The Roundtable on Financing Water

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Session 1. Rationale and Aims of Water-related Investment: The Case for Resilience

BACKGROUND PAPER

A TYPOLOGY OF WATER-RELATED INVESTMENTS[1]

[1] This background note draws on previous OECD work as well as two papers prepared by Alex Money, Oxford Smith School of Enterprise and Environment, for the World Water Council (2018), *A Typology of Water Infrastructure Projects* and *A Typology of Water Infrastructure Investors.*

Background

1. The Sustainable Development Goal (SDG) 6 commits governments to ensure availability and sustainable management of water and sanitation for all by 2030.[2] While water is an essential foundation of life, livehoods and well-being that supports economic activity in the long-term, it has been under-valued and under-priced to date, contributing to financing falling far short of actual water-related investment needs. As of 2015, 2.1 billion people still lacked access to safely managed drinking water services and 4.5 billion lacked access to sanitation.[3]

2. Better valuing water can catalyze a dialogue to help set well thought out priorities for water efficiency, innovation and better practices. Valuing water means understanding the full range of direct and indirect benefits and risks associated with water. It can promote efficiency, innovation and better practices by exposing the short and long-term social costs of pollution, waste and misallocation of water resources, thereby facilitating further investments. Economic instruments (including pricing) and regulation that reflect the value of water can also signal scarcity, avoid waste and promote conservation.

3. The Valuing Water Principles sets out five key principles[4] for valuing water:

- Principle 1: Recognise and embrace water's multiple values
- Principle 2: Reconcile values and build trust
- Principle 3: Value and protect the sources of water
- Principle 4: Educate to empower
- Principle 5: Ensure adequate investment in institutions, infrastructure, information and innovation

4. The concept of resilience, which signifies absorbing and recovering after threats have materialised, should be considered in approaches to better value water. Integrating resilience into water-related investments means ensuring system-wide developments are made to minimise the recovery costs. This includes reducing the impact of events that can be difficult to predict, which include social change, political disruption, landslides, cyber-attacks, climate and water-related challenges, such as drought, storms, floods, and others. This paper provides a brief overview of the rationale and aims of water-related investments and the importance of resilience in the discussion.

5. Water-related investments comprise a very diverse set of investments: water supply, sanitation, managing risks, and others, which can be characterised by their function, scale, and asset longevity, among many other features. Understanding the characteristics of water-related infrastructure relavent for investors is important in order to discern appropriate financing models. Box 1. provides a summary of sub-sectors of water-related investments, with a brief description of each.

[2] Sustainable Development Goal 6.

[3] WHO-UNICEF (2017)

[4] High level Panel on Water (2018) *Making Every Drop Count*

Box 1. Water-related investments: description of sub-sectors[5]

- Water resources management: Conservation and rehabilitation of inland surface waters (rivers, lakes etc.), ground water and coastal waters; prevention of water contamination.
- Bulk water supply: The production of water to be distributed to various end-users, including drinking water supply. Bulk water supply may be produced from the abstraction of surface or groundwater or through non-conventional sources, such as desalination or wastewater reuse.
- Storage and conveyance: The infrastructure required to store and transport bulk water supply to various end-users. This includes reservoirs, pipelines, channels and other forms of water supply distribution.
- Water supply services: The production and distribution of high quality water at standards required for consumption as drinking water.
- Sanitation, wastewater collection and treatment: Sanitation services consist of the provision of facilities and services for the safe disposal of human urine and faeces. Wastewater collection and treatment refers to the safe collection and treatment of sewage and wastewater. The treatment can be executed on several different levels: preliminary, primary, secondary and tertiary. May include waste to energy activities.
- Irrigation: The production and distribution of water intended for agricultural use.
- Flood protection (riverine, coastal): Interventions intended to manage the risk of flooding caused by coastal and river flooding. Flood is defined as the overflowing of the normal confines of a stream or other body of water, or the accumulation of water over areas that are not normally submerged.
- Urban drainage: Interventions to manage runoff from storm water.
- Multipurpose infrastructure: encompasses all constructed water systems, including dams, dykes, reservoirs, hydropower and associated irrigation canals and water supply networks, which may be used for more than one purpose for economic, social and environmental activities.

Sources: (WHO, 2017[1]); (OECD, 2013[2]); (Sperling, 2007[3]); (OECD, 2015[4]); (OECD, 2017[5]).

6. These very heterogeneous investments related to water typically require different approaches to financing due to important differences in terms of the risk-return profile of each sub-sector. Therefore, a more granular understanding of the varied financing approaches that are best suitable to the different types of investments is required. The rest of the paper sets out a typology of investments and investors that can help inform discussions about appropriate financing approaches for water-related investment – including, but not limited to, potential sources of capital.

[5] OECD (2018)

A typology of water-related investments

7. Historically, public finance has played a major role in financing water investments. Yet, in light of the constraints on public finance and substantial investment needs, leveraging finance from other sources (in particular, domestic commercial finance) and investors with different risk appetites can help to scale up investment. Many countries have used the Public Private Partnerships (PPPs) for infrastructure investment to attract additional financing from private operators and benefit from the expertise of the private sector in constructing and operating public facilities.

8. The extent to which various water-related investments will be suitable for fulfilling development priorities that is also attractive for commercial investors depends on the extent to which (1) the investment supports development objectives, and (2) whether the risk-return profile of the investment can be designed to attract commercial finance. Table 1. summarises the main features of investments that influence its attractiveness to commercial finance and its suitability.

Table 1. Attributes of investments that influence their attractiveness to commercial finance

Feature	Description
Risk	
Macroeconomic and business risks	Arise from the possibility that the industry or economic environment is subject to variation. Macroeconomic risks include variables such as inflation, real interest rates and exchange rate fluctuations. Business risks include an assets' exposure to the business cycle, namely, shifts in demand is a principle business risk of the asset.
Regulatory and political risks	Arise from governmental actions, including changes in policies or regulations that adversely impact infrastructure investments. Such actions may be broad in nature (link convertibility risk) or linked to specific sectors or PPP contracts.
Technical risks	Determined by the skill of the operators, managers and related features of the project, its construction and technology. In the case of water infrastructure, this is also influenced by: • The type of infrastructure used to deliver services (e.g. nature-based solutions[6], conventional "grey" infrastructure and combinations of both). • The track record of the technology used (more innovative projects are more technically risky). • Hydrological risk, which is the extent to which the operation of the assets relies on reliable access to water resources
Environmental/ social risk	The extent to which the project may be challenged due to unacceptable environmental or social impact.

[6] Nature-based solutions involve the use of natural or semi-natural systems that utilise nature's ecosystem services in the management of water resources and associated risks (too little, too much and too polluted water, and the risk to the resilience of ecosystems).

Return	
Cash-flow generation	Extent to which the project generates predictable cash-flows, which can cover financial costs and provide a return for investors. This may be influenced by whether the good or service provided is a public or private good and the way the project is structured to generate cash flows.
Developmental return	Contribution to development outcomes.
Capital gain	Profit earned for equity investors.
Project attributes	
Greenfield vs. brownfield	Type of project that either is complete new (greenfield) or the upgrading, expansion or refinancing of an existing facility (brownfield), which impacts both risks as well as structure of cash flows.
Scalability	Potential to replicate the same project or financial structure.
Size	Physical scale of the asset/ capacity to reap economies of scale or attract large pools of capital
Transaction costs	Degree of standardisation of the operation and need to tailor financial and contractual arrangements
Tenor/ Longevity	Operational lifetime of assets/ tenor of financing required

Source: Authors' elaboration, drawing on (OECD, 2015[6]).

9. On the supply side, a variety of institutions seek to participate in water-infrastructure development activities by designing the project according to client needs and constraints. Improving the 'supply side' (e.g. project developers) can attract more private capital towards water infrastructure.[7] How can project developers propose investment opportunities in water infrastructure attractive to project investors?

10. One of the ways is to divide ***project risk*** into four components: project development, off-taker, political and regulatory and currency risk. Of these, incorporating bottom-up risk (e.g. business, technical and etc.)[8] in combination with the economic and political risk would be able to provide a better context and perspective on the heterogeneity of water infrastructure as an asset class and its opportunities.[9]

11. A typology of water infrastructure projects can further inform this process, which consists of: *scope, system, structure, security and sustainability.*

[7] World Water Council (2018) *A Typology of Water Infrastructure Projects.*

[8] World Water Council (2018) *A Typology of Water Infrastructure Projects.*

[9]To clarify, project-level measures such as macroeconomic, business and technical are considered bottom-up, while political and regulatory are considered top-down.

- **Scope** includes the size and scale of a project (i.e. the levels of capital commitment, project complexity and government involvement); and its stage in the project lifecycle, from development through to termination.
- **System** defines the role of public sector in governance, provision and regulatory arrangements, environmental standards, fiscal arrangements, access to local capital, sovereign credit worthiness, devolution, etc.
- **Structure** means ownership arrangements and models of operation, levels of equity and debt, project guarantees, private sector participation, access to financial instruments (including green bonds and blended finance).
- **Security** includes measures such as project development risk, off-taker risk, political and regulatory risk, and currency risk. It also includes enforceability of contracts, risk of construction delays and cost overruns, volatility of demand, counterparty and liquidity risk.
- **Sustainability** defines the measures of return including financial and non-financial return: how the project contributes to the SDGs including reduced poverty, better health, less inequality, decent work, industry and innovation, sustainable cities, etc.

12. Active engagement with stakeholders is also important because it provides understanding about potential supply-side changes by helping policy makers to learn about the latest changes in the private sector (e.g. business models and technological changes).[10] It further provides a credibility to the relevant stakeholders who are involved by offering a variety of insights and perspectives.

A typology of investors

13. One of the reasons why water infrastructure is not as attractive compared to other types of infrastructure investment is because its financial return may be limited or difficult to quantify. Often, these projects are capital intensive, long-lived with high sunk costs that require a high initial investment after a very long pay-back period, with a poor record of cost recovery.[11]

14. The types of investors that provide key sources of finance for infrastructure include banks, corporations, institutional investors and utilitiy firms. From the total finance of approximately USD 2.6 trillion of private financing in infrastructure, water received extremely limited private finance at 2 percent of the total, after the energy and finance for renewables, non-renewable power generation and the transport sector.[12]

15. Under this backdrop, categorising the 'demand side' (e.g. project investors) could attract further private capital for investing in water infrastructure.[13] Using a typology of water infrastructure investors, for example, could help enhance this process. In categorising the types of investors, in addition to considering the risk-return appetite of

[10] ITF (2017) *Strategic Infrastructure Planning*

[11] OECD (2018) *Financing Water: Investing in Sustainable Growth*

[12] OECD (2017) *Investing in Climate, Investming in Growth*

[13] World Water Council (2018) *A Typology of Water Infrastructure Investors*

investments and the duration of their liabilities and assets, the following elements could be used to classify investors:

- **Mandate** includes the nature and extent of investor engagement. For instance, the Terms of Reference on what assets they can invest in; over what timeframes; against what return benchmarks; with what risk appetite; in which countries, etc.
- **Motivation** means the propensity to invest in water infrastructure, to what extent they identify themselves as impact investors or to what extent their business is at risk from poor infrastructure
- **Materiality** is the amount that they have available to invest, as measured by assets under management. It also includes their influence in triggering changes in the behaviour of other investors, through blended finance, for example.
- **Mobility** indicates if investors have fresh capital to deploy or if they are 'fully invested' (e.g. if they need to sell some existing holdings or raise funds before they could invest).
- **Momentum** means track record of progress with investments. An investor who made investment in the water infrastructure asset class in the past is likely to be better positioned to make decisions on opportunities in the future, compared to a new investor.

Concluding remarks

16. Scaling up financing is fundamental to support achieving the SDG 6 to ensure availability and sustainable management of water and sanitation for all. Promoting water-related investments would contribute to meeting the needs of over two billion people who still lack the basic services of water and sanitation that support shared mission of 'Leaving No One Behind'.[14] Building on the typologies of investments and investors would help determine the most appropriate ways to match financing needs to the supply of finance for water-related investments.

[14] United Nations (2019)

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