



RESEARCH REPORT

Mobilizing Additional Funds for Pro-Poor Water Services

**An Exploration of Potential Models to Finance Safe Water Access
in Support of Sustainable Development Goal 6.1**

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September 2018





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This study was commissioned by



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Acknowledgments

This report was funded by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). We are grateful to them and to all our funders, who make it possible for Urban to advance its mission.

The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at urban.org/fundingprinciples.

We are grateful to the experts interviewed and consulted during the course of writing this report, including those identified in appendix C.

The authors would like to thank several people for reviewing earlier drafts of this report: Alice Brandt, policy advisor at GIZ; Kathleen Dominique, project manager at the Organisation for Economic Co-operation and Development; Rolfe Eberhard, an independent consultant on international water issues; Elke Peetz, sector economist at KfW; and Regina Rossmann, junior advisor at GIZ.

The authors would also like to acknowledge the guidance provided by Katrin Gronemeier, head of component, sustainable water policy at GIZ, and Ulrike Pokorski da Cunha, head of programme, sustainable water policy at GIZ. The authors also appreciate additional support provided by the Water Policy Team at GIZ.

Executive Summary

More than 2 billion people, mostly in the poorest countries in the world, lack access to safely managed drinking water services. The estimated cost of meeting the United Nation’s Sustainable Development Goals (SDGs) for drinking water and sanitation services is \$1.7 trillion, three times more than has been invested in the sector to date. For many utilities and municipalities serving the poorest populations, there is insufficient local revenue from tariffs or transfers to sustainably self-fund the necessary operational and maintenance expenditures. While reforming and strengthening providers so that they are able to self-finance is certainly key to sustainable service provision, it is unlikely that improvements will occur within the time frame set by the SDGs.

Further, although private finance can play an important role in expanding access to and improving quality of water services for the poor, particularly when combined with concessional capital through blended finance, many utilities serving the poor are not yet ready for this and will continue to need subsidies in the medium term. To leave no one behind, donor capital will continue to have a role to play for a much longer period of time.

Disaggregating funds needed to expand water infrastructure (capital expenditures) from those used to sustain the actual delivery of services through that infrastructure (operational and capital maintenance expenditures) is a necessary first step in understanding how to raise resources to expand services. Even if sufficient resources could be leveraged to invest in expanding infrastructure without resources for operations and maintenance, such infrastructure might deteriorate, and services would continue to lag.

This report seeks to draw from the experiences of other sectors to answer the following question: **Where, outside of tariffs, can governments in developing countries and their development partners raise additional resources to sustainably finance safely managed water services in line with SDG ambitions?**

After an extensive literature review and stakeholder interviews, we narrowed our focus to look at three models that seemed most promising for a sustainable subsidy approach:

- global philanthropy-led partnerships and funds
- solidarity levies (surtaxes)

- land value capture strategies

These three models have the potential to raise significant international and domestic resources, to fundamentally alter how donors and the private sector collaborate, and to yield reliable, automatic contributions without yearly renewals, allowing a longer planning and implementation horizon.

Global Philanthropy-led Partnerships and Funds

Global funds have been established in several sectors, especially in global health (e.g., Gavi, the Vaccine Alliance), as new ways to pool funding for country systems and targeted interventions in developing countries. In health, this has led to a net increase in funding. Global funds usually do not seek to be implementing agencies; however, all global funds require coordination among different stakeholders, and they may help to align interests and motivations. Because reliable service delivery requires ongoing funding commitment, a global fund would require a mechanism through which resources can be reliably replenished.

Multiple funds with the same end goals may not only divert resources and efforts but also create more hoops for recipient governments to jump through. A global fund in water should prioritize funding utilities that have demonstrated a willingness to serve the poorest and should monitor the effectiveness of its funding in increasing access to safe drinking water. If funding could be tied to measurable and verifiable service delivery metrics accepted by a range of providers, it is possible that donors may agree to pooling resources.

Based on our research, we determine that for donors in the water sector to have parallel impacts, there are four unresolved issues:

- uniformly monitoring the same outcome (and output) indicators
- providing resources in addition to what is already being provided and deciding on a replenishment time table
- agreeing to focus on funding and not on implementation
- jointly determining how to prioritize investments

Solidarity Levies

Solidarity levies are small surtaxes that countries can place on a specific industry or consumer item to raise funding for programs or goals with some sort of “unifying purpose.” Solidarity levies that tax items more often purchased by the middle and upper class (e.g., airplane tickets) may be more likely to receive political backing.

Solidarity levies present opportunities for sustainable, longer-term funding. The solidarity model has allowed Unitaid, for example, to make longer-term funding commitments for bulk purchases of medicines. Funders in the water sector have suggested the use of solidarity levies, especially a tax on bottled water, but sectors such as international trade and finance, telecommunications, and extractive resources could also be taxed. For solidarity levies to be realized in the water sector, one or more donors must assume a leadership role in organizing the architecture of the tax and the principles for its distribution.

Land Value Capture

Land value capture is a mechanism that can be used to raise resources domestically, even in lower- and middle-income countries. This is a fundamentally different model than the philanthropy-led models discussed in this report because it is a market-based approach that exploits land price increases resulting from public investments. The only documented cases of market value changes from water service improvements have been those where such investments were made as part of broader urban neighborhood improvement programs. **It may therefore be possible** to use land value capture as part of a larger infrastructure improvement approach that **integrates multiple services, including water.**

Pathway to Sustainability Financed Pro-Poor Utilities

To meet Sustainable Development Goal 6.1, utilities and municipalities that serve the poor will continue to need subsidies. A stepwise approach that requires that all utilities become fully creditworthy and leverage private capital before extending services to the poor (using repayable capital to make investments in infrastructure) would leave too many behind for too long.

If utilities can be benchmarked not just on their budgetary performance but also on improvements in reaching the poorest populations, it is possible to incentivize improved performance using elements of a results-based financing approach.

A philanthropy-led, outcomes-oriented fund could boost pro-poor service access, incentivize improved utility performance, and strengthen utilities toward the goal of financial sustainability. A fund such as the Global Water Access Fund proposed in this paper could blend multiple global and local sources of sustainable funding, pair funding with technical assistance, and measure performance to ensure funding is having the desired pro-poor impact.

Expanding services to the poor can improve utility performance in the long term by engaging millions of new customers and establishing new norms of service provision. Mainstreaming pro-poor units within utilities and supporting improvements in reaching the poor by benchmarking and verifying access are two ways to identify utilities committed to serving the poorest populations.

Background

In recent years, millions of previously unserved and underserved people have gained access to improved water and sanitation services, but there are still over 2 billion people, mostly in the poorest countries in the world, who lack access to safely managed drinking water services (WHO and UNICEF 2017). Population growth and unplanned urbanization have placed additional burdens on cities in developing countries, which struggle to adequately serve residents, particularly those in informal settlements and peri-urban areas. In sub-Saharan Africa, growing urban populations and low investment in water and sanitation services have led to a decline in urban water supply coverage in 14 out of 46 countries (World Bank Group 2016a). Although water and sanitation are only two of many basic public services, they are critical to individual well-being and social stability.

In recognition of this reality, the Sustainable Development Goals (SDGs) lay out several ambitious targets regarding not just access to safe water and sanitation services but also the management of water resources and irrigation. The goals seek to monitor relevant indicators, including the share of the population using safely managed water and sanitation services (indicators 45 and 46) and the share of wastewater flows treated to national standards (indicator 47). The goals are clear in acknowledging that both environmental and financial sustainability are key to development and come with a much higher price tag that reflects long-term costs. Per Hutton and Varughese (2016), the cost of meeting the drinking water and sanitation services goal is estimated to be \$1.7 trillion, “three times the amount historically invested in the sector” (Kolker et al. 2016, 1). Thus, the financial needs in the water sector far exceed what has historically been allocated or spent.

Financial needs are present at all levels, from central governments to individual consumers, but in the face of rapid, unplanned urbanization and climate change, municipalities face the greatest challenges in accessing sufficient financing to extend and maintain services. In most cases, municipalities are responsible for public service provision but cannot generate sufficient local revenues to sustainably provide them.¹ Private sector actors have historically played a limited role in supplying such public goods for several reasons: high up-front and fixed capital costs, large deferred maintenance costs, uncertain legal and regulatory environments, low tariff rates set by the government, and unwillingness to pay among consumers (Cutler and Miller 2006). Generally, the share of financing brought to projects by major international private operators has been declining and was further reduced following the financial crisis (Winpenny 2015). Policymakers thus face a stiff challenge, particularly in enabling access among the poor, and must develop innovative ways to stimulate financial resources.

Financing for Water: Theory versus Reality

Extending and improving the infrastructure required to supply water requires a large influx of capital. The financing gaps for sustaining actual service delivery are even trickier to fill, especially when it comes to serving the urban and rural poor. Utilities rarely serve rural households, and the majority of poor urban households are in informal settlements where only a small fraction are connected to piped networks. Disaggregating the sources of funding for expanding water infrastructure from those for sustaining service delivery using that infrastructure is a necessary first step in understanding how to raise resources to expand services.

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Governments are expected to assume the responsibility of funding infrastructure that requires large, bulky, up-front capital expenditures (CapEx) with long payback periods. Governments raise these resources through a combination of public borrowing, low-interest/concessional loans from development finance institutions, and equity investments from the domestic or international private sector.² In addition to the large up-front cost and perhaps low profit margins, such infrastructure may have other public-good aspects, including multiple externalities, making it less attractive to the private sector. From an economic perspective, compared with the delivery of infrastructure, a service delivered to a household, even when arranged by the state, is treated as a private good because such a service is both “exclusive and rivalrous.” Thus, households are the largest provider of financing for water access through the user charges or tariffs they pay to water service providers. Tariffs are justified on the grounds that they are recovering costs for a private good, and as a scarce commodity, water would be overused without a cost associated with its consumption.³ In general, investments into backbone infrastructure go hand in hand with tariff increases for consumers with access to a connection.

This study makes the distinction between resources available for financing capital expenditures on hardware and software (CapEx) and those available for operations (OpEx) and the maintenance of capital (CapManEx), focusing on OpEx and CapManEx (Fonseca et al. 2010).⁴ CapEx, even in middle-income countries, is generally raised at the national level and either lent or granted to municipal

governments, with a variety of arrangements for provision, ranging from direct provision through a government body, corporatized semiautonomous body, or purely private sector entity. Utilities (used here to describe all organized service providers) have different relationships with local governments based on the context: some run like companies and may report to a board, others report directly to local elected officials, and still others report to national ministries or departments (Baietti, Kingdom, and Van Ginneken 2006). The accountability relationships between utility managers and politicians have a large impact on their incentives and abilities to raise and spend resources (Boex and Edwards 2014).

Utilities are expected to cover both their OpEx and CapManEx through tariffs, which is the case in many, though not all, high-income countries. However, a range of political and economic factors and administrative inefficiencies combined with low budgets prevent many local service providers and utilities in developing countries from covering their own OpEx and CapManEx let alone expanding services (Edwards et al. 2015). Some of the factors commonly highlighted in the literature include poor governance and management of utilities, low tariff rates, limited capacity among many families to pay even those low tariffs, large system losses because of breakages and theft, poor information and management systems, and rapidly growing urban populations.⁵ Service levels are therefore far lower than built capacity might predict, as utilities providers struggle to deliver water in sufficient quantities or of acceptable quality. At a global level, this means that even if sufficient resources could be leveraged to invest in expanding infrastructure (CapEx), without resources for OpEx and CapManEx, such infrastructure might not be maintained and services would continue to lag. Many in the water sector recognize this problem and have highlighted the need for increased investment into sustainable and pro-poor service delivery (Goksu et al. 2017). This study acknowledges the existence of this gap but focuses on how to raise additional resources to support OpEx and CapManEx.

When piped networks only serve middle- and higher-income consumers, low tariffs are regressive, in essence subsidizing comparatively wealthy households' consumption (Van den Berg and Danilenko 2017, 20). This can also reinforce disparities in middle- and lower middle-income countries: utilities may choose to not serve poor households because they assume (often incorrectly) that poor households cannot pay the one-time connection fee, the monthly charge, or both (Kemendi and Tutusaus 2018). Other challenges, especially in low-income and unplanned areas, could include "insecure and uncertain land-tenure preventing utilities from entering into formal contracts with the dwellers in these areas, the lack of 'permanency' due to high transitional populations, and the lack of spatial planning which makes it difficult for water utilities to pass water pipes in low income areas" (Kemendi and Tutusaus 2018, 1). Another challenge is that national utilities may focus only on capital cities, "leaving secondary cities underfunded, understaffed, and sometimes without functioning utilities altogether" (Van Ginneken,

Netterstrom, and Bennet 2011, ix). This study does not explicitly address affordability constraints for households, but it should be acknowledged that willingness to pay varies highly among urban populations based not only on incomes but also on where consumers are located in relation to an existing municipal source and if they have access to alternatives such as private wells.

While reforming and strengthening providers so that they are able to self-finance is certainly key to sustainable service provision, it is unlikely that improvements will occur within the time frame set by the SDGs. In countries with the greatest financing needs, tariffs are low, central transfers are small and unpredictable, and borrowing in the form of concessional finance is insufficient to meet future needs. A review of public expenditures on water in five low-income sub-Saharan countries revealed that the governments spent an average of 0.32 percent of their GDP on water and sanitation (equaling \$1.71 per person). Some middle-income countries (Morocco and South Africa) invested much more and did see significant gains in access, but this may not be replicable by lower-income countries because of financial limitations and other constraints (Van Ginneken, Netterstrom, and Bennet 2011).

While reforming and strengthening providers so that they are able to self-finance is certainly key to sustainable service provision, it is unlikely that improvements will occur within the time frame set by the SDGs.

Acknowledging that the current structure of financing water services solely (or primarily) through tariffs is inadequate for many utilities in developing countries raises two obvious questions: What are alternative sources of funding to allow utilities to serve the poorest populations? And what models might exist to support utilities to improve performance and serve the poorest simultaneously?

A comprehensive approach must consider the potential for raising new private (domestic and foreign) capital; leveraging public, philanthropic, and donor funding; employing smart tariff structures to expand resources available for service delivery; and increasing resources that can be used to make investments in governance and technology that improve utility performance while maintaining an explicit pro-poor philosophy for water access.

Methodology: Breaking the Cycle to Move Forward

The main research question is: **Where, outside of tariffs, can governments in developing countries and their development partners raise additional resources to sustainably finance safely managed water services in line with SDG ambitions?**

In this study, we considered the roles that private finance (equity and debt), development finance institutions, and private philanthropy, as well as blended partnerships that bring them closer, can play in expanding the pro-poor resources available for OpEx and CapManEx for the delivery of water services. We did not look at funding requirements for sanitation as part of this study. While initially we were agnostic with regards to rural and urban services, it quickly became clear that our research would be more relevant to urban services. This is also a focus area for German development agencies.

We carried out an extensive literature review of three comparable social sectors that deliver public goods with large externalities: health, education, and transport. We used defined search strings in databases such as PubMed, JSTOR, ProQuest, CAB Direct, Global Health, and ERIC. We identified over 200 publications, which we surveyed for their analysis and commentary on financing for service delivery. Because each sector may employ one or more of four sources of funding (philanthropic donations by foundations and individuals, domestic revenues raised by taxes, commercial financing raised by the state or by private providers, and multilateral and bilateral windows), we also attempted to classify our readings by the source of funds used. Based on our literature review, we highlighted seven interesting models and mechanisms that could raise additional revenues for the water sector (table 1).⁶

We presented the results of our literature review and these seven approaches to a small group of experts at the World Water Forum held in Brasilia in March 2018 and asked them for input on the sources of financing that they considered most suitable and feasible for improving water service delivery. We simultaneously conducted interviews with investors, private sector operators, and staff in multilateral and bilateral financial institutions and foundations to understand their perspectives on the funding gap to meet Sustainable Development Goal 6.⁷

TABLE 1

Models and Mechanisms

	Model	Health	Education	Transport/Energy	Water
New business models to blend finance	Philanthropy-driven and sustained models	Global health initiatives (e.g., Gavi; Global Fund to Fight AIDS, TB, and Malaria; President's Emergency Plan for AIDS Relief)	Global Partnership for Education		
	Public-private integrated partnerships	Lesotho Hospital Public-Private Partnership		Delhi Metro	
	Revolving funds blending official development assistance and local commercial finance	Revolving fund of the Pan American Health Organization			Philippine Water Revolving Fund
New sources of finance	Land value capture		Local property tax to fund K-12 education in the US.	Railway systems in Japan, Singapore, Hong Kong, Beijing, and Delhi	
	Social and green bonds and innovation funds			Global Energy Efficiency and Renewable Energy Fund	DC Water green bond
	Surtaxes on consumption	Unitaid airline tax			

Based on interviews and consultations with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), we narrowed our research to look at three models that seemed most promising for a sustainable subsidy approach:

- global philanthropy-led partnerships and funds
- global, non-regressive surtaxes on private consumption, such as surcharges imposed by airlines on certain fares, taxes on tobacco, or a tax on bottled water
- land value capture and other local sources of finance that can be combined with additional philanthropic capital

We selected these three models for different reasons. They have all raised significant international and domestic resources for other sectors, fundamentally altered how donors and the private sector collaborate, and provided reliable, automatic contributions without yearly renewals, allowing a longer planning and implementation horizon.

The three models have all raised significant international and domestic resources for other sectors, fundamentally altered how donors and the private sector collaborate, and provided reliable, automatic contributions without yearly renewals, allowing a longer planning and implementation horizon.

In the following sections, we summarize the current discourse on the need for additional resources to meet Sustainable Development Goal 6. Because much of the current dialogue on innovative financing focuses on mobilizing commercial finance, we briefly examine the role that private capital can play in filling these gaps. We then move on to a detailed examination of two financing models from the health sector and one from transport that have been successful but have not been used to the same extent by the water sector. We outline the opportunities and costs associated with each model and discuss their relevance to the water sector.

While the purpose of this study is not the recommendation of “how” additional resources should be allocated, we also propose a model that integrates philanthropic and private capital in a global fund and suggest mechanisms through which such a fund might prioritize investments and incentivize improved outcomes. In this study, we do not focus specifically on a country-level analysis of the suitability of

funding mechanisms given that two of the three we highlight are international and philanthropy driven. A rudimentary, correlation-based statistical analysis of access to piped water (as a proxy for safe water) and country-level characteristics is summarized in appendix A.

Not surprisingly, **GDP per capita, fragility, and urbanization** had the strongest correlations with access to piped water, with r^2 of 0.496, 0.449, and 0.452 respectively. GDP per capita and access to piped water are positively correlated, with higher per capita income countries providing better access to piped water. Fragility is negatively correlated, with more fragile countries providing lower levels of access to water. Urbanization is positively correlated, as countries with higher rates of urbanization had better access to piped water.

Study Limitations

This study is mainly concerned with the financing gap for realizing SDG target 6.1: by 2030, achieve universal and equitable access to safe and affordable drinking water for all. As such, and given the differences in financing challenges between water and sanitation, this study focuses explicitly on water provision and excludes sanitation.

Although this study did not purposefully distinguish between rural and urban contexts at the outset (in order to look at financing regardless of the mode of service delivery), over the course of the study, it became apparent that the mechanisms we examined are better suited to urban contexts. We anticipate that because German development cooperation engages primarily in urban water programs, discussions around the study will also focus on applicability to urban contexts.

This study does not address the complex and important issue of affordability constraints for poor households. There is a large existing literature on how to design tariffs and social supports to address affordability issues both in terms of how much the poor can pay and in what tranches payments are made.

Further, this study does not examine the role of tariffs in detail (see the hypothesis on tariffs below) and instead is meant to be complementary to the literature around setting tariffs and models of cost recovery.

Finally, this study does not focus on utility governance issues. It does, however, acknowledge that governance arrangements (i.e., putting a competent management team in place and allowing the utility to recover costs through tariffs) are essential to improving the efficiency and performance of water utilities and ultimately improving their creditworthiness. Much has been written about the central role

of governance, and certainly none of the proposed mechanisms would work without sound governance in place.

Study Hypotheses

Several hypotheses underpin this study, including the following:

- Water supply is a basic social service. Governments have a responsibility to ensure access to safely managed water services for all, irrespective of ability to pay.
- In the current discussion around water financing, the need for **sustainable** flows for OpEx and CapManEx is sometimes overlooked and overshadowed by the emphasis on CapEx investments to extend services. While this study recognizes considerable CapEx financing gaps, it aims to complement the current discussion by providing fresh ideas around funding OpEx and CapManEx.
- Reliable service delivery requires ongoing funding commitment. Without resources for OpEx and CapManEx, infrastructure will not be maintained and services will continue to lag.
- Tariffs have a role to play as one source of finance among many. The ultimate goal of full cost recovery through tariff revenue is worth pursuing, but given the challenging operating environment for many utilities in developing countries and the lack of access, particularly among the poor, there is a need to subsidize access in the medium term. Without such subsidies, too many poor people will be left behind for too long.
- Globally, private funding is typically not best suited to expand water service delivery to the poorest and most vulnerable. Utilities that already attract or are “on track” to attract commercial finance (the focus of blended finance conversations) are often not utilities that serve the poorest. A different (but complementary) approach is needed for those utilities.
- SDG 6.1 requires the international community to focus on reducing inequalities and providing water services to the poor. This study aims to complement the ongoing discussion around water finance with a pro-poor perspective.

Financing SDG6: Is There a New Role for Private Capital?

The scope and scale of development challenges have long meant that official development assistance (ODA) alone is insufficient to finance solutions. At the same time, the growth in foreign direct investment (FDI) and remittances has far outpaced the growth in ODA. Private financial flows from abroad dwarf ODA and have for some time: FDI surpassed ODA in developing countries in Latin America in 1981, Asia in 1986, and Africa by 2012.⁸ A growing awareness of the critical role private capital could play was reflected in the 2002 Monterrey Consensus on Financing for Development (United Nations 2002). The Monterrey Consensus highlighted roles for international organizations, donor countries, and developing countries to play vis-à-vis this capital, but it was largely limited to promoting the flows themselves (i.e., removing barriers to foreign investment) rather than intentionally shaping those flows toward explicitly pro-poor investments.⁹

In recent years, the international community has contemplated a more pro-development role for private capital as part of a push to view all flows comprehensively. This is largely driven by the need to accelerate progress toward achieving the Millennium Development Goals and the SDGs. In April 2015, the Joint Ministerial Committee of the Boards of Governors of the World Bank and the International Monetary Fund released a statement titled, “From Billions to Trillions: Transforming Development Finance.” Its preamble stated:

To meet the investment needs of the Sustainable Development Goals, the global community needs to move the discussion from “Billions” in ODA to “Trillions” in investments of all kinds: public and private, national and global, in both capital and capacity.

Globally, achieving the proposed SDGs will require the best possible use of each grant dollar, beginning with some US\$ 135 billion in ODA. Yet flows for development include philanthropy, remittances, South-South flows and other official assistance, and foreign direct investment— together these sources amount to nearly US\$ 1 trillion that needs to be used just as effectively. The most substantial development spending happens at the national level in the form of public resources, while the largest potential is from private sector business, finance and investment. This is the trajectory from billions to trillions, which each country and the global community must support together to finance and achieve the transformative vision of the SDGs.

“Billions to trillions” is shorthand for the realization that achieving the SDGs will require more than money. It needs a global change of mindsets, approaches and accountabilities to reflect and transform the new reality of a developing world with highly varied country contexts.¹⁰

The statement emphasized that because ODA will remain only a small fraction of overall development flows, such funds must be increasingly targeted “to crowd in other funding sources: (i) for

Low-Income Countries on the basis of poverty, vulnerability, and limited fiscal capacity; and (ii) for Middle-Income Countries, by playing an increasing role to leverage and catalyze public and private sources of financing.”¹¹

This presents three of the concepts that underline the promotion of blended finance: the potential for limited ODA to *leverage* (much) larger private funds, thereby *catalyzing* projects that would not have happened otherwise or would not have had as much of a *pro-poor focus*. Blended finance has been defined by the Organisation for Economic Co-operation and Development as the “strategic use of development finance for the mobilization of additional finance towards sustainable development in developing countries” (OECD 2018a, 4).

“From Billions to Trillions” led to the convening of a task force to suggest guidelines on how to measure private investment that had been “catalyzed” by the multilateral development banks. In April 2017, the principles of this strategy were released, and they focused primarily on “private sector finance coming into emerging market infrastructure projects by Banks, equity providers, and institutional investors alike.”¹² The principles laid out how credit-enhancing instruments could be structured so that the private sector would be attracted to investing in developing countries. The report did not make a distinction between low- and middle-income countries, nor was it explicitly focused on any one sector. At the same time, the World Bank’s International Development Association (IDA) received its 18th replenishment, its largest ever at \$75 billion. The replenishment blended grant contributions from donor countries with market-issued debt secured by IDA’s loan portfolio. The replenishment also established a Private Sector Window (PSW), with \$2.5 billion set aside for the singular goal of catalyzing private sector investment in developing countries. According to the Center for Global Development’s analysis of the strategy, “success is defined as real development impact, using a robust results framework that included outcomes for beneficiaries but also careful measurement of ‘additionality’ - the additional private investment that is mobilized thanks to the intervention of the PSW. In other words, what would not have occurred without the PSW” (Lee 2017).

Risk sharing lies at the heart of any blended finance project (i.e., who is bearing the most risk and how it is priced into the contractual mechanism). The International Finance Corporation–Multilateral Investment Guarantee Agency PSW is intended to “de-risk” private investments for foreign and domestic investors in four ways: by mitigating currency risks, by providing political guarantees, through local currency–denominated lending, and through blended finance, with the last intended to be “high-impact and pioneering” (Lee 2017). The launch of the PSW has been met with tempered enthusiasm because, as the Center for Global Development notes, risk-mitigation instruments have existed for some time but “still represent less than 5 percent of total [multilateral development bank] lending” (Lee

2017). The most promising among the PSW's instruments appears to be the openness to cofund projects with large social returns that would otherwise be too costly or risky for the private sector alone. Many investments in the water sector fall exactly into this basket of projects.

Using Donor Finance to Leverage Private Investment in the Water Sector

Given the current push to raise additional resources to meet development goals, donors are once again exploring how to engage the private sector. An August 2017 World Bank report on the financing needed to achieve the SDGs for water and sanitation made the case that governments needed to “place a greater priority on leveraging commercial finance into the sector while at the same time bolstering public funds for the sector” (Goksu et al. 2017). Another report from the World Bank and UNICEF states:

Hence the feasibility of achieving the SDG WASH targets depends on the ability to mobilize and redirect significant additional resources, beyond historical levels of expenditure, if services are to reach poorer, harder to reach populations. In particular, loans and other forms of repayable finance from domestic private lenders will be a critical resource in financing efforts to achieve the SDGs (see section 4.1). However, this form of finance will be mobilized only when the sector reaches a certain level of efficiency and reliability to assure lenders that their funds will be repaid (World Bank and UNICEF 2017, 6).

According to a recent econometric analysis of how regulatory costs affect the availability and desirability of using private finance, the “tension between financial viability and inclusion, in the very places where the share of poor consumers to whom one would wish to extend the service is higher, is the first fundamental challenge of infrastructure finance in developing countries” (Fay, Martimott, and Straub 2018, 3).

The financing needs in the water sector are such that both public and private capital are essential. Yet, as a growing consensus appears to hold, they play distinct roles. Public capital leverages private finance, especially for CapEx (Sparkman and Sturzenegger 2016). This leveraging may result in public-private partnerships that have a wide range of contractual agreements, including both infrastructure and service provision, or it can come in the form of long-term borrowing from banks (e.g., municipal bonds). In reality, formal private sector participation in the water sector has not been growing—some have noted that it is actually shrinking. Goksu and colleagues (2017, 13) estimate that the water and sanitation sector “attracts only 3 percent of all of private sector participation in infrastructure (energy, transport, and water) projects (2009-14).” The few public-private partnerships that exist in water service delivery in Latin America tend to be limited to supply contracts. The situation is not remarkably

different in sub-Saharan Africa.¹³ These supply contracts do not imply ownership of either the water resources or the infrastructure.

While private capital is likely necessary to expand and improve services for all, there are several important caveats that must be considered, especially for low-income countries.¹⁴ Given that ODA is scarce, using it to leverage private funds may be unnecessary, ineffective, or counterproductive if it diverts resources and attention.¹⁵ Critics charge that it can even be guided by a false ideological belief that the private sector will be more efficient (Romero 2017). Further, targeted reforms that help governments raise taxes and spend efficiently have demonstrated that the public sector can effectively fund infrastructure, reducing the need for private finance. Fay, Martimott, and Straub (2018, 28) note, “Countries with infrastructure deficit should therefore not consider the expansion of private finance as the sole way to increase investment. In fact, policy reforms meant to improve the business environment are likely to have competing effects. Some will make infrastructure ventures more attractive for private financiers, while others will improve public sectors’ ability to raise taxes and spend efficiently. Our analysis suggests that both paths should be pursued.”

Donors can provide grants and technical assistance to bridge the gap between the present (when public capital is insufficient and utilities are weak) and the future (when public capital will be able to leverage private investment and utilities are stronger) (World Economic Forum 2015). Three key ways in which donors have used grants to make the sector more attractive to commercial/private capital are by (1) helping governments plan, budget, and allocate public resources more efficiently; (2) improving the performance and governance of service providers to make efficiency gains in how services are delivered; and (3) leveraging public funds to attract commercial finance (see box 1 on water sector reform in Senegal).

The first two components—helping governments improve budgetary performance and helping utilities improve financial and technical operations—are not new to the entire range of bilateral and multilateral donors who have, through technical assistance and loan products, attempted to improve budgetary processes, streamline tax collection, improve the transparency and operations of utilities, and introduce pro-poor policies and considerations into service expansion. For example, between 2011 and 2014, the Water and Sanitation Program of the World Bank, which provided in-kind technical assistance for water and sanitation in over 20 countries, disbursed \$142.4 million, of which 65 percent went to rural sanitation and supporting pro-poor sector reforms (World Bank Group 2016, 8). GIZ, on behalf of the German Federal Ministry for Economic Cooperation and Development, has supported pro-poor water sector reform in a range of countries, including Kenya,¹⁶ Tanzania,¹⁷ and Uganda.¹⁸

BOX 1

Water Sector Reforms and Private Investment Contract in Senegal's Utilities

After undergoing reforms in the urban water and sanitation sector starting in 1996, Senegal has achieved a high level of access to and quality of water supplies, as well as strong financial health and sustainability of water utilities, through public-private partnerships (Mohan 2005). Various donors provided financial support to Senegal to support its sectoral reforms. Critically, the World Bank provided a \$100 million IDA loan to the Senegalese government, which then lent to the state-owned asset holding company. Other multilateral and bilateral agencies, including the European Investment Bank and the European Development Fund, also granted loans or subsidies to finance implementation of sectoral reform.

The key sectoral reform was the dissolution of the former national water utility company, which was replaced by two new bodies: SONES (Société Nationale des Eaux du Sénégal) and SDE (Eaux du Sénégal). SONES is the state-owned asset holding company responsible for making investments in water infrastructure and regulating SDE, the private operator responsible for the operations and maintenance of water service provision and billing and collection. The Ministère de l'Hydraulique, SONES, and SDE signed a 10-year affermage contract on water supply management. An affermage is a public-private partnership structure “under which the private operator is responsible for operating and maintaining the utility/ business but not for financing investment. The project company does not receive a fixed fee for his services but retains part of the receipts collected from consumers, with a portion of the receipts going to the contracting agency as owner of the assets. The payment to the contracting agency will be a percentage of the receipts or a percentage of the total units of service provided.”^a

This contract offered SDE strong incentives to add more customers and increase service for the poor as it received a fixed payment for the volume of water sold (Mohan 2005). In addition, better management of the water supply system, more efficient billing and collection practices by SDE, and reduced government subsidies resulted in the long-term financial sustainability of water supply services (Mohan 2005). About 1 million people became newly connected to water supply services, and existing customers were provided better quality water (World Bank Group 2006). Approximately 81,000 social connections (free connections for the poor) and 13,000 new sewerage connections were also made (World Bank Group 2006). The bill collection ratio also rose from 95 percent to 98 percent in 2003 (Mohan 2005), enabling the full recovery of operation and maintenance costs and repayment of the World Bank loan (Brocklehurst and Janssens 2004).

Recently, the government of Senegal revisited and reexamined this reform project while designing a new public-private partnership paradigm to improve water service delivery in rural areas. It signed the first affermage contract in the rural water sector with private operators in July 2015.^b

^a “Affermage,” PPP Knowledge Lab, accessed August 4, 2018, <https://pppknowledgelab.org/glossary/affermage>.

^b Oumar Diallo, “Senegal Shifts Its Thinking: Rural Water Delivery Moves to Private Operators.” *Infrastructure & Public-Private Partnerships* (blog), World Bank Group, July 28, 2015, <http://blogs.worldbank.org/ppps/senegal-shifts-its-thinking-rural-water-delivery-moves-private-operators>.

What then are potential sources of funding that can subsidize providers committed to expanding access to the poorest populations while simultaneously engaging them in a reform process that ultimately makes them sustainable and creditworthy to commercial sources of capital? In the following section, we examine three mechanisms that have been used by other sectors to raise funds to deliver public goods.

Exploring Effective Financing Models from Other Sectors

Global Philanthropy-led Partnerships and Funds

Global partnerships and funds have become a popular mechanism for raising capital and addressing the shortage of financing in different sectors. These partnerships and funds take the form of multistakeholder partnerships among multilateral and bilateral donors, philanthropic actors, nongovernmental organizations (NGOs), private sector actors, and recipient country governments. This represents a shift from vertical representation between countries and international organizations to horizontal participation from different bodies (Walt, Buse, and Harmer 2012). This multistakeholder partnership structure allows countries and institutions to demonstrate and use their comparative advantage. For example, the World Bank is a treasurer for the International Finance Facility for Immunisation (IFFIm) and administers the Global Agriculture and Food Security Program (GASFP).

As we are interested in investigating the role of development partners—governments, donors, private philanthropy, and NGOs—in raising additional resources for sustainable water service delivery, we have selected and studied global philanthropy-led partnerships that focus on raising funds for comparable social sectors with large externalities where universal access to services is a goal: health, education, climate change, agriculture/food security, and water and sanitation (see table 2). Their financing, operations, and governance models exhibit numerous common features, both advantageous and disadvantageous, from which we can draw inspirations and ideas for innovative financing mechanisms.

TABLE 2

Philanthropy-led Partnerships and Funds

Name of partnership/fund	Time frame	Amount pledged/ committed	Amount disbursed/ contributed
Gavi, the Vaccine Alliance ^a	2000–March 2018	\$15 billion	\$12.5 billion
International Financial Facility for Immunisation	2006–March 2018	Bonds raised +\$6.5 billion ^b	\$2.6 billion (through Gavi) ^c
The Global Fund to Fight AIDS, Tuberculosis, and Malaria ^d	2001–March 2018 2001–16	Pledged \$40.5 billion	Paid \$39.6 billion
President's Emergency Plan for AIDS Relief ^e	2003–present	\$24.8 billion	
Africa MAP ^e	2000–present	\$1.6 billion	+\$1 billion
Global Partnership for Education ^f	2003–March 2018		\$5.1 billion in donor contributions
International Financial Facility for Education ^g	By 2020	Requires \$2 billion guarantee + \$2 billion grants	Aims to mobilize \$13 billion annually
Green Climate Fund ^h	2014–May 2018	Pledged \$10.3 billion Committed \$3.7 billion	
Global Environment Facility Trust Fund ⁱ	1992–September 2016	\$16.6 billion	\$16.5 billion
International Fund for Agricultural Development ^{j, k}	1978–2017 2013–17		\$18.5 billion in grants and concessional loans \$3.5 billion in grants and concessional loans
Global Agriculture and Food Security Program ^l	2009–August 2016	\$1.59 billion to the public and private sector windows	\$1.52 billion
Global Sanitation Fund ^m	2008–June 2017	\$117 million	

^a“Disbursements,” Gavi, accessed August 23, 2018, <http://www.gavi.org/results/disbursements/>.

^b“Disbursements,” IFFIm, accessed August 23, 2018, <https://www.iffim.org/funding-gavi/disbursements/>.

^c“Bonds,” IFFIm, accessed August 23, 2018, <https://www.iffim.org/bonds/>.

^d“Core Pledges & Contributions List,” The Global Fund, June 30, 2018, https://www.theglobalfund.org/media/1119/core_pledgescontributions_list_en.xlsx.

^e“Funding Mechanisms,” Center for Global Development, accessed August 23, 2018, <https://www.cgdev.org/page/funding-mechanisms>.

^f“Funding,” Global Partnership for Education, accessed August 23, 2018, <https://www.globalpartnership.org/funding>.

^gSophie Edwards, Plans for the International Finance Facility for Education take shape, Devex, May 14, 2018, <https://www.devex.com/news/plans-for-the-international-finance-facility-for-education-take-shape-92725>.

^h“About the Fund,” Green Climate Fund, accessed August 23, 2018, <https://www.greenclimate.fund/who-we-are/about-the-fund>.

ⁱGlobal Environment Facility, *Global Environment Facility Trust Fund Financial Report* (Washington, DC: Global Environment Facility, 2016).

^j“About,” IFAD, accessed August 23, 2018, <https://www.ifad.org/web/guest/about>.

^kIFAD, *Annual Report 2017* (Rome: IFAD, 2018).

^l“Funding,” GAFSP, accessed August 23, 2018, <https://www.gafspfund.org/content/funding>.

^mWater Supply and Sanitation Collaborative Council, *Global Sanitation Fund Progress Report 2016* (New York: Water Supply and Sanitation Collaborative Council, 2017).

Health

Global health has been one of the most innovative sectors in development with regards to experimenting with new financing mechanisms. Beginning in the 1990s, the AIDS epidemic focused donor attention on the inability of the health sector to deliver preventive and curative care in large parts of sub-Saharan Africa that were being devastated by HIV. Since 2000, large global health partnerships (also known as global health initiatives, GHIs, or global health public-private partnerships) have emerged as a new way to finance health systems in developing countries. The Global Alliance for Vaccination and Immunization (Gavi) was launched to strengthen health systems and provide new vaccines in the poorest countries. Initiatives such as the Global Fund to Fight AIDS, Tuberculosis and Malaria; the U.S. President's Emergency Plan for AIDS Relief; and the World Bank Multi-Country AIDS Program were created to provide a large influx of donor funds specifically for fighting diseases on multiple fronts in many countries. The involvement of the Bill & Melinda Gates Foundation elevated interest in both preventable childhood deaths and neglected tropical diseases. Bilateral and multilateral donors created special grant-financing mechanisms aimed at fighting specific diseases. World Health Organization (WHO) analyses suggest that allocating funding through GHIs has led to an aggregated increase in overall funding for health, which means that the funding comes not from reallocation from other health targets but from additional sources (WHO 2009, 2147). The *Millions Saved* report by the Center for Global Development (2004) attributes sufficient funding from donors, collaboration among diverse partners, and the contribution of national governments to the success of large-scale global health programs.

Education

The Global Partnership for Education was launched in 2002 to bring together major donors and partners around the goal of universal primary education. It takes a blended finance approach to help governments finance their education programs, using its own funds to leverage domestic finance and external funding by making investments in education more attractive to multilateral and bilateral donors.¹⁹ Two multidonor, multirecipient trust funds were established to support the implementation of national education plans in developing countries and to provide technical assistance for the development of education programs, respectively. This financing mechanism through trust funds is centered on the idea that domestic resource mobilization should be the major source of funding for a country's basic education provision, using external aid to fill funding gaps.

Other Sectors

The success of global health and education partnerships has not gone unnoticed in other sectors, and there are many other notable global funds that use multistakeholder partnerships. They are often established under and governed by a new or existing international framework with a specific mandate. The Global Environment Facility was founded on the eve of the 1992 Rio Summit to finance a range of climate projects. The Green Climate Fund was established to finance climate adaptation and mitigation practices under the United Nations Framework Convention on Climate Change. The Global Agriculture and Food Security Program was started to help G20 countries implement their pledges to increase financing for country and regional agricultural and food security strategic plans.²⁰ The International Fund for Agricultural Development is an international financial institution and a specialized agency under the UN established to mobilize resources for agriculture and rural development.²¹ The Global Sanitation Fund was established by the UN Water Supply and Sanitation Collaborative Council to accelerate financing for improving sanitation.

Benefits: What Makes Global Philanthropy-led Partnerships Attractive?

Focus on Funding, Not Implementation

Global funds usually do not seek to be implementing agencies but instead provide funding and technical assistance from a central secretariat to recipient countries or country-led programs. In other words, while fundraising may be done at the global level, most programs are run at the country level once the raised funds are allocated to each country government or program. However, all global funds require coordination among different stakeholders in the recipient countries to ensure effective implementation of programs. For example, IFFIm raises funds for Gavi, which then transfers funds and provides technical expertise to governments or country-specific programs. The Global Fund has the Country Coordinating Mechanism through which national committees made up of various stakeholders apply for funding on behalf of the entire country. The mechanism also oversees the implementation of approved grants and coordinates with other national health and development programs. The Global Sanitation Fund supports national sanitation programs by coordinating actions of national governments and other stakeholders, allowing them to effectively and sustainably achieve goals set by national sanitation strategies.²²

Global funds usually do not seek to be implementing agencies. ...However, all global funds require coordination among different stakeholders.

Some funds require that governments also contribute a certain amount from their own budgets as matching funding. For example, to receive the first 70 percent of Global Partnership for Education program implementation grants, “each developing country partner must meet several key requirements, including the commitment to finance the education sector plan. GPE seeks government commitment to progressively increase the domestic budget allocation for education to 20 percent of the total national budget” (Martinez and Terway 2016, 2–3). This gives a high level of ownership of programs to national governments and requires coordination among different stakeholders within the recipient countries to ensure effective implementation of programs.

Performance-Based/Results-Oriented Financing Mechanism

Performance-based financing or results-based financing mechanisms allow global funds to enhance the effectiveness of their funding, ensure transparency in the use of funds and program implementation, and contribute to capacity building of actors involved in program implementation. Using this approach, funders can pay providers or recipients of health services after they verify that certain outcomes or targets have been achieved. The Global Fund’s initial grants are disbursed based on the project design and specifications, but subsequent rounds of grant funding are made based on results.²³ Results-based financing has been credited with increasing the efficiency of health systems, fostering behavioral and organizational changes to incentivize health care providers and recipients, and reaching the poorest and most vulnerable by removing barriers to access such as fees.

Each fund can establish its own targets and metrics for measurement and track disbursement of resources based on those metrics. The International Fund for Agricultural Development implements a performance-based allocation system to allocate its loans and grants based on a country’s performance (broad policy framework and commitment to strong rural development policies) and need (population and gross national income per capita), using a formula to calculate a country score. The Global Partnership for Education incentivizes partner countries to “prepare financially sustainable education sector plans, increase national budget allocations, and improve the quality of education expenditure. It also supports countries in improving financial management and monitoring spending” (Martinez and Terway 2016, 1). One way to improve financial accountability is through performance-based financing.

However, the use of this mechanism is still limited in the education sector as education projects tend to be very decentralized, and while outputs (e.g., number of schools built, students graduated, etc.) may be easily tracked, outcomes and impacts (e.g., improved life choices, increased employment prospects, etc.) are far more difficult to measure and may require long periods of time to ascertain.

Innovative Funding Mechanisms and Blending Finance

Global funds often offer more than one type of financing instrument or draw funds from more than one source. This so-called “blended finance” approach enables global funds to match funding for different types of projects and contexts, helping raise additional funds from a range of sources, including nontraditional ones. The Green Climate Fund provides debt, equity, guarantees, and grants to engage the private sector to provide funding and support for climate projects. It has set up the Private Sector Facility to leverage its funds to mobilize private investment. The Global Agriculture and Food Security Program has both the Public Sector Window, which aims to mobilize grant funding, and the Private Sector Window, which aims to crowd-in private sector investment funding by supporting projects with a range of risk and return profiles.²⁴ The private financing window provides debt, equity, first-loss cover, and advisory services to support small- and medium-sized agribusinesses and farmers. The International Fund for Agricultural Development sources funds from grants from member and nonmember states, concessional and non-concessional loans, sovereign borrowing, and investment income.

IFFIm has been a pioneer of innovative finance. It leverages long-term donor pledges to issue vaccine bonds and *sukuks* (a financial certificate that complies with Islamic financing principles) in various capital markets. This has allowed IFFIm to raise a large sum of immediately available cash to finance Gavi’s programs.²⁵ IFFIm’s financing model has been successful as a proof of concept, inspiring the launch of funds in other sectors, such as the International Finance Facility for Education (The Education Commission 2017).²⁶

Challenges: What Limitations Do the Global Funds Currently Face?

Raising Sufficient Funds to Meet Established Goals and Competing with Existing Mechanisms

Global funds are not always successful in generating sufficient funding, as they have to compete for a limited pool of resources and the funding gaps are so great. For example, the Global Sanitation Fund has committed a total of \$117 million to sanitation and hygiene programs in 13 countries since its launch in 2008. However, this is far from adequate to bridge the financing gap in water, sanitation, and hygiene (WASH) as meeting SDG targets 6.1 and 6.2 requires the capital financing of \$114 million per year, according to the UN-Water GLAAS 2017 Report (WHO 2017).

As of May 2018, 43 state governments have pledged a total of \$10.3 billion to the Green Climate Fund, which set a goal of mobilizing \$100 billion per year by 2020.²⁷ The huge difference between the pledged amount and target implies that Green Climate Fund will have to rely heavily on leveraging private finance, which could obscure its future financial viability.

Some global funds have faced concerns that they may interfere with existing mechanisms focused on the same or similar issues, creating unnecessary duplication of efforts and generating inefficiencies through their high setup costs. During the creation of the Green Climate Fund, it was argued that adding another climate financing institution could be distracting and that it would be better to add more resources to existing mechanisms. Similarly, civil society groups and recipient countries fear that the International Finance Facility for Education could interfere with the Global Partnership for Education and Education Cannot Wait. This is a legitimate concern, as multiple funds with the same end goals may not only divert resources and efforts but also create more hoops for recipient governments to jump through.

Multiple funds with the same end goals may not only divert resources and efforts but also create more hoops for recipient governments to jump through.

High Startup and Replenishment Costs

As might be expected, large funds also have substantial setup and operational costs. While bringing in funding from multiple sources has advantages, funds also have the related costs of meeting varied expectations and reporting requirements. In addition, each replenishment cycle requires preparation, and proposals have to be approved and their funds appropriated through a regular budgetary cycle. The Global Environment Facility has a replenishment cycle of four years, and the International Fund for Agricultural Development has a replenishment cycle of three years for the member state contributions.

Because there are so many competing uses for global health dollars, donors have decided to consolidate some of the larger initiatives such as Gavi and the Global Fund, which will be co-located in Geneva.²⁸ Gaining access to financial markets also has significant up-front costs. For example, while IFFIm was able to front-load resources at relatively low borrowing costs, almost a third of the committed amount was used to service debt (Gartner 2015, 500). However, this particular financing mechanism makes sense as long as the return to beneficiary countries of the front-loaded money outweighs the additional costs of servicing debt, as IFFIm has achieved (Brookings Institution 2016).

Country System Capacity Risks

One of the benefits of funds is that they focus on raising resources rather than on implementation, but they have also been criticized for failing to strengthen country systems that use the resources raised. For example, GHIs have enabled many countries to provide targeted health interventions for free, but they have not been able to address the lack of capacity or weaknesses in country health systems, such as “inadequate infrastructure for service delivery, shortages of trained health workers, interruptions in the procurement and supply of health products, insufficient health information, and poor governance” (WHO 2009, 2138). This is reflected in country proposals, as funding demanded for direct service delivery is far greater than funding requested for building service provision capacity (WHO 2009, 2152). Moreover, it has been pointed out that disease-specific funding administered by GHIs might be poorly aligned with the health priorities or the burden of disease of each country (WHO 2009, 2142). In some countries where GHIs have successfully coordinated their funding mechanisms to align with the government’s national planning process, their operation is still challenged by a lack of capacity to enact programs and deliver services at the local level and of clear definitions of the roles and responsibilities of stakeholders (Spicer et al. 2010).

Implications for the Water Sector

Global partnerships have been proposed, and many exist in both the water and sanitation space. However, none operate at the scale of GHIs such as the Global Fund and Gavi. In 2002, when GHIs were being proposed, the Bill & Melinda Gates Foundation and McKinsey & Company reported that GHIs offered the following potential benefits that could not be achieved by individual donors:

Avoid duplication of investments and activities; produce economies of scale; pool resources to enable higher risk activities than any partner would undertake alone, share knowledge and resources to improve effectiveness; and create momentum and attract funding by building a common “brand” that gains legitimacy and support. (Bill & Melinda Gates Foundation and McKinsey & Company 2005, 3)

Similar arguments have been made for the water sector, and numerous multidonor partnerships do exist (see table 3). However, none of the existing efforts have come close to reaching the scale or impact of GHIs. The diversity of actors, interests, and contexts in the water sector can create sharp divisions in perspectives on appropriate governance models, funding approaches, and priorities for water. For a global fund for water to be successful, donors would have to overcome several fundamental challenges.

First, sustainable water provision is a public service, in which outcomes can be especially difficult to measure or quantify and costs can vary significantly. Water service provision is not a one-time intervention but an ongoing endeavor that requires predictable and constant financing for OpEx and CapManEx, similar to health interventions such as vaccinations or antiretroviral drug provision. However, the costs of providing a service such as water vary not only based on design and labor costs but also on the availability of raw water, its quality and the type of treatment required, and differences in governance, tariff rates, and so on. As a result, despite many studies and evaluations of the economic benefits of access to sustainable, safe, and reliable water, there is no commonly accepted *outcome* measure that all donors support. Thus, one of the challenges for a global fund in water would be to come up with international benchmarks that can be agreed upon by all (or most) donors and subnational entities, such as government ministries and departments, municipal governments, and community water boards.

While global health funds have also faced challenges providing sustainable finance for service delivery, there are clear “outcomes” (e.g., number of lives saved because of vaccination or reduced disability-adjusted life years because of antiretroviral treatment) related to verifiable “outputs” (e.g., number of children vaccinated or HIV-positive patients treated with antiretroviral drugs).²⁹ Indeed, one of the biggest reasons that donors continue to support GHIs is that they offer a clear “return on investment,” meaning financial and social impacts can be measured in numbers. It is admittedly more

difficult to report impacts of behavior change campaigns or health system improvements, but staff at GHIs work with specific donors who agree to support such efforts with the understanding that they are necessary for long-term improvements in public health.

TABLE 3
Water Funds

Name	Time frame	Amount committed, disbursed, mobilized, or invested
World Bank, Water and Sanitation Program ^{a, b}	2011–14	Disbursed \$142.4 million
World Bank, Water Partnership Program ^b	2009–16	Committed \$43 million
World Bank, Global Partnership on Output-Based Aid’s investment portfolio in water and sanitation ^b	2007–15	Invested \$75.66 million
African Development Bank, Rural Water Supply and Sanitation Initiative (RWSSI) ^c	2003–present	African Development Bank invested €1.53 billion in 53 RWSSI programs RWSSI mobilized +€5.93 billion
RWSSI Trust Fund ^c		Committed €189.2 million Contributed €181.9 million
African Development Bank, African Water Facility ^d	2006–present	Mobilized €151.2 million
Emerging Africa Infrastructure Facility ^e	2002–16	\$1.3 billion donor funding disbursement, which mobilized \$31.4 billion from private sector investments and development financial institutions

Notes: Values are given in euros and dollars because there was great fluctuation in the exchange rate of the two currencies during the time frame. The Global Water Partnership, while not exclusively serving the roles of a global fund and hence not included in this table, raises funds from donors, development finance institutions, implementing international agencies, local governments and individuals, and disburses its income to program activities that aim to foster integrated water resource management.

^aWorld Bank Group, “Evaluation of the World Bank Group’s support for water supply and sanitation services, with focus on the poor FY2007-2016” (Washington, DC: World Bank Group, 2016).

^bIRC, *Financing Facilities for the Water Sector* (The Hague: IRC, 2016).

^c“Rural Water Supply and Sanitation Initiative,” African Development Bank, accessed August 23, 2018, <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/rural-water-supply-sanitation-initiative/>.

^d“Donors & Funding,” Africa Water Facility, accessed August 23, 2018, <https://www.africanwaterfacility.org/en/about-awf/donors-funding/>

^ePrivate Infrastructure Development Group, *The Private Infrastructure Development Group Annual Report* (London: Private Infrastructure Development Group, 2016).

A recent study commissioned by the Rockefeller Foundation and conducted by Lion’s Head Global Partners highlights the absence of agreed upon outcome measures that can be related to improved water access. The study reports that “availability of indicators that are measurable and comparable is crucial to the communication and verification of programme success” (Lion’s Head Global Partners 2017, 15) and analyzes the feasibility of creating a Global Investment Fund for Water that would catalyze additional funds to support achievement of Sustainable Development Goal 6. A number of studies have

proposed steps for benchmarking service delivery outcomes and provider performance, but none have been universally accepted.³⁰ If funding could be tied to measurable and verifiable service delivery metrics accepted by a range of providers, it is possible that donors may agree to pooling resources.

If funding could be tied to measurable and verifiable service delivery metrics accepted by a range of providers, it is possible that donors may agree to pooling resources.

Second, any fund would need to distinguish itself early from existing initiatives such as the Water Supply and Sanitation Collaborative Council or the Global Water Partnership in order to not duplicate efforts and compete for the same resources. Unlike health funds, water funds have not been able to leverage water bonds (although such instruments exist in developed markets) and other commercial avenues, and most rely solely on bilateral and multilateral donors. As can be seen from the table above, bilateral and multilateral donors support many funds with similar purposes. Unlike in the health sector, they have not agreed to combine their efforts for water. There are no WASH donors on the scale of the Bill & Melinda Gates Foundation in the health space, although the Gates Foundation is also the largest philanthropic player in the WASH space.³¹

Third, a fund would need to solve the replenishment issue—because reliable service delivery requires ongoing funding commitment, a global fund would need to create a mechanism through which resources can be reliably replenished.³² Currently, bilateral donors and aid agencies must commit to replenishments, sometimes on an annual basis. This leads to volatility in the amount of resources available and also adds large overhead costs as staff managing fundraising align their efforts to a political budgetary process. Even though no funds can entirely avoid volatility (an economic slowdown affects all philanthropic giving, which may be procyclic rather than anticyclic), having a dedicated, reliable funding mechanism that is not tied to capital markets or government appropriations is very attractive.

Because reliable service delivery requires ongoing funding commitment, a global fund would need to create a mechanism through which resources can be reliably replenished.

BOX 2

Kenya Innovative Finance Facility for Water and the Kenya Pooled Water Fund

The Kenya Innovative Finance Facility for Water (KIFFWA), a codeveloper of water initiatives in Kenya, provides finance and technical expertise to create and support viable water investment opportunities and attract private investors to these opportunities. It invests in initiatives in their development phase, encouraging capital flows into the water sector and fostering project development.^a

KIFFWA was started in January 2016 with its first initiative, the Kenya Pooled Water Fund (KPWF), with support from the Netherlands embassy in Nairobi, the Kenyan national treasury, the Ministry of Water and Irrigation, the Water Sector Trust Fund, USAID, the Swedish International Development Cooperation Agency, and SNV.^b As the national water finance facility, KPWF develops and finances bankable proposals for water utilities. It uses donor guarantees to facilitate bond issuance at the domestic capital market and lends the raised funds to creditworthy utilities at affordable rates.^c Pooled bond facilities such as this have demonstrated proof of concept in India, the Philippines, and Colombia and can be adopted to each country's legal and institutional framework.

It was expected that the first pooled bond would be issued by the second quarter of 2018. The bonds have a tenor of 10–15 years at a risk-free rate of +1 percent and will be listed on the Nairobi Securities Exchange. The sale of bonds of approximately 3.5 billion Kenyan shillings (equivalent to US\$25–40 million) will provide funds for infrastructure development of six utilities. This is expected to give WASH access to about 700,000 additional people, 27 percent of whom are poor or live in rural areas (GWI 2016).^d Depending on the success of the first issuance, there will be an annual bond issuance going forward.

KPWF hopes to be able to lend to utilities at the lowest possible rate by attracting viability gap funding from development finance institutions. Even without the funding, the annual debt service that utilities have to pay will be lower than that of commercial loans thanks to the longer tenor of the bonds (GWI 2016). Currently, only a small number of Kenya's water utilities are creditworthy and financially robust enough to take out commercial loans, and the take-up of commercial loans has been slow. However, partial guarantees and subsidies are in place to lower the risks of commercial lending, and utilities are realizing the benefits of having access to commercial finance as they familiarize themselves with the new type of lending (GWI 2016).

^a“Kenya Innovative Finance Facility for Water,” KIFFWA, accessed June 18, 2018, <http://www.kiffwa.com/>.

^b“Our Project,” Water Financing Facility, last modified July 20, 2017, <https://waterfinancefacility.com/2017/11/20/portfolio/>.

^c“Kenya Pooled Water Fund,” KPWF, accessed June 18, 2018, <http://www.kpwf.co.ke/>.

^d“Kenya Innovative Finance Facility for Water,” KIFFWA.

Lastly, any global fund would need to create a mechanism to allocate and prioritize grants, as the health funds have done. Disbursement of grants from global health funds is based on country requests, and countries are themselves prioritized inversely with income. It is possible to create a similar process for a water fund, with requests coming from utilities, but monitoring progress against similar benchmarks would be essential. Water supply responsibilities are often highly decentralized, with water utilities being managed at the municipal or local government level. It is hence important for a global water fund to prioritize funding utilities that have demonstrated a willingness to serve the poorest populations and to monitor the effectiveness of funding in increasing access to affordable and safe drinking water. The Kenya Innovative Finance Facility for Water (see box 2) is attempting to do something similar at a smaller geographic scale.

It is...important for a global fund in water to prioritize funding utilities that have demonstrated a willingness to serve the poorest, and monitor the effectiveness of their funding in increasing access to safe drinking water.

Solidarity Levies

A solidarity levy is an initiative in which countries can choose to add small taxes to a specific industry or consumer item and use the funding from that levy to contribute to programs or goals with some sort of “unifying purpose.” For example, a solidarity tax was introduced in Germany in 1991 mainly to support expenses related to reunification.³³

Solidarity levies can help overcome limitations of traditional aid, such as insufficient resources and aid volatility. In the case of Unitaid, the solidarity model has allowed the organization to make longer-term funding commitments for the bulk purchasing of medicines and avoid the loss of funding from political cycles. These successes indicate opportunities for the longer-term funding of operational expenses in the water sector, an essential part of water provision that has often been underfunded. If implemented properly, the model allows for the participation of many countries—not just developed ones—without distorting markets. Furthermore, it allows for *additionality* in funding as it does not require governments to gain political support for increased aid flows originating from budgets.

This section of the report will highlight the benefits and challenges of solidarity levies, considerations for progressive application of levies based on successful and unsuccessful attempts, and the potential of levies for the water sector. The findings for this section come from research on the following solidarity levies:

- **Unitaid airline levy:** Unitaid was created in 2006 as an international facility for drug purchases to “accelerate access to high-quality drugs and diagnostics for HIV/AIDS, tuberculosis, and malaria in high-burden countries” (Unitaid 2016, 4). It is hosted by the WHO and was designed to collaborate with leading international health institutions such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Clinton Foundation (Gartner 2015, 502). Unitaid has received \$2.8 billion, and its main donors are France, the United Kingdom, Norway, Brazil, Spain, South Korea, Chile, and the Bill & Melinda Gates Foundation. In 2015, the airline tax accounted for “approximately 61 percent of total UNITAID resources and generated \$1.48 billion for UNITAID” (Gartner 2015, 503–4). Unitaid is the most successful and well-known solidarity levy and will be mentioned frequently throughout this report.
- **Financial/Currency transaction tax (FTT):** Certain policymakers have been trying to gain political backing for a global FTT since the early 2000s; however, the idea has not gained widespread support because of the difficulty of determining which transactions should be taxed. Proposed options include “a financial sector activities tax; a Value Added Tax (VAT) on financial services; a broad financial transaction tax; a nationally collected single-currency transaction tax; and a centrally-collected multi-currency transaction tax” (Leading Group 2010, 4). Advocates of a global FTT argue that it could raise substantial amounts of money, even compared with other solidarity levies: “a tax of one basis point (0.01%) has been estimated to raise over \$200 billion annually if levied globally on stock, bonds and derivative transactions” (IMF 2010). France has already implemented a domestic FTT to finance environmental policies: “in 2012, France introduced a 0.2 percent tax on purchases of shares in French companies with a market capitalization of at least 1 billion euros. The tax raised 1.1 billion euros in 2012 and was raised to 0.3 percent this year.”³⁴ France continues to advocate for a Europe-wide FTT to fund the fight against climate change.
- **Solidarity Tobacco Contribution (STC):** In 2011, the WHO released a discussion paper on the idea of a “solidarity tobacco contribution” with the dual goal of increasing funding for health programs and reducing smoking by increasing taxes on tobacco products. The STC was projected to generate approximately \$5.5 billion per year for developing countries, but the levy was ultimately not adopted (Ross and Bettcher 2011, 4). Possible reasons for why the STC was

not passed include the legislative challenges of routing domestic taxes to fund international work, tax administration issues from creating an additional tier of taxes, and a partial tax increase being insufficient to reduce demand. Additionally, there was misunderstanding about the role of the WHO, with public complaints about its ability to “impose” taxation, and the WHO had to communicate that any country that adopted the STC would do so voluntarily.³⁵

What Does a Successful Solidarity Levy Look Like?

Based on the existing examples, successful solidarity levies might include the following elements:

- Preexisting taxes, elasticity, and characteristics of the industry to be taxed should be considered.
- Funds should be additional, rather than replacing current ODA.
- A new fund should only be created if there is not an existing fund with aligned motives, and both new and existing funds should be housed within larger international organizations.
- The fund should include representatives from recipient countries.
- There must be a clear strategy to find the best fund recipient.

CONSIDER CHARACTERISTICS OF THE INDUSTRY TO BE TAXED

Previous plans have taken advantage of preexisting taxes in industries to make it easier to implement the solidarity levy. Doing so is less likely to distort consumer behavior because consumers are accustomed to seeing taxes on those purchases, and it will diminish political opposition to the levy. For example, in the case of Unitaid, airlines are already a heavily taxed industry, so a small addition will not make customers angry or cause them to change their behavior. There are two options for a levy: “ring-fence a proportion of existing taxes, or increase [taxes] and ring-fence the additional revenue” (Lockley and Chambwera 2011, 2).

A second consideration when choosing the industry to be taxed is whether the levy is meant to be distortionary or non-distortionary. One major appeal of the micro-levy is the ability to collect significant funding without changing industry and consumer behaviors. For example, the Unitaid model boasts that it has raised billions of dollars without distorting the airline industry. If this is the goal, then the industry chosen must be inelastic; consumers should continue to purchase the good or service even with a slight increase in price because of the levy. This is one reason that the airline industry was chosen: “price elasticities for air travel are thought to be low, with estimates clustered around -1 (slightly lower for

long-haul business, slightly higher for short-haul leisure). This means that a 1% increase in the price of air travel leads to a 1% demand reduction...against a background of steady annual increases in air travel” (Lockley and Chambwera 2011, 6). Customers are willing to pay a slightly higher fare for air travel, and there are few ethical concerns with asking them to do so.

Additionally, a tax on a particular industry should not make a country less competitive than other countries. For example, a tax on extractive industries may be appealing for demand control, but a country may be unwilling to adopt the tax if the global market could get oil and minerals from a neighboring country. The airline industry was attractive for this reason because travelers are taxed when they depart from a country and therefore are likely to continue booking despite the additional charge.

Alternatively, there is an option for governments to use a levy as a demand-control strategy in addition to a mechanism for raising funds. The latest example of this is a sugar tax imposed on all beverages sold in the UK. The goal of the tax is not just to reduce the consumption of sugary drinks but also raise resources for the WHO. Solidarity levies have been used to prevent smoking while raising money for health and preventing risky financial speculation while raising money for the poor. Rather than taxing airlines for Unitaid, Norway taxes carbon dioxide emissions from fuel, as it is one of the largest crude oil exporters in the world. If the STC had been adopted, the WHO was planning to measure impact in two ways: (1) amount of funds generated and (2) number of lives saved from smoking as a result of the tax.

Although there has not been widespread adoption of this tactic, the flexibility of the solidarity levy as either non-distortionary or purposely distortionary offers an additional benefit to the funding model. If purposely distortionary, the level of taxation must be carefully considered. Too high of a tax could unintentionally create illicit trade networks, while too low of a tax would not have the desired effect. Similarly, traditional “sin” taxes have been accused of most negatively impacting the poor, so intentionally distortionary taxes must consider the effects on lower-income populations. For this reason, levies such as financial transaction taxes and luxury taxes, with larger impacts on higher-income populations, could be appealing.

ENSURE THAT FUNDS ARE ADDITIONAL, RATHER THAN AN ODA REPLACEMENT

A core benefit of the solidarity levy is that it can generate funds that complement rather than supplant ODA, and therefore, the initiative must stress “additionality.” These levies are not meant to replace ODA or the normal taxes that the government has in place for local projects. Without a solidarity levy, even if a country is willing to provide new funding, it may not have a current budget to allocate quickly, and there may be political obstacles. Additionality is a key tenet of innovative financing, and a levy can

generate new, off-budget income streams quickly. As such, member countries must hold each other accountable to ensure that new funds are being contributed. The pooled fund mechanism can be a helpful way to do this and is discussed in the upcoming section.

DETERMINE WHETHER IT IS APPROPRIATE TO START A NEW FUND OR USE A PREEXISTING ONE

Solidarity levies should be deposited into a pooled fund, as opposed to each country maintaining its own fund from the levy. This tactic allows for greater *sustainability* (one country's allocation fluctuations can be offset by another country's), *additionality* (a unilateral fund is more likely to supplant a country's traditional ODA flows), *efficiency* (fewer parallel aid flows), and *magnitude* (the more countries involved, the more funds collected). Global funds also allow philanthropic organizations to donate to the cause even if they cannot contribute in the same way as a government.

The question is whether a new fund should be created to pool funds collected from the levy or whether a preexisting fund can be used. Relying on existing funds can eliminate startup costs while avoiding additions to the already-crowded international development architecture. Existing mechanisms already have streamlined collection and disbursement processes, so member countries could focus efforts on financing as opposed to operational logistics. Benefits of using a preexisting fund include built-in proposal review systems; global procurement models for rapid disbursement of funds; internal monitoring and evaluation; broad-based networks, institutional systems, and country offices; and past experience managing funds for global use (Ross and Bettcher 2011, 19).

The decision will largely come down to two considerations: (1) whether an existing fund can accommodate the preferred use for the tax or if the mandate would need to be changed, and (2) whether the fund's governance and disbursement modalities are compatible with the contributors' goals and preferences (Ross and Bettcher 2011, 5). Unlike in the health space, global funds for water have not incorporated multiple funding mechanisms, and there is room to explore this option.

Regardless of whether the fund is new or old, there must be a small and dedicated staff within the implementing mechanism to administer calls for proposals, monitor and evaluate funded projects, and maintain effective communication with stakeholders for resource mobilization (Ross and Bettcher 2011, 10).

INCLUDE RECIPIENT COUNTRIES AND NONSTATE ACTORS IN FINANCING AND GOVERNANCE

Mechanisms that include recipient actors are more successful for two main reasons. First, they encourage sustainability and behavior improvement. If a country implements the tax itself, it has "skin in

the game” and will likely be more devoted to the effort. Second, it can help the governing board understand where money is most needed and where it will be most effective when distributed.

In addition to its techniques for generating resources, Unitaid has been praised for its governance structure. Its executive board is representative of both developed and developing countries as well as multilateral and philanthropic organizations: “the governance of UNITAID reflects a larger role for diverse stakeholders from the affected populations and countries than in most innovative financing mechanisms” (Gartner 2015, 503). While the French government selected the airline tax as the financing mechanism, nonstate actors helped influence the innovative approach to the pharmaceutical market and pushed Unitaid to only accept approaches that generate significant market impact (Gartner 2015, 503).

Part of this process involves ensuring that health sector innovators understand and address the requirements of the populations most in need. It connects the innovators with people in resource-limited settings and helps these “upstream” innovators (e.g., researchers and product development teams) identify the most relevant solutions. It then works with “downstream” partners (e.g., country governments, NGOs, and implementing partners) who serve those in need to ensure that these innovations are manifested within communities. Unitaid acts as more than an innovative financing mechanism—its governance structure and partnerships allow it to act as a bridge between these often disconnected “upstream” and “downstream” actors to ensure that health services actually reach and assist those in need (Unitaid 2017, 17).

DETERMINE THE BEST RECIPIENT FOR FUNDS AND INTRODUCE CLEAR ELIGIBILITY CRITERIA

There are three options for disbursing funds for project implementation: (1) small, local actors; (2) large, international organizations already operating in-country; and (3) recipient country governments. Unitaid follows the second model, giving funds to a few large organizations such as the Clinton Health Access Initiative (which receives 44 percent of Unitaid funds) as opposed to managing smaller grants (Silverman 2013, 13). This tactic avoids replication of efforts from multiple actors and decreases transaction costs. The case for the water sector will vary, as funds will likely be distributed to utilities, but the general premise of reducing costs and complexities associated with too many recipients can allow the funding to create more impact.

Regardless, there should be clear standards that allow the fund to determine which actors can best use the funds. In addition to the executive board, which makes high-level decisions such as what should be taxed and which types of countries should be targeted for assistance, there should be a technical

board that assists with proposal selection. In the fields of health and water, funding should be awarded based on feasibility and potential for impact, which requires someone with expertise in the field.

Benefits: What Makes a Solidarity Levy Attractive?

AUTOMATIC, PREDICTABLE, AND SUSTAINABLE

By taxing goods and services that are used regularly, these taxes can generate substantial, dedicated funding. Further, the taxes are automatic in the sense that funding does not require government approval each year or each political cycle. Realistically, governments can take the tax away, but it involves opting out as opposed to opting in. Therefore, as compared to other types of development assistance, an agreed upon tax regime does not require a lengthy appropriation process. The sustainability and predictability allows for longer-term commitments than typical ODA or philanthropic grants. In the health sector, this allows for bulk purchasing that reduces costs; the Unitaid model emphasizes a market-based approach, meaning that it aims to use its buying power to create economies of scale and change pricing in the health market. In the realm of water provision, sustainability represents an opportunity to fund continuous operational expenses.

INVISIBLE

The central idea behind the solidarity levy is that because it is implemented at a global scale, each individual levy does not have to be high. This fact diminishes or eliminates the effect of the levy on demand, preventing it from distorting markets. The airline industry was chosen to fund Unitaid because its global nature allows a small tax to go a long way. France is the largest contributor to Unitaid through the air tax and it has not reported distortions to its airline market.

LOW COST

If solidarity levies are applied to industries that are already taxed, and if the pooled fund for contributions sits within a preexisting organization, the operating and transaction costs are minimal. This low cost also means that the levies can be more quickly implemented than other types of appropriations, as the government does not have to release large amounts of money from its budget. Unitaid demonstrates that these levies can be easy to set up and cheap to administer. According to data published by the UK's revenue and customs authority, "Air Passenger Duty is the cheapest of all UK taxes to collect. At 0.04 pence per pound collected, it is more than twice as cheap as the next most efficient tax, and over 27 times cheaper than the average pound of UK tax revenue" (Lockley and Chambwera 2011).

FLEXIBLE AND AUTONOMOUS

Solidarity levies can be implemented in a country but coordinated globally, allowing for large-scale funding that maintains malleability for country circumstances. This flexibility makes the levy more politically attractive because the industry and amount taxed can be adjusted for local sentiment, and parts of the levy can be diverted to national causes; not all of it has to go to the global pooled fund. For example, Korea uses part of the funds from its airline levy for Unitaid to fund Korean NGOs and African governments, furthering its own development goals.³⁶ A government could also divert funds for domestic causes, increasing its appeal to citizens and politicians.

The flexibility also allows for the participation of lower-income countries because they can charge lower taxes than higher-income countries (Ross and Bettcher 2011, 13). In the case of the airline levy, the tax can be “a flat rate, be varied by distance or class of travel, or be a percentage of the ticket price” (Lockley and Chambwera 2011, 4). Because the contributions are collected in a pooled global fund, means of contribution can even extend beyond a levy if desired by the country: “in France, the tax is one euro for domestic flights and six euros for international flights in economy class, and ten and forty euros respectively, in first class” (Gartner 2015, 502). Norway allocates its tax based on carbon dioxide emissions from aviation fuels and the United Kingdom contributes with multiyear commitments.

Because of their autonomous nature, levies are quick to establish, as they do not require extensive international approval. Legally, any national government has the right to tax consumers in its jurisdiction without the need for international agreement.

Potential Challenges

CORRELATION WITH ECONOMIC FLUCTUATIONS

Although the levy should ideally be charged on an inelastic good to prevent purchase distortion, even inelastic industries suffer from recessions. Further, taxing goods and services that are immune to economic fluctuations (i.e., vital goods and services) would be unethical.

In the case of Unitaid, “as a luxury good, air travel is highly vulnerable to economic fluctuations, such as during the 2008/2009 economic crisis. The fall in air traffic during that crisis appears to be correlated with a similar drop in UNITAID’s revenue. Though the airline levy was intended to insulate UNITAID’s funding from political considerations, it may also have limited the ability of the political process to act as a counter-cyclical, revenue-smoothing device. UNITAID’s revenues fell 21% between 2008 and 2009; overall development assistance for health rose 3% during the same period” (Silverman 2013, 7). However, given increasing globalization and the current lack of a travel alternative for long distances, it

is likely that a tax on the airline industry will remain stable in the long term. In addition, the charge on airline travel is not regressive because luxury and business travel is charged a higher rate.

EASILY MISREPRESENTED AND MISUNDERSTOOD

As is a possibility with any tax, the Unitaid model was controversial with some international actors, including the International Air Transport Authority, which did not feel that air travel should fund “social programmes that are not related to airport and aeronautical services.”³⁷ Some were concerned that the airline industry would have fewer resources to invest in growth and financial sustainability, particularly if there were an unpredicted downturn in air travel. Similarly, when the WHO released information about the STC, there was pushback from the international community arising from the misunderstanding that the WHO would be the taxing entity rather than volunteer countries.³⁸ The STC was also controversial because a tax on tobacco is traditionally considered a “sin tax,” which could most negatively impact the poor. Solidarity levies that tax items more often purchased by the middle and upper classes (e.g., airplane tickets) are more likely to receive political backing. There will always be criticism of taxes, even in higher-income categories, but these levies are more likely to come to fruition.

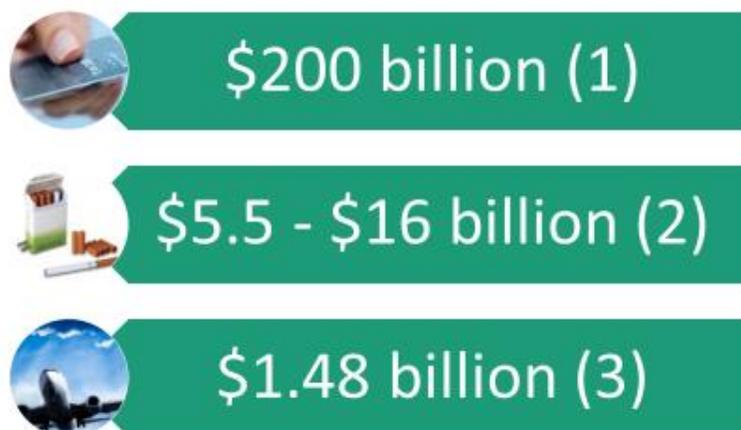
Solidarity levies that tax items more often purchased by the middle and upper classes (e.g., airplane tickets) are more likely to receive political backing.

ACCOUNTABILITY AND OVERSIGHT

Because a solidarity levy is a direct tax that funds a specific organization or issue, those paying the tax might demand additional oversight and accountability measures than they would for taxes that go to a general government coffer and are allocated based on an established political budgetary process. In practical terms, this heightens the need for solidarity levies to be transparent with their use of funds and to report on results. This, in and of itself, can be a positive force for accountability and help improve impact; however, it can also lead to multiple layers of scrutiny and cumbersome accounting frameworks. In addition, this increased oversight can make a solidarity levy an easy target if disbursements are controversial for any reason (e.g., a funded utility fails to use funds appropriately).

FIGURE 1

Actual and Projected Revenues from Solidarity Levies



¹ Financial transaction tax (estimated): “A tax of one basis point (0.01%) has been estimated to raise over **\$200 billion** annually if levied globally on stock, bonds and derivative transactions” (IMF 2010, 19).

² Solidarity Tobacco Contribution (estimated): “WHO assessed the potential revenue that could be generated from an additional micro-levy as part of broader national excise taxes per pack of cigarettes among the 43 G-20+ countries...The results were that an STC could generate **between US \$5.5 billion and \$16 billion** in extra excise tax revenues annually, depending on the chosen scenario” (Ross and Bettcher 2011, 12).

³ Unitaid: **\$1.48 billion** raised by airline tax (Gartner 2015, 503-4).

Going Forward: Application to the Water Sector

Given the automatic and sustainable nature of the model, a solidarity levy represents a significant opportunity to ensure that water provision remains funded in the long term. As such, a solidarity levy is a fairly flexible fundraising mechanism that can be used to fund large international organizations and global health funds. Not only could the funds from taxation be used to implement an environmentally sustainable water provision model, but the model can also be used to incentivize good environmental management practices, depending on what is taxed. A levy also represents an opportunity to create an international tax on environmentally unsustainable activities that use water (production and sale of plastic water bottles or expansion of water-intensive industries like fruit or nut farming) to ultimately finance safe water provision.

If implemented for water provision in the future, this model could involve taxing different sectors, such as international trade and finance, telecommunications, and extractive resources. Because of the flexible and autonomous nature of the levy, this method can be applied to a wide range of countries. The funding for water provision from such a model would be best suited for low-income countries that are not able to access finance on their own. This international taxation model uses an international

organization to administer and distribute funds and therefore could function in fragile countries as well as well-governed countries.

Bilateral donors will also need to take the lead in establishing consensus around the need for a tax to generate funds for water provision. Throughout the Millennium Development Goal agenda, leadership from G8 countries was seen as critical for accelerating spending on global health: “G8 countries proved to be among the most important champions for launching innovative finance mechanisms for global health. Ultimately, the specific architecture of each mechanism depended a great deal on the range of state and non-state actors who participated in the process of design and governance” (Gartner 2015, 507). France and Brazil (in partnership with the Clinton Foundation) were largely responsible for developing the Unitaid airline tax and determining the destination for the funds. Any new levy will require similarly high-level political support from a group of innovative member states that are prepared to launch a pilot.

While the potential application of the solidarity levy for water has not received widespread attention, other development practitioners have noticed the potential; for example, the Rockefeller Foundation and Lion’s Head Global Partners proposed the Global Investment Fund for Water, which would be funded by a variety of mechanisms, including a solidarity levy on companies that produce and sell bottled water (Lion’s Head Global Partners 2017, 32). The fund has been successfully established but has thus far received few contributions. For this mechanism to generate the level of resources that have been generated for the health sector, one or two countries will have to step forward to propose and enact such a levy.

POTENTIAL SIZE OF LEVY

The global bottled water market has been growing steadily over the past decade, and according to the International Bottled Water Association, global bottled water consumption reached 100 billion gallons in 2017 and is expected to continue growing. Beverage Marketing, a private financial and marketing firm working with the global beverage industry, predicts that within a few years, per-person consumption of bottled water could rise to 50 gallons per year (Rodwan 2018, 8).

A tax on bottled water has been considered by a number of countries and has been implemented successfully in parts of the US to raise revenues. There are two ways to raise revenues: taxing consumers for each bottle purchased and taxing companies for each bottle produced.

Taxing consumers: If implemented directly on consumers, taxes on bottled water can be directed directly to municipalities. Simple calculations using consumption data published by the bottled water

industry suggest that a tax of 5 cents on every liter of water Americans consume (per capita consumption is 42 gallons in 2017) could generate over \$2.5 billion per year.

Globally, consumers buy about 1 million plastic bottles a minute or approximately a half trillion bottles per year.³⁹ A 5 cent tax on each bottle sold could hypothetically generate \$26 billion a year. If the tax was just 1 cent, it could generate \$5 billion. This assumes a tax on all bottles, not just water, and that the tax would be uniform across the globe, but these estimates give a very rough estimate of the amounts that could be raised. The decision on how to use such taxes would vary from city to city. In parts of the US, the taxes have been justified on the grounds that they can offset some of the costs of recycling and solid waste management associated with increased plastic waste. For example, in the first five years after enacting a 5 cent tax per bottle of water sold, the city of Chicago raised \$38 million,⁴⁰ an amount roughly equivalent to a summer of road repairs in the broader county.⁴¹

Taxing producers: The Beverage Marketing Corporation estimates that nearly 100 billion gallons of bottled water were consumed in 2017 (Rodwan 2018). A 5 cent tax on each gallon produced internationally could generate as much as \$5 billion per year. It is not easy to tax water bottlers, and attempts to do so have been met with vigorous opposition.⁴² Furthermore, while four of the most prominent water bottlers are international conglomerates (Nestle, Danone, Coca-Cola, and Pepsi), many bottlers are local businesses. Thus, a solidarity levy charged only to these four producers, while large, would produce significantly smaller revenues than one that could be imposed on all significant producers, international and domestic.

FIGURE 2

Global Bottled Water Market

GLOBAL BOTTLED WATER MARKET				
Leading Countries' Consumption and Compound Annual Growth Rates 2012 - 2017				
2017		Millions of Gallons		CAGR*
Rank	Countries	2012	2017	2012/17
1	China	14,579.9	25,468.9	11.8%
2	United States	9,711.4	13,710.5	7.1%
3	Mexico	7,516.3	8,682.9	2.9%
4	Indonesia	4,966.4	8,158.2	10.4%
5	Brazil	4,611.9	5,794.5	4.7%
6	India	3,623.6	5,759.0	9.7%
7	Thailand	3,135.4	3,966.3	4.8%
8	Germany	3,024.1	3,131.5	0.7%
9	Italy	2,904.8	2,917.5	0.1%
10	France	2,287.9	2,445.7	1.3%
Top 10 Subtotal		56,361.7	80,034.9	7.3%
All Others		16,532.8	19,520.7	3.4%
WORLD TOTAL		72,894.5	99,555.6	6.4%

*Compound annual growth rate
 Source: Beverage Marketing Corporation
 Copyright © 2018 by Beverage Marketing Corporation

Source: Reproduced with permission from John G. Rodwan Jr., *Bottled Water 2017, Staying Strong: U.S. and International Developments & Statistics* (Alexandria, VA: International Bottled Water Association, 2018), 18.

Land Value Capture: Funding Transport Investments

While philanthropy-led initiatives and solidarity levies rely on transfers of resources from wealthier countries to less-developed countries, especially in the health sector, land value capture (LVC) is a mechanism that can be used to raise resources domestically even in lower- and middle-income countries. This is a fundamentally different model than the philanthropy-led models discussed in this report because it is a market-based approach that exploits land price increases resulting from public investments.

Most LVC investments reviewed in the literature were used to fund transport infrastructure, particularly urban mass transit, regional highways, and high-speed rail. Much like the water and sanitation sectors, there are strong network externalities in transport that result in the creation of natural monopolies. This distinguishes transport and water from the health and education sectors, which can be more easily decentralized to relatively independent service providers. Blended finance projects in health and education have similar contractual, political, and financial risks but exhibit fewer issues with monopoly creation.⁴³

As more than 200 cities around the world plan and execute mass transit projects,⁴⁴ market-based approaches such as LVC have emerged as a viable funding mechanism (see box 3 on LVC funding and the Delhi metro). These approaches make use of rising land prices following transportation system upgrades to provide tax revenue for authorities, which could then be dedicated to reinvestments in operational subsidies or further expansion of the system. This is based on a foundational concept in urban economics, the *bid rent framework*, that posits that proximity to transit commands higher real estate values because of both time and cost savings for commuters and the heightened ability of businesses to access workers and customers (Alonso 1961). In other words, commuters and businesses are willing to pay land rent premiums in return for shorter travel times or access to suppliers and consumers.

BOX 3

Land Value Capture Implementation in Delhi

With daily ridership of 2.76 million, 8 lines, and 208 stations, the Delhi metro is one of the region's largest and most pioneering urban mass transit projects and has been operating since 2002. Unlike other systems in South Asia, the financing model features innovative and proactive use of LVC enabled by Delhi's unique governance structure. It involves government investments in commercial plazas on transit stations and capturing rents from price appreciation from adjacent land parcels, the proceeds from which have been reinvested in system upgrades. It represents a rare case of LVC implementation through a "unique" new governance model (i.e., Delhi's quasi-state status within India and the creation of the Delhi Metro Rail Corporation) (Bon 2015). The agency was specially created to make sure that the traditional inertia of government was overcome by the professionalism required to have the performance standards necessary to make the financing scheme work.

Typical LVC models involve the transport utility and local and regional authorities working together to identify government- or transport utility-owned land parcels, which could be auctioned off as-is or further developed as commercial establishments. For example, government could undertake transit-

oriented development projects such as new mixed land-use communities adjacent to transit, either itself or jointly with private developers, or build shopping malls or hotels on top of stations. This often requires changing land-use regulations with support from local governments and community leaders. Local governments or special-purpose transit authorities could then raise significant revenues from windfall gains in market prices, often without even investing own sources.

Benefits

These characteristics make LVC a particularly potent and low-risk financing instrument, which could enable local authorities to independently raise investment resources with minimal reliance on higher levels of government. Although LVC might result in a one-time resource raise, depending on whether and how a government structures transit-oriented development projects, it could reap sustained benefits in the form of monthly or annual rent payments. For example, in Delhi and Singapore, the government has built and leased commercial buildings on top of metro stations, which presents a sustainable funding opportunity (Murakami 2015).

Since the building of new infrastructure, particularly in densely populated urban areas, generates fresh demand for residential and commercial real estate, developers are eager to enter public-private partnerships. In these arrangements, the government rezones prime land parcels, inviting private bidders to pay fees for the right to construct real estate; in return, they either receive rents for an agreed upon period or simply pay off the government, after which they retain full rights over revenues (see box 4 on LVC in Kansas City).

From the government's standpoint, with appropriate institutional arrangements, the benefits of economic gains from public investments in mass transit could be widely shared across society (e.g., through user subsidies for the poor or network expansion to cover economically depressed neighborhoods). It follows that because land market value appreciation is the result of publicly funded investments, the benefits should be widely shared among all segments of society, which epitomizes the role of government as a benevolent redistributor of resources.

Unlike situations where government raises funds through bonds, loans, or grants from donors, funds generated through LVC are largely controlled by the government itself, with minimal or no conditions attached to their spending. This implies that public officials, those most familiar with their area's needs, are likely to make more informed decisions for the best possible developmental outcomes. This independence is relatively rare, particularly among local governments in Asia and Africa, and could

result in significant improvements in the quality of public services such as water, provided local authorities make the correct decisions.

BOX 4

Kansas City Streetcar Land Value Capture

In 2016, downtown Kansas City, Missouri, saw the opening of a two-mile modern streetcar system (National Academies of Sciences, Engineering, and Medicine 2016). Infrastructure upgrades accompanying the development included ancillary services like water and sewer replacements, utility upgrades, and modern technology augmentations. These public system improvements benefited residents and businesses alike, particularly those located along the new transport corridor. Only a third of the project's combined cost of \$102 million came from grants, with the rest funded through bonds issued by the city. It used LVC to retire the bonds by creating a transportation development district, a special region for the city to impose additional taxes to generate revenue for infrastructure projects.

The streetcar, developers projected, would bring economic growth to the surrounding region, a portion of which could be captured for the project itself by levying taxes and assessments on the development district. Voters, in conference with an organization of property owners, approved a collection of assessments on the district, including a 1 percent sales tax, a special assessment on real estate, and a special assessment on surface pay parking lots. As the streetcar continues to add value to the property and encourage economic activity, revenue from the district is expected to increase, and the city will accelerate toward its funding goals. The city will enjoy not only a new streetcar system but also important infrastructure upgrades, such as 40,000 feet of sewer and water pipe replacements costing \$22.6 million included within the \$102 million allocated for the project package.

Sources: "Tracking Progress," KC Streetcar, accessed August 3, 2018, <http://kcstreetcar.org/tracking-progress/>; Austin Alonzo, "It's official: Kansas City's streetcar construction is underway," *Kansas City Business Journal*, May 23, 2014, <https://www.bizjournals.com/kansascity/news/2014/05/22/kansas-city-streetcar-construction.html>.

Challenges

The government's ability to capture rents depends on several complicating factors, including the efficiency of the local land market, regulatory environment, colonial legacy determining government land ownership, quality of public services that also determine values, and so on (Cervero and Landis 1993; Duncan 2011). For example, several East Asian cities, such as Singapore and Hong Kong, designed vertically integrated mass transit projects in which cross-subsidization within the transport value chain was critical. Because of authorities' ability to undertake "en-bloc" land acquisition per favorable local

laws (Lum, Sim, and Malone-Lee 2004), they could internalize windfall gains from public investments in mass transit stations to subsidize the public.

But in most cities around the world, particularly those with high-density old towns, land acquisition of the scale necessary to build ground-level or elevated mass transit requires the extremely high financial and political costs of executing eminent domain. It also requires contracts allocation based on transparency in the allocation of risks through open data sharing, effective stakeholder management by public authorities, and support from local government, businesses, and communities (Roumboutsos 2016). This requires a transparent, trusted, and accountable government sector willing to put its administrative and political weight behind such projects, even in the face of opposition from vested interests. Local governments and public utilities, which are often controlled by higher levels of government, must be incentivized to collaborate on capturing and repurposing rents for wider social benefit.

In many countries in Asia and Africa, local governments do not have adequate fiscal, political, or administrative autonomy to use such approaches (Boex et al. 2016). Because they are not allowed to increase service fees or collect own-source revenue through other means, they remain highly dependent on fiscal transfers from higher levels of government, which severely limits their ability to execute innovative financing schemes. Not surprisingly, LVC has not been used for improving public services like water, solid waste management, or sanitation in most countries. A plausible reason is that utilities often do not own much public land and have no authority over other functions of local government and so are unable to capture and reinvest land value rents. They remain dependent on local governments to undertake LVC.

Implications for the Water Sector

While both global health funds and solidarity levies have been discussed at length in sectors other than health, there are no precedents for employing LVC for water utilities, although property developers have helped fund water network expansions (box 5). Thus, insights here are based on theoretical similarities between transport and water in terms of service delivery and their public goods qualities. We find both strong similarities, suggesting great potential for transferability of analytic insights discussed above, and key differences, with clear implications on innovative financing.

BOX 5

Property Dealers in Action: Network Expansion and Flood Protection in Casablanca

Since 2007, in anticipation of rapid future growth, Casablanca's public infrastructure investment plan has targeted water network expansion and improved floodwater management. While user tariffs cover 70 percent of total costs, including operations, maintenance, and upgrades, the remainder is being funded through contributions from property developers. They do this by providing last-mile connectivity and in-house equipment, which is particularly important in low-income neighborhoods. Contributions range from 0.7 to 1.3 percent of the property's sale price, depending on the type of housing, with social housing and luxury apartments being on the lowest and highest ends, respectively. In some cases, this allows contribution waivers when connecting the lowest income neighborhoods because of their wide social benefits.

Source: OECD (2017).

First, at the basic level, both types of infrastructure are designed to manage flows—of vehicles and water, respectively. Projects are planned based on usage demand projections, which directly depend on population growth and density. Both types of infrastructure often end up having excess capacity in the short- to medium-term time horizon. This is partly because they are capital-intensive networked infrastructure systems where assets are lumpy, largely immovable, and have long-lasting benefits. This creates the obvious question of how capital flows will be generated, at what scale, when returns will emerge, and what authority will manage capital expenses and operational management.

Once built up, both transport and water systems have low marginal cost for adding new users, so the potential for economies of scale is large. This implies that if price-differentiated usage can be guaranteed through tolls and smart metering, target subsidies could help safeguard the neediest users. Unlike other public services like solid waste collection, operators can erect and control entry barriers, such as in the case of piped water services. Like other functions of the local public sectors, the quality and coverage in both sectors depends heavily on institutional capacity for effective governance.

Despite these similarities, there are also clear differences that mostly impede—but could also support—successful LVC schemes in the water sector. While improved transport access almost always increases property values and rents, improved water provision alone is unlikely to have the same effect. Proximity to mass transit results in time and financial cost savings and increases access to a greater range of jobs. Access to water in the home also leads to time savings, but these may not be sufficient to justify an increase in property values if other basic services such as electricity, solid waste collection, and sewerage are also lacking. The only documented cases of market value changes from water service

improvements have been those where such investments have been made as part of broader urban neighborhood improvement programs. This packaged approach is likely the most feasible way to finance water service improvements, particularly in urban areas in developing countries.

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Unlike transport, water is widely regarded as a fundamental human right that everyone deserves, regardless of socioeconomic status. Thus, governments could find it difficult to prioritize investments in water service improvements by geography, as social well-being considerations would take precedence. Because it is a more quintessential public service that the public generally wants covered through government funds rather than nontraditional sources, innovative financing mechanisms for water provision could be less popular with local communities. As shown in the case of Flint, Michigan, in the United States, any errors in maintaining quality of water service have grave implications on public health and could have massive political repercussions for relevant authorities. Not having access to safe transport is arguably a hazard to the public's well-being, but certainly not in the same manner as water.

Applicability and suitability are tied to country and local contexts. Successful LVC implementation requires stable, effective, and transparent governance systems, sufficiently functional local land markets, and economically dense urban areas with adequate demand for land. Countries falling in our nonfragile, urban, lower middle-income or upper middle-income groupings (see appendix A) are more likely to see LVC applied successfully to the water sector.

Finally, technical issues aside, public decisionmaking is inherently political, which must be considered when discussing innovative financing mechanisms. While in the transport sector, highway route choices could be made such that certain districts receive priority connectivity and thus tangible economic gains from improved market access, this is harder to accomplish in water service provision. From a political standpoint, another key difference is the highly visible nature of transport infrastructure, particularly in densely populated cities in developing countries, where mass transit is mostly elevated. Water pipes are typically laid underground, or water is sold through discrete sale points scattered throughout cities, and these are less likely to gain constituents' attention. In resource-

constrained Pakistan, for example, civil society and political opposition have severely criticized the government's decision to use subsidies to build and operate three mass transit projects in as many cities. They argue that annual operational expenses on mass transit exceeds the Punjab province's entire education outlays, attributing this "unjustified" prioritization on the public visibility and thus political returns from urban transport connectivity. Local policymakers vying for greater public support in the water sector should carefully consider ways to raise the visibility of their interventions, such as strategically locating water cleaning plants next to highly visible thoroughfares or simply lobbying to include local water provision in the manifesto of local political parties.

Conclusion and Way Forward

An analysis of the lessons learned in the health, education, and transport sectors leads us to suggest that if the water sector is indeed serious about meeting the SDGs and serving all populations, irrespective of their ability to pay for basic water services, donors will have to work toward a more common understanding of the problem and cocreate and cofund solutions. The health sector has clearly demonstrated that philanthropic capital can take the lead in providing basic services while local systems are strengthened.

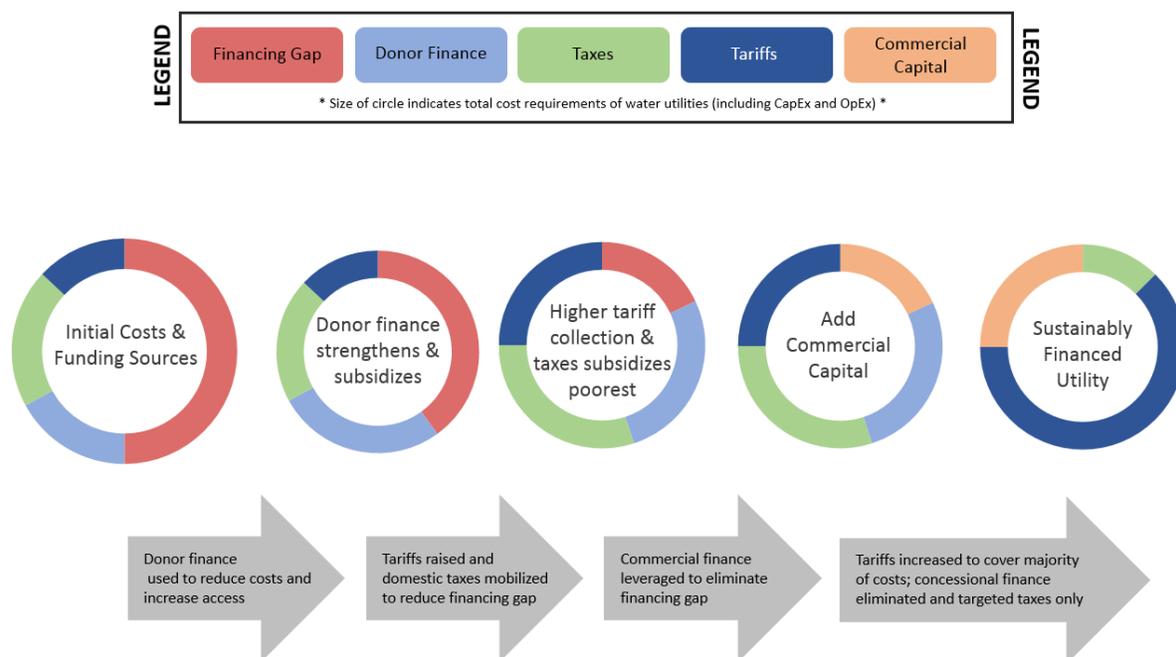
Expansion of services to the poor, while costly, can actually improve utility performance in the long term by engaging the poor as customers and establishing new norms of service provision. There are obvious challenges, including the costs of extending networks to rural communities and to the hard-to-reach populations in slums that currently lack any access, but there is also the opportunity to connect millions of new consumers, many of whom may be paying a higher unit price for their water to informal providers. A stepwise approach that requires that all utilities become fully creditworthy and leverage private capital before extending services to the poor (using repayable capital to make investments in infrastructure) would leave too many behind for too long.

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Our research suggests that ODA and philanthropic funds need to be used strategically to improve access to water for the poor. To leave no one behind, donor capital will continue to have a role to play for a much longer period of time. Based on what we have learned from other sectors, we outline below how a global philanthropy-led fund for water could help utilities provide services to the poorest populations while simultaneously incentivizing improved utility performance. This improved performance would eventually move the utility toward a sustainably financed operation in which domestic resources (taxes) would subsidize consumption for those who are unable to pay and repayable finance could be raised either domestically or internationally for capital improvements.

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FIGURE 3
Pathway to Sustainably Financed Utility



Source: Adapted by authors from Amanda Goksu, Sophie Tremolet, Joel Kolker, and Bill Kingdom, *Easing the Transition to Commercial Finance for Sustainable Water and Sanitation* (Washington, DC: World Bank Group, 2017). Underlying data on financing needs informed by Guy Hutton and Mili Varughese, *The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation, and Hygiene* (Washington, DC: The World Bank, 2016).

Some utilities have used differentiated tariff rates and free or reduced connection charges to allow the poor to connect and simultaneously improved their financial performance. If utilities can indeed create virtuous cycles of trust with all users, progressively expand coverage to reach everyone, and devise non-regressive tariffs, they can use philanthropic capital to bridge the gaps between the resources raised through tariffs and the amounts needed for OpEx and capital maintenance. In both Senegal and Cambodia, national utilities have extended contracts to the poorest families and increased safe water coverage while simultaneously investing in better infrastructure, reducing nonrevenue water, and improving billing and collection.

Financial incentives (e.g., results-based financing/aid) can improve outcomes and pro-poor targeting of projects (Pearson, Johnson, and Ellison 2010; Grittner 2013). Two approaches that have been adopted with limited success in the water sector are results-based financing and the creation of pro-poor units within utilities. There are challenges in both approaches, but if utilities can be benchmarked based not just on their budgetary performance but also on improvements in reaching the poorest populations, it is possible to incentivize improved performance using a results-based financing approach (van den Berg and Danilenko 2017).

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In the following section, we discuss how a proposed Global Water Access Fund could integrate lessons from the health, education, and transport sectors in raising and distributing finances in ways that could simultaneously expand access and strengthen utilities toward the ultimate goal of financial sustainability.

Global Water Access Fund: A Multistakeholder Model to Pool and Deliver Subsidies for Water Access

Development partners have turned to global funds and partnerships to address acute needs in specific sectoral or thematic areas. As explored earlier in this paper, global funds are particularly prominent in both health and education, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Global Partnership for Education.

Global funds benefit from their economies of scale and alignment of stakeholder priorities. Specifically, global funds help collectively pool and distribute funds, provide sectoral strategy and coordination, create standards, convene decisionmakers, and support delivery of best practices in technical assistance and management.

A global fund for water might achieve these benefits for the water sector. Such a fund, which we refer to as the Global Water Access Fund (GWAF), could serve as a vehicle for pooling funding from multiple sources (including the models identified in this report) and disbursing that funding to utilities that provide access to clean, reliable water for the poor in developing countries. This fund would bridge the funding gap between the demand for clean water and the ability for existing utilities to reliably serve that demand with clean water. The fund could be designed in a way that directly reinforces efforts to improve operational efficiencies and financial sustainability—two critically important elements to achieving long-term equitable water access—by providing medium-term financing coupled or aligned with technical assistance (e.g., to reduce inefficiencies, optimize targeted tariff schedules, etc.).

The proposal for GWAF is not the first for a global fund explicitly focused on helping achieve Sustainable Development Goal 6. Notably, the Global Investment Fund for Water was proposed in 2017 with the goal of enabling “the development of sustainable WASH services at scale that are able to become independent of aid within a 10-15 year period by relying on sustainable revenue streams and potentially subsidies” (Lion’s Head Global Partners 2017, 3). This model emphasizes the ability of risk-tolerant capital (the fund itself) to bridge the gap between pilot and scale for business model innovation in the WASH sector. By contrast, while also relatively risk tolerant, GWAF would be a vehicle for bridging the cost of delivering water to low-income households sustainably. There is a potential need for both.

Funding Sources

The GWAF could launch with seed funding from multilateral and bilateral donors. These resources would provide an initial reserve to enable GWAF to launch and begin operations, serve as a gesture of faith and commitment by the interested donors, and help leverage other resources. These funds would be complemented, and ultimately dwarfed, by two additional sources of funding—global solidarity contributions and local matched funds (see figure 4):

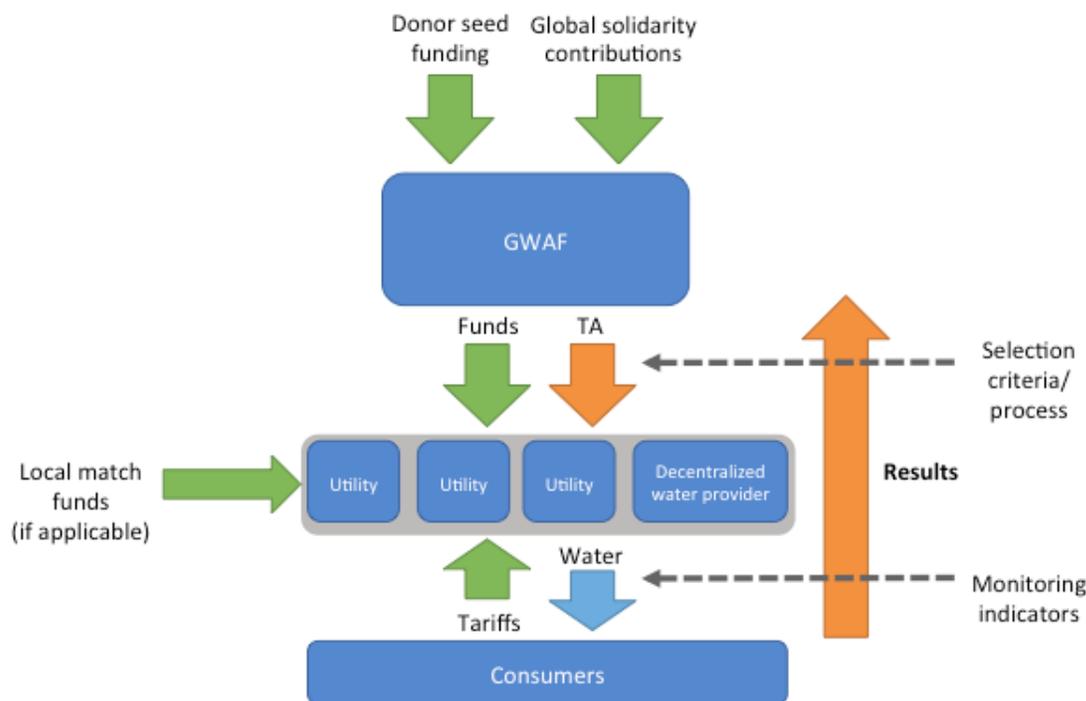
- Global solidarity contributions: The largest source of funding would come from solidarity levies on individuals and/or companies in Organisation for Economic Co-operation and Development countries. These taxes would represent a sustainable and reliable contribution to GWAF that would not require yearly renewals. Examples of such “dedicated” funding abound, especially in the transportation sector. For example, the transit system in the greater Boston area derives about half of its funding from a dedicated sales tax and dedicated revenues from local real estate assessments.⁴⁵ Something similar could be done for water, with a small dedicated tax on water consumption. An existing tax on tap water in the Netherlands is designed to reduce

consumption.⁴⁶ Advocates have lobbied for taxes on water consumption for similar reasons in countries like the United States (Owen 2017). In addition to a consumption tax, other water-related taxes could also serve as reliable funding sources. For example, a jurisdiction could enact a small fee on every water bottle purchase, add an additional levy on water-intensive industries (e.g., tree nut or fruit farming),⁴⁷ or impose one-time fees on real estate purchases and sales or a special yearly tax on real estate. Such taxes should be tailored to different national contexts and values and, in some cases, may need to be decided at the subnational level. Levies on things not directly related to water (e.g., financial services) could also be explored, although they would likely present additional and distinct hurdles.

- Local matched funds: Different developing countries, depending on their capacities, regulatory regimes, political realities, wealth distribution, and economic composition, would provide matching funds to complement the globally sourced resources of GWAF. Depending on the country, these local funds could be derived from extractive industry taxes, land value capture, redistribution of water-earmarked resources (e.g., from a cash-rich utility), or other sources. As observed in appendix A, for example, countries that rely on natural resource extraction for a large percentage of their GDP see worse access to water, suggesting there may be room to funnel profits from the extraction of natural resources into water provision in countries that currently lack access to piped water and where financing is a limiting factor.⁴⁸ To ensure political buy-in, these funds would likely be earmarked for GWAF subsidies to utilities serving poor individuals in that same country. In addition, tariffs could and perhaps should be collected from those benefiting from the subsidy. The tariff amount should be calculated to ensure that it does not present a significant burden but promotes responsible water resource use and encourages buy-in.

FIGURE 4

Global Water Access Fund Funding Sources



Note: TA = technical assistance.

Use of Funds

The primary purpose of GWAF would be to provide grants or highly concessional loans to utilities so that they can improve the quality and reliability of clean water access to poor individuals and households. In other words, these funds would fill the gap between what water consumers can pay (vis-à-vis tariffs) and what it costs utilities to serve them, helping to expand access to reliable, clean water. This funding, which supports operation and maintenance (OpEx and CapManEx), would be separate from public, private, and blended financing from other sources that support capital expenditures.

To ensure GWAF funds are impactful and aligned with the efforts of other stakeholders and partners, it would be desirable for the fund to engage in activities that complement its core activity (providing subsidies). As such, GWAF could and should engage in activities beyond simply transferring subsidies:⁴⁹

- **Initial assessment:** As part of GWAF's due diligence, it should perform thorough reviews and assessment of potential subsidy recipients to ensure they have a clear need aligned with GWAF's purpose, have the capacity to absorb and transparently manage the funds, and cannot

fully self-fund services. The goal is not to create significant barriers to accessing GWAF but to ensure the likely limited funds are directed where they are most needed and can be best used). This review should not lead to the exclusion of utilities with operational challenges (most if not all recipients will likely have some challenges). Indeed, as noted below, technical assistance to help address these challenges should be considered as a component of GWAF's support. One way to simplify the selection of utilities may be to select those utilities which have set up, integrated, and supported a pro-poor unit (see box 6).

- Smart tariffing: As noted above, GWAF funding should be complemented with some degree of tariff revenue (even if nominal) to ensure both efficient water usage practices and create ownership, buy-in, and an expectation of service quality among consumers. At the outset of GWAF's support for a utility, it should seek—in full partnership with the utility (and potentially other partners)—to identify an appropriate tariff schedule matched to the needs and financial capacities of consumers. This schedule should be occasionally updated as needed.
- Technical assistance to support efficiency: As part of GWAF's initial assessment, it would likely identify operational challenges and inefficiencies. Although technical assistance is a secondary component of GWAF's mission, it could and should work to couple its funding with efforts to improve the utilities' management and operations. Over time, this will ideally lead to an improvement in service delivery, a decrease in subsidy needed, or both.
- Performance assessment and subsidy reviews: To ensure that GWAF funds are spent transparently and are having an impact, which is important to be fair to all utilities receiving funds and to remain accountable to taxpayers providing funds, GWAF should set performance targets tailored to each utility and regularly measure and track progress against these. These regular, perhaps yearly reviews should also include a reassessment of the need for GWAF funding and the suitability of the tariff schedule.

BOX 6

Reexamining and Supporting Pro-Poor Units

In 2008, the World Bank, through a series of grants, supported the formation of pro-poor units within utilities. The rationale behind these units was to “proactively improve(s) services to the poor, rather than responding on an ad hoc basis” (Castro 2009, 5). The World Bank and other donors saw that utilities struggling to meet the cost of their operations and stay in the black would simply not serve the poorest populations, who may be hardest to connect to and least able to pay. Pro-poor units would ideally be incorporated into the corporate strategy. “The purpose of such a unit would be to improve coordination between and amongst external partners and lead the effort to: Increase access and coverage, increase utility revenue, reduce water losses, and Improve relations with poor consumers” (Castro 2009, 5).

The pro-poor units would ideally be integrated into the operations of the utility but would raise resources from external funders in addition to transfers from local government and tariffs from customers. Such units were set up in four cities in Africa, and an evaluation revealed varying degrees of success based on how central such units were to the mandate of the utility and the relationships they were able to forge with the communities they were meant to represent. In Kampala, Uganda, the pro-poor unit was able to increase both revenue collection and the number of connections (Kariuki et al. 2014), but this was not the case in all four cities. Political interference in the process was a major hurdle, as most pro-poor units worked in areas where many households did not have official titles to their property. Moreover, if households already received free water from community standpipes, they were unlikely to want to connect, even for a small fee. In Kampala, the success of the pro-poor unit was supported by a national policy aimed at increasing connections to the poorest populations and political support for a variable tariff policy. Yet, many of the poor who were connected were always at risk of being disconnected for nonpayment of tariffs (Kariuki et al. 2014, 41).

A more recent evaluation of pro-poor units in two secondary cities in Kenya (Nakuru and Kisumu) that have been operating for approximately a decade found a dramatic and positive impact on both the number of poor in low-income areas who are now connected to water as well as in the total tariffs collected by the utilities. Utilities in both cities have integrated the pro-poor units into their operations. Through a combination of prepaid meters, water kiosks, and private and shared water taps, both utilities have reduced nonrevenue water, improved collection rates and “maintained cost recovery of more than 100% which indicates that both are financially sustainable ‘despite’ implementing pro-poor strategies” (Kemendi and Tutusaus 2018, 6). Admittedly, the piped network of both utilities is quite small, and many poor households still remain unconnected to services. Providing operational support to utilities that have demonstrated the commitment to expanding services is an additional way in which donors can both expand and improve service to the poor, moving from kiosks and community taps to higher levels of service in the form of shared or household yard taps.

- **Results-based financing:** Another way in which service providers can be supported and incentivized to serve the poorest is through a results-based financing approach where “resources are disbursed not against individual expenditures or contracts on the input side, but against demonstrated and independently verified results that are largely within the control of the recipient.”⁵⁰ There are a wide range of results-based financing instrument categories, including impact bonds and performance-based aid, transfers, and contracts. The specific objectives and actors involved will determine the correct instrument; however, underlying all results-based financing instruments is an effort to link funding to outputs or outcomes and, in so doing, improve accountability and the achievement of desired results.⁵¹ Selecting the right benchmarks, estimating appropriate incentives, measuring and verifying progress, and using evidence to inform future funding decisions are all critically important (see box 7). Efforts to withdraw funding completely if a utility fails to meet performance targets may be politically or practically unfeasible or undesirable; limiting the performance-based funding to a portion of the full subsidy may be more realistic. It is important in that scenario, however, to tie a sufficiently large portion of the funding to performance to provide a real incentive. For instance, if only 5 percent of funding is tied to performance, that may be too insignificant to encourage improvement.

BOX 7

Using Results-Based Financing for Water and Sanitation in Morocco

In 2006, the Moroccan government, in partnership with two private operators and one public utility, launched a results-based financing project to improve peri-urban household water access. The project, leveraging a \$7 million grant from the Global Partnership on Output-Based Aid, used an output-based aid approach to bridge the financing gap between households' ability to pay for water connections and the cost of service. Lasting from 2007 to 2011, the project used two outputs that triggered disbursements of subsidies to providers: certification of individual connections to water and sewerage services (60 percent of the subsidy) and verification of six months of sustained water provision (40 percent) (GPOBA 2014).

Critically, because 100 percent of the subsidy was tied to performance, this project required service providers and utilities with the ability to self-finance up-front costs. Funding to help subsidize service provision with providers and utilities that have less financial capacity could implement performance metrics tied to a smaller portion of the overall subsidy (e.g., 20 percent) or could provide “bonus payments” beyond the subsidy needed, although this may present moral hazard concerns.

For GWAF or a similar fund to be launched, significant thought must first be given to how it would operate in practice. This includes elements of governance, compliance mechanisms, funding prioritization policies, and other critical core questions. Further exploration and discussion of these issues is merited if key stakeholders express interest.

Appendix A. Country Groupings and Indicators

In recognition that water access issues manifest differently across different types of countries and, similarly, building sustainable solutions requires different approaches and strategies, we first sought to create “groupings” of countries that shared similar characteristics. To do so, we examined the effect of numerous economic, political, and geographic variables on the provision of water to determine which indicators seemed to have the largest effect. We looked at these indicators for 98 countries across regions, making sure to include countries with diverse characteristics within the low, lower-middle, and upper-middle income categories.

We used **access to piped water** as our proxy variable for water provision for two reasons. First, data for variables such as “safely managed water” or “water free from contamination,” which would have allowed for a higher and perhaps more accurate standard for water provision, is only available in a few countries, and therefore would not have allowed for large-scale comparison. Second, other measures with widespread availability were not discerning enough. For example, the World Bank’s standard measurement of percentage of the population with “access to an improved water source” showed high percentages for countries that may have high access rates, based on the Millennium Development Goals definition of access, but took no account of water quality, reliability, or affordability. This problem became clear when comparing the rates for “improved water source” to “piped water” for the same countries. Ghana has 89 percent access to an improved source but only 32 percent access to piped water, and Nepal’s 92 percent access falls to 48 percent when focusing on piped water. A drop of 50 percent or more between these two measures was not uncommon for other countries as well.

Unfortunately, access to piped water is not itself a flawless variable; piped water is not necessarily safe to drink or affordable to the poor. However, for the purpose of our research, piped water does indicate a level of capital expenditure (the infrastructure required to install piped water). In addition, accessing water from pipes is a good proxy for service delivery because utilities need to cover operating expenses required to maintain the pipes, ensure water continues to flow, and that the water is safe to drink. Thus, given the data available, access to piped water is sufficient as a proxy variable for preliminary country research because it demonstrates a level of commitment by the government and other actors to providing water and financial capacity to maintain access.

Not surprisingly, **GDP per capita, fragility, and urbanization** had the strongest correlations with access to piped water, with r^2 of 0.496, 0.449, and 0.452 respectively. GDP per capita and access to piped water are positively correlated, with wealthier per capita income countries providing better access to piped water. Fragility is negatively correlated, with more fragile countries providing lower levels of access to water. Urbanization is positively correlated, as countries with higher rates of urbanization provide better access to piped water.

FIGURE A.1

GDP Per Capita and Access to Piped Water; All Countries in Dataset

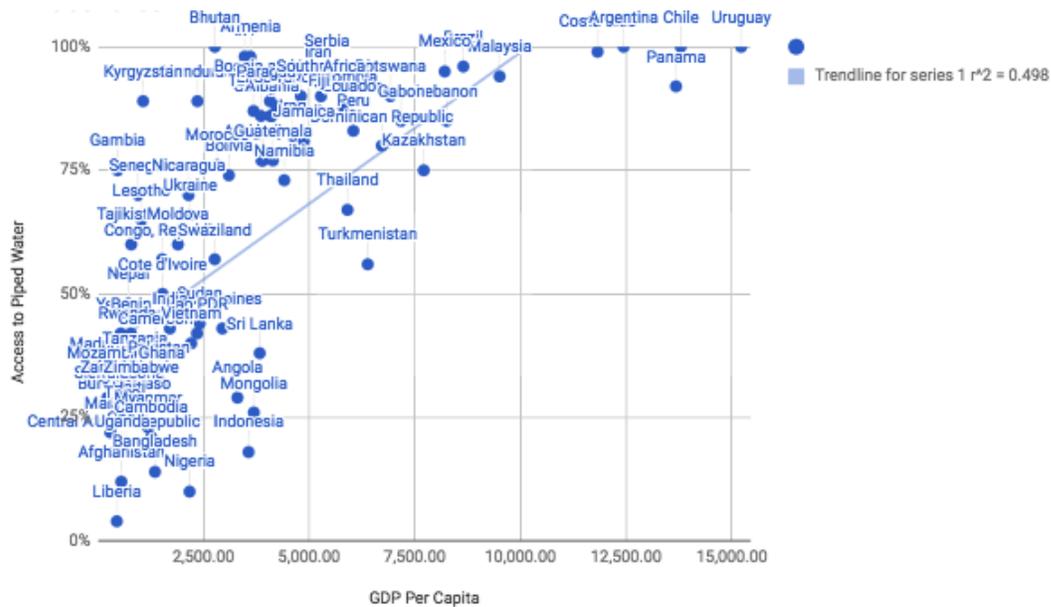


FIGURE A.2

Fragility and Access to Piped Water; All Countries in Dataset

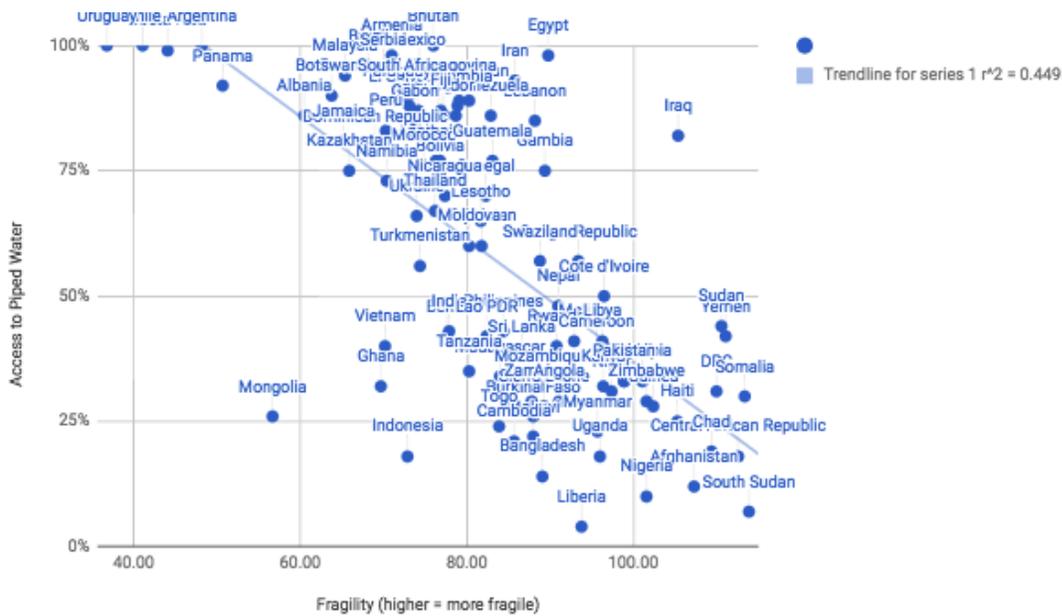
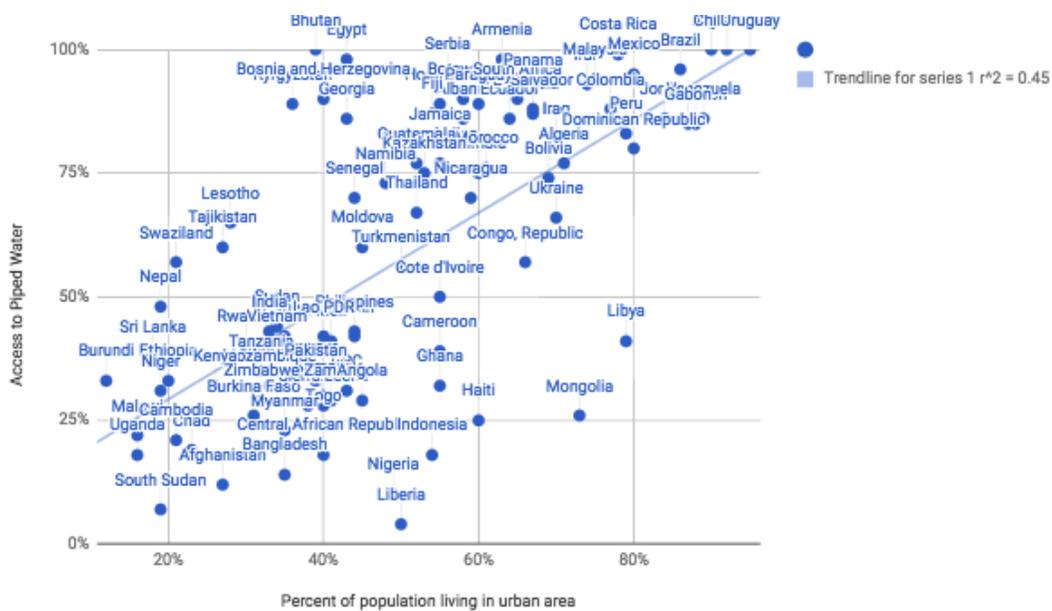


FIGURE A.3

Rates of Urbanization and Access to Piped Water; All Countries in Dataset



It is important to take all three indicators into consideration. GDP per capita is one useful way of considering the financial resources in a country. Broadly, lower GDP per capita can indicate lower domestic capacity to sustainably finance water access and, conversely, a greater need for external

resources. Fragility is distinctly important to consider, as it adds an extra layer of complication to providing safe drinking water. In fragile countries, resources are spread thin, infrastructure can be damaged by violence, and the physical security of utility crews and aid workers limits where improvements can be made. The Fragile States Index also captures governance features such as public services and rule of law, and therefore this measure can take into account the capacity and willingness of the state to ensure public goods such as water provision. Our data demonstrates these trends, as low- and lower middle-income countries with a fragility score of 89 or higher have an average of 33 percent access to piped water, while countries at the same income level with a fragility score of 89 or lower have an average of 55 percent access to piped water. Urbanization is also an essential variable in the context of financing water provision, as expanding access to safe drinking water in rural countries will be more difficult and expensive. Furthermore, significant rural-urban disparities in access to drinking water may be masked in highly urbanized countries. For example, Morocco has 76 percent access to piped water as a country (fairly high for its lower-middle income group), but access in rural areas is only 50 percent, while urban areas have 94 percent access. Therefore, it is important to look past countrywide water indicators to ensure equitable distribution.

We incorporated all three of these variables into the following country grouping. The rates of access to piped water shown in the table below demonstrate that in addition to having an impact on access to piped water as separate variables, GDP per capita, fragility, and urbanization have an impact on water provision when grouped.

Other variables analyzed, such as *ease of doing business*, *global competitiveness*, and *financial market development*, are correlated with GDP per capita, fragility, and urbanization, indicating that these country groupings successfully capture other factors that may impact the financing and processes associated with water provision.

In the final analysis, recommendations for innovative financing tools and structures will be highly dependent not just on the need for additional finance in the sector, but also on other important trends and relationships identified in our country grouping analysis. For example, it is possible that the use of commercial finance is less likely to be successful in fragile and largely rural contexts, but it is also possible that such finance can be used in fragile countries that are also highly urbanized and therefore already have higher rates of access to piped water.

TABLE A.1

Piped Water Access by Income Level, Fragility, and Urbanity

Country groups	Low Income	Low Income	Low Income	Low Income	Lower-Middle Income	Lower-Middle Income	Lower-Middle Income	Lower-Middle Income	Upper-Middle Income	Upper-Middle Income	Upper-Middle Income	Upper-Middle Income
	Fragile	Fragile	Nonfragile	Nonfragile	Fragile	Fragile	Nonfragile	Nonfragile	Fragile	Fragile	Nonfragile	Nonfragile
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
% access to piped water	25%	22%	43%	38%	66%	32%	70%	60%	88%	79%	89%	85%

TABLE A.2

Country Groupings

Country grouping	Classification criteria	Average % access to piped water	Countries in group
Low Income Fragile Urban	<ul style="list-style-type: none"> Fragility score of 93 or more GDP per capita of \$1,006 or less Urbanization rate of 33% or more 	25%	<ul style="list-style-type: none"> Central African Republic Democratic Republic of Congo Guinea
Low Income Fragile Rural	<ul style="list-style-type: none"> Fragility score of 93 or more GDP per capita of \$1,006 or less Urbanization rate of less than 33% 	22%	<ul style="list-style-type: none"> Afghanistan Burundi Chad Ethiopia
Low Income Non-Fragile Urban	<ul style="list-style-type: none"> Fragility score less than 93 GDP per capita of \$1,006 or less Urbanization rate of 35% or more 	43%	<ul style="list-style-type: none"> Benin Gambia Madagascar Mali
Low Income Non-Fragile Rural	<ul style="list-style-type: none"> Fragility score less than 93 GDP per capita of \$1,006 or less Urbanization rate of less than 35% 	38%	<ul style="list-style-type: none"> Burkina Faso Malawi Mozambique Nepal
Lower-Middle Income Fragile Urban	<ul style="list-style-type: none"> Fragility score of 84 or more GDP per capita of \$1,006 to \$3,955 Urbanization rate of 41% or more 	66%	<ul style="list-style-type: none"> Angola Cameroon Republic of Congo Cote d'Ivoire

Country grouping	Classification criteria	Average % access to piped water	Countries in group
Lower-Middle Income Fragile Rural	<ul style="list-style-type: none"> ▪ Fragility score 84 or more ▪ GDP per capita of \$1,006 to \$3,955 ▪ Urbanization rate of less than 41% 	32%	<ul style="list-style-type: none"> ▪ <i>Bangladesh</i> ▪ Cambodia ▪ Kenya ▪ Myanmar ▪ Pakistan ▪ Sri Lanka ▪ Sudan ▪ Swaziland ▪ Zimbabwe
Lower-Middle Income Non-Fragile Urban	<ul style="list-style-type: none"> ▪ Fragility score less than 84 ▪ GDP per capita of \$1,006 to \$3,955 ▪ Urbanization rate of 55% or more 	70%	<ul style="list-style-type: none"> ▪ Algeria ▪ Armenia ▪ Azerbaijan ▪ Bolivia ▪ <i>Ghana</i> ▪ Honduras ▪ <i>Mongolia</i> ▪ Morocco ▪ Nicaragua ▪ Tunisia ▪ Ukraine
Lower-Middle Income Non-Fragile Rural	<ul style="list-style-type: none"> ▪ Fragility score less than 84 ▪ GDP per capita of \$1,006 to \$3,955 ▪ Urbanization rate less than 55% 	60%	<ul style="list-style-type: none"> ▪ Bhutan ▪ Georgia ▪ India ▪ <i>Indonesia</i> ▪ Kyrgyzstan ▪ Lao PDR ▪ Lesotho ▪ Moldova ▪ <i>Vietnam</i>
Upper-Middle Income Fragile Urban	<ul style="list-style-type: none"> ▪ Fragility score of 74 or more ▪ GDP per capita of \$3,955 to \$10,000 ▪ Urbanization rate of 70% or more 	88%	<ul style="list-style-type: none"> ▪ Colombia ▪ Iran ▪ Iraq ▪ Jordan ▪ Lebanon ▪ Mexico ▪ Venezuela
Upper-Middle Income Fragile Rural	<ul style="list-style-type: none"> ▪ Fragility score of 74 or more ▪ GDP per capita of \$3,955 to \$10,000 ▪ Urbanization rate less than 70% 	79%	<ul style="list-style-type: none"> ▪ Ecuador ▪ Fiji ▪ Guatemala ▪ Thailand ▪ <i>Turkmenistan</i>
Upper-Middle Income Non-Fragile Urban	<ul style="list-style-type: none"> ▪ Fragility score of less than 74 ▪ GDP per capita of \$3,955 to \$12,235 ▪ Urbanization rate of 65% or more 	89%	<ul style="list-style-type: none"> ▪ El Salvador ▪ Malaysia ▪ Dominican Republic ▪ Brazil ▪ Costa Rica ▪ Peru ▪ South Africa ▪ Gabon
Upper-Middle Income Non-Fragile Rural	<ul style="list-style-type: none"> ▪ Fragility score of less than 74 ▪ GDP per capita of \$3,955 to \$12,235 ▪ Urbanization rate less than 65% 	85%	<ul style="list-style-type: none"> ▪ Albania ▪ Bosnia and Herzegovina ▪ Botswana ▪ Jamaica ▪ Kazakhstan ▪ Namibia ▪ Paraguay ▪ Serbia

Note: GDP per capita groupings are based on the World Bank Country and Lending Groups. Fragility and urbanization cutoffs are based on averages within groups. Green indicates positive outliers and red italics indicate negative outliers.

Comprehensive Country Grouping Framework

The main goal of the country groupings is to identify sets of countries that might benefit from similar financing solutions. However, they are also important to reveal outliers, both good and bad, meriting closer review. Countries that are significantly higher or lower than their group's trend line must either be affected by other unavoidable variables (e.g., mountainous regions could make water provision more difficult) or those countries are relying on different methods for water provision. In table A.2 above, green indicates positive outliers and red italics indicate negative outliers.

Analysis of Variables across Country Groupings

Ease of doing business, natural resources as a share of GDP, and industry as a share of GDP had weak but some correlation with access to piped water (r^2 ranging from .15 to .29). Income inequality, ease of access to loans, water stress, and WASH budget as a share of GDP had little to no correlation with access to piped water.

We were initially surprised by the lack of correlation between the Gini coefficient and access to piped water. One reason could be that the Gini coefficient does not look at absolute income differences and remains the same if everyone is experiencing the same rate of growth in income, therefore, it does not act as a strong indicator of true income inequality. When the **inequality-adjusted Human Development Index** is used instead, the correlation with access to piped water is significantly higher ($r^2 = 0.467$).

Across all countries, there is weak negative correlation between **access to natural resources** and water provision (all countries $r^2 = 0.185$; low income countries $r^2 = 0.224$), indicating that countries that rely on natural resources extraction for a larger share of their GDP see worse access to water. This might indicate that additional profits from resources are not utilized for public goods provisions. It is difficult to provide an explanation for this finding without more information (it could support the idea of a resource curse); however, for the sake of our research, it could suggest that there is room to funnel profits from the extraction of natural resources into water provision in countries that currently lack access to piped water where financing is a limiting factor.

FIGURE A.4

Inequality-Adjusted Human Development Index and Access to Piped Water; All Countries in Dataset

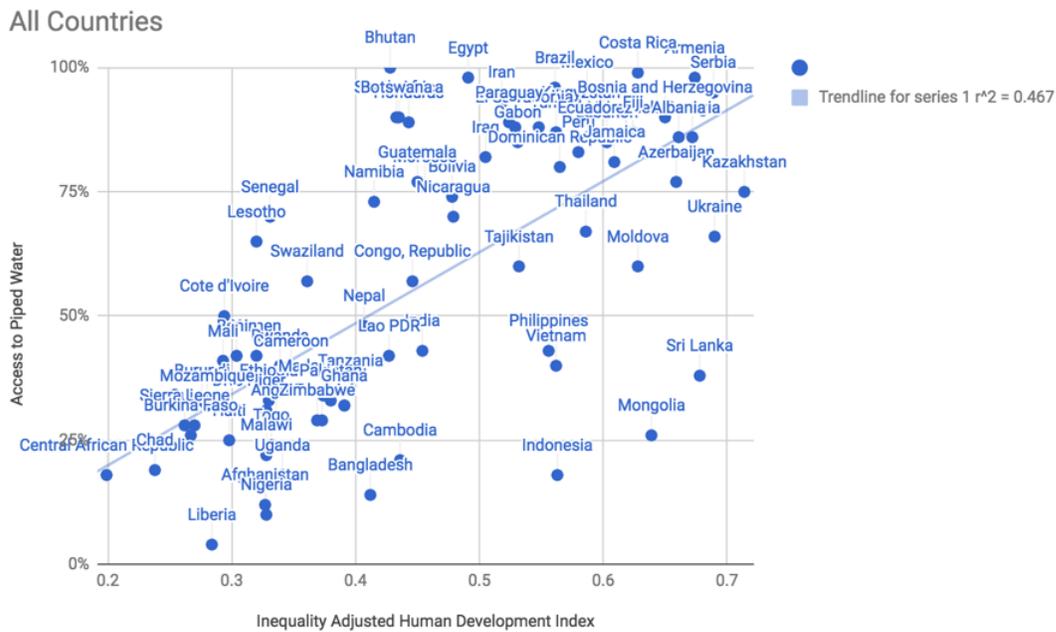
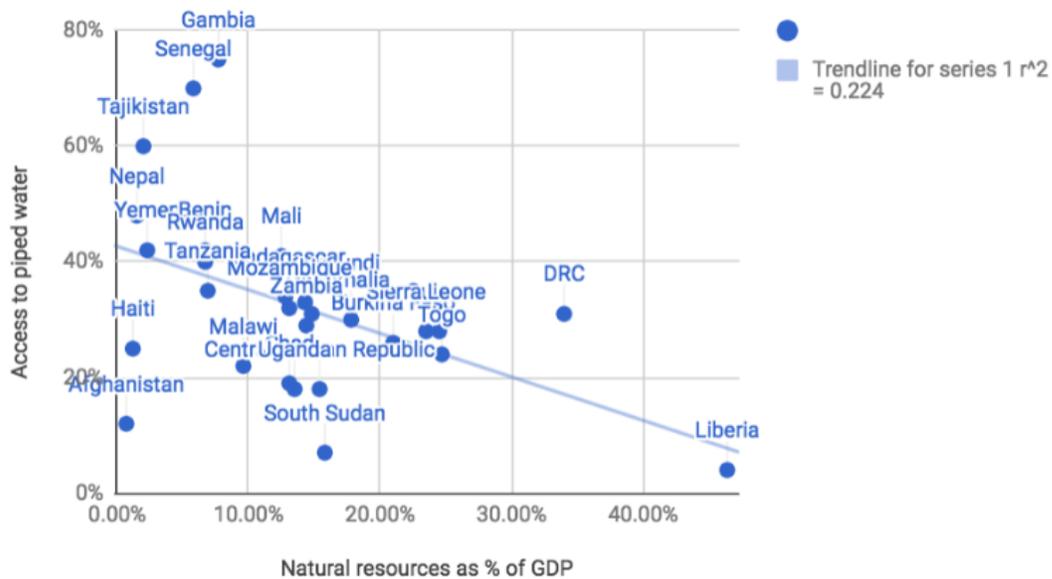


FIGURE A.5

Natural Resources and Access to Piped Water; Low-Income Countries (Fragile and Nonfragile)



There is a weak positive correlation between access to piped water and the **Global Competitiveness Index** ($r^2 = 0.239$). The index is meant to measure “national competitiveness – defined

as the set of institutions, policies and factors that determine the level of productivity” (Schwab 2017) and includes the following variables: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. The correlation drops to an r^2 of 0.11 (with almost no correlation within country groups) when narrowed down to **financial market development**. This disparity could indicate that the other factors measured in the index, such as institutions, infrastructure, and so on, have more of an impact on access to piped water than financial market development and that financial markets currently play a minimal role in ensuring access to water.

Similarly, there is no correlation between water provision and the share of a country’s GDP made up by **industry**, indicating either that industry is not providing an additional source of wealth to the country or more likely that these internal sources of wealth are not being utilized for water provision. Among fragile country groups, the correlation does become slightly stronger ($r^2 = .21$ for *fragile/low income* and $r^2 = .124$ for *fragile/low-middle income*, as compared to $r^2 = .082$ for all countries), potentially indicating that in fragile countries, industry can be a method to better provide for the public; however, the correlations are too weak to make any conclusions. As with natural resources, it is possible that lack of a correlation means governments are not currently taking advantage of profits from industry to enhance water provision and that there could be room to explore this source of financing (e.g., carbon tax directed to water).

There is no correlation between drinking water provision and **natural access to water** (e.g., baseline water stress), with the very weak correlation ($r^2 = 0.103$) counterintuitively indicating that countries with more access to water are less successful at providing drinking water. This trend demonstrates that good governance and access to financial resources are far more important predictors of successful provision of public goods than natural access to water.

FIGURE A.6

Industry and Access to Piped Water; All Countries in Dataset

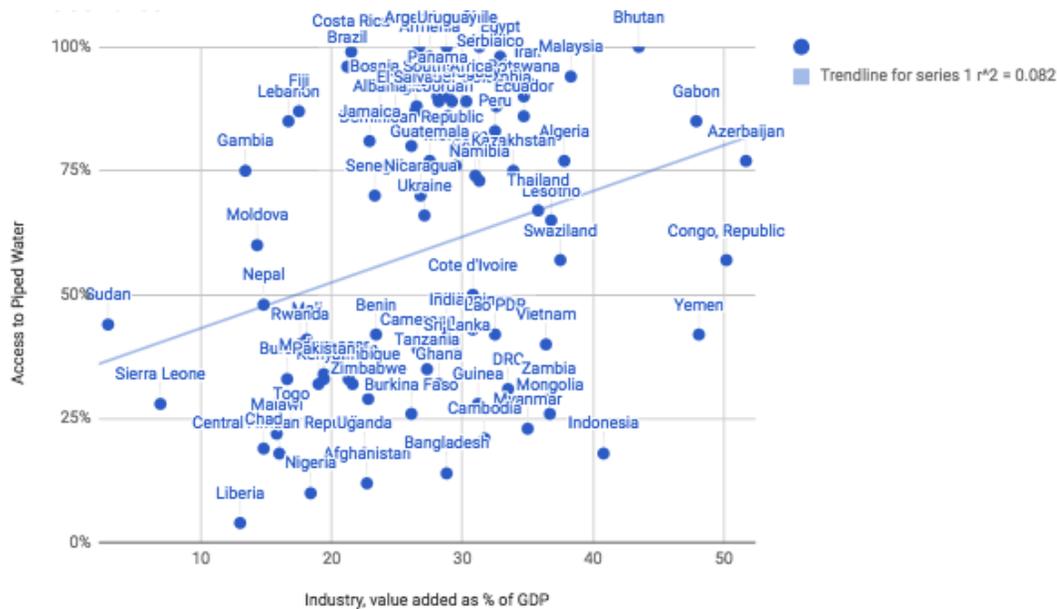
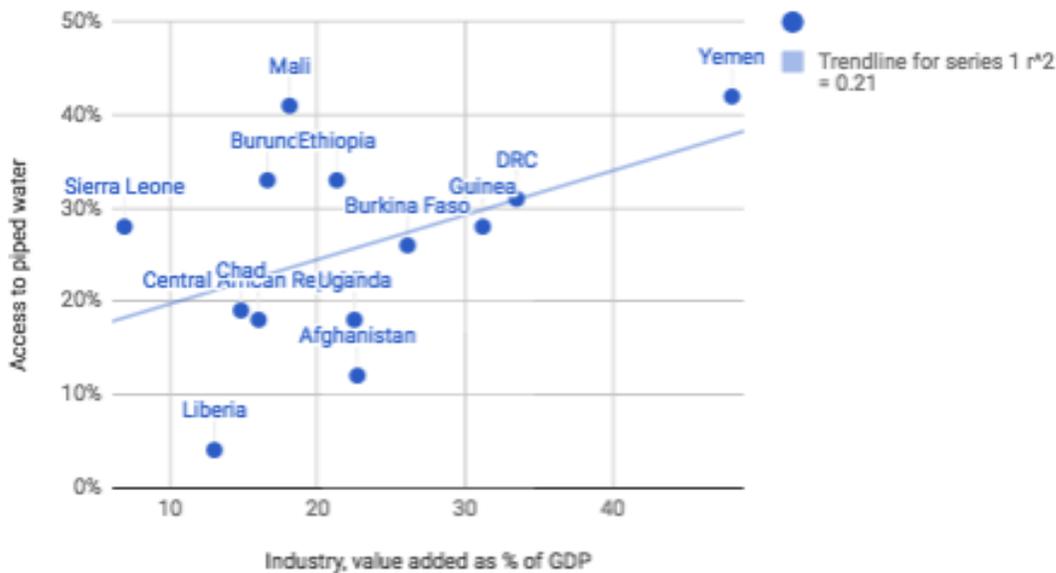


FIGURE A.7

Industry and Access to Piped Water; Fragile/Low-Income Countries



Perhaps surprisingly, there was little correlation between **WASH budget** as a share of GDP and access to piped drinking water ($r^2 = .033$). There are three possible explanations for this: (1) WASH budgets include funds for sanitation as well as water, and it is likely that some countries prioritize sanitation; (2) the data includes the *budget* and not actual *expenditure*, and therefore the variable does

not account for how much money is ultimately spent on water provision (and even expenditure does not account for absorption of funds and proper use); (3) WASH budgets only consider funds devoted by the government, and therefore, do not take into account funds from aid or private lending. Kyrgyzstan, for example, relies on the government for less than 1 percent of its water and sanitation financing, while approximately 74 percent comes from foreign aid sources and 25 percent comes from repayable finance (WHO 2017, 19). Further, Kyrgyzstan has one of the highest rates of access to piped water within its *nonfragile/low middle-income* country grouping, demonstrating that government funding is just one source for successful water provision.

There was a slight correlation between **WASH expenditure** (what was actually spent) and access to piped water ($r^2 = 0.239$), and within country groupings, the correlation between WASH budget and access to piped water did rise (in fact, the r^2 for *fragile/lower middle-income* countries was .762), indicating that government funds allotted to water and sanitation are likely having some impact on the provision of piped water, but the data is limited and flawed, as mentioned above.

FIGURE A.8

WASH Expenditure and Access to Piped Water; All Countries with Available WASH Data

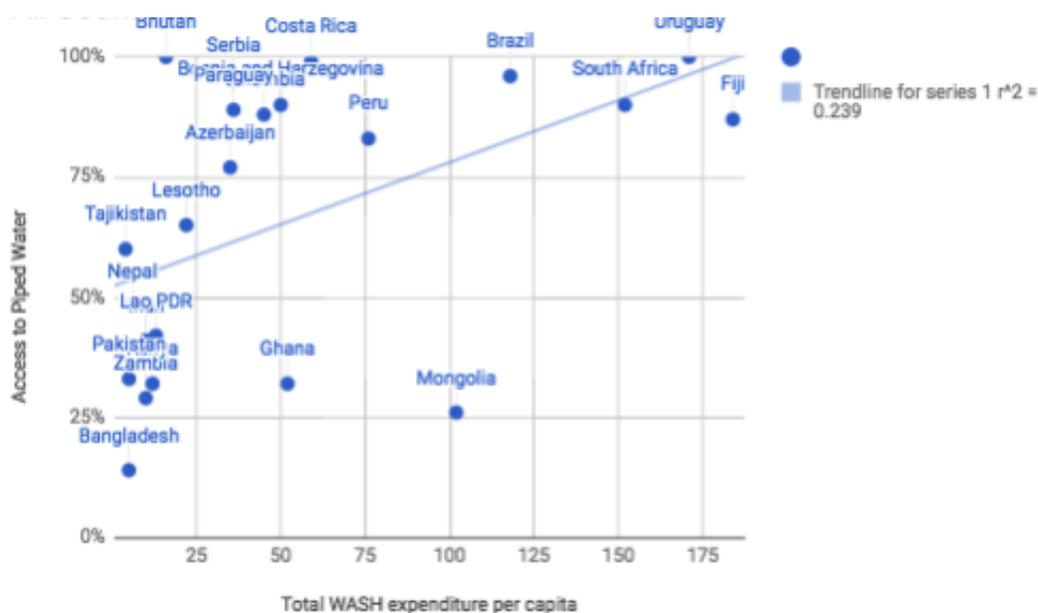
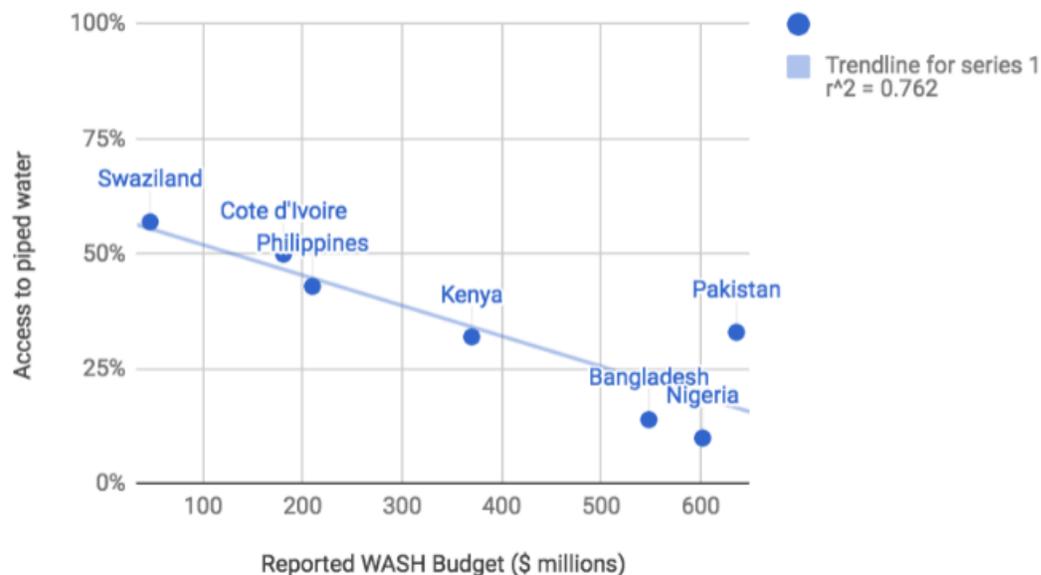


FIGURE A.9

Reported WASH Budget and Access to Piped Water; Fragile/Lower Middle–Income Countries



Data Sources for Country Groupings Analysis

Access to piped water: WHO and UNICEF 2017

GDP per capita: World Bank 2016b

Fragility: Fund for Peace 2017

Urban population (% of total): World Bank 2016c

Income Gini Coefficient: United Nations Development Programme 2013 (original source: World Bank World Development Indicators)

Industry, value added (% of GDP): World Bank 2016d

Ease of access to loans: World Bank 2017b

Total natural resources rents (% of GDP): World Bank 2015

Global Competitiveness Index: Schwab and Sala-i-Martin 2016

Ease of Doing Business: World Bank 2017c

Water Stress: Gassert et al. 2013

Total WASH Expenditure per Capita: United Nations – Water Global Analysis and Assessment of Sanitation and Drinking Water 2017

Report WASH Budget in US\$ millions: United Nations – Water Global Analysis and Assessment of Sanitation and Drinking Water 2017

Appendix B. Innovative Financing Models Considered in Phase 1

Multistakeholder Philanthropy-led Financing

A multistakeholder, philanthropy-led financing model can be characterized as a partnership among multilateral and bilateral donors, private sector, foundations, and NGOs aiming to meet specific sectoral targets or provide specific services. It is funded through pledges made in each replenishment cycle and is therefore capable of raising significant resources and ensuring financial sustainability. Gavi, one of the most successful examples, has accumulated donor contributions of \$20.9 billion for the period 2000–20.⁵² Gavi is also at the forefront of developing innovative financing mechanisms. The International Finance Facility for Immunisation, established to raise and manage funds for Gavi, issues vaccine bonds securitized by donor governments' long-term pledges to provide Gavi with a large pool of funds. A WHO analysis suggests that the creation of such partnerships has induced an aggregated increase in overall funding for health from additional sources rather than from reallocation of resources (WHO 2009). Gavi and other partnership examples have a pro-poor focus by either targeting countries with the highest need or the most vulnerable populations. Disbursements are tied to meeting targets, and these partnerships often have a strong due diligence process and monitoring and evaluation mechanisms that ensure financial accountability and improve aid effectiveness.

Solidarity Levies

In 2006, a global health initiative called Unitaid was launched to invest in new ways to prevent, diagnose, and treat HIV/AIDS, tuberculosis, and malaria more quickly, cheaply, and effectively. Since then, Unitaid has received over US \$2.5 billion in donor contributions. A key source of income is the solidarity levy on airline tickets initially implemented by France and later adopted by nine other countries. The taxation amounts are miniscule so as not to disrupt the airline industry but have amounted to large sums. Unitaid does significant ex-ante impact assessment and due diligence to determine market barriers for medicines and treatment, and provides grants to organizations that have the necessary expertise to overcome such barriers. Unitaid has ensured the distribution of 350 million high-quality malaria medicine tablets, provided ongoing treatment to 690,000 children with HIV, and reduced prices for HIV and tuberculosis medicines by 60–80 percent. The Unitaid model is said to be

successful for three main reasons: broad participation from traditional donors and developing countries in financing and decisionmaking; sustainable, long-term financing through taxes enabling OpEx finance; and a catalytic model, targeting indirect, market-level impact in addition to direct provision of treatments.

Fund of Funds

Centralized funds of funds enable pooling of resources for efforts in specific sectors or issue areas, reducing duplication, improving alignment and strategic deployment, and helping to hedge against risk. These funds can make blended investments in private equity funds and leverage their position to promote sustainable development investments. For example, the Global Energy Efficiency and Renewable Energy Fund, a fund of funds advised by the European Investment Bank, blends over 200 million euros of investment from the EU, Germany, Norway, and private investors. It is anticipated that these resources will be leveraged to mobilize over 10 billion euros worth of infrastructure projects that promote renewable energy and energy efficiency in emerging markets.

Impact and Results-Based Investing

Impact investing has often been defined as the “use of profit-seeking investment to generate social and environmental good.” Impact investors are understood to be open to smaller financial return in exchange for greater social good. In 2009, a widely cited study by the Monitor Institute estimated that the size of the market would reach “500 billion within the next decade” (Freireich and Fulton 2009, 31–33). While this estimate may have been wildly optimistic, still in 2017, the Global Impact Investing Network survey of 208 respondents reported a total of \$114 billion invested in transactions in low- and middle-income countries.⁵³ The emphasis on impact investing is not driven by its ability to go to scale in any appreciable way but in its support of new financial models that specifically target the poor. The combination of results-based financing, structured to monitor positive externalities such as health impacts and a real focus on the poor, could reveal truly disruptive local models that may be scaled to supplement traditional ways of delivering services.

Revolving Funds

Revolving funds provide financing for specific projects and ensure their sustainability by using returns from those investments to fund future investments. There are multiple examples of revolving funds in

the water sector, including the Philippine Water Revolving Fund (PWRF) and the Clean Water State Revolving Fund (CWSRF) in the United States. The PWRF uses leveraged ODA and local private funds (a cofinancing agreement between the Government of the Philippines and private banks) to provide loans for utilities to expand piped water access and wastewater treatment facilities. Repayments are reinvested into the PWRF to finance other projects. The CWSRF functions like a sustainable infrastructure bank, blending federal and state funds to back the issuance of bonds, proceeds of which are then used to finance clean water investment loans. Loan repayments are used to finance the bonds. Revolving funds enable blending of private/commercial investment and public/ODA funds. For the focus of this research project, revolving funds also present challenges, including how to ensure sustainability when the investments are tailored to cover operational expenditures for utilities that are not self-sustaining. A hybrid form of revolving fund, which provides a public/ODA subsidy and enables cross-project subsidies with longer time horizons, may be a solution.

Public-Private Integrated Partnerships

An integrated partnership is a form of public-private partnership with the primary goal of mobilizing private capital to improve quality, access, and efficiency in services delivery in addition to financing the construction or improvement of infrastructure (Sekhri, Feachem, and Ni 2011). Integrated partnerships can allow for a greater stability in operational budgets for providing services (e.g., health care) especially when the government budget is unreliable, because the private partner is actively engaged in “designing, financing, building, and maintaining health facilities and delivering clinical services” (Sekhri, Feachem, and Ni 2011, 1499). The return on investment to the private partner depends on performance (e.g., the number of patients received by a hospital that is run by a private health care provider), which is monitored and evaluated by a third party or jointly by the government and the private partner. While this mechanism may incentivize the private partner to improve access and provide quality services, it may not necessarily benefit the poorest unless the government subsidizes user fees (or tariffs). Another challenge lies in accurately estimating the demand for services, which may severely affect cash flows and thus cost recoverability.

Land Value Capture

Value capture is premised on the assertion that public investment in infrastructure would increase market values of public and private land, some of which could be realized as revenue by public

authorities to cover capital costs, or defray operational expenses. Usually applied in urban transport, where proximity to mass transit typically commands land value premiums, successful value capture requires prerequisites, including an efficient land market with private land ownership, clarity of titles with government being able to exercise eminent domain, and a somewhat benevolent and transparent governance system. Moreover, local government, political leaders, and service delivery units have to be in sync, which is often not the case, particularly in highly centralized countries where service delivery is controlled or influenced by provincial or national government. This alignment of purposes is critical for targeting low-income citizens, which requires cross-subsidization from value capture to service operations. This mechanism has had limited traction in the water sector mainly because land value appreciation from improvements in piped water coverage or water quality is limited. But some cities have experienced success by including water within a suite of urban improvements that also included transportation, waste management, and zoning.

Appendix C. List of Interviews

Name	Organization	Position	Interview date
Darren Saywell	AECOM	Director of Water Services	05/07/2018
Stephanie Phipps	GAVI	Senior Programme Assistant	05/22/2018
David Kyle	Impact Business Leaders	Executive Director/Founder	02/21/2018
Victor Valente	KfW	Coordinator of Sanitation and Urban Mobility Projects	03/19/2018
Jehanne Fabre	Danone	Program Management Officer	03/19/2018
Cyrille Arnould	Global Energy Efficiency and Renewable Energy Fund	Head	03/19/2018
Prit Salian	i-San Associates	WASH Expert	03/19/2018
Kathleen Dominique	OECD	Environmental Economist/ Project Leader	04/06/2018
Aakif Merchant	Convergence Finance	Blended Finance Specialist	04/12/2018
Rachel Cardone	Red Thread Advisors	Founder	04/18/2018
Louis Boorstin	Osprey Foundation	Managing Director	04/27/2018
Yogita Musseen	The World Bank	Senior Infrastructure Economist, Global Water Practice	05/01/2018
Joel Kolker	The World Bank	Lead Water & Sanitation Specialist, Water and Sanitation Program	05/17/2018
Elke Peetz	KfW	Sectoral Economist, Department of Urban Development and Natural Resources	05/18/2018

Notes

- ¹ In other cases, national governments place responsibility for water service provision with a corporatized utility.
- ² In the mid-1990s, financial sources for water and sanitation were estimated to be 65–70 percent the domestic public sector, 5 percent the domestic private sector, 10–15 percent international donors, and 10–15 percent international private companies (Prynn and Sunman 2000).
- ³ Typically, tariffs for water and sanitation services only cover the cost of service provision and rarely cover all environmental externalities. If there is an abstraction charge or tax in place, utilities can pass it through via the water tariff.
- ⁴ Fonseca and colleagues (2010, 4) use the following definitions for the water, sanitation, and hygiene sector:
Capital expenditure – hardware and software (CapEx): The capital invested in constructing fixed assets such as concrete structures, pumps, and pipes. Investments in fixed assets are occasional and “lumpy” and include the costs of initial construction and system extension, enhancement, and augmentation. CapEx software includes one-off work with stakeholders before construction or implementation, extension, enhancement, and augmentation (such as costs of one-off capacity building).
Capital maintenance expenditure (CapManEx): Expenditure on asset renewal, replacement, and rehabilitation costs, based upon serviceability and risk criteria.
Operating and minor maintenance expenditure (OpEx): Expenditure on labor, fuel, chemicals, materials, or regular purchases of any bulk water. Most cost estimates assume OpEx runs at between 5 percent and 20 percent of capital investments. Minor maintenance is routine maintenance needed to keep systems running at peak performance but does not include major repairs.
- ⁵ According to WHO (2014), among the countries for which data are available, 70 percent report that tariffs are insufficient to cover operation and maintenance costs.
- ⁶ Multistakeholder, philanthropy-led models; solidarity levies; and land value capture are explained in detail in the body of this report. Brief descriptions of the other mechanisms can be found in appendix B.
- ⁷ A list of those interviewed is available in appendix C.
- ⁸ Michael Jacobs, “Where’s the Money: Financial Flows to the Developing World.” *Prosper* (blog), CSIS, October 1, 2014, <https://csisprosper.com/2014/10/01/development-financial-flows/>.
- ⁹ For example, the Monterrey Consensus notes that institutions could support foreign direct investment through “export credits, co-financing, venture capital and other lending instruments, risk guarantees, leveraging aid resources, information on investment opportunities, business development services, forums to facilitate business contacts and cooperation between enterprises of developed and developing countries, as well as funding for feasibility studies” (United Nations 2002, 6).
- ¹⁰ “From Billions to Trillions: Transforming Development Finance: Post-2015 Financing for Development: Multilateral Development Finance,” World Bank Group, April 2, 2015, [http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23659446/DC2015-0002\(E\)FinancingforDevelopment.pdf](http://siteresources.worldbank.org/DEVCOMMINT/Documentation/23659446/DC2015-0002(E)FinancingforDevelopment.pdf).
- ¹¹ Ibid.
- ¹² G20-IFA Working Group, “Principles of MDBs’ Strategy for Crowding-In Private Sector Finance for Growth and Sustainable Development,” April 2017, https://www.bundesfinanzministerium.de/Content/DE/Downloads/G20-Dokumente/principles-on-crowding-in-private-sector-finance-april-20.pdf?__blob=publicationFile&v=2.

- ¹³ John Vidal, “Water Privatization: A Worldwide Failure?” *The Guardian*, January 30, 2015, <https://www.theguardian.com/global-development/2015/jan/30/water-privatisation-worldwide-failure-lagos-world-bank>.
- ¹⁴ Many of these are discussed in OECD (2018b). The OECD DAC Blended Finance Principles aim to guide how the use of blended finance can avoid such pitfalls.
- ¹⁵ These potential downsides were a focus of Romero (2017). See also “Workshop in Preparation for the Third International Conference on Financing for Development: The Role of Catalytic Aid,” United Nations, accessed August 23, 2018, http://www.un.org/esa/ffd/wp-content/uploads/2015/01/Catalytic-aid_Programme-and-Note-for-FfD-Workshop-at-DCF.pdf and Paddy Carter, “Maximising Bang for the Buck: Risks, Returns, and What It Really Means to Use ODA to Leverage Private Funds,” *Development Matters* (blog), OECD, November 15, 2016, <https://oecd-development-matters.org/2016/11/15/maximising-bang-for-the-buck-risks-returns-and-what-it-really-means-to-use-oda-to-leverage-private-funds/>.
- ¹⁶ “Reform of the Water Sector in Kenya,” GIZ, accessed August 4, 2018, <https://www.giz.de/en/worldwide/19853.html>.
- ¹⁷ “Supporting Water Sector Development,” GIZ, accessed August 4, 2018, <https://www.giz.de/en/worldwide/20255.html>.
- ¹⁸ “Sanitation Activities of GIZ in Uganda,” Sustainable Sanitation Alliance, accessed August 4, 2018, <https://www.susana.org/en/knowledge-hub/projects/database/details/11>.
- ¹⁹ “Timeline,” Global Partnership for Education, accessed August 4, 2018, <https://www.globalpartnership.org/timeline>.
- ²⁰ “About GAFSP,” Global Agriculture and Food Security Program, accessed June 18, 2018, <http://www.gafspfund.org/content/about-gafsp>.
- ²¹ “Finance,” International Fund for Agricultural Development, accessed June 18, 2018, <https://www.ifad.org/web/guest/finance>.
- ²² “How It Works,” Water Supply and Sanitation Collaborative Council, accessed June 18, 2018, <https://www.wsscc.org/who-we-are/how-it-works/>.
- ²³ “Financials,” The Global Fund to Fight AIDS, Tuberculosis and Malaria, accessed June 18, 2018, <https://www.theglobalfund.org/en/financials/>.
- ²⁴ “Private Sector Window,” Global Agriculture and Food Security Program, accessed June 18, 2018, <http://www.gafspfund.org/content/private-sector-window>.
- ²⁵ “Overview,” International Finance Facility for Immunisation, accessed June 18, 2018, <https://www.iffim.org/about/overview/>.
- ²⁶ “The Education Commission,” The International Finance Facility for Education, accessed August 23, 2018, <http://educationcommission.org/international-finance-facility-education/>.
- ²⁷ “Resource Mobilization,” Green Climate Fund, accessed June 18, 2018, <https://www.greenclimate.fund/how-we-work/resource-mobilization>.
- ²⁸ Gloria Pallares, “Global Fund and Gavi to Become Roommates in Cost-Saving Drive,” Devex, December 15, 2017, <https://www.devex.com/news/global-fund-and-gavi-to-become-roommates-in-cost-saving-drive-91702>.
- ²⁹ Interview with Louis Boorstin, Osprey Foundation. The most widely used estimate of disability-adjusted life years related to water and sanitation comes from Prüss and colleagues (2002). The estimate is based on interventions used for four diseases and only considers the impact that poor water and sanitation together have on health.

³⁰ The International Benchmarking Network for Water and Sanitation Utilities has the most comprehensive database of utility performance. It covers coverage, consumption, metering, and tariffs among other indicators. Launched in 1996, it was hosted at the World Bank and supported by funding from the Department for International Development. It has gathered data from over 110 countries and thousands of water providers, although not all report regularly. See Danilenko and colleagues (2014).

The Performance Assessment System for water and sanitation was developed by the Center for Water and Sanitation at CEPT University in India beginning in 2008, when it received a grant from the Bill & Melinda Gates Foundation. The system now covers six states and 900 cities in India. It developed an exhaustive performance measurement framework for benchmarking utility performance in India. See <http://www.pas.org.in>.

³¹ For a detailed list of funders in the WASH sector, see “Funding Map,” WASHfund.org, accessed August 23, 2018, <http://washfund.org/funding-map/>. The top five funders in this sector by dollar value of grants (since 2006) are the Bill & Melinda Gates Foundation, the Conrad N. Hilton Foundation, the Coca-Cola Foundation, the Howard G. Buffett Foundation, and the Queen Elizabeth Diamond Jubilee Trust.

³² While a revolving fund could exist in water (and thus be self-replenishing), the fund envisioned in this report would provide subsidies to pro-poor utilities and thus would not be able to sufficiently self-replenish.

³³ The tax remains in effect even though there has been legal action taken to remove it. According to some, because there is no political unity to remove it, it will remain in effect into the foreseeable future. See “Solidarity Surcharge,” WW+KN, accessed August 23, 2018, <https://www.german-tax-consultants.com/german-taxes/solidarity-surcharge-solidaritaetszuschlag.html>.

³⁴ Reuters Staff, “France to push for European financial transactions tax,” *Reuters*, December 10, 2017, <https://www.reuters.com/article/us-france-tax-environment/france-to-push-for-european-financial-transactions-tax-idUSKBN1E40G1>.

³⁵ “WHO statement in response to the Business Standard news article ‘WHO imposes Rs 250-cr tobacco tax on India,’” World Health Organization, news release, January 10, 2012, http://www.who.int/tobacco/communications/statements/tobacco_tax_india_2012/en/.

³⁶ “Air Ticket Solidarity Levy,” Korea Official Development Assistance, accessed August 4, 2018, <http://www.odakorea.go.kr/eng.etc.AirTicketSolidarityLevy.do>.

³⁷ “Solidarity Tax,” International Air Transport Authority, accessed August 23, 2018, <https://www.iata.org/policy/Documents/solidarity-tax.pdf>.

³⁸ “WHO statement in response to the Business Standard news article ‘WHO imposes Rs 250-cr tobacco tax on India,’” World Health Organization, news release, January 10, 2012, http://www.who.int/tobacco/communications/statements/tobacco_tax_india_2012/en/.

³⁹ Sandra Laville and Matthew Taylor, “A Million Bottles a Minute: World’s Plastic Binge ‘as Dangerous as Climate Change,’” *The Guardian*, June 28, 2017, <https://www.theguardian.com/environment/2017/jun/28/a-million-a-minute-worlds-plastic-bottle-binge-as-dangerous-as-climate-change>.

⁴⁰ Peter Gleick, “Significant Figures. Bottled Water Tax,” *Science Blog*, May 9, 2013, <http://scienceblogs.com/significantfigures/index.php/2013/05/09/bottled-water-tax/>

⁴¹ Laura Bliss, “The Case for Taxing Bottled Water,” *CityLab*, May 28, 2015, <https://www.citylab.com/equity/2015/05/the-case-for-taxing-bottled-water/393848/>.

⁴² As an example, following a drinking water crisis in the town of Flint, Michigan, there were calls to raise resources to overhaul and improve the piped water system, partly through a tax on water bottlers. See Nicholas Schroek, “As Michigan’s Municipal Water Crisis Drags on Its Water Industry Booms,” *CityLab*, May 23, 2018,

<https://www.citylab.com/environment/2018/05/as-michigans-municipal-water-crisis-drags-on-its-bottled-water-industry-booms/561098/>.

- ⁴³ Thus, any private sector participation in the water sector must be regulated, and specific contractual mechanisms should be put in place through bundling and risk sharing.
- ⁴⁴ “Global BRTData,” BRT+ Centre of Excellence, last modified August 8, 2018, <http://www.brtdata.org>.
- ⁴⁵ Patrick Garvin, Catherine Cloutier, and David Butler, “How the MBTA makes and spends its money: A breakdown of the 2015 fiscal year budget,” *Boston Globe*, March 2, 2015, <https://www.bostonglobe.com/metro/2015/03/02/how-mbta-makes-and-spends-its-money/PL3Z70XaEFfnI42awRcKMO/story.html>.
- ⁴⁶ “Water Tax,” Government of the Netherlands, accessed August 4, 2018, <https://www.government.nl/topics/environmental-taxes/water-tax>.
- ⁴⁷ See Blackhurst, Hendrickson, and Sels i Vidal (2010) for a study of water-intensive industries in the United States.
- ⁴⁸ This observation is not based on robust statistical analysis, and further study would be needed to validate this.
- ⁴⁹ Although important, details on how such a fund would operate in practice are beyond the scope of this study. Careful consideration of operational questions is needed before launching this or a similar fund.
- ⁵⁰ “Output-Based Aid in the Results-Based Financing Universe,” Global Partnership on Output-Based Aid, accessed August 23, 2018, https://www.gpoba.org/sites/gpoba/files/Output-Based%20Aid%20in%20the%20Results-Based%20Financing%20Universe_0.pdf.
- ⁵¹ A number of resources exist to help navigate the range of results-based financing instruments. For an overview of approaches in developed and developing countries, see Eldridge and TeKolste (2016) and Instiglio (2017).
- ⁵² “Key figures: donor contributions & pledges,” Gavi, accessed August 4, 2018, <https://www.gavi.org/funding/donor-contributions-pledges/>.
- ⁵³ According to GIIN (2017), only 6 percent of these investments went to WASH. Excluding two large outliers, the total drops to 1 percent.

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This study was commissioned by

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
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On behalf of

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