POLICY BRIEF

Governing Water as a System

Aligning climate, ecosystems, and economies through the hydrological cycle.

Five policy shifts at a glance

1. Govern the full water cycle
2. Put water at the centre of climate policy and finance
3. Advance cooperation across shared waters
4. Connect water across global processes
5. Make water governance inclusive and equitable

Introduction

Water is not just a resource under pressure; it is the system through which climate change, ecosystem change, and economic instability are experienced.

Climate change is primarily experienced through water, including droughts, floods, and shifting rainfall patterns. Climate change, land use change – particularly deforestation– and human activity are reshaping the hydrological cycle at local, regional, and global scales. At the same time, water is a critical part of the solution, enabling both climate adaptation and mitigation through, for example, nature-based solutions (NbS) that strengthen ecosystem functions, enhance resilience, and support sustainable water management.

Yet water governance remains fragmented across sectors and scales. Policies on climate, biodiversity, land, and development are often designed and implemented in

isolation, despite being deeply interconnected through water systems. As a result, responses to growing risks are partial, inefficient, and difficult to scale.

A shift is needed from managing water as a sector to governing it as a system—connecting climate, ecosystems, and social and economic systems to strengthen resilience.

Across SIWI's work, the focus is increasingly on moving from ambition to implementation, translating policy into practice and dialogue into action. This means identifying where progress is happening, where gaps remain, and how stronger governance and cooperation can bridge them.

A critical gap in current approaches is the limited recognition of *green water*[1]—the invisible moisture in soils, ecosystems and the atmosphere—as a central component of the hydrological cycle. While governance frameworks have traditionally focused on blue water in rivers, lakes, and aquifers, green water plays a fundamental role in regulating rainfall, sustaining ecosystems, supporting agriculture, and enabling climate mitigation through carbon storage. Strengthening governance of the full hydrological cycle, including both blue and green water, is therefore essential to building long-term resilience.

This brief sets out five priority policy shifts to strengthen water governance in a changing climate. Together, these shifts provide a framework for moving from fragmented approaches toward more coherent, systemic water governance—linking how water systems function with how policy, finance, and implementation are aligned.

The policy shifts are structured to move from understanding and governing the system itself, to aligning policy and finance, and finally to enabling cooperation, coherence, and implementation:

- **Policy Shift 1** establishes the foundation by advancing governance of the full hydrological cycle, including both blue and green water, across land, water, and ecosystems
- **Policy Shift 2** integrates water into climate policy and finance, ensuring that climate action reflects water-related risks and opportunities
- **Policy Shift 3** strengthens cooperation over shared waters, enabling countries to jointly manage risks and build long-term stability
- **Policy Shift 4** strengthens the role of water across global governance processes, improving coherence between climate, biodiversity, land, and development agendas
- **Policy Shift 5** embeds inclusive and just governance, ensuring that water decisions reflect diverse knowledge, needs, and rights

Taken together, these shifts aim to support more effective decision-making, strengthen resilience across systems, and enable coordinated implementation at scale.

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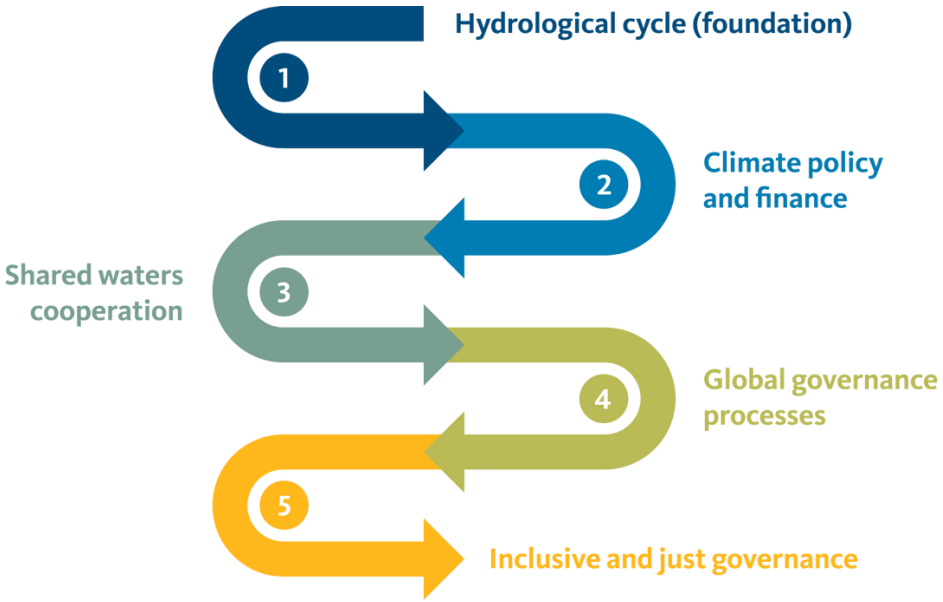
1 Malin Falkenmark who was a SIWI scientist since its foundation brought to light the fundamental importance of the invisible "green water" stored in soils and circulating as evapotranspiration, challenging and correcting the prevailing narrow focus on "blue" water in rivers, lakes, reservoirs, and aquifers, inherited by reductionist concepts of the water cycle of past decades. (Falkenmark, M. 1995. Land-Water linkages: A synopsis. In Land and Water Bulletin: Land and Water Integration and River Basin Management, vol. 1, ed. T. Mather, 15–16. Rome: Food and Agriculture Organization (FAO) of the United Nations)

This brief is intended for national governments, development finance institutions, multilateral organizations, basin and regional bodies, and private sector actors engaged in climate and water investment.



Policy Shift 1: Govern the full water cycle

The challenge

The stability of water systems depends not only on climate, but on how land, ecosystems, and soils are managed. These interactions shape the hydrological cycle—the continuous movement of water through landscapes, vegetation, and the atmosphere.

Yet governance systems largely focus on blue water—rivers, lakes, and groundwater—while green water, the moisture found in soils, vegetation and the atmosphere remains largely invisible in policy. As a result, decisions on land use, agriculture, ecosystems, and water are often made separately, despite being physically and spatially interconnected.

This disconnect is not just a governance gap—it is a systemic risk. Changes in land use and ecosystem health directly affect soil moisture, evapotranspiration, and rainfall patterns, further compounded by climate change. When these relationships are not reflected in policy, interventions risk addressing symptoms rather than underlying system dynamics.

The result is declining resilience of water systems, increasing systemic risks to food production, ecosystem stability, and long-term water availability across regions, with impacts that can cascade across economies and societies.

Why action is needed

Water challenges cannot be addressed in isolation from the landscapes and ecosystems through which water moves.

Forests, soils, wetlands, and agricultural systems regulate water flows, store moisture, and influence rainfall patterns at local and continental scales. These processes underpin food systems, sustain ecosystems, and contribute to climate regulation and resilience.

Water does not follow administrative or sectoral boundaries. Moisture evaporated in one region can contribute to rainfall in another, linking distant landscapes through atmospheric water flows. At the same time, rivers, soils, and groundwater systems each operate across different physical boundaries.

Yet governance systems are typically organized within fixed jurisdictions and sectors, which do not reflect how water actually moves through the hydrological cycle. This mismatch limits the effectiveness of policies and makes it harder to manage risks that span regions and scales.

Addressing this requires governance approaches that operate across multiple, connected levels—from local landscapes to river basins and groundwater reservoirs, continents and beyond—while enabling coordination between them.

Public and private actors alike depend on stable hydrological systems, yet decisions are often based on fragmented or incomplete understanding of water risks across landscapes and value chains.

Strengthening water resilience therefore requires governance approaches that explicitly connect blue and green water, land use, ecosystem stewardship, and climate considerations—operating at basin and landscape scales where hydrological processes occur.

Policy direction

Governments, finance institutions, and other financial actors should integrate water, including both blue and green water, into climate policy and finance frameworks.

This includes:

- linking water governance at basin and landscape scales, connecting water management with land stewardship
- explicitly integrating green water into land-use, agricultural, climate, and biodiversity policies
- protecting and restoring ecosystems that regulate water flows, including forests and wetlands
- improving synergies and coordination across water, land, agriculture, and climate policy frameworks
- strengthening knowledge, data, and monitoring systems that capture interactions across the hydrological cycle to support evidence-based decision making

What SIWI is working towards

Water governance must move beyond a narrow focus on blue water to explicitly include green water and the full hydrological cycle. This requires connecting land, ecosystems, and water systems across scales, and aligning with climate policies.

Governing the hydrological cycle as a whole is essential to strengthening resilience, sustaining ecosystems, and securing water availability in a changing climate.

Policy Shift 2: Put water at the centre of climate policy and finance

The challenge

Climate change is primarily experienced through water. Rising temperatures are intensifying droughts, floods, and rainfall variability, increasing risks to ecosystems, agriculture, cities, and energy systems, and placing growing pressure on societies and economies.

Yet climate policy frameworks and planning often treat water as a sectoral issue rather than as a systemic risk that connects multiple sectors and governance levels. While many national climate strategies recognize water-related risks, they often fail to translate this understanding into governance reforms, infrastructure planning, or investment priorities.

At the same time, climate finance remains insufficiently aligned with water realities. Investments frequently target climate risks in isolation, without adequately reflecting how changes in water systems shape both adaptation and mitigation outcomes, leading to continued investment in assets and infrastructure that are not resilient to water-related risks. This disconnect limits the effectiveness of climate action and increases the risk of maladaptation.

Why action is needed

Climate adaptation and mitigation depend on how water systems are managed.

Building on the need to govern the full hydrological cycle (Policy Shift 1), climate action must reflect how water moves through basins, landscapes, ecosystems, and economies. This includes understanding how drought, flooding, soil moisture, and ecosystem change affect food systems, energy production, infrastructure, and livelihoods.

Climate-water risk assessments—such as drought and flood risk analysis, groundwater recharge, and longer-term hydrological change—must inform decisions on water allocation, infrastructure investment, land management, ecosystem protection, and disaster preparedness. Without this, investments risk shifting risks across sectors and scales, increasing the vulnerability of disadvantaged groups such as women, youth, and Indigenous Peoples.

These assessments must also guide climate finance, ensuring that investments strengthen long-term resilience rather than addressing climate risks in isolation. Water-

related risks should be recognized and assessed as material financial risks in climate and economic decision-making.

Public finance alone will not be sufficient. Mobilizing private capital and innovation will be essential, while ensuring strong public oversight, equitable access to water, and protection of public interests.

Policy direction

Governments, finance institutions, and other financial actors should integrate both blue and green water into climate policy and finance frameworks.

This includes:

Policy integration and planning

- integrating water considerations into Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), and climate implementation frameworks
- strengthening climate-water risk assessments to inform policy, planning, and investment decisions

Investment and finance alignment

- aligning climate finance with water resilience, including investments in watershed restoration, resilient water infrastructure, drought and flood early warning systems, and nature-based solutions
- increasing public investment in water resilience, including ecosystem restoration, water information systems, and early warning capacities
- aligning water use and investment decisions with basin-level sustainability thresholds to avoid overexploitation and long-term system risks

Enabling frameworks and incentives

- creating enabling frameworks that attract responsible private investment while safeguarding public interests and equitable access to water and allowing public-private-people partnerships.
- improving the valuation of water in climate-related decision-making
- addressing financing and coordination barriers that limit joint investment across sectors and administrative boundaries, including by enabling pooled and blended finance approaches that reflect the shared and distributed benefits of water resilience investments

What SIWI is working towards

Climate policy and finance must recognize water as a central connector across adaptation, mitigation, food systems, ecosystems, and economic resilience.

Aligning climate action with water systems is essential to ensuring that investments deliver long-term, systemic resilience.

Policy Shift 3: Advance cooperation across shared waters for peace and security

The challenge

Nearly half of the world's population lives in river basins that cross national borders. Climate change, population growth, and economic development are increasing pressure on these shared water resources.

However, many transboundary basins lack effective governance arrangements, shared monitoring systems, or institutional mechanisms for joint decision-making. Where cooperation frameworks do exist, they are often limited in scope or insufficiently equipped to address evolving challenges such as climate variability, shifting water availability, and growing demand.

At the same time, water systems within these basins are being reshaped by both climate change and land-use change, including deforestation and land degradation. These changes affect not only rivers and groundwater, but also soil moisture, evapotranspiration, and local water cycles that influence rainfall across regions.

In the absence of effective cooperation, unilateral decisions can shift risks across borders, undermining resilience at basin scale and increasing the risk of tensions, economic disruption, and instability.

Water is also shared across administrative boundaries and sectors. Without coordination at multiple levels, changing water dynamics can exacerbate tensions and undermine long-term development, particularly where governance is weak or trust is limited.

Why action is needed

Shared water resources require governance approaches that extend beyond national or other administrative boundaries.

Building on the need to govern water as part of interconnected systems (Policy Shift 1) and to align climate action with water realities (Policy Shift 2), cooperation over shared waters is essential for managing risks that no single country can address alone.

Shared basins are not only defined by rivers and aquifers, but by interconnected water cycles across landscapes, including green water processes that influence rainfall and water availability across borders.

Cooperation enables countries to jointly assess risks, share data, coordinate infrastructure and investment decisions, and respond to variability and change. It also provides a platform for dialogue, trust-building, and sustained engagement, even in politically sensitive contexts.

In a changing hydrological cycle, strengthening cooperation is not only a matter of resource management, but of regional stability, economic resilience, and long-term development.

Policy direction

Countries and relevant basin-level and regional institutions should strengthen cooperation over shared waters through:

- supporting and initiating inclusive dialogue platforms — formal and informal — that bring together all relevant actors and respond to concrete needs, from knowledge exchange and scientific cooperation to joint planning and basin-wide investment decisions
- improving and supporting cooperation around shared monitoring systems, data exchange, and early warning mechanisms
- strengthening strategic communication, as challenges often stem less from lack of knowledge than from how the benefits of water cooperation are communicated, particularly in contexts affected by misinformation and declining trust
- adapting approaches to diverse cooperation contexts, recognizing that water cooperation processes unfold in simple, complicated, or complex settings, requiring different expectations and definitions of success
- creating an enabling environment for establishing and strengthening basin-level governance agreements and institutions
- integrating shared climate resilience into transboundary water management and planning
- integrating land-use, ecosystem management, and green water considerations into transboundary water governance
- engaging civil society, Indigenous Peoples, and local stakeholders and rightsholders in inclusive and participatory processes
- strengthening capacity development approaches to better address structural challenges, support water diplomacy, and enable more context-aware cooperation.

What SIWI is working towards

Shared waters should be managed through sustained cooperation, strong institutions, and continuous dialogue at multiple levels.

Strengthening governance of shared water resources at different scales is essential to managing shared risks, building trust, and supporting long-term peace and security.

Policy Shift 4: Connect water across global processes

The challenge

Water underpins progress across climate action, biodiversity conservation, land management, food systems, and sustainable development. Yet water governance remains fragmented across global policy processes.

Climate, biodiversity, land, and development frameworks are often negotiated, implemented, and financed separately, despite being interconnected through water systems. As a result, water-related risks and dependencies are addressed inconsistently, and opportunities for aligned action are missed. This leads to disconnected priorities, competing funding streams, and implementation gaps.

Without alignment, progress in one domain can unintentionally undermine outcomes in another.

Why action is needed

Addressing water challenges requires greater coherence and alignment across global governance frameworks.

Building on the need to govern the hydrological cycle (Policy Shift 1), align climate action with water systems (Policy Shift 2), and strengthen cooperation over shared waters (Policy Shift 3), water provides a critical entry point for connecting policy processes that are otherwise addressed in isolation.

Greater coherence can help align incentives, reduce duplication, and ensure that policies reinforce rather than undermine each other across sectors.

Stronger integration of water across climate, biodiversity, land, and development agendas can help align priorities, improve resource use, and support more effective decision-making and implementation.

Without this, global commitments risk remaining fragmented, limiting their impact at national and local levels.

Policy direction

Governments and international institutions should strengthen the role of water across global governance frameworks and processes by:

- integrating both blue and green water into climate, biodiversity, land management, and development policy frameworks
- establishing coordination mechanisms across key multilateral processes
- aligning priorities and reporting across frameworks to reduce duplication and conflicting objectives
- using water as an entry point to connect policy agendas across sectors and scales
- aligning national-level commitments and implementation progress with global commitments

What SIWI is working towards

Water should be recognized as a cross-cutting global priority, connecting climate resilience, ecosystem protection, land management, disaster risk reduction, and sustainable development.

Strengthening coherence across global governance processes is essential to translating commitments into coordinated action.

Policy Shift 5: Make water governance inclusive, just and equitable

The challenge

Water governance decisions shape livelihoods, ecosystems, food systems, and public health. Yet many governance systems fail to include the voices, knowledge, and priorities of those most affected.

Inclusion alone does not guarantee equitable outcomes. Participation without attention to power, representation, and decision-making influence can reinforce existing inequalities rather than address them.

Women, youth, Indigenous Peoples, and marginalized communities are often underrepresented or excluded from decision-making processes. As a result, policies may disregard local and Indigenous knowledge, overlook local realities, reinforce existing inequalities, and fail to deliver effective or lasting outcomes.

This is not only a question of equity and justice, but of effectiveness. When governance systems do not reflect the diversity of stakeholders and knowledge systems, they risk producing solutions that are poorly adapted to local contexts and difficult to implement.

Why action is needed

Inclusive, just and equitable governance strengthens both the legitimacy and effectiveness of water decisions.

Building on the need for systemic governance (Policy Shift 1), alignment across climate and finance (Policy Shift 2), cooperation over shared waters (Policy Shift 3), and coherence across global processes (Policy Shift 4), inclusive approaches ensure that these frameworks translate into meaningful outcomes at national and local levels.

Local governments, communities, and Indigenous Peoples play a critical role in managing water systems and implementing policy. Their knowledge and experience are essential for understanding local conditions, managing risks, and sustaining ecosystems.

Without meaningful participation and accountability, policies risk remaining top-down, disconnected from practice, and insufficient to address inequalities and vulnerabilities.

Policy direction

Governments and institutions should strengthen collaborative water governance that is inclusive, equitable and just by:

- embedding human rights-based approaches in water governance frameworks
- ensuring women, youth, Indigenous Peoples, and local communities move from consultation to equitable participation in decision-making and co-leadership, with real influence over decisions and outcomes
- strengthening transparency, accountability, and access to information in water institutions
- supporting inclusive dialogue platforms across sectors and governance levels

- strengthening the capacity of local institutions to engage in and influence water governance processes

What SIWI is working towards

Water governance must be inclusive, equitable, just and participatory, ensuring that diverse stakeholders have meaningful influence over decisions and outcomes.

Embedding inclusive and just approaches is essential to ensuring that water governance is effective, legitimate, and capable of delivering long-term outcomes.

Looking ahead

As global attention turns to a series of key water moments, there is a growing opportunity to move from ambition to implementation.

These moments offer a critical window to strengthen how water is governed across climate, ecosystems, and economies, and to translate commitments into coordinated action.

Real progress will depend not only on new commitments, but on how existing agendas are connected, aligned, and implemented.

The policy shifts outlined in this brief provide a framework for more coherent governance, more effective investment, and stronger implementation.

Seizing this opportunity will be essential to managing increasing water-related risks, strengthening stability, and ensuring that water systems continue to sustain people, ecosystems, and economies in a changing climate.

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