Financing for Water

Understanding Water Security in Context

ICED Infrastructure & Cities for Economic Development

This summary paper provides an overview of the global water security and related financing challenge. It forms the first part of a four-part series of summary papers based on research, commissioned through ICED, on innovative financing approaches to mobilise public and private financing for freshwater management.

The Global Water Challenge

The global demand for water is expected to increase annually at a rate of c.1% due to population growth, changes in consumption, and economic development. The bulk of growth in demand will take place in developing countries. The number of people at risk from floods is projected to rise from 1.2 billion today to around 1.6 billion in 2050 (nearly 20% of the world's population). Nearly half the world's population currently live in areas that are potentially water-scarce for at least one month per year. This number could increase to 4.8-5.7 billion by 2050.[1]

For the past thirty years, water pollution has increased in rivers globally, with water quality expected to deteriorate further, posing public health risks and environmental threats. Water has not been adequately valued and managed as the precious resource that it is, which has led to an enormous amount of pressure on water resources. Decision-making in the interests of economic growth are often taken separately from those to manage water resources even though water is central to most economic activity.

What is Water Security?

Water security, despite multiple definitions, can generally be framed in the following two contexts:

- **Scarcity:** Freshwater resources are limited in availability, against population growth, changing consumption patterns, and changes in environment systems, including climate. Water scarcity was listed in 2015 by the World Economic Forum as the largest global risk in terms of potential impact over the next decade.
- **Risk:** Water risks looks at the challenge of an overabundance of water as well as insufficiency, and frames the challenge in the context of uncertainty. Climate change is altering the water cycle and influencing water quality and availability but in ways that is increasing in uncertainty.

A working definition from the ODI Water report defines water security within the context of risk and scarcity as "*having sufficient water, in quantity and quality, for the needs of humans - health, livelihoods, and productive economic activities; and ecosystems, matched by the capacity to access and use it, resolve trade-offs, and manage water-related risks, including flood, drought, and pollution".*[2]

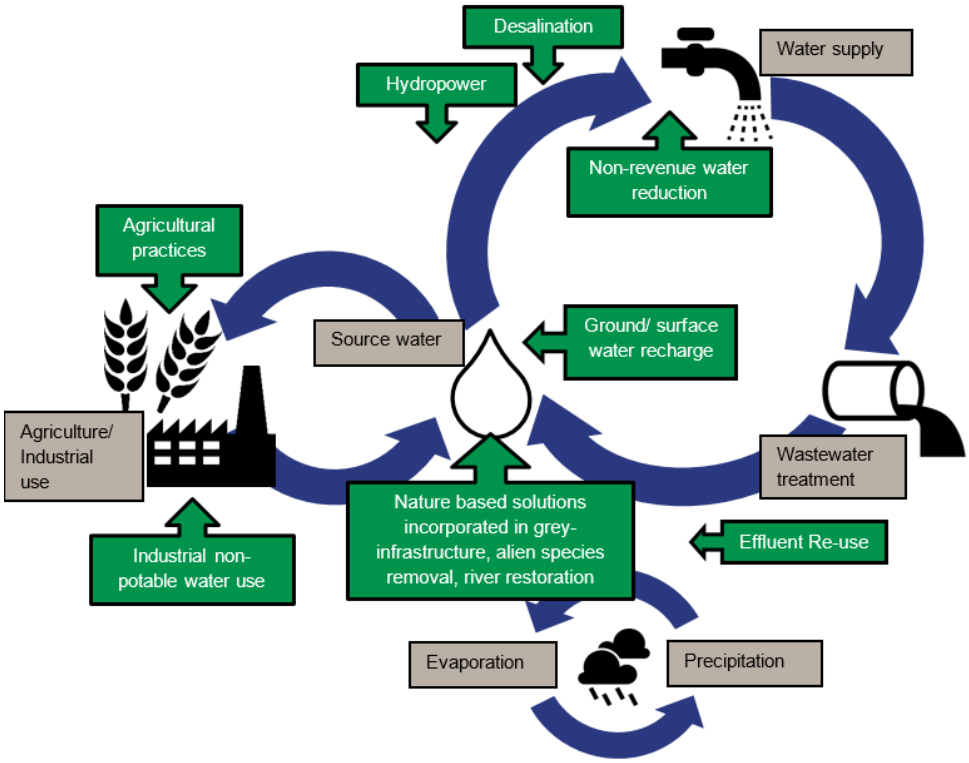
The Water Cycle

A water system cannot be thought of in isolation from the ecosystem within which it sits - both from a hydrological and from a human perspective. Competing demands that span the system from economic activity, the environment, and people, directly affects the vulnerability of the populations that it serves to water-related risks. The impact is further compounded in cities by the results of rapid urbanisation. In this context, addressing water security requires looking at all aspects of the water cycle, outlined in Figure 1 and including:

- Water resources management (e.g. conservation, protection, and remediation activities upstream);
- Water supply activities downstream (e.g. bulk water services) and augmentation by utilities (e.g. desalination, effluent reuse);
- The management of waste water and wastewater treatment, and;
- Addressing public health needs at the community level with Water, Sanitation, and Hygiene (WASH).

[1] UN (2018) 'World Water Development Report'.
[2] ODI (2012) 'Water security: from abstract concept to meaningful metrics – An initial overview of options'.

Figure 1: The water cycle

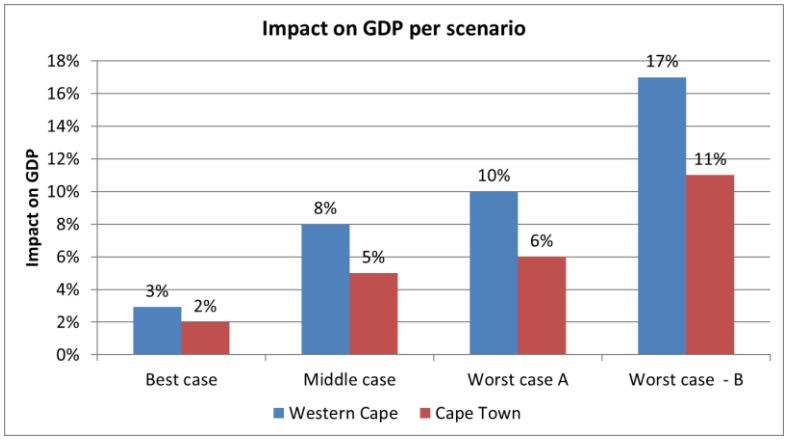


Water security for downstream use is essential

Securing water resource availability upstream is essential to ensure that sufficient water can be used and treated for consumption downstream. Without that, efforts spent downstream on WASH and other uses of water will be even costlier. Furthermore, competition for scarce water resources that span jurisdictional borders have serious consequences on social stability and economic development. Water crises force difficult decisions on where to allocate precious water resources - whether it is between supplying water to irrigation, energy, industry or households. Too often, the poor and vulnerable, and the natural environment, bear the brunt of these negative impacts.

Water scarcity can have dramatic impacts on downstream economic productivity. In the aftermath of Cape Town's drought, the provincial and local government commissioned a study to see what the impact of prolonged water shortages would be on the GDP at both levels of government. The results of this showed that, in the worst case scenario, the economy could suffer by as much as a 17% drop in GDP – see Figure 2.[3]

Figure 2: Modelling impact of prolonged water shortages in Western Cape following 2016-2018 drought



[3] Water Resilient Cities Conference, July 2018, Durban, South Africa. Presented by Helen Davies, Chief Director: Green Economy, Western Cape Department of Economic Development and Tourism

The Water Financing Challenge

How much money is needed to ensure water security?

Approximately USD 1.7 trillion of additional investments at present value are needed until 2030 to achieve the Sustainable Development Goal of achieving universal and equitable access to safe and affordable drinking water for all. This is about three times the current investment levels.[4] Moreover, this estimate represents only *a fraction of the water agenda*: projections of global financing needs for water infrastructure range from USD6.7 trillion by 2030 to USD22.6 trillion by 2050. Projections for investments needed for water resource management are not included, nor do these figures cover the development of water resources for irrigation or energy.[5] Given that the water security challenge is so pressing, why is more money not being invested in water resources management?

Investments in water resources management are far outmatched by investment into bulk water supply and WASH. A McKinsey study from 2009 calculated that annual expenditures on water resource management (or the upstream part of the water sector) amount to between **USD 70-90 billion worldwide**, including capital and operating expenditures for resource abstraction, agricultural irrigation, water reuse.[6] In contrast, the same study showed that downstream water supply (bulk water) and WASH sector total expenditures were estimated at **USD 485 billion worldwide**. Over the course of ten years, despite differences in absolute spending of development aid into the water sector, the proportion of investment into water resources management versus WASH remains virtually unchanged, with approximately 85% of total investments made into bulk water supply and WASH over the years. This closely mirrors the contributions from bilateral and multilateral agencies, which continue to prioritise downstream investments over those focused on water sources. See Figures 3 and 4.

Despite acknowledgements that conventional management strategies, solely focusing on water allocation and quantity (bulk water), may actually have contributed to the degradation of water quality in recent decades, particularly for downstream watersheds, there is still a huge difference in how much financing exists in water resources management and how these projects are financed.[7]

Figure 3: Proportion of water related investment by sector in 2005 (Source: McKinsey: Charting our Water Future)

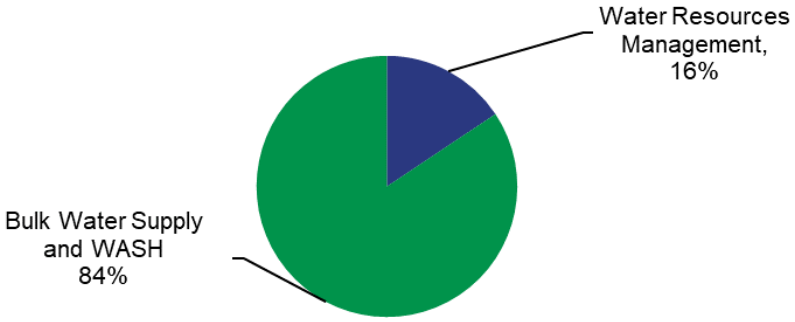
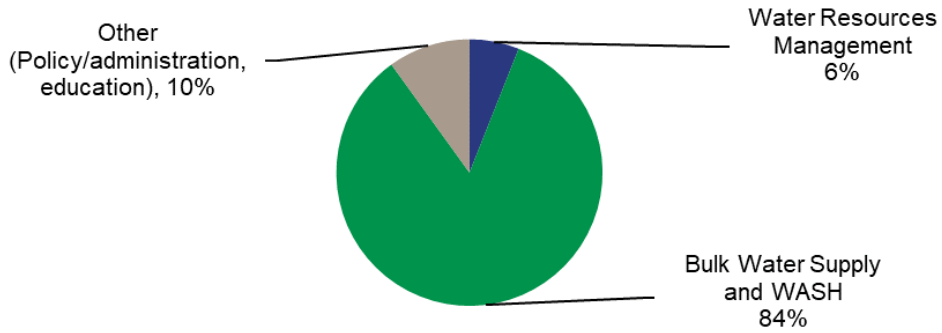


Figure 4: Proportion of water related aid by sector in 2015 (Source: OECD DAC Creditor Reporting System)



[4] Hutton and Varughese (2016) 'The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene'
[5] OECD (2018) 'Policy Paper – Financing Water Investments'
[6] McKinsey (2009) 'Charting our Water Future - Economic frameworks to inform decision-making'

An important analogue for the water sector can be found in a careful consideration of the formalisation and resulting financial stability and growth of the power sector in the global South, looking at 1) comparisons between the power sector in 2000 and the water sector today, 2) the interventions of aid agencies and other facilitators to help the power sector to progress, and 3) the current situation of the power sector. See box on the following page.

Learning Lessons from the Power Sector

Power and water share many similarities: they are typically both distributed by a capital-intensive network, both are paid by end users through a tariff based on units consumed, and both are in short supply for some of the world's most vulnerable communities. However, over the past 20 years, the power sector has been able to successfully attract billions of pounds of investment for generation, while the water sector has steadily fallen behind. The reasons for this are relatively straightforward:

1. The public sector, namely government, as a party willing to provide guarantees to back-stop offtake agreements by non-credit worthy public utilities (at times coupled with a MIGA guarantee).
2. The ability to earmark revenues from the power sector into ring-fenced accounts, to be later pledged as collateral
3. Market openness for a handful of developers willing to go to emerging markets to develop projects given the prevalence of lower returns in developed markets – creating economies of scale and success stories attracts new investors in to the market.

None of these factors are particularly complex, and all of them could easily be modified for replication in the water sector. As an example, in Kenya, the Kenya Electricity Generating Company (KenGen) successfully raised US$ 250 million in 2009 through a ten-year bond issued in local currency; the water sector is still struggling to find ways to raise money through the capital markets for large investments in water infrastructure.

However, despite the obvious comparisons, the nuances between the power sector, which is viewed primarily as a commodity available at a relatively set price, and the water sector, which is viewed as both a commodity and a basic human right, requires a fresh and unique look at water and its associated financing.