



GLOBAL COMMISSION on the  
ECONOMICS OF WATER

# Brief: Intergenerational Intersections and the Economics of Water

Inspired by the final report of Global  
Commission on the Economics of Water –  
The Economics of Water: *Valuing the  
Hydrological Cycle as a Global Common Good.*

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The Global Commission's report sets out the shifts required to drive radical changes in how water is valued, managed, and used. The new economics of water begins by recognising that the water cycle must now be governed as a global common good, through collective and concerted action in every country, collaboration across boundaries and cultures, and for benefits that will be felt everywhere.

This policy brief examines the implications of the Global Commission's findings for young and future generations and identifies pathways for how youth-led intergenerational collaboration can enable just and truly sustainable water futures. It aims to guide policymakers on local to global actions, highlighting how an intergenerational approach to water is essential for delivering the five missions set out by the global Commission and stabilising the global hydrological cycle.

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## Key messages

- The environmental, economic, and humanitarian costs of inaction on the water crisis and recent changes in the global hydrological cycle are high and are disproportionately borne by today's youth and future generations. Median GDP, for instance, is projected to shrink by 8-15% by 2050. Action is required – and possible – if the world is to continue to enjoy the myriad benefits water provides globally.
- The water crisis and a tilted hydrological cycle are inherently intergenerational issues spanning sectors, scales, and geographies. Decision-making is more effective when it reflects that intergenerational dimension.
  - Youth are the largest demographic group globally, making up 70% of the population in regions such as Sub-Saharan Africa, and are inheriting the consequences of an altered hydrological cycle – manifesting as increasing global water imbalances.
  - A growing number of youth actors are active in water-related spaces at all levels. Fostering intergenerational action on water issues requires support in terms of access to funding, finance and platforms, data and information, and continuous and formal consideration and inclusion in decision-making processes.
- In addition to institutional arrangements and reforms, particular lines of action can reflect intergenerational dimensions and consequences of a tilted water cycle:
  - Operationalising water system justice supports the incorporation of intergenerational justice to ensure a transition towards just and sustainable water futures for all. This requires intentional consideration of and accountability towards the welfare of youth and future generations through measures such as ensuring green and blue water needs for a dignified life are met and absolute limits on usage are respected.
  - Adjusting discount rates to reflect the needs of future generations is a potent tool for considering intergenerational justice in decision-making.
  - Investing in educational systems and shaping markets to foster jobs that specifically address, account for or mitigate effects of a tilted hydrological cycles, targeted to young professionals, to ensure the emergence of a workforce across the economy that is well-prepared and able to stabilise the hydrological cycle and promote intergenerational equity.

## Context

Water – green and blue<sup>1</sup> – is indispensable for planetary health, well-being and human development. It fuels the global economy and underpins livelihoods. Yet, for the first time in history, humanity – through climate and land use (cover) change, and unsustainable water use – is pushing the global hydrological cycle increasingly out of balance. Disruptions to the water cycle bring severe ramifications for economies and livelihoods worldwide, which will only worsen if collective action is not taken.

Younger and next generations are disproportionately affected as inaction transfers increasing costs into the future. This calls for intergenerational justice in green and blue water systems through reshaping institutional and economic mechanisms for managing water more efficiently, sustainably and equitably. Adopting an intergenerational approach to water in such way illuminates perspectives that enrich our understanding and open up for more systemic, long-term and innovative pathways. Recognising the inherently intergenerational dimension of water thus means understanding that an intergenerational approach to water is essential for delivering the five missions set out by the Global Commission (see Box 1) and stabilising the global hydrological cycle.

### **Box 1:** Five missions to stabilise the hydrological cycle

1. Launch a new revolution in food systems to meet the nutritional needs of a growing population.
2. Conserve and restore natural habitats critical to protect green water.
3. Establish a circular water economy.
4. Enable a clean-energy and AI-rich era with much lower water intensity.
5. Ensure that no child dies from unsafe water by 2030.

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<sup>1</sup> “Blue water” refers to the water we can see in our rivers, lakes, and aquifers. “Green water” is the water stored as soil moisture and in vegetation, which returns to the air through evaporation and transpiration and eventually falls down as rain. Green water generates around half of all rainfall over land.

# Key challenges and implications

## A tilted water cycle and the cost of inaction

Delaying action or failing to act on the water crisis and recent change in the hydrological cycle will cause higher costs in the future, transferring wealth from the future to the present.

New modelling from the Global Commission on the Economics of Water shows that the combined effects of changing rainfall patterns and rising temperatures due to climate change, together with declining water stores above and below ground, and lack of clean water and sanitation, could see the median gross domestic product (GDP) in high-income countries shrink by 8% by 2050, and lower-income countries could face an even steeper drop in GDP between 10 and 15%. The implications are cascading disruptions to the global economy and significant stress for already vulnerable communities.

The cost of inaction on the water crisis and recent changes in the global hydrological cycle far exceeds the cost of acting today and the opportunities such action will bring. They are disproportionately borne by younger and future generations, underscoring the importance of factoring in long-term effects and considering intergenerational justice.

## Recognising intergenerational dimensions of water economics

Young people represent the largest demographic group globally and make up large shares of the population in low- and middle-income countries. In Sub-Saharan Africa for instance, 70% of the population are under 30 years old [1]. As young and future generations are inheriting the unprecedented consequences of an altered hydrological cycle, manifesting as increasing global water imbalances, understanding the socioeconomic implications for youth and future generations is imperative.

## Youth employment and the hydrological cycle

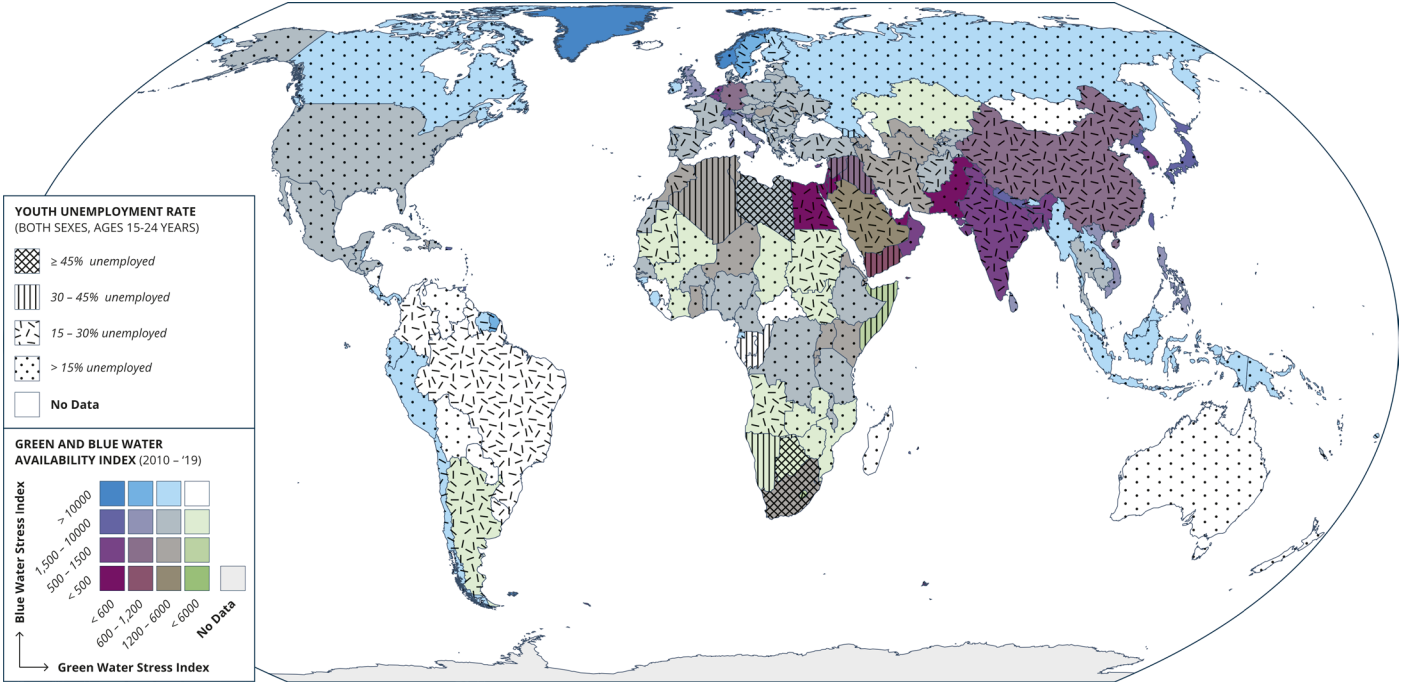
As shown in the map below, youth in different regions worldwide are already facing challenges to secure employment. Over the next decade, an unprecedented 1.2 billion young people in low- and middle-income countries will enter the workforce, yet only 420 million jobs are expected to be created [2]. A tilted water cycle causing changing rainfall patterns and declining water stores is likely to exacerbate this gap.

The relationship between green and blue water scarcity and youth unemployment is yet to be fully understood. However, regions with stressed hydrological conditions often coincide with higher unemployment rates among young people. In the North African countries of Egypt, Libya, Algeria, Morocco and Tunisia, located in one of the most green and blue water scarce regions, unemployment rates range from 15 to over 45% among youth. Another example is South Africa where youth unemployment rates rise above 45% while the country is experiencing a high degree of green and blue water scarcity. Additionally, these countries are highly (blue) water-intense economies indicating that their economic activity are particularly vulnerable to dwindling water endowments [3].

In rural, agriculture-dependent communities, drought has a negative impact on employment, particularly affecting youth, due to the sensitivity of the agricultural sector to green and blue water availability [4], [5], [6]. Changing rainfall patterns and water endowments pose considerable risks to jobs in these economies. For instance, in Morocco, Tunisia and Egypt, where agriculture contributes to over 10% of GDP [7], [8], [9], and employs between 13 and 30% of the workforce [10], severe green and blue-water stress, intensified by a disrupted hydrological cycle, is already a pressing challenge. A weakened agricultural sector generates fewer job opportunities, making it harder for young people entering the labour market and limiting their prospects for social mobility.

At the same time, youth are already facing systemic barriers to engage in food systems facing constraints in accessing land, finance, and services, and are often excluded from decision-making processes. Even where rights exist, power imbalances hinder their realisation. In this context, changes in green and blue water availability





**Map 1.** Green and Blue Water Availability Index (Global Commission on the Economics of Water, 2024) overlapped with Youth Unemployment Rates (CIA World Factbook, 2024).

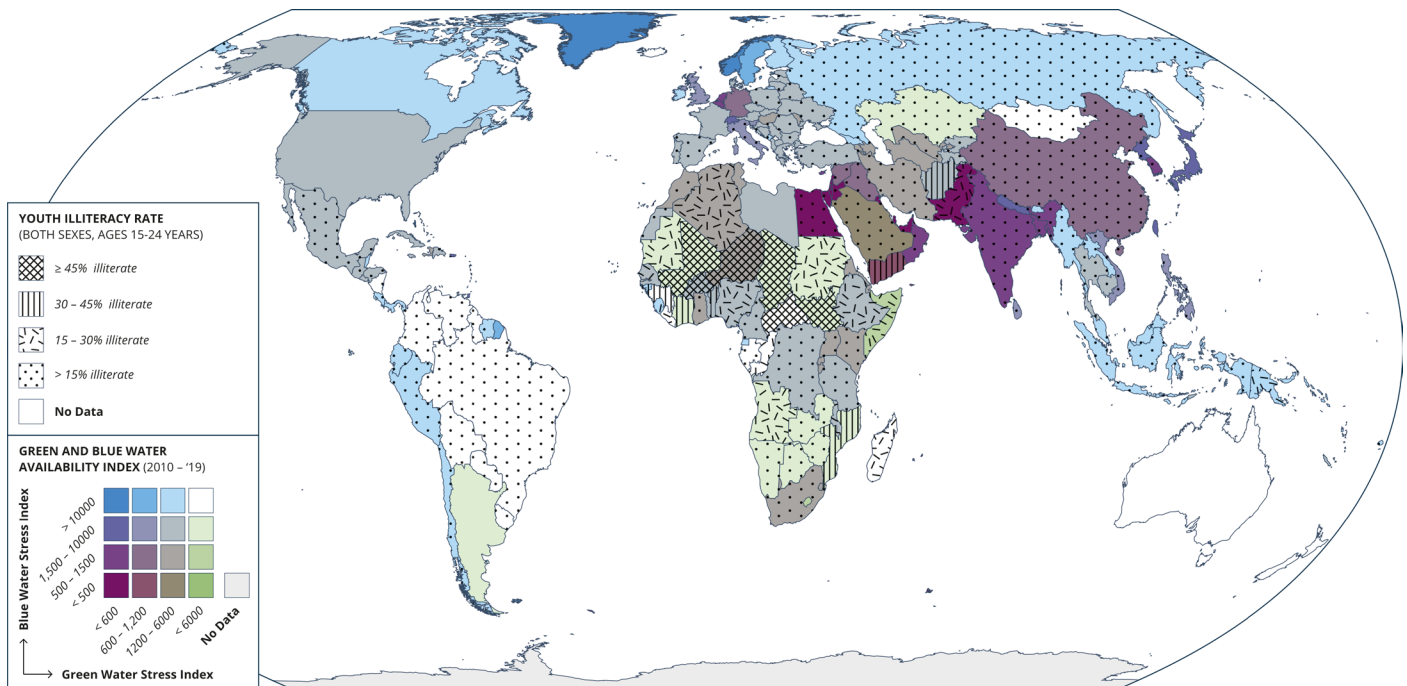
further discourage the aspirations of the younger generation to engage into the required transition of the food systems [11]. For instance, the effects of water imbalances on agriculture-centred communities have been observed to induce youth migration. In northern Ghana, hydrological imbalances and climate change are limiting agricultural opportunities which in turn pushes youth, mainly men, to migrate in search of better employment opportunities elsewhere. As a result, nearly one in five Ghanaian youth born in the north now resides in the south. While youth migration can generate important remittances for the origin communities; it also risks disrupting social networks and intergenerational knowledge transfer, and significantly reduce labour availability, leading to a decline in agricultural productivity and economic development [12]. Furthermore, the migration of young men in response to agrarian distress has contributed to the feminisation of agriculture, positioning women as key actors in managing agricultural systems under growing climatic and hydrological pressure [13]. An inclusive, gender-sensitive and systemic policy response is therefore essential to empower youth, and especially young women, as active agents in transforming food systems..

As many economies present high or medium blue water intensity of their GDP [14], the implications of dwindling water resources extend beyond agriculture-dependent communities. Economic sectors directly and indirectly reliant on water like manufacturing, energy and even tourism will also be affected with decreasing employment opportunities as a likely consequence. Even in countries with currently low levels of water scarcity, young people will increasingly feel the effects of a disrupted hydrological cycle. For example, Brazil and Colombia rely heavily on hydroelectric power, with significant investment and educational structures tailored for this sector. As droughts become more frequent and rainfall patterns unstable, their energy sectors face mounting challenges, radically shifting employment prospects and risking stranded skills for young people specialising in the field.

While changing rainfall patterns and declining water stores add significant pressure to the looming job crisis, acting on the water crisis presents opportunities. Promoting anticipatory skills development and creating decent jobs for young professionals across sectors can not only generate economic development but also yield broader societal welfare benefits now and in the future.



## Education and the hydrological cycle



**Map 2.** Green and Blue Water Availability Index (Global Commission on the Economics of Water, 2024) overlapped with Youth Literacy Rates (Institute of Statistics, UNESCO, 2024).

While multifaceted and context-sensitive, drought and lack of water availability also impact education. Among girls in rural, agriculture-dependent communities in Zimbabwe, drought has been observed to increase attendance in education but reduce students' performance levels, sometimes to the extent that it offsets the benefits of increased attendance [15]. Water scarcity also affects gender inequality among youth in terms of education. It is well established that the time spent by young girls and women to fetch water for their community or the absence of toilets in schools hinder girls' access to education and income-generating skills.

The map above (Map 2) reveals that regions with higher youth illiteracy rates often overlap with areas facing severe water scarcity. For instance, in sub-Saharan countries like Niger and Chad, both marked by high youth illiteracy rates (30-45%) and severe green and blue water scarcity, the challenges are compounded. Conversely, some highly water scarce countries such as India and Pakistan present lower illiteracy rates (>15-30%). This emphasises the need for further, disaggregated research to fully comprehend the intersections between education and the hydrological cycle. A clear understanding of this relationship is important as illiteracy limits the capacity of young adults to pursue higher education and economic opportunities, as well as accessing information and participate in water-related governance. Furthermore, high illiteracy rates may also hamper effective communication and implementation of strategies supporting the hydrological cycle, such as the adoption of agricultural approaches that enhances the green water cycle and resilience to climatic and hydrological extremes.

## Youth and the future of the economics of water

People who are young today will bear the cost of inaction or misdirected action in the future, as the economic, social, and environmental costs of the water crisis are projected to escalate. Moving forward, it is essential to better understand the relationship between education, skills acquisition, youth employment and hydrology and how these interlinkages affect the health, self-realisation, and quality of life of young people now and in the future. This understanding can help shape more effective strategies to address these socioeconomic challenges and their consequences for the wider economy.

It follows that safeguarding our global common good that is a stable water cycle requires an intergenerational approach. Addressing these intergenerational dimensions is essential to identify the levers for long-term sustainability of systems and prosperous livelihoods.

## Policy recommendations

### Enrolling youth: An opportunity that needs support to materialise

Pathways to address the water crises need to embed the preferences and capabilities of people who will be affected by the consequences of decisions made today and stand at the frontlines of tomorrow's action: the youth and, as much as possible, future generations. While there will be trade-offs in terms of short-term costs and long-term benefits, decision-making is more relevant and effective once it reflects those intergenerational dimensions and captures the stakes and aspirations of young people.

There is a growing number of youth water actors, across geographies and levels, and the voices of young water professionals are increasingly heard and valued. The Global Youth Movement for Water connects over 300 youth-led organisations and allies from 70 countries and at the 2023 UN Water Conference, more than 400 commitments in the Water Action Agenda involved youth. Already ahead of the 2023 UN Water Conference, youth were appointed as co-guardians of the Transformative Future for Water Security dialogue co-convened by the International Water Management Institute [16]. On a local level, young people are often well-rooted in their local communities, positioning them to drive place-based, intergenerational action and local enterprise addressing water-related challenges, including sustainable agricultural practices and land use (e.g., green water management solutions), in ways that resonate with their localities. While threatened by youth migration, horizontal, community-based networks that serve to transfer and democratise traditional, ecological, local, and community knowledge between generations is a vital tool in this work to empower and engage youth [17]. Strengthening these networks and supporting localised, youth-led intergenerational efforts involving multi-stakeholder collaboration can contribute to building resilient systems that combine economic efficiency, social equity and environmental sustainability.

Localised action can inform and cumulatively drive global impact, reinforcing the importance of a multilevel approach. Scaling on-ground impact fosters higher bargaining power in influencing policy both at national and global levels by showcasing possibilities and expanding the landscape of feasible pathways.

However, young actors and professionals still face challenges such as a lack of funding and access to finance, limited access to data and information, and insufficient continuity and formality – even as their agency is recognised and they secure seats at the table. At times, young people lack the avenues, platforms, and support to play their part in the development of strategies and policies aimed at protecting the hydrological cycle and defining how we govern water for the common good.

Therefore, recognising roles and responsibilities in fostering intergenerational action on water issues is essential: leveraging the experience, authority and resources of older stakeholders while harnessing the energy, ideas, stakes and skills of young people. This way, youth can become key innovation brokers by connecting policy, infrastructure, and community-level solutions.

While continuing the efforts already engaging young actors and professionals in local to global water-related processes, appointing a Youth Water Envoy can support a formalised, intergenerational approach on a global level.

### Operationalising water system justice

Water System Justice is based on the notion of the hydrological cycle as a global common good. It aims to tackle structural injustices pragmatically and identify a just and sustainable path for blue and green water management [18]. Intergenerational and intragenerational justice are recognised as integral parts of this ambition.

- Intergenerational justice addresses past and present impacts and pressures on the water cycle and warrants the present generations to anticipate future demands and safeguard reliable stocks and flows for future generations, preserving the hydrological and ecological functions of landscapes that support a stable hydrological cycle. This means groundwater tables should not decline, and surface water bodies should be maintained. This also means that land use should be managed in light of the consequences for green water (soil moisture and land-sourced rainfall) locally and downwind, now and in the future.
- Intragenerational justice concerns the relationships between those within the current generation. It emphasises equitable access and allocation of resources, and exposure and vulnerability to water-related risks. In this context, it is also paramount to ensure that young people – of all ages, sexualities, ethnicities, genders, backgrounds, or disabilities – can contribute to the conversation across scales and

play their part in formulating governance and management strategies and policies aimed at protecting the hydrological cycle as a global common good.

Embedding intergenerational and intragenerational justice in pathways to address the water crisis is a condition to ensure just and sustainable water futures. Operationalising intergenerational and intragenerational justice requires intentional consideration of and accountability towards the welfare of youth and future generations in policies aiming at restoring sustainable and efficient water allocation or reducing risks from the water crisis. It entails recognising youth and enabling their participation in procedural and decision-making processes.

Operationalisation also means recognising green and blue water needs and limits for current and future generations. Recent estimates suggest that each and one of us requires a minimum of 4000 litres of green and blue freshwater per person per day<sup>2</sup> to live a dignified life meeting essential health and hygiene needs, adequate nutrition and consumption in addition to water needs for nature and environmental processes. At the same time, there are absolute limits on the amount of green and blue water that can be safely and sustainably consumed. For blue water, this implies that there are limits on the amount of water that can be withdrawn and limits on the concentration of pollutants. For green water, protecting the sources of supply (e.g., forests, wetlands) and integrated policies to conserve the moisture held in soils will be critical. Ensuring intergenerational and intragenerational justice thus implies fulfilling today's needs while respecting the limits in order to retain the capacity to meet the needs of those to come.

## Intergenerational discounting

Adjusting discount rates is a prominent tool to consider intergenerational justice in decision-making. Discount rates in cost-benefit analyses give a lower value to benefits that accrue after longer periods and thus disincentivise long-term investments. Furthermore, such analyses rarely consider the value socioeconomic and environmental impacts in monetary terms [19]. Quantitatively accounting non-market impacts and getting discount rates right for investments over longer time horizons, also known as intergenerational discounting, will reconsider the utility and preferences of generations to come.

Ideally, discounting should be based on the rate at which society is willing to postpone water consumption and land-use change today for consumption in the future [20]. Adjusting discount rates this way will yield both societal and environmental benefits. Evaluating future preferences on a case-to-case basis rather than applying standardised rates can help governments quantify the multiplicative effects of strategic investment in green and blue water and water-related ends.

## Shaping future-fit education and markets for skilled labour

Investments in educational systems and shaping markets that foster water resilience jobs available to young professionals are imperative to ensure a workforce well-prepared to safeguard the hydrological cycle. Developing these skills ensures that the workforce can effectively implement and manage technologies and practices that contribute to hydrological and ecological resilience as well as climate adaptation and mitigation. This effort includes identifying specific educational and training needs in light of the changing job market. Accordingly, curricula may be adjusted to include improved technology implementation, water economics and even components of water diplomacy in ways that reflect interdisciplinary realities to prepare better leaders and workforce for the future.

Young professionals across sectors, beyond water management (including agriculture, urban and land use planning, and industries that use or affect green and blue water availability and finance) hold the potential to be effective agents of change, bearing the critical responsibility to achieve sustainability, unlock the potential for transition and transformation in key sectors, as well as in new growth sectors.

Skills for high-impact sectors like regenerative agriculture and the bioeconomy are especially critical to building water-resilient futures. A robust capacity-building approach is needed, encompassing technical, legal, and social domains, anticipating key adaptive competencies. By targeting youth with these integrated

<sup>3</sup> Taking an economy-wide approach and factoring in needs for human development, such as food and industry, as well as blue and green water supplies in addition to basic health and sanitation, presents a far higher integrated estimate of freshwater needs for a dignified life. The GCEW recommends increasing the minimal water requirements from 50 to 4,000 litres/ person/day.

capabilities, countries can drive innovation and adapt their industrial strategy while strengthen the ecological and hydrological systems that underpin long-term resilience. They should therefore be a major target of skills development and initiatives for addressing the five missions to stabilise the hydrological cycle set out by the Global Commission.

Just Water Partnerships offer a critical framework for actively creating intra- and intergenerational coalitions of national authorities, development partners, national and sub-national governments, civil society, private actors and young people. By bridging generations and levels of governance, these partnerships can simultaneously shape national education and labour strategies while supporting locally driven initiatives.

## **Leverage youth skills for harnessing data as a foundation for action**

Closing the intragenerational digital divide enables younger generations to support the foundation of new global water data infrastructure, contributing to building FAIR water data systems locally and globally following the principles of findability, accessibility, interoperability, and reusability [21]. For instance, citizen engagement in monitoring and data gathering can complement public and private efforts while supporting data democratisation, transparency and justice which is critical to ensure intergenerational equity. Involving students, youth in agriculture and other youth groups in community-based monitoring efforts offers opportunities for efficient, affordable, and scalable approaches to data collection.

Digital innovation in data collection and analysis can be mobilised to support democratisation of data collection and access, as well as generate efficiency gains. Leveraging AI specifically can support equitable, sustainable and efficient decisions and investments for transforming water systems. Moreover, deploying digital tools to facilitate access to data and engagement with the preferences and ideas of youth allow for more effective and decentralised stakeholder engagement and decision-making processes.

## Pathways to unlock the potential of activating intergenerational spaces

- Acknowledge the intergenerational dimensions of the causes, consequences, and responses to a tilted hydrological cycle. Identify research needed and fill knowledge gaps, including
  - How does disruptions to the hydrological cycle impact young people today and next generations, e.g., in terms of employment and growth opportunities, education and skills acquirement, and quality of life? Are there differences determined by gender, rural or urban divide, geographies, low-income and high-income countries? While this brief hints at general implications, more research is needed to enable strategies that address the socioeconomic implications for youth.
- Leverage the opportunity to enrol Youth in the design and implementation of long-term transformative transitions along innovative and just pathways.
- Develop specific intergenerational strategies led by youth from the local level to global fora to embed long-term preferences and intergenerational justice.
- Appoint a UN Youth Water Envoy to ensure a formal, intergenerational approach that is streamlined throughout local to global water governance.
- Operationalise water system justice to ensure consideration of inter- and intragenerational justice in policies and instruments addressing the water crisis and promoting just and sustainable water futures.
- Promote intergenerational discounting to properly reflect the preferences of future generations in today's decision-making.
- Mobilise Just Water Partnerships to design inclusive skills pathways, forging a workforce well-equipped to address the water crises and support and scale local, youth-led intergenerational initiatives, and laying the foundation for a resilient future economy.

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