

Roundtable on Financing Water

OECD-WWC-Netherlands Roundtable on Financing Water Second meeting 13 September 2017, Tel Aviv

Discussion Highlights

The second meeting of the Roundtable on Financing Water gathered over 60 participants including private investors, development finance institutions, government officials, NGOs and research institutions. Organised in the context of WATEC, Israel's major international event on water and environmental technologies, the meeting included a focus on innovation. The generous support of the Government of Israel in hosting this meeting is greatly appreciated.

A brief summary of the highlights that emerged from the discussion is provided below. The agenda and background papers for the Roundtable meetings are available on the [webpage](#).

The meeting was an opportunity to reiterate the relevance of the work of the Roundtable for the High-Level Panel on Water. Preliminary outputs of the Roundtable will be conveyed to the Sherpas to the High-Level Panel, with a view to support the discussion and the policy message that will be developed. The outputs will highlight how investment in water can contribute to achieving the SDGs and ways to expedite investments that contribute to water security and sustainable growth.

A Special Session on the Roundtable will be organised at the **8th World Water Forum, 18-23 March 2018 in Brasilia**, to further support the discussion of the High-Level Panel on Water.

Key messages

- Well-designed regulation (economic and environmental) drives investment in water security.
- Innovative technologies have the potential to lower the costs of improving water security and can generate new investment opportunities. Technological innovation is also making various aspects of water management easier to track, quantify and regulate. Water-related innovation, as measured by patenting activity, more than doubled between 1990 and 2013.
- Improving the financial viability of utilities remains fundamental. The “3Ts” (tariffs, taxes and transfers from the international community), remain the ultimate sources of funding to *close* the financing gap, while commercial finance (e.g. bonds, commercial loans, microfinance and vendor finance) can be used to *bridge* the financing gap. These sources of funding and finance can deliver sustainable financing when combined with enhanced efficiency of service providers.
- Blended finance – defined as the strategic use of development finance for the mobilisation of additional finance towards the SDGs in developing countries - has the potential to scale-up financing flows. But, challenges related to blending need to be managed, including by providing a strong enabling environment, to ensure that development finance does not crowd out private finance and that the desired development outcomes are realised.
- Innovative approaches to financing include capital stacks to allocate varying degrees of risk across various parties; value capture mechanisms; monetising cost avoidance related to investments; and hybrid approaches combining elements of corporate finance and project finance.

Session 1. Seizing opportunities generated by innovation: Trends in water-related innovation

As demand for water increases, water quality standards become more stringent, and the impacts of climate change on water availability become more pronounced, the deployment of water-related technologies, such as drip irrigation, rainwater collection, smart meters and wastewater treatment and reuse, are likely to become increasingly instrumental to improving water security and achieving the Sustainable Development Goals (SDGs). Innovative technologies can improve the efficiency of water use and lower the costs of improving water security. For investors, innovative water technologies and services can generate investment opportunities.

Decentralised systems, especially for sanitation and wastewater treatment, are becoming a major focus of technological development. While households have clear incentives to invest in water supply improvements (e.g. for drinking water), improvements in wastewater treatment deliver significant public benefits (e.g. environmental improvements) and often to downstream beneficiaries, giving rise to an important role for regulation and public investment.

OECD [analysis](#) of patent data from over 200 jurisdictions from 1990-2013 documents an increase in patenting for water-related technologies (e.g. pollution abatement, demand-side, and supply-side technologies). The overall level of patenting for all technologies has increased 2.5 times between 1990 and 2013, with growth in patenting driven in particular by demand-side technologies, where patenting increased 3.5 times over the period. Inventions in water pollution abatement technologies account for the largest share of water-related inventions, but fell from over 80% of all water-related patents in 2000 to just over 70% by 2013.

The five largest overall inventors of the world's water-related technologies, by patent count, are the US, Korea, Germany, China, and Japan, with about 70% between them. China and Korea have exhibited substantial growth in their share of global patenting over the period. Israel is among the top five countries with the highest shares of demand-side technology patents.

Even if countries do not account for a major share of overall water-related technologies, domestic factors, including institutional settings and environmental pressures, can lead to a relative specialisation in water-related technologies compared to other technological domains. Indeed, despite accounting for a small share of the world's inventions in water security (about 1.2%), the most water-stressed countries have a pronounced relative technological advantage¹ in those technologies. Conversely, the least water-stressed have a relative disadvantage. This suggests necessity is only one parent of invention, as a country's economic size and general propensity to innovate are also likely important factors giving rise to inventive activity.

The countries most sought after for water-related patent protection are also among the largest inventors, the US, Europe (lead by Germany), Japan, China, and Korea. The most water-stressed countries, which typically are not major markets in which inventors seek to protect any technology, attract about 50% more water-related technologies than they do other technologies.

Participants noted that water-related technologies require roughly 5-8 years to go from invention to market and up to 12-15 years for pollution abatement technologies. Generally, utilities are perceived as risk-adverse when it comes to adopting technological innovation, given that they are dependent on funds from rate payers and public budgets. However, some participants challenged this conventional wisdom,

¹ Relative technological advantage (RTA) is a measure of a country's specialisation in a particular technological domain. In this analysis, it is calculated as the ratio between a country's share of water security patents and its share of total patents.

arguing that utilities are no more conservative than large institutions in the financial or health sectors (e.g. large banks, hospitals), but that there is demand for fully integrated solutions, which combine novel technologies into a package of solutions.

Government support is often available at early stage development, but it is much more difficult to find financing for scaling up. Some participants commented on the “mass exodus” by venture capital firms from Cleantech companies, where venture capital firms have found disappointing returns and long payback periods. “Patient” capital, without defined exit timelines, can provide scope for inventors and start-ups to gain traction. These funds can use a structure with a staged gate system to partner with others and have mechanisms to allow partners to liquidate, if they wish. One example of efforts to address structural gaps in the innovation landscape is the non-profit *Current*, launched in 2016 with the support of the City of Chicago and other partners. *Current* aims to develop, validate and commercialise innovations through research, demonstration and market development programmes

Some investors were optimistic about prospects for investment in water, noting increasing water prices in a number of countries and more, and better regulation (notably China), which is considered an important driver of investment (parallels drawn to the importance of renewable energy mandates for scaling up investment in solar). Also, it was noted that if companies reach some point of viability, they can have quite high valuations (even with a small amount of revenue or none at all) and can be quickly acquired.

Session 2. Seizing opportunities generated by innovation: Harnessing new sources of finance

Investments in water security generate a range of benefits in terms of valuable goods and services as well as reduced water risks, which can result in significant avoided costs. Valuing water also helps to identify the benefits of good water management, improved water security and the management of water-related risks and disasters. Innovative policies can be used to convert benefits from investments in water security into revenue streams that support financial returns to investors. Innovative business models can be used to bring water technologies to the market as a service, rather than good.

Several participants highlighted examples of innovative financing approaches and the use of risk mitigation instruments. For example, by exploring ways to monetise cost avoidance and building this into financing models; by using capital stacks to allocate varying degrees of risk across various parties; or using value capture mechanisms (e.g. tax-increment financing). A [case study](#) on the financing of Igudan, the largest sewage treatment plant in Israel, provides an illustration of an innovative financing approach combining elements of corporate finance and project finance to secure long-term financing for a new multi-decade investment plan of more than NIS 2 billion (USD 500 million). While tailor-made arrangements are growing in number, investments at scale would require more standardised approaches which minimise transaction costs. Intermediaries have a role to play in a fragmented market.

Despite the growing interest in the application of innovative technologies in the water sector, there is still a significant gap between the potential of these technologies and the reality on the ground. For example, technology has the potential to digitise billing collection and water metering, yet collection rates in some developing countries are still very low (only about 50% of the amount billed, for the lowest quartile of utilities analysed) and non-revenue water averages 35%.² Thus, the need to continue to reiterate the importance of the fundamentals required to improve the financial viability of utilities: (1) improving the efficiency of utilities (2) improving governance, regulation and operational management, (3)

² Based on data from 605 developing country utilities in the IBNET database. See: [Leigland et al. \(2016\) Achieving Universal Access to Water and Sanitation by 2030: The Role of Blended Finance](#), The World Bank.

developing the project pipeline³. In terms of financing options, the “3Ts” (tariffs, taxes and transfers), remain the ultimate sources of funding to *close* the financing gap. Commercial finance (e.g. bonds, commercial loans, microfinance and vendor finance) can be used to *bridge* the financing gap, but will still need to be repaid.

Obstacles for investment in water security include the fragmentation of the market, weak governance, high transaction costs and a lack of expertise. Low tariffs are still problematic in many, but not all, countries. In Southeast Asia, average tariffs are particularly low and utilities have relied on substantial sums of public money to invest in infrastructure. However, this CAPEX-driven approach in the context of low tariffs means that revenue flows are insufficient to finance operational and maintenance costs, resulting in deteriorating infrastructure.

To help investors to decipher the environmental benefits or water-related risks associated with their investments, a number of tools have recently become available. Responding to demand from investors with a “green” mandate S&P has recently developed a Green Evaluation approach, which provides a relative “green impact” score on instruments targeted at financing environmentally beneficial projects. This evaluation is not a credit rating, but provides a score related to the environmental impacts of climate change mitigation and adaptation projects, as well as a score on transparency and governance of the projects. CDP’s programme on water-risk encourages companies to disclose their exposure to water risks, which can improve transparency for investors.

Session 3. Analysing policies that promote or hinder water security investment: The role of regulation

Regulation can be an important driver of investment in water security and generate new markets for innovative products and services. For example, regulation can raise the stringency of water quality standards and wastewater treatment requirements, thus increasing investment in water security and demand for pollution abatement technologies. Regulation that imposes limits on water abstraction can generate increased investment in water conservation and alternative sources of water supply (such as wastewater reuse) along with demand for related technologies. At the same time, regulatory barriers exist that inhibit investment in water security, such as a lack of a clear regulatory framework for wastewater reuse, regulatory limits on private sector participation, or constraints on foreign investment.

In the [case](#) of Israel, regulatory and economic instruments were used to encourage the use of reclaimed wastewater, including significant public financial support for the development of infrastructures in reclaimed wastewater projects and reduced tariffs for reclaimed wastewater to make its use attractive for irrigators. Today, over 87% of wastewater in Israel is reused and more than 40% of the water used for agricultural irrigation is reclaimed wastewater.

Where there is an absence of economic regulation (such as in North America), it is very difficult for utilities to invest to meet more stringent environmental regulation in the context of fixed tariffs. In the UK, the system of privatised utilities with an independent economic regulator has encouraged investment, but this model is atypical and unlikely to be replicated.

The design of regulation is clearly important; inflexible regulations (e.g. prescribing specific types of test for water quality) can hinder innovation and raise the cost of compliance. Regulatory uncertainty needs to be managed with the specific context; private investors would expect compensation for regulatory changes that have adverse impacts on returns. The process for reforming environmental regulations is

³ Project preparation costs are rising, accounting for 3% of a project and up to 10% of project costs in some places in Africa.

lengthy and the process needs to engage stakeholders and be as transparent as possible, including determining willingness to pay for water services and environmental improvements. Some firms will anticipate regulation and begin preparing for changes before regulations are finalised. Corporate action on reducing water risks is often a response to regulatory changes – either impending or recently implemented. The actions and interests of multi-nationals can be persuasive, when raising the issue of water insecurity to the attention of Ministries of Finance. In some countries, these firms can have more influence than the Ministry of Environment.

The role of regulation in driving investment in water security is generally acknowledged, but the role of innovation in advancing regulation is often overlooked. As more technology is deployed in the sector, various aspects of water management become easier to track, quantify and regulate. For example, water rights in California are currently managed in an archaic way, but efforts are underway to digitise these records, to support greater transparency and better public policy decisions.

Session 4. Blended finance for water security investments

Public finance is likely to continue to play a central role in financing the delivery of universal access to water and sanitation. Yet, in light of the constraints on public finance and substantial investment needs, leveraging contributions from different sources of finance with different risk appetites can help to scale up investment. Many countries have used public private partnerships for infrastructure investment to attract additional private finance and benefit from the expertise of the private sector in constructing and operating public facilities. For example, in [Israel](#), PPP projects have been promoted in a variety of infrastructure areas since the mid-1990s, totalling more than NIS 30 billion (over USD 7 billion) to date, about half of them in transportation, 20% in energy, and 23% in seawater desalination. These projects require appropriately allocating risk between the government and the private sector, with each side bearing responsibility for the risks it is better positioned to manage.

Blended finance is the strategic use of development finance for the mobilisation of additional finance towards the SDGs in developing countries⁴. Since 2000, there has been a growing interest in the use of blended finance, as reflected by the increasing number of blended finance facilities. In total, between 2000 and 2016, a total of 167 facilities which engage in blending were launched, with a combined sized of USD 31 billion (in terms of commitments).

While many actors engage in blending finance, development finance play a critical role, providing the public or private development finance that mobilises the private sector to engage. Recent OECD [analysis](#) shows that for water and sanitation, total official finance flows to developing countries have increased by 5% annually in the last decade, reaching USD 14.3 billion in commitments on average per year in 2014-15. The 2016 DAC Survey estimates that an additional USD 1.5 billion of private resources were mobilised in 2012-15 for water and sanitation, with guarantees and syndicated loans as the main leveraging instruments.

An example of a blended finance project for water and sanitation is the Tamil Nadu Water and Sanitation Pooled Fund (WSPF), created to overcome challenges in tapping private capital markets for infrastructure investments at the local level (especially for smaller projects). The WSPF is a Special Purpose Vehicle, with a subordinated tranche (35%) funded with a EUR 10 million concessional loan from KfW. This was combined with the Government of Tamil Nadu's equity support as cash collateral (10%) to

⁴ Working definition (OECD, 2018 forthcoming), *Making Blended Finance Work for the SDGs*. In this context, “development finance” is defined to comprise Official Development Finance, as well as private funds that are governed by a development mandate (e.g. philanthropies). “Commercial finance” is defined as both public and private sources of finance that do not have a primary “development” mandate, including, e.g. investment by public or privately owned pension funds or insurance companies, banks, businesses, etc.

provide an additional cushion against potential losses. The Fund issued two bonds in 2012 and 2013 to mainly institutional investors, including public and private pension funds. The combination of the KfW concessional loan and interest on the bonds permitted on-lending on a revolving basis to municipal projects at a sustainable level.

Compared to overall development financing needs, the contribution of ODA is relatively small. Private flows – e.g. remittances, foreign direct investment, private philanthropic funds – now overshadow other sources of external development finance to developing countries. Thus, the interest from bilateral donors to focus on better targeting ODA to catalyse private finance. Blended finance has significant potential, but it cannot replace strong enabling environments. Participants acknowledged that scaling up of blended finance should be based on a robust and transparent evidence base. There is a delicate balance to manage in terms of blended finance – with the goal to give a sufficient “nudge” to encourage private investment, while avoiding subsidising the private sector. Checks and balances are needed to avoid the potential detrimental impacts, such as crowding out of private finance or suboptimal development outcomes. There is also a need to better demonstrate the impact in terms of poverty reduction. In past years, donors have pushed for results-based delivery, but the approach has sometimes been to the detriment of longer term capacity building efforts. Development finance institutions are uniquely positioned to help strengthen infrastructure project pipelines and mitigate risk.⁵

Further analysis is needed to draw lessons learned from experience with blended finance and better understand the challenges of applying the approach in specific geographies and contexts (such as in the case of water security). Monitoring, evaluation and reporting is also needed to assess the effectiveness of blended finance and, ultimately, its contribution to poverty eradication. The OECD/DAC is developing Principles for Blended Finance to assist donors and development finance providers in the design, implementation, and scale up of effective blended finance policies and approaches. Additional work will be undertaken on how these Principles apply in the context of water.

For more information, please visit:
www.oecd.org/water/roundtableonfinancingwater.htm
www.oecd.org/water

⁵ See discussion in: [Money](#) (2017) *The potential for public, purposed, development and hybrid finance to bridge the water infrastructure gap*.