

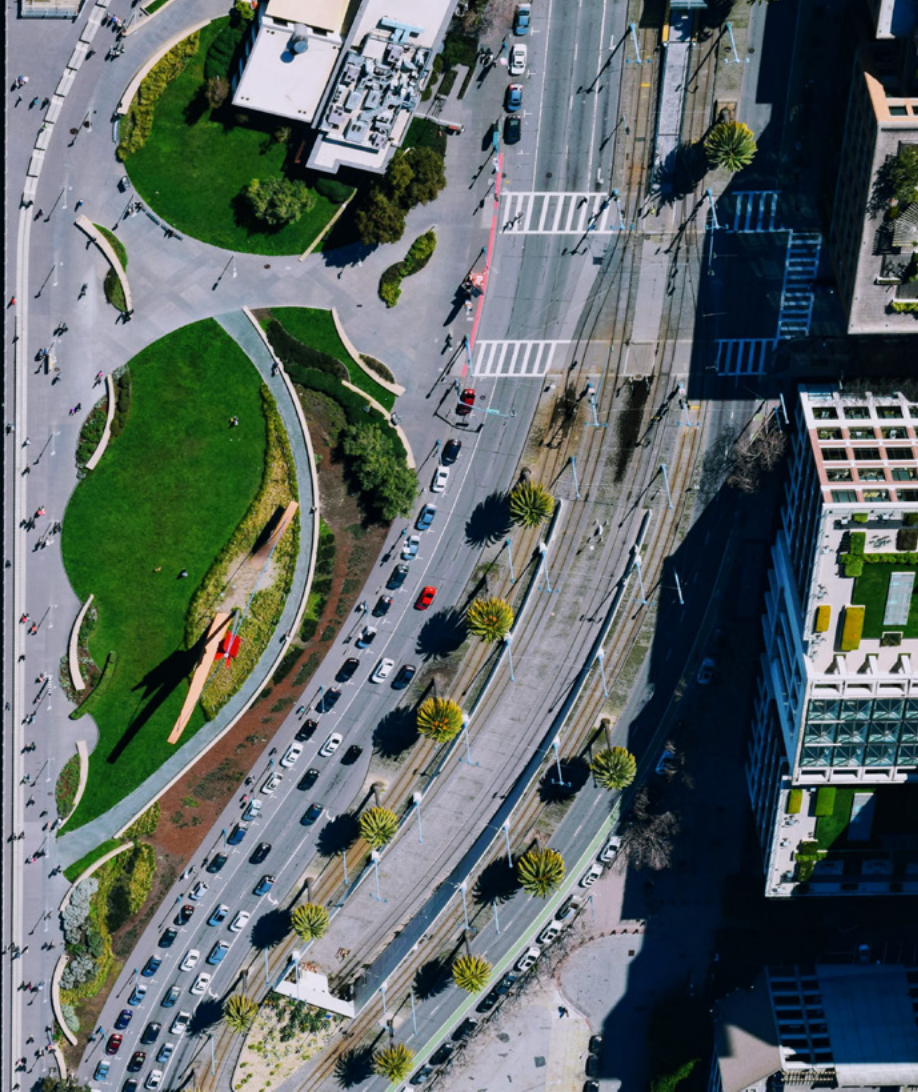
WATER

RESILIENCE

FOR

ECONOMIC

RESILIENCE



Water Resilience for Economic Resilience: A Call for Action for COP27 and Beyond

Water is the ultimate connector in the global commitments towards a sustainable future. The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) are highly dependent upon improved water management. From long-term tipping points of the irreversibility of the earth's ecosystems, such as sea level rise, to short-term repercussions like periodic extreme weather events, climate change has far-reaching consequences.

For example, responses to 2017's Hurricane Harvey in the U.S. cost an estimated USD 125 billion, while the 2010 Russian heat wave resulted in an estimated 55,000 deaths (OECD, 2021). More recently, the combination of droughts, floods, and storms in 2021 have affected the lives of more than 100 million people globally in various ways, causing injuries, loss of life, and threatened livelihoods. To make matters worse, a significant amount of these costs will be borne by developing and less developed countries that are constrained by limited financial resources.

AS CLIMATE CHANGE INTENSIFIES, **WORSENING STORMS** ARE EXPECTED TO CAUSE INCREASING LOSSES, ESTIMATED AT **USD 1988BN** BY 2050, WITH **FLOODS AND DROUGHTS** ADDING **USD 1472BN** AND **USD 607BN** ADDITIONAL RISK RESPECTIVELY. (UNDRR, 2022)



OECD. (2021a). *Fostering Economic Resilience In A World Of Open And Integrated Markets: Risks, Vulnerabilities And Areas For Policy Action*. OECD Publishing: Paris, France.

UNDRR. (2022). *New research reveals USD 5.6 trillion water risk by 2050*. PreventionWeb. Available at: <https://www.preventionweb.net/news/new-research-reveals-usd-56-trillion-water-risk-2050>

Governance and Stakeholder Management: The Role of International Organizations

THE CHALLENGE

Resilience is not an accident — it must be planned for and invested in. The IPCC Sixth Assessment Report in 2022 called for “water-based adaptation” to be at the center of our resilience investment, planning, and policy processes, while other calls for “water-centric” resilience go back to at least 2019. The IPCC’s statement recognizes that while most of the negative impacts of climate change are expressed through the medium of the water cycle, water is also the medium for coherent resilience strategies.

When climate and development activities are divided between sectors and silos without reference to how climate change may alter the quality, quantity, and timing of water they depend on, we expose our economies to new climate risks that may trigger conflict, undermine critical sectors like energy and agriculture, create unexpected competition between communities and ecosystems, and increase inequity and social disruption.

Good governance and enforcement are essential to address water security and achieve resilience. Having a forward-looking water management approach will be essential in protecting against risk. Technology can play a key role in that through the use of smart devices and sensors which will allow utilities to monitor and have timely data to enable predictive operational interventions. This is both cost efficient and effective, saving money by deferring new investment and giving decision makers timely data to design, direct, and adapt future investments.

CALL TO ACTION: A MOBILIZED COALITION AND ENFORCED GOVERNANCE

National and regional economies cannot be resilient without using water resilience as the medium for coherence. Having a strong coalition is essential in creating the necessary changes, reinforced by clearly defined and enforced governance mechanisms. We demand that civil society, multilateral and private sector financial institutions, and businesses and corporations embrace water resilience as a mechanism for inclusive and resilient development, enabling economies to ride the coming waves of shocks and stresses.

Investment and Water Security: Financing Water Adaption

THE CHALLENGE

As economies, populations, and assets grow, so too will the corresponding water risks. As such, investments should be developed to be robust to uncertainties and adaptive as risks, opportunities, and social preferences change. The diversity of water risk means there is no one-size-fits-all solution for improving resilience to water risk. Adaptation and mitigation efforts in regions facing severe water scarcity will differ from those applied in areas where the greatest risk is posed by over-abundance through flooding and storm events.

Can the powerful tools of economics support our reorientation to resilience so that we can unleash funding flows to help us prioritize, value, and sequence our investments to ensure prosperity and well being in a time of deep, ongoing change? Official Development Assistance (ODA) financing by

*LOOKING AT **GLOBAL GREEN BOND ISSUANCE** TRACKED BY THE CLIMATE BOND INITIATIVE UK, THE **WATER SECTOR** ONLY REPRESENTS A MINOR SHARE OF **9% OF ALL INVESTMENTS** (CBI, 2020). REASONS FOR THIS RELATIVELY SMALL SHARE POINT TO SOME CLEAR LIMITATIONS FOR CERTAIN WATER-RELATED INVESTMENTS. (OECD, 2021)*

international organizations such as the World Bank has started to refocus climate resilience with their national investment planning via Climate Change Development Reports (CCDRs). The Asian Development Bank has set mainstreaming water resilience from national finance ministries to individual investments by 2030. Some two dozen countries have enrolled in a new program to use water resilience as a central organizing component of their national climate planning efforts, such as the NDCs. Even regional cooperation programs focused on peace and security are reorienting to water resilience as a mechanism to enable political change.

Investments in water security and economic growth are interlinked. There are feedback cycles between vulnerability and exposure to water risks, and water-related limits to economic growth. For example, enhancing water security can reduce the price and the price volatility of staple food crops, a key priority in the global economy. In the U.S., the government funds 95% of the total water infrastructure. However, with the growing need, it is evident that the government must invest in repairs.

The role of private sector investments in reducing exposure to water and climate risks can be pivotal, particularly when the climate- and water-related risks to business value are higher than the costs of mitigating them. This can incentivize the private sector to address risks using their own resources. These investments can yield additional benefits for water security and resilience for surrounding communities and can deliver co-benefits for biodiversity conservation or water quality management. The private sector can thus help deliver public goods while reducing the burden on public funds. Still, more widespread and intentional actions along these lines requires a strong coalition, coordination, and supportive governance as discussed above.

CALL TO ACTION: PRIVATE SECTOR INVESTMENT & WATER IN ESG FRAMEWORKS

According to CDP's Global Water Report 2020, companies reported maximum financial impacts of water risks at over USD 300 billion — about five times higher than the cost of addressing those same risks. Existing ESG reporting frameworks under-represent water as a critical risk and opportunity at a time when water is increasingly being recognized as a material risk to businesses (Sarni, 2021). More private investment should be driven towards water, aligning with a refocused set of ESG reporting mechanisms that better address water.

The Economic Value of Resilience

THE CHALLENGE

The emerging practice of climate resilience suggests that efficient, optimized solutions may also be brittle and prone to systemic failure if key assumptions are violated or not tested for sensitivity. How can we show that approaches such as redundancy, robustness, and flexibility are critical components for ensuring broader water resilience and economic resilience? Adding a resilience perspective to our economic tools can fuel robust and flexible communities, sectors, and even scale to whole economies. Moreover, these choices would be robust enough to withstand unfavorable changes while still helping economies flourish in favorable weather circumstances (OECD, 2015).

Too often, economic analyses fail to consider the inherent uncertainties in a changing climate or the need for including new approaches such as flexibility to anticipate those uncertainties — especially for long-lived investments.

THE GLOBAL WATER
RESILIENCE OPPORTUNITY
IS COMPELLING; A RECENT
ESTIMATE OF THE SCALE
OF GLOBAL ECONOMIC
LOSSES RELATED TO **WATER
INSECURITY: USD 260
BILLION PER YEAR FROM
INADEQUATE WATER SUPPLY
AND SANITATION, USD 120
BILLION PER YEAR FROM
URBAN PROPERTY FLOOD
DAMAGES, AND USD 94
BILLION PER YEAR OF WATER
INSECURITY RELATED TO FOOD
PRODUCTION.**
(SADOFF ET AL., 2015)

Sarni, W. (2021). *We need to rethink ESG to ensure access to water and sanitation for all*. World Economic Forum. Available at: <https://www.weforum.org/agenda/2021/08/rethink-esg-to-ensure-access-to-water-and-sanitation-for-all/>

OECD. (2015). *Climate Change Risks and Adaptation: Linking Policy and Economics*. OECD Publishing: Paris, France. <https://dx.doi.org/10.1787/9789264234611-en>.

Sadoff, C.W., Hall, J.W., Grey, D., Aerts, J.C.J.H., Ait-Kadi, M., Brown, C., Cox, A., Dadson, S., ... & Wiberg, D. (2015). *Securing Water, Sustaining Growth: Report of the GWP/OECD Task Force on Water Security and Sustainable Growth*. University of Oxford: Oxford, UK.

Traditionally, economic analysis evaluates programs and investments through the improvement of efficiency and optimized tradeoffs between competing uses by maximizing Net Present Value (NPV), Economic Internal Rate of Return (EIRR), cost-benefit ratios, or by assessing outcomes through cost-effectiveness analysis. Climate change impacts on the water cycle challenge these assumptions. Such impacts are often complex and difficult to project with confidence, which often leads to economists discounting potential, uncertain, and/or distant climate impacts.

Recent climate impacts in regions such as the Colorado River basin in North America, unprecedented flooding in Pakistan and Thailand, or long-term loss of frozen water resources in the Andes and Himalayas suggest that resilience perspectives that take account of climate-driven water risks and synergies are important contributions to macroeconomic planning and evaluation. In contrast, economic evaluation tools such as Real Options Analysis (ROA) enable an analysis of future option prices and the economic costs of not considering alternative futures. For instance, the large water storage projects along the Blue Nile in Ethiopia were evaluated using the ROA application. The approach allows for flexibility in design and operation decisions, including dam selection, size, sequencing, and reservoir operation regulations. Using a simulation model that links climate change and system hydrology, the economic sensitivity of future dam investments to climate change and other uncertainties is assessed. Unsurprisingly, the results of the Blue Nile basin reveal that no single investment strategy performs well across a spectrum of anticipated future climate conditions (Jeuland and Whittington, 2013).

CALL TO ACTION: LEVERAGE WATER FOR RESILIENCE

Developing a strategy to achieve water stewardship goals requires an evidence-based approach and integrated coordination mechanisms. Investing in and leveraging technology to ensure timely data for predictive interventions is essential to giving decision makers the information they need to design and direct adaptive investments. Incorporating resilience opportunities and opportunity costs in investments is a direction that should be adopted.

How to Get Involved

Individuals and organizations are encouraged to join the collaborative effort behind the Water Resilience for Economic Resilience (WR4ER) initiative. Visit the WR4ER webpage at www.wr4er.org or using the QR code below to:

- see case studies demonstrating WR4ER issues and principles in practice
- sign up for the mailing list
- learn how to get involved.



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