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Water Financing

Scaling up Finance to the Water, Energy, Food and Environment (WEFE) Nexus

Darshini Ravindranath and Paul Steele

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Acknowledgements

This work was carried out under the Water Resilience Tracker project funded by the UK's Foreign, Commonwealth & Development Office (FCDO).

The authors thank Tanisha Reddy, Cheshika Fernando, Emmanuel Attoh, Vidhisha Samarasekara for their technical guidance and inputs.

WATER RESILIENCE TRACKER

Citation

Ravindranath, D.; Steele, P. 2026. *Water financing: scaling up finance to the Water, Energy, Food and Environment (WEFE) Nexus*. Colombo, Sri Lanka: International Water Management Institute (IWMI). 24p.

Cover photo: Alejandro González Brocal/Pinterest

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Contents

Acronyms and Abbreviations

CLTS	Community Led Total Sanitation
CPI	Climate Policy Initiative
DAC	Development Assistance Committee
DFI	Development Finance Institution
EAIF	Emerging Africa Infrastructure
FLID	Farmer-led Irrigation Development
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
ICF	International Climate Finance
IFC	International Finance Corporation
IDA	International Development Association
KWL	Kigali Water Limited
LDC	Less Developed Country
MDB	Multilateral Development Bank
NCQG	New Collective Quantified Goal
NDC	Nationally Determined Contribution
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PES	Payments for Ecosystem Services
PIDG	Private Infrastructure Development Group
PPP	Public-Private Partnership
SMSE	Small Medium Scale Enterprise
SOE	State-owned Enterprise
VCM	Voluntary Carbon Market
WASAC	Water and Sanitation Corporation
WEFE	Water, Energy, Food and Environment
WSS	Water Supply and Sanitation

Executive Summary

Financing for climate, nature and wider development has been central to a series of high-level global meetings over the last year, but water financing is still not yet front and centre. These international meetings include the Climate COP29 in Baku, the Nature COP 16 in Colombia, the Desertification COP 16 in Saudi Arabia, the World Bank/IMF's Annual meetings in the US and the Replenishment of the World Bank's concessional arm, the International Development Association (IDA) in Korea.

COP29 focused on the New Collective Quantified Goal (NCQG) for Climate Finance, i.e. the total quantity of spending available for developing countries. This highlighted the need to increase adaptation financing and focus on cross-sectoral just transitions, but very few details were discussed and there was no time for negotiations on what sectors to spend this money. So, apart from a few side events, water as a cross-cutting topic, along with other spending priorities, was not covered in Baku.

The rapidly changing global landscape for climate action, including climate finance, has drastically shifted since COP29. Several governments are rolling back climate regulations and redirecting financial resources away from climate and foreign aid. The US has withdrawn from the Paris Agreement, with numerous countries, such as Indonesia, threatening to follow suit. This potential shift significantly impacts international efforts to mobilize finance to combat climate change, as these agreements rely on collective action and commitment, particularly financial, from all participating nations. This also signifies the need to focus on private finance and innovative blended finance structures.

Since, at the June Climate Meetings, SB62 in Bonn, there was a significant move to track adaptation finance, underpinned by civil society pressure and technical consensus. A formal finance agenda item was however blocked, limiting substantive negotiations on public climate aid. Water was explicitly recognized as a sector under the adaptation finance framework, through indicator category 9a ("Water supply and sanitation") and dedicated technical proposals on water-related indicators.

This paper will review to what extent water financing, especially in the context of the Water, Energy, Food and Environment (WEFE) Nexus, can be increased in the context of current financing commitments, and what opportunities are available to make this happen in the future. Water is central to the climate crisis and is essential to the provision of other resources in the nexus (i.e., energy and food) and hence water insecurity is a greater threat. Investing in water is fundamental to food security, biodiversity, gender equality, and circular economy. The nexus is the synergies and trade-offs between competing resource-use systems. In the global agenda on water, it is acknowledged that action on water affects action on other goals, and that action by others affects water. This implies that financing and investment for water is systemic: investment in water can achieve (or put at risk) outcomes across multiple sectors, and investments by other sectors can achieve (or put at risk) water outcomes. This can make it difficult to unpack and make transparent to investors finance interdependencies.

Resource availability and access, particular for water, are complicated and shaped by economic, legal, social and political structures and rules in which resulting scarcities may be relative to the position held within such structures. There are often trans-regional and trans-boundary issues at stake. Financing solutions also vary for large scale water infrastructure (e.g. irrigation systems, reservoirs for hydropower, networked water supply etc), nature-based solutions (e.g. watershed restoration, regenerative agriculture), bottom-up solutions (e.g. off-grid hydro), and water policies and governance.

Water financing needs are growing due to climate change; whilst this is well recognised for adaptation, evidence is also emerging of the important links with mitigation. The evidence of the need to finance water for climate adaptation is now widely recognized with water the top priority in most countries' Nationally Determined Contributions (NDCs) and National Adaptation Plans (Kerres et al. 2020). This is no surprise as 90% of floods and droughts are climate

related. Slow-onset declining water availability due to climate change, impacts food security (e.g. lack of rainfed and canal irrigation), energy security (e.g. hydropower decline) and ecosystems health (e.g. limited water for riverine species). However, evidence is less well known for water's potential contribution to climate mitigation. Initial emerging data argues that the water sector is itself a cause of up to 10% of anthropogenic greenhouse gases (Kerres et al. 2020).

The world's water finance needs are well known but still shocking. A quarter of the world's population is without safe drinking water, and half the world's population lacks proper sanitation. Much of the world's population faces water-related challenges: too much, too little, or too dirty. People live in areas prone to floods and droughts, rely on saline or rainfed agricultural lands, or face water pollution. Water financing needs add up to an additional $200 billion a year which may triple by the year 2030.

Key Messages on Water Financing for Water, Energy, Food and Environment

Despite many reports on water financing, limited consensus exists among the main international players and international civil society groups on how to bridge the water financing gap. Thus, there is a pressing need to synthesise and challenge existing views. This Position Paper has set out to undertake this synthesis particular for the WEFE Nexus. The main recommendations are fourfold:

- **Given the limitation of large-scale public and private finance, including climate finance, a pivot to opening regional and local financing is needed for water finance. The meso- and micro-private sector has often stepped in to fill the gap**. This includes "own source" private sector capital, small and medium scale enterprises and informal water markets. Despite all the hype during high-level global meetings, climate finance is constrained and will not solve the water financing crisis. As the limitations of COP29 in Baku showed, with only $300 billion of new public money pledged over the next 6 years, the $200 billion needed for additional water financing is unlikely to swallow up two thirds of these funds given the many other pressing needs.

- **With lower public finance commitments, mobilizing private finance has become more important than ever**. An additional layer of up to $1.3 trillion primarily encompassing private finance was proposed at COP29 Baku to achieve the overall climate finance goal – the Baku to Belem Roadmap. Yet, few new insights have emerged on how the private sector can best get involved. For water and its adjacent sectors, there is a need to improve the risk-return profile of investments. There is evidence demonstrating that blending capital with different risk profiles can have an outsized impact in unlocking additional investment for these sectors with typically higher perceptions of risk.

- **As the WEFE framing suggests, what happens outside the water sector (e.g. in Ministries of Finance, Agriculture, Energy, Environment etc.) will drive reform and increase financing for the sector**. Scaling up water financing requires a cross-institutional and cross-Ministerial whole-of-government approach.

- **Tracking water financing expenditures should be a high priority, as very little is known about what is spent on water and by whom:** There are only ad hoc reports, with no systematic data collection by any international organisation. The Organization for Economic Co-operation and Development's (OECD) Development Assistance Committee collects donor spendings on climate and environment but not specifically on water.

Specific Recommendations on the Main Water Financing Sources

Private "own source" and Small Medium Scale Enterprises (SMSEs) are the largest sources of water finance and could increase with appropriate "enabling conditions." Contrary to many international finance institutions, which largely overlook this pool of capital, "own source" finance by rural and urban water users of irrigation, water supply and micro-hydro is the largest source of water finance. With the appropriate enabling conditions focused on the use and input rights "own source" finance could be expanded. Enabling conditions include removing legal and policy restrictions on smallholder investments, and expanding access to inputs such as tenure, credit and technology. This will allow more investment in small scale-irrigation, supply and sanitation and micro-hydro. Furthermore, conversations around global climate mobilization need to move towards regional and local financial bodies, where the nature and complexities of water investments are better understood.

Private informal water markets are booming and likely to grow further with the effective governance through regulations and incentives. Agricultural groundwater and urban water tanker markets are expanding with growing water scarcity, serving between 25-50% of urban water needs in developing countries and a similar share of farmers in countries such as India which has over 30 million pumps. These markets could gain given more evidence on their social benefits, increased resource rights and more transparent accountable governance from regulations and incentives.

Public finance, primarily by national governments, still funds 85% of developing county large infrastructure, but it must be seen as an "investment" not a cost. External public grants for water are facing major budget cuts with a 15% annual decline (Water Aid 2023). Public finance for urban and rural water needs evidence to "make the case" for water as an "investment" with huge economic, social and environmental benefits such as water for energy, food and environment.

"International climate finance" (ICF) is still a relatively small share of water financing at only about 3- 8% spent on water per year (Water Aid 2022). COP19's overall financing constraints suggests this will not grow significantly as a source of water financing. Some water finance (e.g. large renewable hydro) does contribute to climate mitigation by reducing emissions, but these large dams are still largely funded by "traditional" public finance. Little private climate adaptation finance is seen to be spent 'directly' on water, with a few exceptions such as climate-related insurance. The declining public commitment to climate finance spending pledges at COP29 in Baku suggests that ICF as we know it is just one of many options for water financing, and ICF's financial architecture should be reevaluated and re-designed; for example, private investment in cross-sectoral interventions like water should be better supported and scaled through support from public finance. Larger investments such as hydro and solar, which are typically slotted under energy and climate mitigation, also bring about substantial co-benefits for water resilience and adaptation by supporting livelihoods; however, it is essential that these investments are constructed and maintained in ways that both minimise emissions and aid water security.

Public-private blended finance, despite the pages of reports dedicated to the topic, remains limited at less than 5% of total water financing in most developing countries. To grow, it needs effective regulation to ensure effective pricing, improved efficiency and fees compliance and trust building between public and private actors; however, this takes times and faces challenges of political and institutional capacity.

Payments for ecosystem services (PES) and carbon and water credits have to date been small-scale, but voluntary carbon credits have been growing to reach about $2 billion a year, despite a recent decline. A major success of COP29 in Baku was to advance the rules on Voluntary Carbon Markets (VCMs) under "Article 6," and some now predict rapid development of that market. This growing VCM can be a key source for water financing going forward. However, others caution that the voluntary carbon market still faces challenges of effective monitoring, enforcement and capacity building to become scalable. Water credits, another emerging yet small-scale market-based mechanism, are linked to supply chain dependencies and may hold more potential than PES due to lower transaction costs. Water credits might expand with development of standards for high-integrity credits, some of which were launched at COP16 in Cali.

Objectives in a Post-COP29 and Pre-COP30 Context

COP29 in Azerbaijan prioritised finance for climate. This finance focus included NCQG and global stocktaking of mitigation and adaption, transparency and international carbon credits (Article 6) – see later sections below. According to the OECD, the agreed (2009) upon annual $100 billion provided by developed nations was met in 2020 and exceeded in 2022.

COP29 agreed to triple finance to $300 billion by 2030 and reach public and private goals of $1.3 trillion by 2035. The exact wording according to the UNFCCC was to "triple finance to developing countries, from the previous goal of USD 100 billion annually, to USD 300 billion annually by 2035" and "secure efforts of all actors to work together to scale up finance to developing countries, from public and private sources to the amount of USD 1.3 trillion per year by 2035."

COP29 is one of a series of high-level global meetings on financing over the last year. Other meetings include the Nature COP 16 in Colombia, the UNCCD COP 16 in Saudi Arabia World Bank/IMF's Annual meetings in the US and the Replenishment of the World Bank's concessional arm, OECD's financing water roundtable. the IDA in Korea. Water finance needs to be front and centre to these international processes.

The optimal ways to finance water are still debated with limited implementation. Whilst the huge water financing gap is well known, and has been for many years, there are discrepancies about how to resolve it. Many reports on water financing by international institutions, such as the OECD, Water Aid, World Bank, and World Water Council, provide quite general recommendations with some preferences for certain approaches such as private sector focus; this leads to limited implementation.

This paper recommends ways for COP30 to support the scale up of water financing focusing on WEFE by synthesising existing reports and challenging some existing perceptions. It will demonstrate that in the face of failures from traditional public finance, fragmented and inconsistent official development assistance (ODA) and the lack of large-scale private finance, a shift in focus towards regional and local financing might hold the key; it has been the meso- and micro-private sector that has stepped in, including "own source" private sector, small and medium scale enterprises and informal water markets.

Water Financing Gap Worsened by Climate Change

The need for water infrastructure remains high. A quarter of the world (i.e. over two billion women and men) lack access to affordable, safely managed drinking water; half of the world (i.e. four billion people) lack proper sanitation leading to negative health and safety impacts (Systemiq 2022); and the water-food-land nexus leads to food insecurity with over 3.2 billion people now living in severely water insecure agricultural areas based on ground and surface water availability (FAO 2020). For households with access to water, costs are often not affordable (Mitlin and Walnycki 2019).

Financing is key for the WEFE nexus. By 2050, the world's population is estimated to reach 10 billion people, increasing global food demand by 60% and energy demand by 30- 75%. Freshwater use has increased sixfold from the year 1900 to today. Water demand will massively increase further for energy, food and environment in the next 25 years, and this cannot be achieved without water security.

Climate change multiplies water risks and financing needs. Water financing needs are increasing due to the impacts of climate change and both adaptation and mitigation demands. As over 90% of climate disasters are water related (e.g. floods and droughts) in addition to growing "water stress" (see Figure 1), water adaptation and resilience investments are critical. Furthermore, agriculture is extremely vulnerable to climate change, especially in Africa, where the population is growing fast and agricultural production is low as less than 10% of arable land in Africa is irrigated. For mitigation, global greenhouse emissions are linked to water intensive crops such as methane from rice.

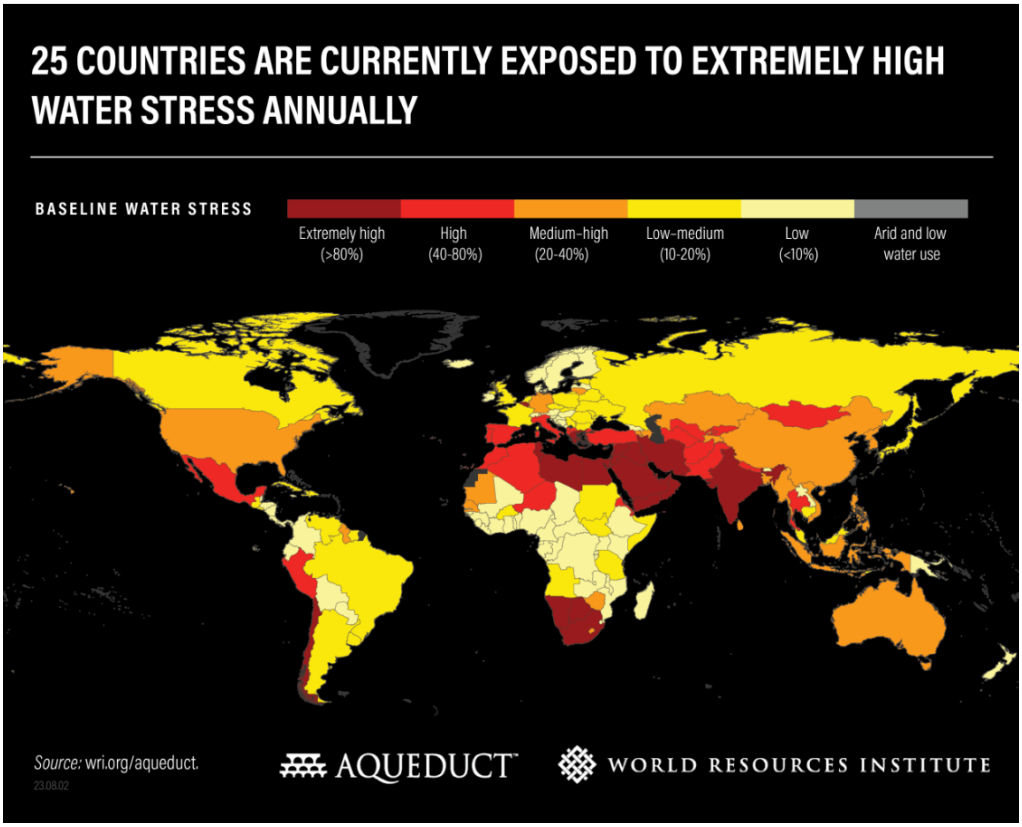

Figure 1. World map illustrating extremely high annual water stress
Source: Kuzma et al. 2023

Financing gap for water is estimated at $200 billion per year, required in developing countries for water capital infrastructure as the demand for water for all uses may rise by 20–30% by 2050 (IWMI 2024). This does not include the significant costs of water operations and maintenance such as the costs of irrigation canal rehabilitation and repair. Despite this funding gap, governments in developing countries spend less than 2% of expenditure on water capital and operating costs, and less than 0.5% in Africa. Only 9% of water investment in developing countries is private compared to 45% in power and 87% in telecoms (Systemiq 2022). So, water systems face a massive financial shortfall in their transition to an inclusive, net-zero and nature-positive economy.

Recommendations on Different Water Financing Sources

Private "Own Source" and Small Medium Scale Enterprises (SMSEs)

Most existing reports overlook or massively underestimate what is typically the largest "financer" of water provision (i.e. SMSEs and "own source" private capital). Water users "own source" finance for water infrastructure includes users of irrigation, micro-hydro, sanitation and water supply. SMSEs provide water technology (e.g. solar and diesel pumps, micro-hydro and pipes and latrines for water supply and sanitation). Low-income users are often willing to contribute "own source" private capital (e.g. labour, materials, savings and user fees). Examples include solar irrigation by farmers and Society for the Promotion of Area Resource Centers (SPARC) India household and community toilets. "Own source" private capital can also be a good vehicle for integrating concerns around equity and inclusion, amplifying women's voices. This also highlights the need for regional and local avenues of finance to be better integrated into the global landscape of climate finance mobilization.

As a recent World Bank blog (Izzi 2021) states: "Farmers are taking actions. They have been driving the establishment, improvement and expansion of irrigated agriculture, without any external support. The concept of Farmer-led Irrigation Development (FLID) is thus nothing new, but only during the last two decades have governments and the development community recognized the massive areas using this 'off-the-record' process and the countless opportunities are still out there for farmers to take the initiative in irrigation."

Similarly, millions of the poorest people are now investing in water infrastructure themselves, following the success of the Community Led Total Sanitation (CLTS). From its start in Bangladesh in the late 1990s, CLTS has now led to millions of people stopping open defecation and constructing their own toilets (IISD 2018).

To expand and upscale this further requires "enabling conditions," such as the removal of restrictions that limit investments and a supportive legal and technical context ensuring rights and access to secure tenure, capital and technology. For example, informal rural and urban land rights and lack of land titles represent significant barriers to expanding poor households' access to networked irrigation and water supply and sanitation services. In many countries, irrigation and water supply connections are seen as a means for inhabitants of a particular property to stake a legal claim to its ownership. Providing land titles, therefore, is often a prerequisite to extending access to services. There are also issues around VAT and other taxes on new solar technologies.

Private Formal and Informal Water Markets

Informal water trading is booming in low-income farms and cities, as a way both to allocate water and to generate demand and supply for water through private traders. This contrasts with formal agricultural water markets which have been developed in several richer countries (e.g. Australia, western United States, Chile and South Africa) but formal water markets have had less success in low-income developing countries. It is estimated that as much as half of urban households in sub-Saharan Africa and a quarter of urban households in Asia and Latin America rely on informal water vendors (Garrick et al. 2019). In rural areas (e.g. India), many farmers rely on informal water markets, such as surface and groundwater wells and pumps powered by either diesel, electricity or increasingly solar.

These water markets are particularly dominant for groundwater. As Figure 2 shows, groundwater provides 49% of all water withdraws for domestic use by the world's population and 43% of all water used for irrigation serving 38% of the world's lands. This groundwater is particularly important in the context of increased climate change and accompanying drought.

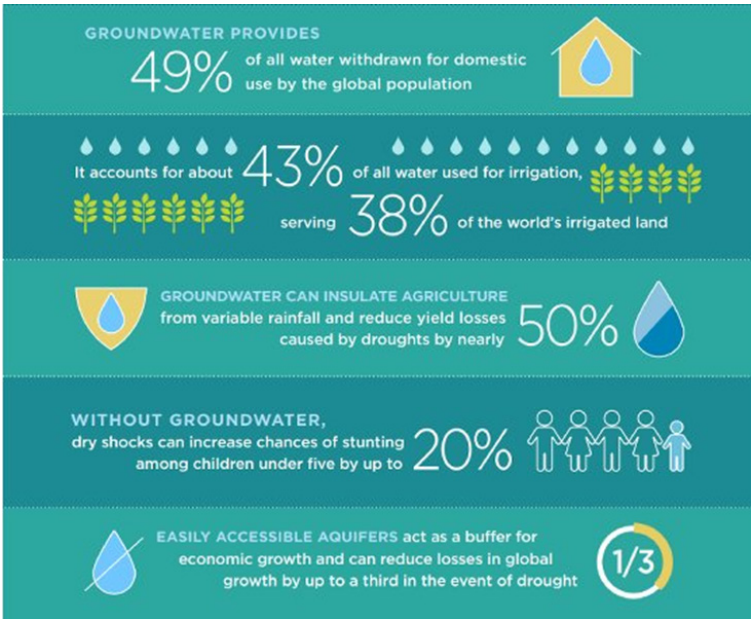

Figure 2. Infographic about groundwater (*Source:* World Bank 2023)

In rural areas, farmer demand and take-up of water markets is particularly influenced by government provided subsidies, such as diesel and electricity subsidies. Better evidence for the benefits of informal water markets is needed. Similarly, whether improved governance, through regulations and pricing, will increase or decrease the need for finance by impacting equity and access must be assessed (Thibert et al. 2019).

Traditional Public Finance

Over 90% of water finance for developing countries' government-provided water infrastructure comes from traditional public finance (Andres et al. 2024). This is constrained by domestic government austerity and donor government budget cuts after COVID and with the growing debt crisis. Foreign loans such as Export-Import Bank of China for hydropower are declining. Efforts to bring in reforms, such as water pricing and water privatization, have been mired in political economy controversy. Farmer contributions (e.g. water for irrigation pricing) have mixed success and remain politically controversial with high transaction costs. Water privatization has largely stopped and even been reversed in some cities and countries.

Water infrastructure for agriculture, energy, infrastructure and environment has too often been seen as the "Cinderella," with low priorities in public budgets. A recent World Bank report of developing government calculates annual spending on water is approximately $164.6 billion annually (2017 prices), roughly 0.5% of their GDP, and encompassing four subsectors: water supply and sanitation (WSS), irrigation, water transport, and hydropower (Andres et al. 2024). About 91% of that annual spending in water comes from the public sector, including spending by government and by state-owned enterprises (SOEs), another 7% comes from ODA, and only 1.7% comes from private sector spending.

More than half of the total amount is allocated to the water supply and sanitation subsector, an estimated $82.6 billion, or 0.26% of GDP. To meet SDG targets, developing countries need to nearly triple their current water supply and sanitation expenditures, increasing annual investments by between $131.4 and $140.8 billion. Another subsector, irrigation, also faces a spending gap: the analysis includes 41 countries and estimates a gap of $3.5 billion a year in a low-cost spending scenario that includes irrigation infrastructure only and reducing agricultural demand.
There is a need to shift the view of public water finance from a "cost" to an "investment." This urgently requires to "make the case" to each sector (e.g. Agriculture, Energy, Industry, Health, Environment, etc.) for investment in water with high economic and social rate of return (i.e. massive pro-poor, public health, gender and environment benefits). The limited estimates that do exist suggest that economic losses due to impacts from lack of hygiene, floods and water scarcity are huge. There is a need to assess trade-offs of water sector policies between different sectors, creating a pathway to better understand how these policies and programs will be financed.

One tool to drive improved public water investments is undertaking water expenditure reviews to assess spending baselines, finance gaps and ways these can be addressed (Manghee and van den Berg 2012). But, these reviews are scarce, with even basic data on per country water expenditures being limited.

To increase traditional public investment for water includes the following three areas related to subsidy provision (SWA 2020):

- Increase value from existing public funding by incentivizing sector performance, improving subsidy targeting and promoting better sector planning and management.
- Mobilize more funding by adequate cost recovery policies, reforming tariff systems, introducing earmarked taxes and establishing an array of options for cross-subsidization.
- Reform repayable domestic finance through mechanisms that reduce perceived risks and pool finance at national, municipal and household levels.

Climate Finance

Climate finance remains a legally undefined and contested concept despite the many negotiations on the topic, including at COP29. International negotiations have focused on international finance (i.e. finance that flows from wealthier countries to less wealthy countries). However, this has thrown up two major debates that were highlighted at COP29. First, many debate whether the funds should be public international funds as opposed to private finance. Second, many debate which countries are "wealthy," with the OECD countries increasingly saying that China and some Gulf States should be seen as wealthier countries who can also contribute to climate finance. Two more controversies have also arisen: to what extent the finance should be for mitigation versus adaptation, with least developed countries stressing adaptation; and, to what extent should public finance be grants versus loans, particularly given the growing debt burden many developing countries are facing.

Taking a broad definition of climate finance here includes a mixture of public/private and household investments (Fonseca 2024) (see Table 1).

Table 1. Mixture of climate finance across various investment types

Mostly public instruments	Mostly private/corporate instruments	Mostly private/households investments

• Grants and concessional loans:
  - Bilateral DFIs
  - Multilateral DFIs
  - Other PDBs
  - National governments
  - Climate funds
  - State owned enterprises
• Export credits/credit enhancement / credit lines (State owned financial institutions)
• Bonds (blue, green, climate, resilience, transition, catastrophe)
• Debt swaps (for nature, for climate, for adaptation)
• Guarantees (if exercised)
	• Concessional and commercial loans
	• Balance sheet financing (debt and equity)
	• Project level financing (debt and equity)
	• Insurance schemes
	• Carbon credits and carbon markets (voluntary and mandatory)
	• Bonds sustainability linked
		• Own investments (equity)
		• Loans by MFIs

Source: Fonseca 2024

According to the most recent estimates, very few of these climate finance sources are financing water. The most recent estimates, based on Climate Policy Institute and OECD data from 2022 of ICF, are that 3- 8% or $6-19 billion of climate finance is water related (Water Aid 2022). This is evident in Figure 3, breaking down ICF by category and showing water and waste at the bottom of the chart at very low figures in terms of expenditures.

As ICF is still a relatively small flow, global climate funds also expect investments to demonstrate the potential to mobilise or influence larger funds and enable system transformation. Practical experience demonstrates that the mandate of climate finance is to tip climate action—mitigation or adaptation—into viability. This can be, for example, through extra resources to ensure meaningful social and environmental sustainability, through de-risking of wider investments or through supporting experimental and innovative approaches (IIED 2019).

Water related infrastructure is closely linked to climate. This includes hydropower, irrigation infrastructure (i.e. solar irrigation), **nature-based solutions** (i.e. wetland restoration and green infrastructure) **and flood and drought management infrastructure.** The OECD's *Financing a Water Secure Future* report emphasizes that while water-related infrastructure investments are essential for mobilising climate finance, they often lack clear revenue streams and face challenges such as small-scale projects and weak enabling environments. It advocates for strengthening policy frameworks, enhancing investment planning and employing innovative financing instruments to improve the risk-return profile of water-related investments.

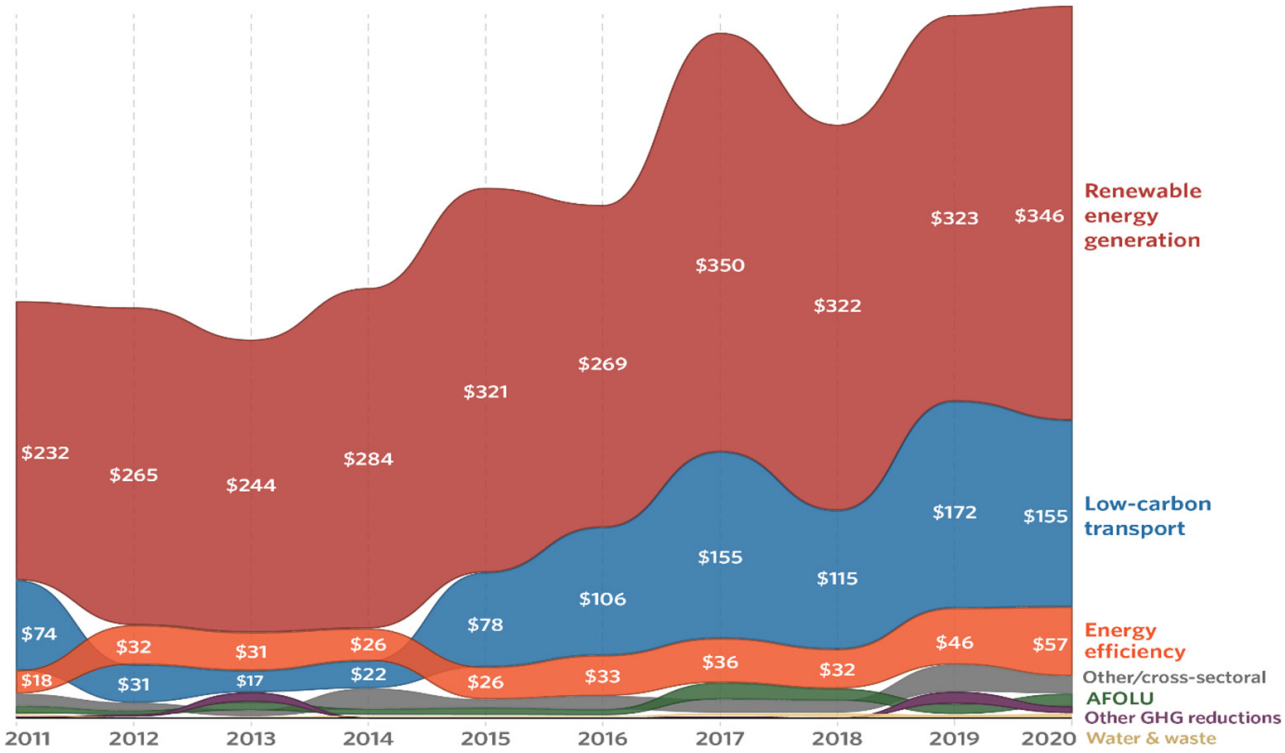

Figure 3. Breakdown of international climate finance

Source: Naran et al. 2022

Financing adaptation to climate, particularly related to water, includes disaster preparedness and response to climate-related droughts, floods, etc. But, currently for adaptation, climate finance is limited: over 70% of climate finance is for climate mitigation, not for adaptation. There is also a political demand from developing countries that adaptation needs should be publicly funded by donors, not by private finance. So, despite donor's promotion of climate finance for private sector adaptation, this remains small with some exception such as *private sector insurance for drought*.

So, whilst climate finance for water resilience and mitigation is less than 10%, this could grow with more evidence and advocacy of the climate benefits of water expenditure. There is a need to need to demonstrate why water expenditures are good for mitigation (e.g. reduced emission from solar irrigation) and adaptation (e.g. pre and post responses to climate impacts such as floods and drought).

The evidence of the need to finance water for adaptation is growing with water as the most prioritised section in most countries NDCs and National Adaptation Plans (Kerres et al. 2020). However, evidence is less well known for water's potential contribution to climate mitigation despite the data. This same study from Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) argues that the water sector is itself a cause of up to 10% of anthropogenic greenhouse gases (Kerres et al. 2020). This includes:

- Purifying, supplying and treating water and wastewater
- Methane and nitrous oxide emissions from wastewater and faecal sludge
- Emission of greenhouse gases (GHGs) from surface water bodies
- Decomposition of organic material in reservoirs
- Degradation and destruction of wetlands, in particular peatlands
- Different flooding regimes for rice paddy irrigation

Given this data of carbon emissions from water use, another recent study shows the strong links between water and the voluntary carbon market (Thomas et al. 2024).

Currently, significant water investment decisions are being made, based on often shaky and inadequate hydrological data. Blending climate and hydrological data with local forms of knowledge can forge a more robust understanding of water risks and provide the basis for more sustainable investments and co-produced adaptation interventions.

The current range of investment strategies used by financial institutions to support water resilience, focusing on selection criteria, risk management approaches and emerging financial instruments, is demonstrated in Figure 4.

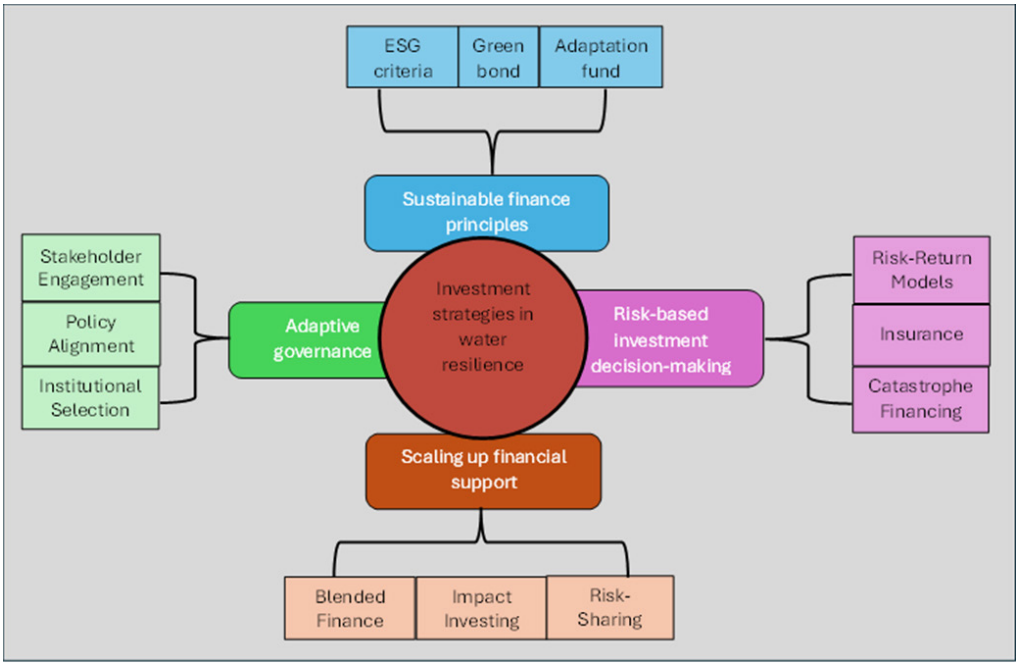

Figure 4. Theoretical framework governing the analysis of investment strategies in water resilience
Source: Attoh et al. 2025

Recognizing water as a critical sector for addressing climate change, many countries have gone from integrating water resilience within their NDCs as a minor topic to a central focus, requiring climate finance to ensure words turn to actions. Updated NDCs are shifting from generic vulnerability assessments to cross-sectoral approaches, highlighting an important strategic shift for water adaptation. Nevertheless, fragmented institutions frameworks, poor coordination among ministries, and limited access to climate finance prevent the success of NDC commitments and water-related adaptation.

To overcome these barriers, countries need long-term financial planning, greater access to global climate funding mechanisms, and increased institutional capacity, especially in resource-constrained settings. Specifically, expanding access to adaptation finance is essential, as many national and subnational agencies lack the tools to develop bankable projects aligned with NDC goals and often face significant hurdles in accessing international climate finance.

Innovative finance models, such as blended finance, green bonds, and performance-based funding, are gaining traction but require stronger financing mechanisms, governance, project preparation capacities and supportive regulatory ecosystems to scale effectively. By addressing finance access issues through enabling policies for innovation finance models, financing shift from “fragmented, grant-based approaches to cohesive, scalable systems that ensure long-term water security and climate resilience.” Enabling policies might include support for blended finance and bond issuance, initiating climate finance readiness efforts, collaborating with development banks and private investors, or even embedding water resilience metrics into national budgeting and planning frameworks. Increasing domestic water adaptation budgets and embedding them in climate and infrastructure strategies, while strengthening access to international climate finance and developing robust project pipelines aligned with NDC targets, will further enhance impact.

Ultimately, embedding water resilience within national climate, infrastructure, and economic strategies, alongside improved finance access and institutional coordination, is essential to translating NDC commitments into transformative, climate-resilient outcomes.

In the face of overlapping water crises and ineffective water governance – all made more severe by climate change – we need new approaches to enhancing climate resilience and sustainable development through water security.

The UK Government's Just Transitions for Water Security (JTWS) empowers 3 complimentary strategies to improve the capabilities of local and national policymakers to trigger transformational action needed to build climate resilience and water security.

JTWS strengthens institutions, technical capacity, and governance; builds market conditions and incentives for investment in water; and ensures delivery of sustainable water stewardship.

RESILIENT WATER ACCELERATOR

Resilient Water Accelerator facilitates investment in water security projects by showing scalable, bankable solutions.

Fair Water Footprints encourages action on water and climate risks in global supply chains through partnerships across sectors.

fair water footprints

WATER RESILIENCE TRACKER

Water Resilience Tracker supports governments in creating inclusive, water-centric climate-resilient policies.

IWMI alongside partners AGWA, ARUP and Deltares are implementing the Water Resilience Tracker, and supporting governments in advocating for water resilience in their national climate strategies (adaptation and mitigation) through technical assistance and capacity building.

Public-Private Blended Capital

Blended finance is a strategic combination of public and private finance. Despite the many reports and recommendations, recent public-private financing solutions have remained limited (Figure 5). Private finance is especially difficult to reach for least developed countries. Only 6% or under $5 billion of total private finance was mobilised in Less Developed Countries (LDCs) (OECD 2020).

Figure 5. Blended finance graphic

Source: Jena and Saxena 2023

And this is even more challenging in the water sector. The OECD estimated that from 2017-19, blended finance for water and sanitation accounts for just 5% of total transactions by volume and less than 1.5% by value of commercial finance mobilised (World Water Council 2022). Innovative examples include green, blue and climate related bonds and government and citizen partnerships such as the *Ethiopian Dam Renaissance Project*.

These opportunities may increase with the focus on private finance for closing the climate financing gap, but this is unlikely. Affordable water services are notoriously difficult to gain profit from which is why they have seen such limited private sector investments. This can include straight-forward issues around water leakages and non-revenue water.

There is the sticky issue around the need to develop sustainable tariff for cost recovery and investments and providing affordable water to the poorest (recognising the human right to water). This is tricky, and the complex socio-political, economic and environmental challenges need robust public governance, equitable pricing and long-term investments/ planning that may not align with private sector interests.

However, there are some exceptions, and the OECD has developed five principles (Figure 6) for effective public private partnerships (OECD 2018).

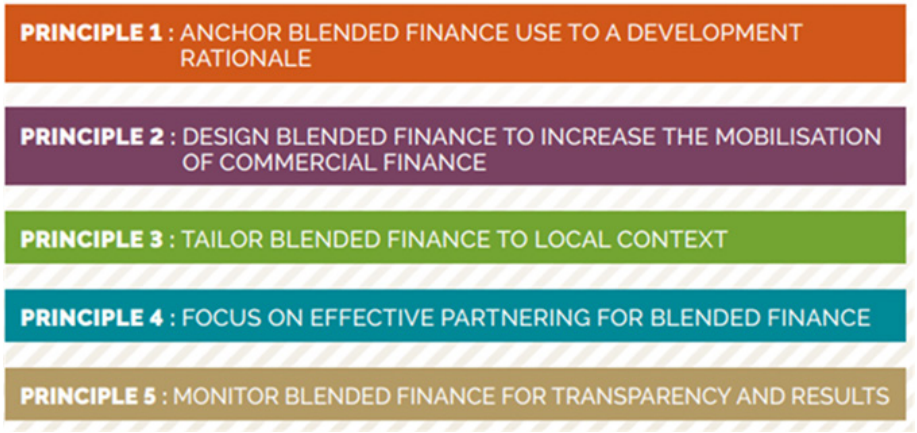

Figure 6. OECD's 5 principles for public-private partnerships
Source: OECD 2018

There is evidence of the strategic use of blended finance to address the disincentives that private sector investment has traditionally faced. Applying the appropriate instruments to optimise public and philanthropic funding can mitigate risks, overcome key barriers and strengthen the development of a high-quality and bankable project pipelines to create a more efficient and investable water sector.

To work in the water sector, public private partnership (PPP) need trust building and effective governance including some catalytic public capital, guarantees and insurance to de-risk private capital water and regulations and appropriate pricing policies. Examples include the Kigali Bulk Water Project, the Jamaica Credit Enhancement, and the Philippine Water Revolving Fund (OECD 2020b).

Kigali Bulk Water Supply Project: Public Private Partnership with Blended Finance
There is a lack of access to piped water supply in Rwanda, with only 40% of the total population connected to a supply system as of 2015 and inequalities observed between urban and rural areas.

Although the Government of Rwanda had committed to achieving universal and reliable access to safe drinking-quality water supply to Kigali and to the country's 12.4 million inhabitants, as set out in its Vision 2020 strategy achieving the goal was challenging due to the limited public water production and supply capacity, impaired by a high rate of non-revenue water which leads to rationing.

The solution was to explore diversified modalities to achieve the goal consisting of a public private finance and blended finance mechanism. The PPP competitively selected by the International Finance Corporation (IFC) is a 27-year Build-Operate- transfer arrangement. The agreement is funded via a tiered capital structure, which means that Kigali Water Limited (KWL), a fully owned subsidiary of Dubai-based Metito, will build, maintain, and operate the treatment plant and sell drinking quality water to Water and Sanitation Corporation (WASAC), Rwanda's public water utility in charge of the transmission and distribution and sole off-taker of the project. At the end of the 27 years period, Metito will transfer KWL over to WASAC, which will maintain and operate KWL.

Three organisations affiliated to the Private Infrastructure Development Group (PIDG) helped finance the project at different stages of its development:

- DevCo, a facility managed by the IFC and funded by PIDG, provided initial financial support and technical assistance to the government of Rwanda to cover the legal, financial, technical and environmental feasibility assessments of the project.
- The Emerging Africa Infrastructure Fund (EAIF) provided USD 19 million in senior debt and USD 2.6 million in junior debt. The EAIF also crowded in African Development Bank funds amounting to USD 19 million in junior debt.
- PIDG's Technical Assistance Facility provided a USD 6.25 million grant to cover upfront capital costs and avoided an increase in water tariffs as a result of the project.

The USD 11 million remaining balance was provided by Metito as equity finance.
Steps taken to minimize risks include:

- The blended package was denominated in US dollars
- Separating the distribution infrastructure from the plant under a distinct concessional loan
- Transparency in calculation and composition of the tariff

Carbon Credits, Payment for Ecosystems Services (PES), and Water Credits

An emerging market-based financing tool linked to climate known as voluntary carbon credits made headway at COP29. These credits arise when projects can "sell" the amount of GHGs they reduce from their interventions. For example, solar irrigation projects can "sell" their GHG reductions compared with using a diesel irrigation pump. The purchasers of such carbon credits are companies who need to reduce their emissions of GHGs and find carbon credits the cheapest and easiest way to do so.

So far, the market for carbon credits has grown to about $2 billion a year, but in the last year of 2024 sales of carbon credits declined significantly due to allegations of fraud in the market. There are different views on the extent to which the market will pick up.

There may be a boost to the market due to the COP29 agreement including on the newly founded Supervisory Body for Article 6.4 which passed at COP29 and includes:

- Safeguarding measures requiring future project developers to identify and address potential negative environmental and social impacts (known as Sustainable Development Tool)
- A standard for the development of carbon-credit methodologies and another one regarding carbon removal activities
- For 'cooperative approaches' to be in line with their promise to deliver finance where it is most needed
- Support to developing countries' capacity to host high-quality projects and structure their offer. By contrast under the pre-Paris system ('Clean Development Mechanism'), only a very small subset of countries with relatively more institutional capacity attracted the vast majority of carbon credits investments

Another form of market-based mechanism for water management is PES, but these have largely failed to materialise due to high "transaction costs" and location specific requirements.

By contrast new "water credits" may offer may opportunities with their focuses on water dependency within companies "supply chains" for positive credits and generalised lower transaction costs. However, these newer "credit" schemes require governance through regulations to promote high integrity markets.

Private Finance and Impact Investment

A study by Climate Policy Initiative (CPI) indicates that USD 1.5 billion accounted for private sector adaptation finance, accounting for only 1.5% of total tracked adaptation finance (Connolly et al. 2024). This private capital, tracked at the project level, came from commercial financial institutions (38%), philanthropies (31%), corporations (28%), and private funds (3%) (see Figure 7). However, CPI acknowledges its findings may be unrepresentative, as tracking private sector adaptation finance accurately remains challenging. To date, there is extremely limited data available to provide a clear picture of private sector contributions, primarily due to the context-specific nature of adaptation finance and the absence of standardized reporting frameworks for private entities. Additionally, many private actors may not even categorize their adaptation-related investments explicitly as "adaptation."

In 2024, ClimateWorks Foundation conducted a baseline survey of over 40 of the largest foundations active in climate and adaptation-related sectors (Roeyer et al. 2024). The survey found that these organizations provided at least USD 600 million in adaptation and resilience funding in 2023, with plans to increase this support in 2024. However, given the ambiguity around what qualifies as adaptation and resilience funding, several funders were unable to quantify their contributions precisely. This reflects a broader challenge across the private sector: the difficulty in categorizing and tracking adaptation finance due to inconsistent definitions and reporting standards.

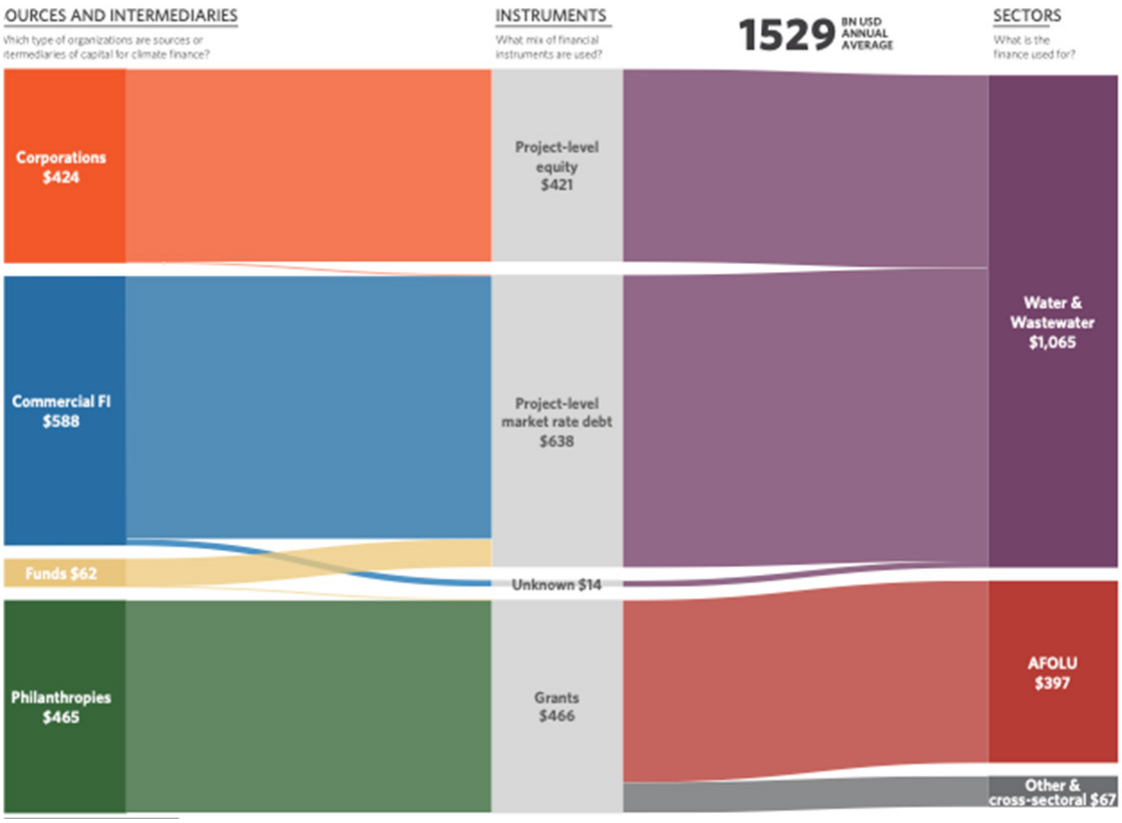

Figure 7. Overview of Tracked Private Adaptation Finance Flows in USD millions from 2021-2022

Source: Connolly et al. 2024

Note: CPI prioritized project-level investment primary data for its relevance in impacting the real economy.

Conclusion

Water remains critically underfunded in climate finance, despite its central role in adaptation and the WEFE Nexus. While SB62 in Bonn acknowledged water within adaptation tracking frameworks, finance discussions still overlook water as a cross-cutting priority.

Public climate finance is declining, and water receives only a small share. Private finance must therefore be scaled up, especially through blended finance, local capital, and informal markets. However, enabling conditions—legal rights, risk mitigation, and regulatory frameworks—are essential to unlock this potential.

There is an urgent need for countries at COP30 to:

- Integrate water financing across sectors and ministries,
- Improve data tracking on water investments,
- Reframe water as both an adaptation and mitigation asset,
- Support mechanisms like water credits and voluntary carbon markets to mobilize new capital.

Without systemic reform and coordination, water financing will continue to fall short—undermining resilience, development, and climate goals.

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Annex: COP29 Declaration on Water for Climate Action

We, national governments and other stakeholders, including international organisations, financial institutions, philanthropies, private sector entities, academia, and civil society organisations;

Recognising that water is at the heart of climate change, with the majority of climate impacts being experienced worldwide through floods, droughts, glacier mass loss, landslides, degraded water quality, water scarcity and changing water availability, as well as other substantial changes in the water cycle at global and regional scales;

Emphasising the vital role that protecting, conserving, and restoring water resources, water basins, including seas, rivers and lakes, groundwater and other water-related ecosystems play in delivering effective climate action for both mitigation and adaptation;

Highlighting the critical role that the water-energy-food-ecosystems nexus plays for both climate mitigation and adaptation, and recognising that water is truly multisectoral and cross-cutting in its nature, and that without addressing water security within all relevant sectors, the climate and sustainable development goals will remain out of reach;

Alarmed that 2.2 billion people still do not have access to safe drinking water, and approximately half the world's population is currently subject to severe water scarcity with 3.5 billion lacking access to safely managed sanitation;

Concerned that one-fifth of the world's river basins are experiencing rapid changes in the area covered by surface waters, indicative of flooding and drought events associated with and exacerbated by climate change; glaciers have suffered the largest mass loss in 50 years; over 90 percent of disaster-affected people and nearly 95 percent of infrastructure loss and damage were impacted by water-related disasters; and that floods are one of the major sources of water pollution, threatening water quality and human health and safety; and noting that these challenges are linked to the degradation of water-related ecosystems and related biodiversity;

Acknowledging that addressing these challenges requires concerted efforts, strengthened actions, dialogue and partnerships at international, regional, national, river and basin levels, through applicable integrated and intersectoral approaches, as well as relevant water-related climate mitigation and adaptation actions for achieving the objective of the UN Framework Convention on Climate Change and the goals of the Paris Agreement, and the objectives of the UAE Framework for Global Climate Resilience, set out in decision 2/CMA.5 on the global goal on adaptation;

Reaffirming our respective commitments under the UN Framework Convention on Climate Change and the Paris Agreement, the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework, the UN Convention to Combat Desertification , the Sendai Framework for Disaster Risk Reduction, and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), as well as our collective support for the 2030 Agenda for Sustainable Development, in particular its Sustainable Development Goal 6 and other related goals, the Pact for the Future and taking note of the UN 2023 Water Conference, the Water Action Agenda, United Nations General Assembly resolution 77/334, and UN Environment Assembly Resolution 6/13;

Welcoming the ongoing efforts on the margins of previous UN Climate Change Conferences to address water-related climate challenges and ecosystem degradation, including initiatives such as the Glasgow Partnership for Fair Water Footprints, the Action for Water Adaptation and Resilience Initiative (AWARe), the Freshwater Challenge, and the Enhancing Nature-based Solutions for an Accelerated Climate Transformation Partnership (ENACT), and the efforts made within the Water for Climate Pavilion;

Seeking to increase concerted efforts to strengthen leadership and cooperation on global water security, address climate change-induced water scarcity, water-related hazards, and disasters including water pollution, conserve, protect and restore water resources, water basins including seas, rivers, lakes, groundwater and other water-related ecosystems, including in the terrestrial and coastal areas adjacent to freshwater and marine environments, taking into account the perspectives of Indigenous Peoples, local communities, women, children, youth, migrants, persons with disabilities, and people in vulnerable situations.

In fulfilling these objectives by 2030, we resolve to:

1. Promote dialogue and partnerships among countries at international, regional, river and basin levels, to:
(a) Strengthen COP-to-COP synergies, continuity and coherence on water-related processes of the UN Climate Change Conferences, the UN Framework Convention on Climate Change, the Convention on Biological Diversity and the UN Convention to Combat Desertification;
(b) Support the development of collaborative and aligned climate action and policy;
(c) Enhance the effective implementation of water-related initiatives launched on the margins of UN Climate Change Conferences, and coordinate with major multilateral water events, including the next UN Water Conferences in 2026 and 2028;

2. Strengthen the generation of scientific evidence on the causes and impacts of climate change on water resources, water basins and water-related ecosystems by leveraging existing knowledge platforms, as well as considering the creation of new regional knowledge hubs to:
(a) Promote sharing of knowledge and relevant data on climate observations and research, including on water cycle, water levels, fluctuations and depletion, as well as experiences and best practices;
(b) Promote access to technology and innovations;
(c) Utilise existing and, as required, develop new basin-wide climate scenarios, and climate risk and vulnerability assessments, including strengthening relevant monitoring and data-sharing mechanisms;
(d) Explore the links between conserving, protecting, restoring and sustainably managing water resources, water basins, and water-related ecosystems and their contribution to both climate mitigation and adaptation efforts;

3. Enhance water-related climate policy actions through:
(a) Effectively integrating water considerations in the design of climate policies, including national adaptation plans (NAPs) or strategies, nationally determined contributions (NDCs), and associated implementation plans, as well as national biodiversity strategies and action plans (NBSAPs), as appropriate, using existing tools;
(b) Improving prevention, preparedness, resilience and recovery in response to water-related hazards and disasters, in particular strengthening national and regional early warning and anticipatory action systems for drought and flood prediction and mitigation of their impacts;
(c) Addressing water challenges by 2030 through enhancing sustainable and efficient use and management of water resources, water-related ecosystems, soil and land resources, improving environmental management, environmental quality regulations, pollution control, water quality monitoring and analysis, and early warning and monitoring systems, and help ensuring recycling, treating, and reusing of wastewater, control on runoffs and other relevant measures;
(d) Expanding the use of relevant integrated approaches such as integrated water resources management (IWRM), nature-based solutions (NbS), ecosystem-based adaptation (EbA), source-to-sea approaches and other applicable tools and methods.

To enable the implementation of these actions we:
Launch the Baku Dialogue on Water for Climate Action as a COP-to-COP collaboration platform for continuous and coherent water-related climate action;
Support the Baku Dialogue on Water for Climate Action;
Resolve to contribute to the implementation of this Declaration in line with our respective mandates;
Encourage future Presidencies to reconvene the Baku Dialogue at each UN Climate Change Conference;
Explore future pathways to bolster the Baku Dialogue on Water for Climate Action, and enhance the implementation of activities planned under this platform.

National governments, and other stakeholders can endorse this Declaration through:
Any official written communications (letter or note verbale) to the COP29 Presidency or email to water@cop29.az

For Background Information:
https://cop29.az/en/pages/baku-dialogue-on-water-for-climate-action-background-information

International Water Management Institute

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.

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