "Multipurpose Water Supply and Irrigation Program for the Municipios of Batallas, Pucarani and El Alto: Loan Proposal." Washington, DC: Inter-American Development Bank. <https://www.cif.org/projects/multipurpose-drinking-water-and-irrigation-program-municipalities-batallas-pucarani-and-el>.

DISTRIBUTIONAL IMPACTS:

Environmental and social safeguards: Environmental and social safeguards tend to focus on the direct impacts of infrastructure development, making it difficult to identify risks associated with governance outputs (such as watershed plans), which extend across larger geographical or temporal scales, or to avoid maladaptation. However, the safeguards process serves to identify disadvantaged groups and target activities to them.

Political economy: Addressing the complex political economy of water governance, including tensions between upstream and downstream water users, is crucial for projects' feasibility and sustainability. CIF's experience in the country highlights the importance of ensuring that projects recognize the influence that different actors have on decision-making and the importance of including both influential groups and disadvantaged groups as direct beneficiaries. Disadvantaged groups should be involved in planning and decision-making, not just as compensation recipients. Another area that needs more attention is the potential for tensions between global decarbonization—which is driving growth in lithium and other mining in Bolivia—and communities' need for climate resilience.

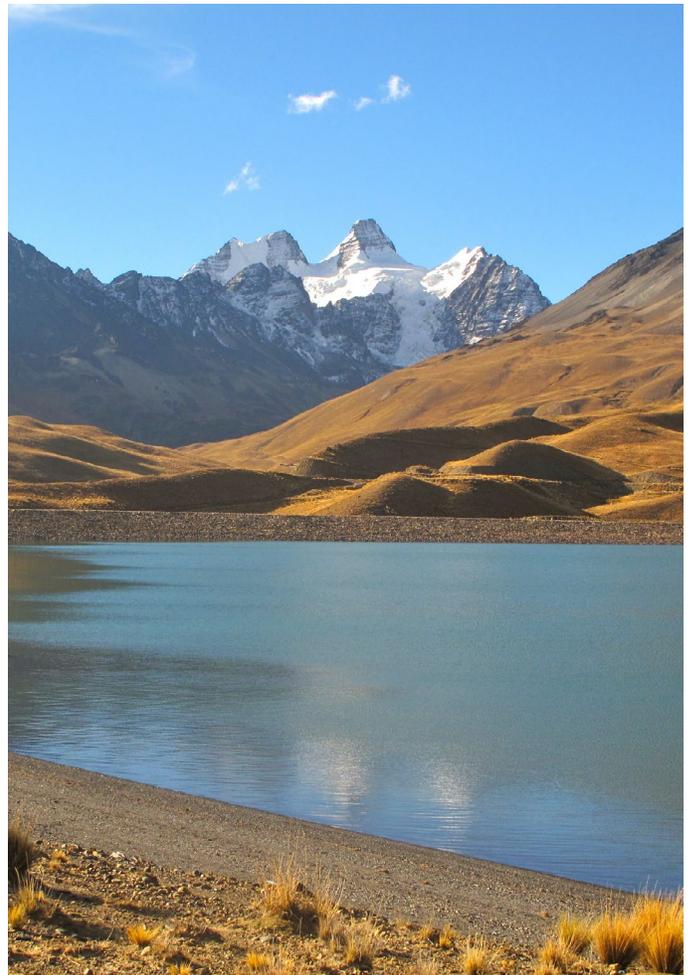
Access to information: Access to high-quality hydrometeorological data and climate information is essential to ensuring a fair allocation of water resources. Water governance projects help to improve data collection and build institutional capacities to interpret and use the data, but mainly at the national and departmental levels, though some municipalities also benefit. A helpful next step would be to support the creation of climate services to make hydrometeorological data and climate information more accessible and useful to community members, and to further enhance capacity building at the municipal and community levels.

Project indicators: Standard project indicators are ill-suited to assessing distributional impacts, as they typically focus too narrowly on quantifying the results of project activities within the project area. Assessing progress from a just transitions perspective requires a broader set of indicators to reflect both benefits and losses, disaggregated and also applied to groups beyond the project's immediate area of influence.

TRANSFORMATIONAL INTENT:

Targeting underlying inequalities and barriers to social inclusion: Achieving just transitions requires not only compensating those who are affected directly by transition policies and projects, but also addressing structural inequalities that perpetuate poverty, marginalization, and vulnerability. Tailoring subprojects to the needs of vulnerable groups, such as women's empowerment initiatives, may contribute to transformational change if they tackle not only unequal outcomes, but also their drivers (for instance, by strengthening women's capacity to organize and participate in decision-making spaces). However, significant scaling up would be needed to transform Bolivia's water governance.

New norms and practices: Shifting from a sectoral to an integrated approach in water management is one of the key challenges in Bolivia. Water governance projects have fostered a strategic and integrated water management approach through the development of climate resilience guidelines and hydrometeorological information systems. Many challenges remain to operationalize integrated water management practices that are truly multisectoral and inclusive.



RECOMMENDATIONS

The case study shares recommendations for how to support just transitions to a sustainable water sector in Bolivia and beyond:

- 1 Embrace an integrated, holistic approach to policy making across sectors and governance scales:** Increased coordination across sectors and scales would allow decision-makers to better tackle the structural drivers of water-related inequalities and balance trade-offs between water uses and users. CIF and multilateral development banks can support the establishment of multipurpose cross-sectoral governance arrangements and inclusive methodologies for elaborating water management plans.
- 2 Anticipate and address the distribution of risks, losses, and benefits of policies, projects, and investments:** Given how central this is to ensuring just transitions, it is important to incorporate robust procedures for assessing distributional effects upfront, with appropriate indicators for monitoring and evaluation during and after implementation. Existing safeguard policies and monitoring, evaluation, and learning frameworks can help, but they are not sufficient.
- 3 Identify and address fundamental inequalities and their drivers:** Internationally funded projects typically focus their equity efforts only on providing compensation to people affected by transition policies and projects. This fails to address underlying marginalization and vulnerabilities and may even exacerbate them. Projects should be designed with a clear understanding of the local political economy, including an analysis of the historical processes and institutional mechanisms of marginalization. This can serve as a foundation for more equitable, inclusive, and transformational benefit-sharing.
- 4 Build adaptive capacity through enhanced access to data and climate information:** Improving the quantity, quality, and transparency of hydrometeorological data and information systems, and making them more accessible, can help key institutions and communities make better-informed and more inclusive decisions that target the fair distribution of water resources.
- 5 Recognize and incorporate Indigenous and local knowledge:** Supporting just transitions requires recognizing and building on a broad range of knowledge sources, especially local communities and Indigenous Peoples. Drawing on local people's knowledge, interests, values, and aspirations is key for understanding just transition challenges and identifying appropriate responses. This requires moving beyond purely top-down approaches that tend to rely mainly on data and insights from experts and public officials.
- 6 Sustain stakeholder engagement, particularly by marginalized groups, through all stages of a project:** Stakeholders need to be able to participate meaningfully all along the project and policy processes, from framing the issues and priorities that need addressing, to policy and project design, to implementation, monitoring, and evaluation. Typically, engagement with marginalized groups is now limited to consultations at the start and during implementation of a project, and activities under safeguard policies. Encouraging a deeper and longer engagement with local communities, including beyond projects' typical time frame, has the potential to increase local ownership and the long-term sustainability of the projects.
- 7 Identify and tackle trade-offs between climate mitigation and adaptation measures:** A just transition requires a skillful assessment of the risks and opportunities for adaptation related to domestic and foreign mitigation strategies, to fairly distribute associated costs and benefits. This includes those associated with the anticipated increase in demand for minerals and other natural resources, including biofuels, which can put significant pressure on water systems as the low-carbon transition accelerates globally.

