

Editorial: Can we meet the costs of achieving safely managed drinking-water, sanitation and hygiene services under the new sustainable development goals?

In September 2015 the United Nations General Assembly adopted a resolution titled ‘Transforming our world: the 2030 Agenda for Sustainable Development’, which brings universal access to drinking water, sanitation and hygiene (WASH) within our sights. Now, there is the opportunity to finish the half completed job from the Millennium Framework that produced the Target 7c on water supply and sanitation. This historical pronouncement should certainly be cause to be positive, considering the billions of dollars of benefit per year that will flow from universal WASH access. However, the WASH targets (SDG #6 Targets 6.1 and 6.2) are, by any standard, extremely ambitious.

We will soon wake up to the Herculean challenge we have set ourselves in this new Sustainable Development Goal (SDG) framework. In the WASH space, we have 15 years to achieve far more than what we achieved for water and did not achieve for sanitation in the 25 years of the Millennium Development Goal (MDG) framework. First, the ‘safely managed’ service level for water and sanitation in the targets (see Table 1) is significantly higher than the ‘improved’ standard in the MDG Target 7c indicators, and thus more costly. Second, we have added hygiene to the scope of the WASH targets, which includes hand washing in the indicator,

and in the wording of the water goal ‘for all’ can also be read to include institutional WASH (schools, health facilities, work places, prisons, etc.) and not just households.

Third, the unfinished job from the MDG period leaves us with a significant proportion of poor, vulnerable, isolated communities and other challenging environments as unserved households – which are more difficult and often more costly to reach with WASH services. Fourth, we have only 15 years, not 25, to meet the targets. And fifth, WASH is ‘competing’ for policy and funding prioritization with many more development objectives; in the MDG period there were 18 targets and 48 indicators – this has now expanded to 169 targets and 229 *proposed* indicators across a broader set of 17 sustainable development goals. Hence, with so many targets now on the agendas of governments and donors, it becomes essential to rationally plan how they are to be financed and implemented. One first step of many is to assess the costs of meeting the targets.

THE BIG COST NUMBERS

So, what will universal safely managed WASH services cost? Cost numbers for each service type and level,

Table 1 | WASH-related targets and proposed indicators and definitions in the SDG #6 on water

SDG target	Proposed indicator	Definition
Target 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all	Percentage of population using safely managed drinking water services	Corresponds to population using an improved drinking water source located on the premises, available when needed, and free of fecal and priority chemical contamination
Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	Percentage of population using safely managed sanitation services including a hand washing facility with soap and water	Sanitation: Implies a system which hygienically separates excreta from human contact as well as safe reuse/treatment of excreta <i>in situ</i> , or transports to a treatment plant where it is properly treated and disposed of or reused Hand washing: Hand washing facility with soap and water in the household

Sources: [United Nations Economic & Social Council \(2015\)](#) for columns 1 and 2, and [WHO & UNICEF \(2015\)](#) for column 3.

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aggregated across 140 developing countries, are shown in Figure 1. Table 2 shows different ways in which these can be summated to arrive at a total cost of achieving the SDG WASH targets, depending on the pathway towards safely managed services (Hutton & Varughese 2016).

In the baseline scenario, the new WASH-related targets carry a price tag for household WASH of US\$ 114 billion annually (range: US\$ 74 to US\$ 166 billion) in capital costs. This is equivalent to 0.39% (range: 0.26–0.55%) of global product of the 140 countries, or roughly four times what has been spent over the past 15 years globally. This global average hides significant variation between regions and countries – for example, the targets cost sub-Saharan Africa (SSA) 2% of its gross regional product (GRP) and Southern Asia 0.85% of its GRP (see Figure 2), while in Latin America and East Asia it is below one-quarter of 1%. Note that these price tags exclude institutional WASH.

For many populations, safely managed WASH is unlikely to be achieved any time soon, and interim targets such as ending open defecation and providing improved water and sanitation remain valid as medium-term goals. Globally, the capital cost of providing basic WASH is \$28.4 billion (range: US\$ 13.8 to US\$ 46.7 billion), or about the same as what has been spent globally in the past 15 years. Again, there is significant variation between regions shown in Figure 2 (e.g., in the SSA region the costs are 0.64% of

GRP), hence the spending needs to be shifted to the most off-track countries, to poor people within those countries and to sanitation and hygiene. In off-track and resource-constrained countries, it therefore makes sense to continue providing low-cost options. For example, it will cost the world only US\$ 3.6 billion (range: US\$ 2.7 to US\$ 4.2 billion) per year until 2025 to end open defecation, which is one-sixth the cost of improved sanitation.

Cost numbers can seem very large, which leads to individual players feeling helpless. The shift in attention should therefore be from these large cost numbers to identifying the right financing sources and mechanisms to extend services to unserved populations and sustain existing services. There is no single recommendation that can be given on how to finance WASH services, as it will vary between population income groups, service levels, rural/urban location, and capital/recurrent cost component. These are explored further in the following paragraphs.

REACHING POOR PEOPLE

The fact that at least 50% of the costs are for people who are in the bottom two wealth quintiles of their countries, and likely to be poor, suggests that the public sector and aid agencies will play a major role in the march towards universal access.

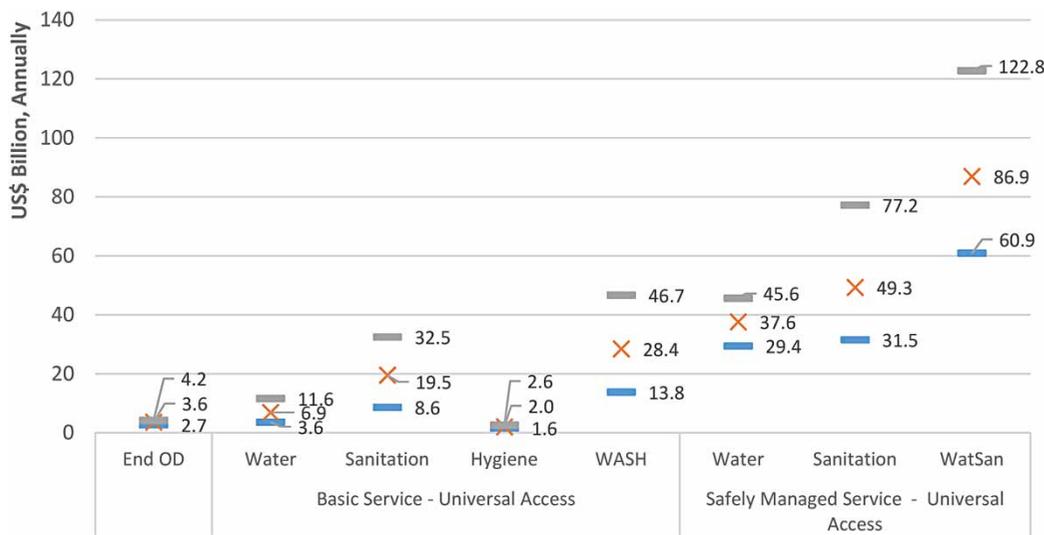


Figure 1 | Annual global capital costs for different WASH service levels for 140 countries, in US\$ billion. Ending open defecation, or becoming open defecation-free, has a target year of 2025. Safely managed sanitation excludes the cost of basic sanitation. WASH = water, sanitation and hygiene; OD = open defecation; WatSan = water and sanitation. Source: Reproduced from Hutton & Varughese (2016) with permission of the World Bank.

Table 2 | Estimated annual global costs of meeting SDG Targets 6.1 and 6.2, under different pathways

Service-level pathway and target	Unit	Lower	Mid	Upper
1. Direct service pathway to safely managed services for all	US\$, billions per year Percent of GP ₁₄₀	71.1 0.245%	108.4 0.373%	157.9 0.510%
2. Indirect service pathway via ODF and basic water for all, to safely managed services for all	US\$, billions per year Percent of GP ₁₄₀	77.4 0.267%	118.9 0.409%	173.7 0.565%
3. Mixture of direct and indirect pathways (50% each of nos. 1 and 2) (baseline)	US\$ billions per year Percent of GP ₁₄₀	74.3 0.256%	113.7 0.391%	165.8 0.537%

Source: Reproduced from Hutton & Varughese (2016) with permission of the World Bank.

SDG = Sustainable Development Goal; ODF = open defecation-free; GP = gross product. Lower and upper bounds were based on three significant sources of uncertainty: (1) 100% of population using low-cost technology to 100% using high cost technology (baseline 50% each); (2) discount rate varied from 3% to 8% (baseline 5%); and (3) alternative method of transferring cost data to countries with limited unit cost data, using absolute U.S. dollar values instead of adjusting taking into account differences in purchasing power.

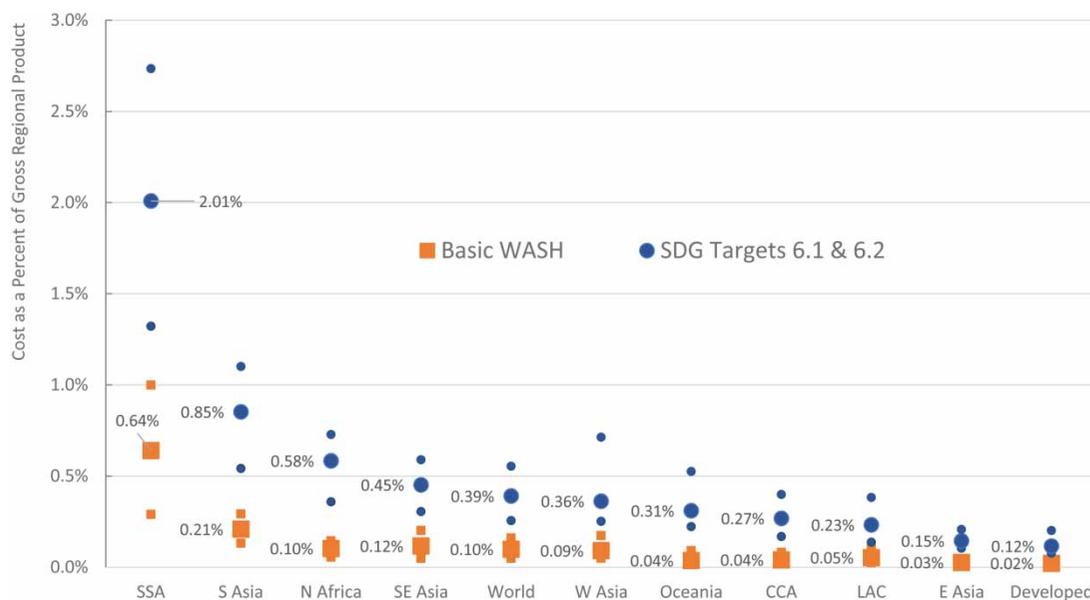


Figure 2 | Costs of basic and safely managed services as a percentage of gross regional product (GRP) by MDG region, with uncertainty range. Data label refers to baseline estimate. MDG = Millennium Development Goal; WASH = water, sanitation and hygiene; SDG = Sustainable Development Goal; SSA = sub-Saharan Africa; LAC = Latin America and the Caribbean; CCA = Caucasus and Central Asia. See Table 2 for details on upper and lower values on variables varied in sensitivity analysis. GRP is based on the aggregated GDP of countries in each region. An economic growth rate of 5% is assumed across all regions. Source: Reproduced from Hutton & Varughese (2016) with permission of the World Bank.

Only 23% of the costs of basic WASH and 18% of the costs of safely managed WASH will occur in low-income countries. However, three-quarters of the world's poor live in middle-income countries, where more than three-quarters of the unserved reside. Hence, significant efforts are still needed in middle-income countries, drawing on a combination of public and private financing streams. The perspective for the availability of public resources is generally positive, as economies continue to grow and tax regimes become more effective at gathering revenues. Nonetheless, better targeting of public resources is needed to reduce subsidy capture by

the middle class. Tariff revision to increase cost recovery remains a thorny political issue, but is key for financial sustainability of many of the world's underperforming water utilities.

RESPONDING TO URBAN GROWTH

Large populations continuing to shift to urban areas (a further one billion by 2030) means that over two-thirds (70%) of the capital costs of extending WASH services to the unserved will be incurred in urban areas. Many of

these settlements are unplanned, or not properly planned, leading to higher eventual costs of serving the unserved with conventional options so often preferred by municipalities and donors alike (e.g., sewerage), or instead, motivating the search for alternative solutions (e.g., septic tank emptying services).

Given the capital-heavy nature of large-scale water and sanitation systems in urban areas, and the multiple risks faced by private investment money, significant public funds are often required. However, a contradiction is found here between this reality in urban areas and the commonly found policy for rural households to be largely responsible for financing of their latrines, which is considered a 'private' matter. Hence, financing mechanisms need to be applied that treat similar households similarly, so that poor households whether in rural or urban areas have access to the same means as each other. In the selection of WASH infrastructure solutions, it is absolutely crucial that financing is secured for the full costs of operations and capital maintenance, as generally more capital-intensive systems have higher running costs on a per household basis.

MOVING TOWARDS APPROPRIATE FINANCING STRATEGIES

While the global cost numbers are susceptible to significant data uncertainties and methodological assumptions, it is best to view these numbers as orders of magnitude of where the financing is needed rather than precise estimates. Ranges have been presented based on varying three out of the twelve costing parameters (Hutton & Varughese 2016). While a global study can be useful to get the debate started, costing studies and financing plans are required at the country, district and utility level to be of any use.

Several tensions arise in deciding how service extension can be financed. They are not unresolvable, but they have to be addressed. One is the targeting of bilateral aid – much of it still does not reach the places it is most needed. To serve the poor and have an impact on poverty, aid should still target middle-income countries – but the support might focus more on how countries' own internal resources can be better used – focusing on equity monitoring, policy, and utility reform. Another tension is the choice inherent in

the SDG targets on safely managed services – and whether it is right for policy efforts and funds to be channeled to safely managed services before universal access to a basic level of service is first achieved.

Third is the question of selecting technologies, whether cheaper hardware options should be chosen to raise the service level for a larger population versus the alternative of investing in better quality hardware that leads to a more sustainable service, but with fewer beneficiaries. A fourth tension is the policy on cost recovery, with a choice faced between scaling up services rapidly through heavily subsidized infrastructure versus charging more to the customer to ensure long-term financial sustainability and a service culture. Finally, the role of government has to be streamlined to be more effective, facing a clear choice between using public funds to extend service coverage directly versus investing in institutional capacity, regulatory structures and inviting the private sector or independent entities to manage WASH services.

The positive outcome of the ambitious global targets on WASH is that it should focus minds and force a prioritization as well as motivate innovations. A risk is that the challenges are seen as insurmountable, and business as usual resumes. But the opportunity now offered is that we are forced to examine the hard realities of sector inefficiencies, the unequal distribution of services, institutional weaknesses, and the inadequate resources to meet WASH targets.

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