

# Roundtable on Financing Water

**The Roundtable on Financing Water**

**5th meeting, 26-27 November 2019, Manila**

**Session 1: Scene Setting: Investment needs and financing capacities. Outlook and key challenges**

**Estimating investment needs and financing capacities for water supply and sanitation in Asia-Pacific.**

**BACKGROUND PAPER**

## Project background and scope

The Asian Water Development Outlook (AWDO) is a recurrent flagship publication of the Asian Development Bank (ADB), which assesses the key dimensions of water security in the region. It builds on a set of indicators that characterise the five dimensions of water security as defined by the ADB:

- Household Water Security
- Economic Water Security
- Urban Water Security
- Environmental Water Security
- Resilience to Water-Related Disasters.

The 2020 AWDO will, for the first time, include a specific focus on financing. The chapter on finance will assess challenges and opportunities related to financing investments that contribute to water security and sustainable growth in the Asia-Pacific region. The ambition of the analytical work is to provide a credible assessment of financing challenges and opportunities for water-related investments in the region. The analysis will cover the following three sub-sectors:

- Access to water supply and sanitation
- Flood protection
- Irrigation infrastructure

The chapter will analyse investment needs and assess financing capacities (to the extent possible in light of available data). It will outline policy options and institutional arrangements that can scale-up the effective and efficient financing of water-related investments that contribute to sustainable growth. This background note outlines the methodology and preliminary results related to water supply and sanitation.

OECD work on financing for the AWDO will also feed into a new initiative by the OECD, Korea and the Asia Water Council to facilitate water security in Asia. The regional initiative, to be delivered in 2020-2025, will work with governments and stakeholders in selected Asian countries to identify policies and measures that can scale up and secure financing for the achievement of country-specific priorities related to water security.

## Inventory of relevant data sources

As a first step, an inventory and assessment of relevant data sources has been undertaken. Tables 1 and 2 summarise data sources that have been identified as relevant for the analysis of investment needs and financing capacities, respectively. For the data on investment needs, Table 1 includes descriptions of the data type (and sub-sector); whether or not the data include baseline expenditures and or projections of investment needs; the type of costs: capital expenditure (CAPEX), operational and maintenance costs (OPEX) and/ or total expenditure (TOTEX); the unit of measure (e.g. in absolute values or shares of GDP); and geographic coverage. For the analysis of financing capacities, Table 2 includes indicators (or proxies) of factors that influence the capacity to financing water-related investments at the country level.

Data will be complemented by additional information received from select countries from a country questionnaire on water policy, management and financing, which was distributed

by the Asian Water Council as part of the regional initiative on facilitating water security in Asia.

**Table 1. Data availability for investment needs in water infrastructure, Asia-Pacific**

	Baseline	Projections	CAPEX/OPEX/TOTEX	Unit	Available source
<b>Water and Sanitation</b>					
Cost of achieving SDG6 (investment gap to 2030)		Y	CAPEX/OPEX/TOTEX	\$ and % GDP	for most countries
<b>Irrigation</b>					
Cost of irrigation as % of GDP	Y	Y	CAPEX	% of GDP	at sub-regional level
<b>Flood protection</b>					
Affected GDP from coastal and riverine flooding	Y	Y	na	% GDP	for most countries
Urban damage from coastal and riverine flooding	Y	Y	na	USD	for most countries
Cost of coastal protection	Y	Y	na	% GDP	at sub-regional level
Cost of river flood protection	Y	N	CAPEX	% GDP	at sub-regional level

**Table 2. Data availability for financing capacities for water infrastructure, Asia-Pacific**

	Baseline	Projections	Source
<b>Financing strategies</b>			
Respective role of revenue from tariffs, public finance	na	na	
ODA flows	WSS	na	OECD
<b>Financing options</b>			
Experience with commercial finance	anecdotal	na	Thomson Reuters, Preqin, etc.
<b>Equity</b>			
Macro affordability	Y	na	WB
Micro affordability	na	na	GWI (household survey)

## Preliminary results

### 1. Investment needs to reach SDG6 targets for water supply and sanitation

Water management and related infrastructure have been crucial for economic growth, food and energy security, and social wellbeing. Harnessing water's productive potential and mitigating water-related risks remain a key priority to achieve and maintain sustainable and inclusive growth in Asia.

According to recent assessments by the WHO and UNICEF Joint Monitoring Programme (JMP), there has been significant progress in improving access to water supply and sanitation in the Asia Pacific region, but important gaps remain (JMP 2019). Access levels to safely managed water supply and sanitation services vary considerably in the region. Australia and New Zealand, Central and Southern Asia benefit from the highest levels of access to safely managed water supply in the region, in comparison to Oceania (excluding New Zealand and Australia), Western, Eastern and South-Eastern Asia, where the quality of access of water supply for the majority of the population remains basic (JMP, 2019). With regards to sanitation services Central and Southern Asia (and Oceania) lag behind other Asia-Pacific sub-regions. Despite this, Central and Southern Asia have shown good progress, having achieved the largest reduction (39%) in open defecation globally since 2000 (JMP, 2019). Oceania was the only region of the world where open defecation increased, and access to at least basic sanitation services decreased, between 2000 and 2017

(JMP, 2019). Many countries in the Asia-Pacific treat less than half of domestic wastewater (JMP, 2019).

Drivers of investment needs in water supply and sanitation include:

- Current rates of access to water supply and sanitation services
- Current and desired levels of quality of access to water supply and sanitation services
- Population growth<sup>1</sup> and urbanisation<sup>2</sup>
- Status of infrastructure assets, including additional investment required to reach an acceptable standard of operational efficiency (e.g. minimising non-revenue water)
- Compliance with, and stringency of, national and local regulations related to urban wastewater treatment, ambient water quality and wastewater reuse
- Adaptation to climate change, including the potential need for water supply augmentation and storage (e.g. wastewater reuse, desalination, dams, managed aquifer recharge), and increased capacity to collect and treat stormwater, as well as the potential need to protect or strengthen existing water infrastructure to increase resilience to climate-related disasters.

Figure 1 estimates the total investment needs (investment gap) required over the period 2015-30 to achieve universal access to safely managed water supply and sanitation services for countries in the Asia Pacific region. The estimate is calculated based on the gap in access to services as of 2015 and the cost of connecting those without access, as well as improving the level of service for those with access to reach SDG 6.1 and 6.2 targets<sup>3</sup>. The drivers of cost to delivery services are based on World Bank calculations at national level and include: labour costs, cost of materials and public spending efficiency, and the prevalence of corruption. With the exception of a few notable outliers (Timor Leste, Afghanistan, Nepal, Pakistan), most countries will need to allocate between 1 and 2% of GDP to invest in water supply and sanitation infrastructure over the period 2015-2030 (based on extrapolations of growth forecasts).

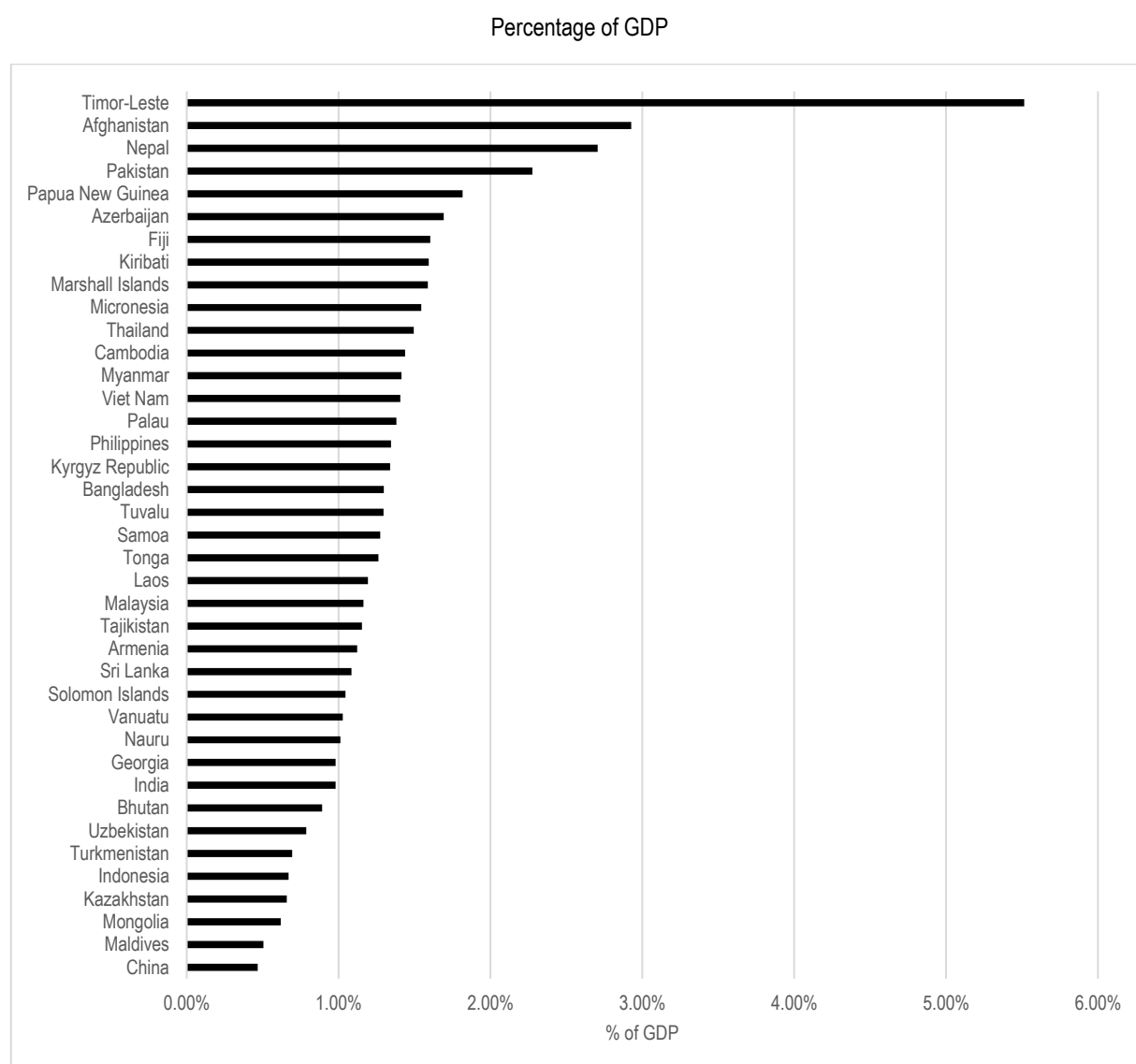
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<sup>1</sup> Sixty percent of the world's population lives in Asia (4.5 billion). The population is projected to grow to more than 5 billion by 2050 (UN DESA, 2017).

<sup>2</sup> Asia's share of urban population, currently at 50%, is expected to reach about 66% by 2050 (UN DESA, 2018).

<sup>3</sup> Sustainable Development Goal (SDG) 6.1: By 2030, achieve universal and equitable access to safe and affordable drinking water for all. SDG 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.

**Figure 1. Total investment gap to achieve universal access to safely managed water supply and sanitation, 2015-30**



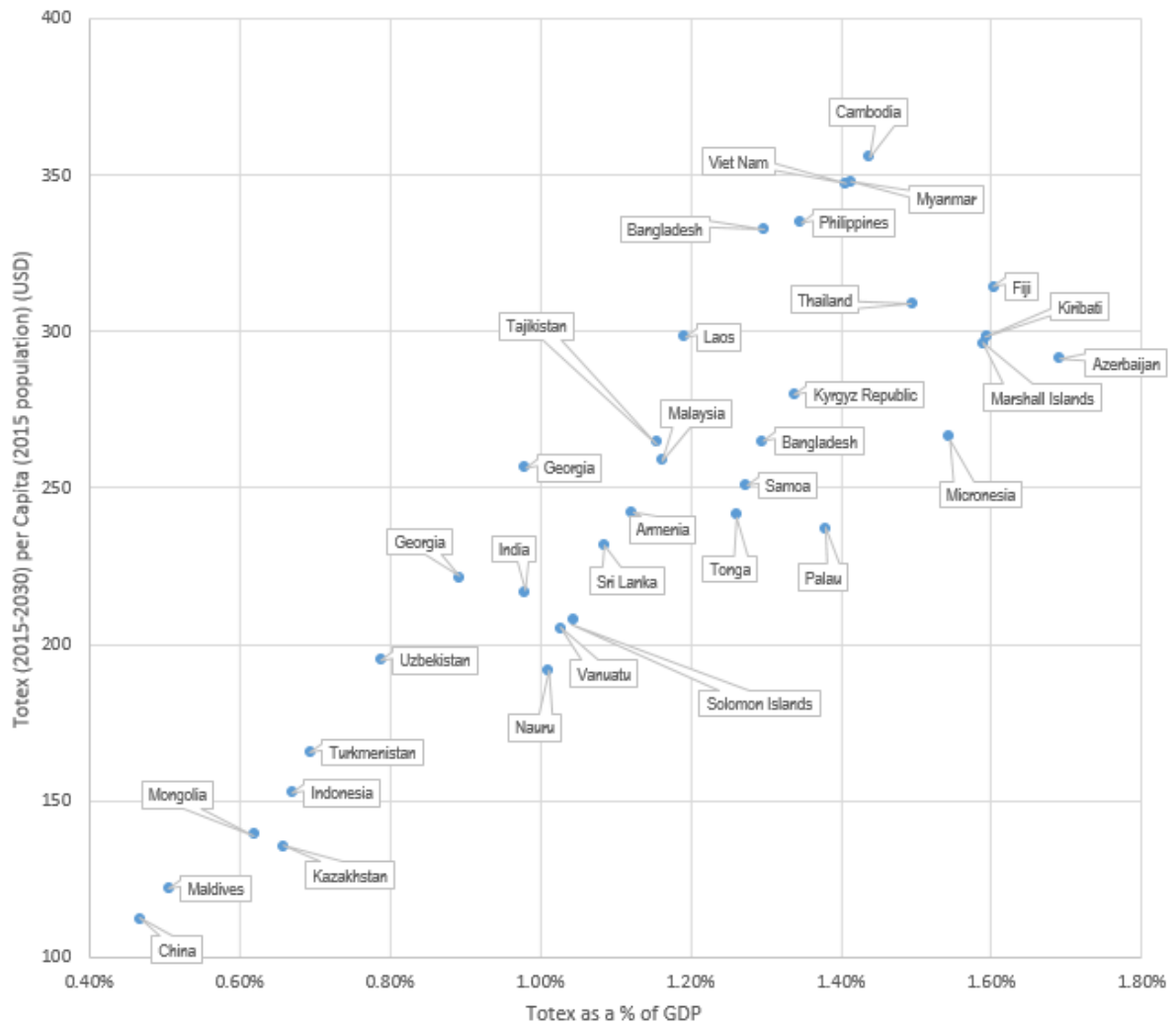
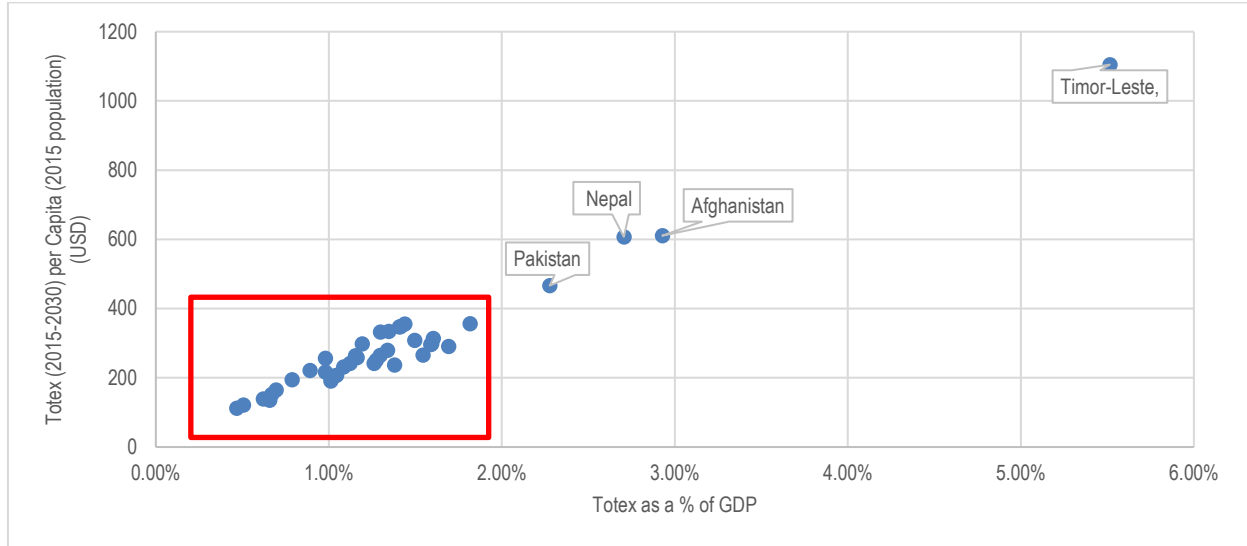
*Note:* No data for Australia, Singapore, New Zealand, Brunei, South Korea, Japan, Hong Kong (SAR China), Niue, Cook Islands.

*Source:* OECD calculations based on cost of service delivery from the Rozenberg and Fay (2019), 2015 dollars. GDP data from IMF. Calculation for GDP over the period derived from actual GDP in 2015-18, forecast of GDP over the period 2019-24 and extrapolation of average growth rate until 2030.

Figure 2 compares countries in the region in terms of the total investment needs to achieve SDGs 6.1 and 6.2 by 2030 as a share of GDP and per capita. This figure provides insights into the macro-economic affordability of investments in water supply and sanitation. Timor Leste, Afghanistan, Nepal, Pakistan, Cambodia, Myanmar, Vietnam, the Philippines and Bangladesh all have water supply and sanitation investment needs of greater than USD20 per capita per year. Countries with investment needs constituting a larger share of total GDP can expect to face greater challenges to meet investment needs.

**Figure 2. Comparative investment gap of water supply and sanitation infrastructure required by 2030 to achieve SDGs 6.1 and 6.2**

Cost per capita (USD) and as a percentage of GDP



*Notes:* Please note the different scale of the two graphs.

Calculation of GDP same as for Figure 1. Calculation for per capital expenditure required based on 2015 population data.

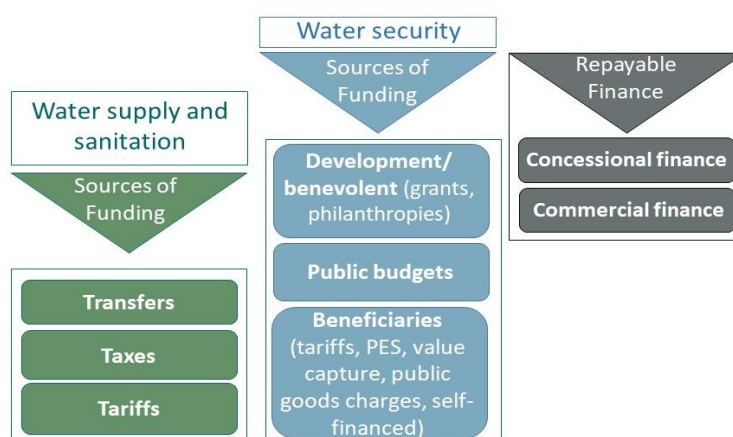
No data for Australia, Singapore, New Zealand, Brunei, South Korea, Japan, Hong Kong (SAR China), Niue, Cook Islands.

*Source:* OECD calculations based on Rozenberg and Fay (2019).

## 2. Financing capacities at country level

The OECD makes a distinction between the three ultimate sources of finance for water-related investments (revenues from tariffs, taxes, transfers from the international community; the so-called “3Ts”) and other sources of repayable finance (loans, bonds, etc.). The 3Ts provides an appropriate distinction for the financing of water services, but is more limited when considering the range of possible funding sources for water security, as illustrated in Figure 3. Repayable sources of finance require a creditworthy borrower, which can provide a financial return (see background note for session 5).

**Figure 3. Potential sources of funding and financing for water-related investments**

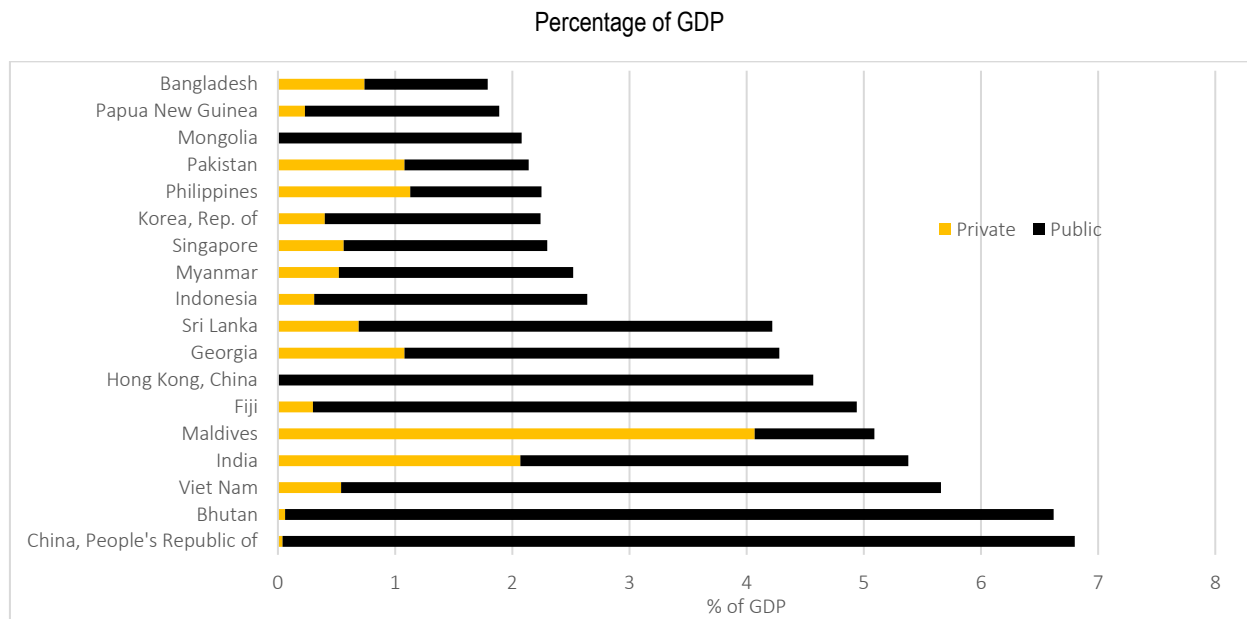


*Source:* Adapted from OECD (2010), Innovative Financing Mechanisms for the Water Sector.

Data availability to characterise current expenditure for water-related investments at country level is limited, which prohibits the possibility to construct a robust and comparable baseline of expenditure. However, some elements of funding sources for water-related infrastructure are available. Figures 4 and 5 provide elements of this overall picture.

Figure 4 depicts levels of water supply and sanitation infrastructure investment (as a share of GDP) over a limited time period for select countries. Countries for which data are available reflect different shares of public and private investment in water supply and sanitation infrastructure. Significant levels of public investment (> 3% GDP) have occurred in several economies, notably People’s Republic of China (China), Bhutan, Viet Nam, Fiji, Hong Kong (China), Sri Lanka, India and Georgia. The Maldives and India have managed to attract significant private investment in water supply and sanitation infrastructure, representing 4% and 2% of GDP, respectively.

**Figure 4. Public and private water supply and sanitation infrastructure investment, select economies, select years**



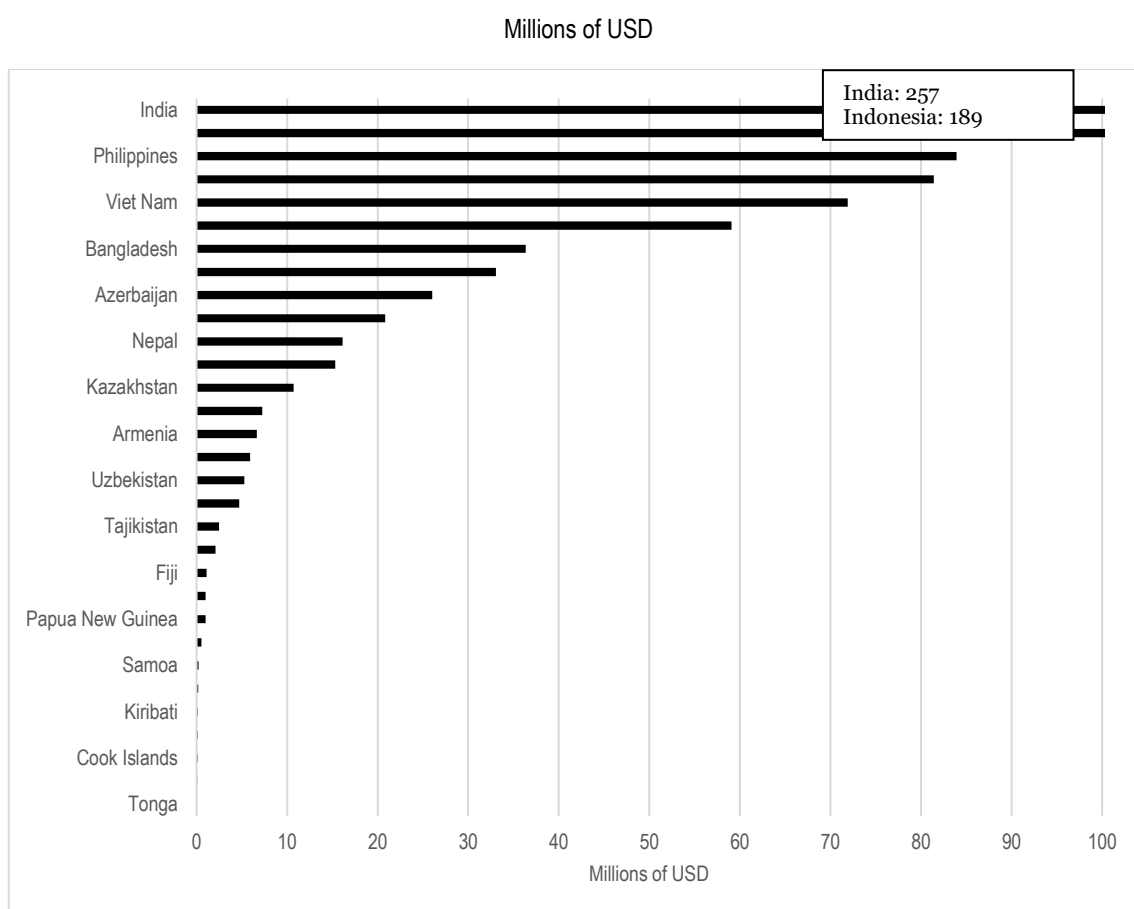
*Note:* Actual budget investments except Armenia, Bhutan, Georgia, Maldives, Myanmar, and Thailand, which are planned or estimated budget investments. Periods covered are 2010–2013 average for Indonesia; 2010–2014 average for the PRC, Fiji, and Malaysia; 2010, 2011, and 2014 average for Hong Kong (China); 2011 for Armenia, Bangladesh and Georgia; 2011–2012 average for Nepal; 2012–2013 average for India; 2011–2013 average for Maldives; 2011, 2012, and 2014 average for Singapore; 2011–2014 average for the Philippines, Sri Lanka, and Thailand and 2014 for Myanmar.

*Source:* OECD calculations based on ADB data (2017). Original sources of country-level data: World Bank Private Sector Participation in Infrastructure (PPI) database, World Development Indicators, ADB estimates.

Figure 5 summarises the annual average of transfers of official development assistance (ODA) for water-related infrastructure for countries in the region over the period 2013–2017, based on data from the OECD Creditor Reporting System. These figures aggregate ODA categorised as investments contributing to water supply and sanitation, water storage, flood protection and irrigation. The data indicate that India and Indonesia received considerable amounts of ODA for the water sector in 2017 in comparison to other countries in the region.



Figure 5. Average annual ODA for water-related infrastructure in Asia-Pacific countries, 2013-2017



*Notes:* Includes ODA disbursements for the following water-related infrastructure: water supply and sanitation, water storage, flood protection, irrigation. Data are in millions of USD, gross disbursements, constant 2017 prices.

*Source:* OECD (2019).

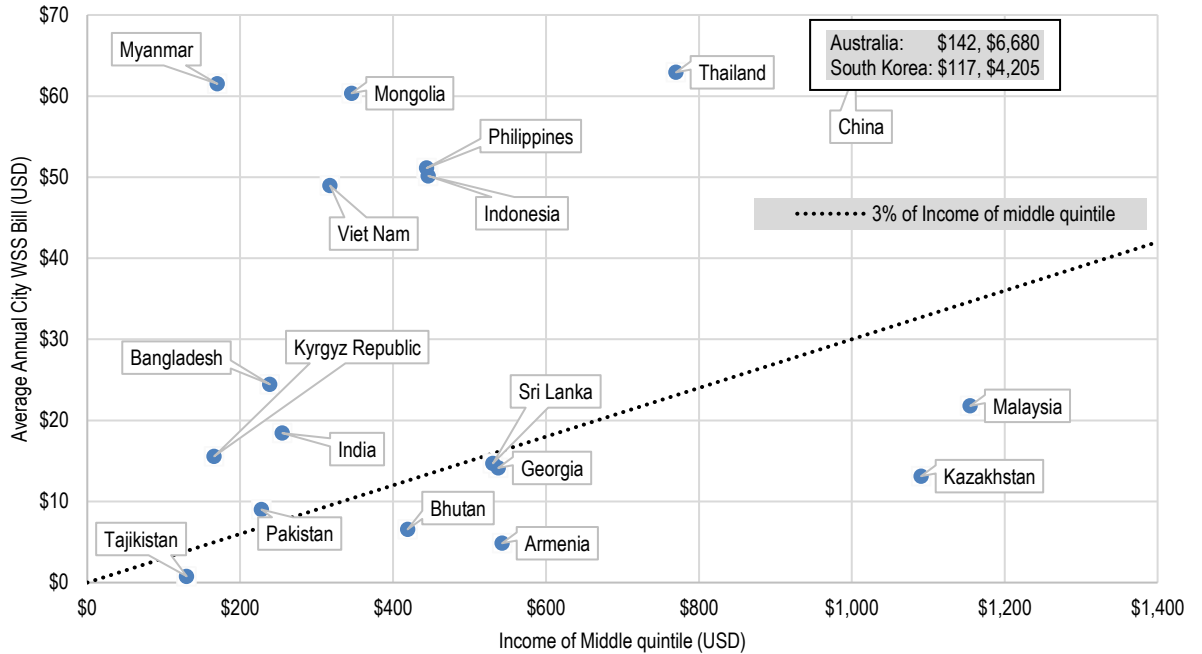
### ***Affordability***

Affordability constraints (perceived or real) affect the capacity to raise additional finance through water supply and sanitation tariffs, additional public finance to cover water-related expenditure needs, and experience with, and opportunities for, mobilising commercial debt. Tariff levels (pricing) is a key element to make water supply and sanitation services financially sustainable. In practice, pricing is often too low to fully recover OPEX costs (including externalities related to water use) and rarely covers CAPEX. Public budgets have an important role to play to finance water supply and sanitation services, in combination with cost recovery from users.

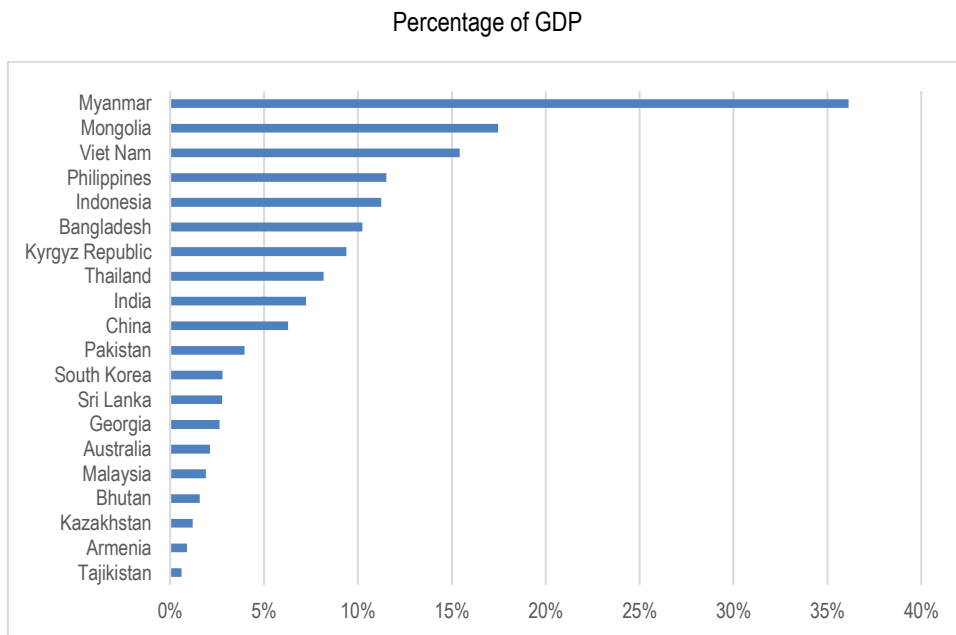
Figures 6 and 7 provide some indication of affordability at the micro-level (households) where data is available. They compare the middle household income with the annual water bill in select cities to provide an assessment of potential affordability constraints. For many countries, the water bill is greater than the 3% threshold recommended as the maximum level of disposable income, which signals limited ability to raise water supply and sanitation tariffs. In particular, Myanmar, Mongolia, Vietnam, the Philippines, Indonesia and Bangladesh face high affordability constraints, with annual tariffs in select cities currently representing more than 10% of the annual income of the middle quintile household. It is worth noting that affordability constraints will be even more dire for the

poorest 10% of households, who are also more likely to already receive some sort of social support.

**Figure 6. Microeconomic affordability: Average city water supply and sanitation tariffs as a share of annual disposable middle-quintile household income**



**Figure 7. Average city water supply and sanitation tariff as a share of household income of the middle quintile**



Note: Please note the different scales of the two graphs. Average city tariff is represents year 2017, and based on available data for select cities from GWI. Annual disposable income of households is based on the middle quintile of income.

Source: OECD calculations based on GWI (2019) and World Bank (2019c).

## Next steps

Based on the above preliminary analysis, a number of countries in the Asia-Pacific region are facing potentially severe financing challenges to achieve universal access to safe water supply and sanitation services. The situation in these countries, and options to address the challenges, will be considered in more detail as the OECD analyses and the AWDO project advances.

## Discussion questions for participants

The following questions are suggested to frame the discussion of *Session 1: Scene Setting: Investment needs and financing capacities*. They are provided to stimulate thinking and prepare your views about the key issues ahead of the workshop.

- How can a better understanding of investment needs and financing capacities be used to inform strategic financial planning for water-related investments at country level?
- What are the key challenges related to current financing approaches in the region? These may include (among others): bias towards specific countries, programmes or projects; the effectiveness of disbursement schemes; concerns about financial sustainability of prevailing policies and programmes of measures to improve water security.
- What can be done to improve the efficient and effective use of public funds? How can they be used more strategically to mobilise commercial finance where appropriate?

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