

Chapter 1. The Past and Future Role of Infrastructure in Asia's Development

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ADB

Objectives

- Examine how infrastructure conditions vary across countries in Asia
- Update ADB estimates of infrastructure investment needs for developing Asia over 2016-2030
- Discuss policy actions for meeting infrastructure investment needs

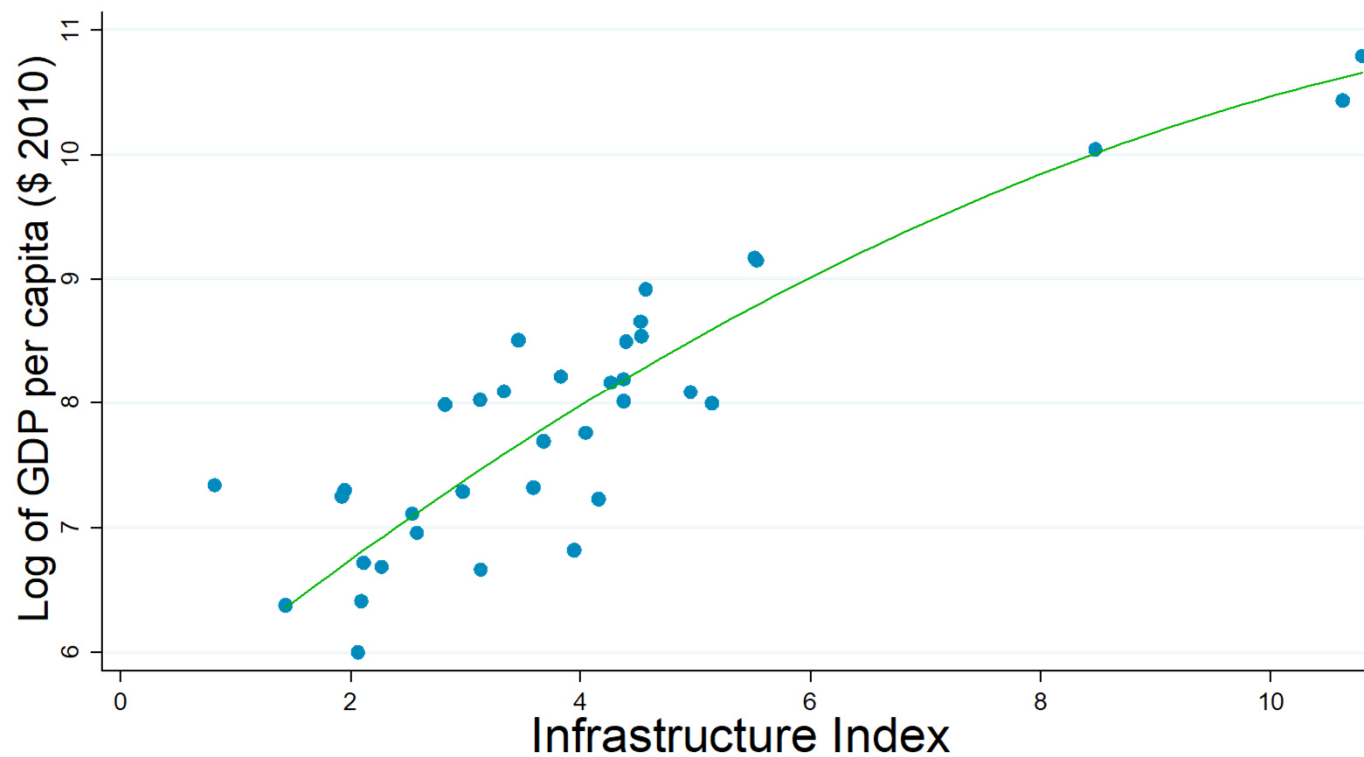
Key messages

- Developing Asia needs \$26 trillion (in 2015 prices), or **\$1.7 trillion per year**, for infrastructure investment in 2016-2030
- Without climate change mitigation and adaptation, the needs are \$22.5 trillion, or **\$1.5 trillion per year**
- The infrastructure investment gap varies across countries
- Both public and private sectors must increase infrastructure finance—reforms are key

Infrastructure: How Much Does Asia Invest?

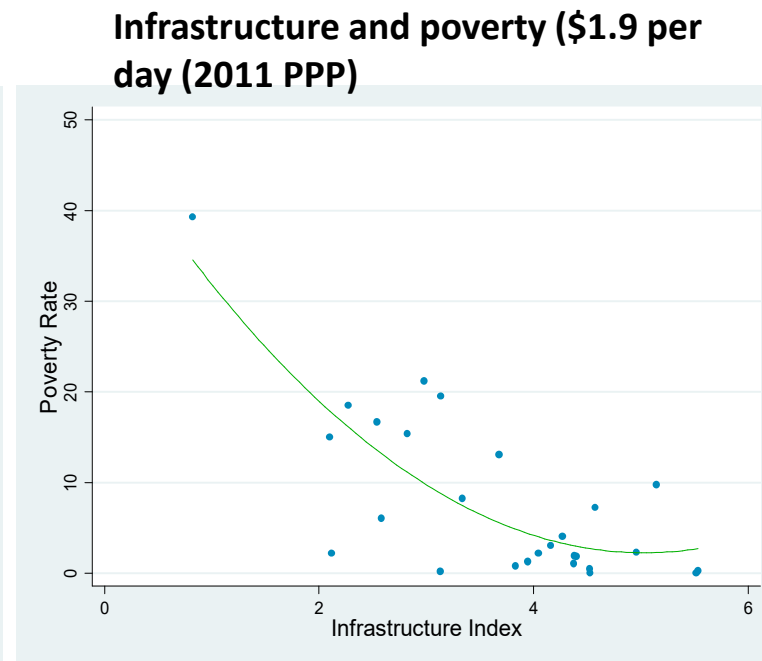
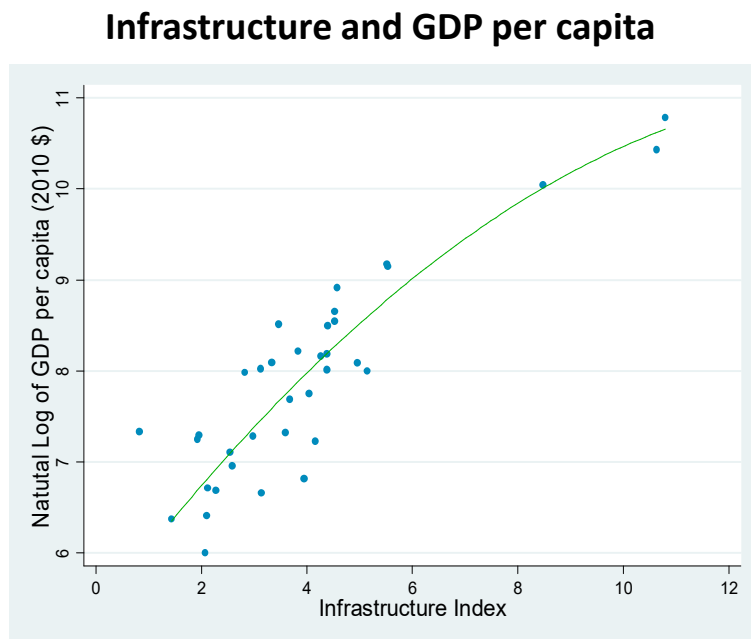


Infrastructure associated with development



Note: Infrastructure index is computed based on first principal component of infrastructure stocks in roads, airport, electricity, telephone, mobile, broadband, water and sanitation. Higher values represent greater infrastructure availability.
Source: ADB estimates based on data from World Development Indicators, World Bank.

Infrastructure associated with development

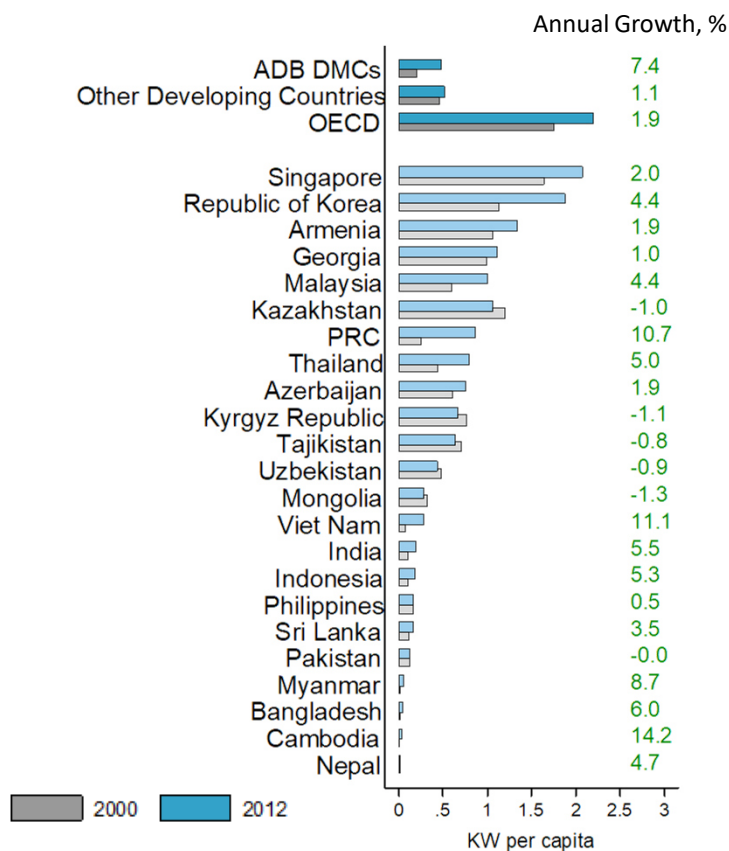


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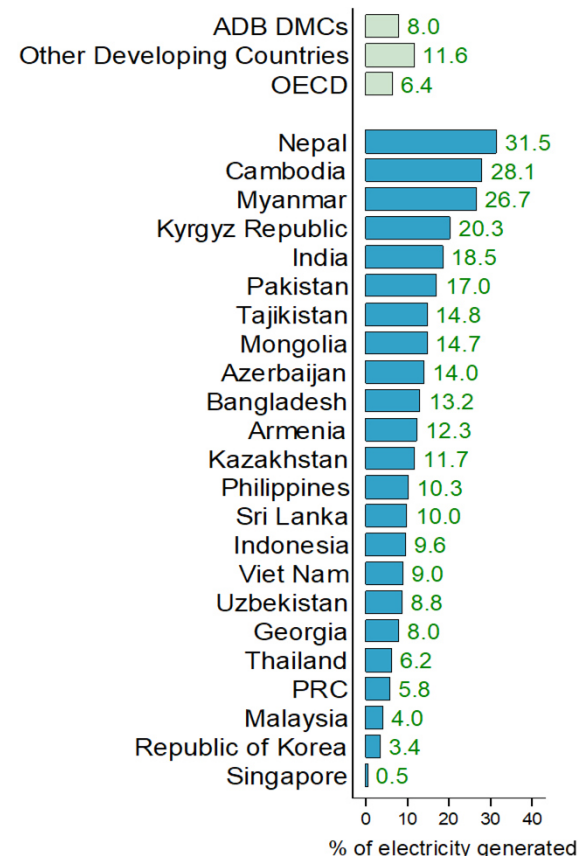
Source: ADB estimates based on data from World Development Indicators and PovcalNet, World Bank

More and better infrastructure is needed

Electricity Generation Capacity



Transmission and Distribution Loss



Note: Regional averages are calculated with population as weights.
Source: International Energy Statistics, US Energy Information Administration; World Development Indicators, World Bank.

How much do economies in developing Asia invest in infrastructure?

- A surprisingly difficult question to answer!
- The key investors are:
 - Central and subnational governments
 - State owned enterprises
 - Corporate private sector
- Data sources:
 - Government budget data (Central and subnational)
 - World Bank's Private Participation in Infrastructure (PPI) Project database for tracking private sector investments¹
 - Gross fixed capital formation (GFCF) at different levels of disaggregation (ICP 2005, 2011 and NSOs)

¹ Includes projects with more than 50% private participation.

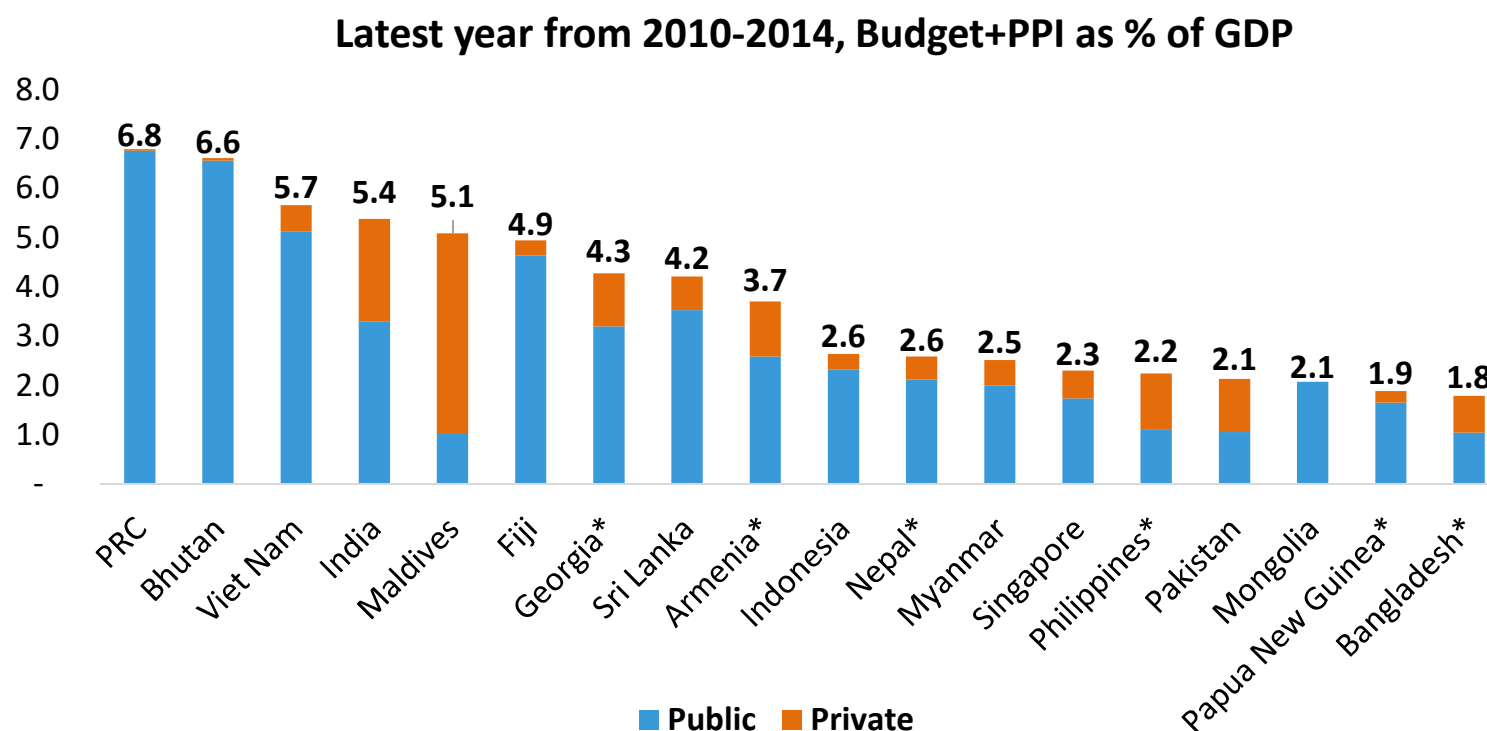
Approaches we have used to measure infrastructure investment

- **Measure 1 [BUDGET+PPI]:**
 - Government budget expenditures¹ + PPI²
- **Measure 2 [GFCF(GG)+PPI]:**
 - GFCF of general government + PPI²
- **Measure 3 [GFCF(CE)]:**
 - GFCF by public and private institutions on construction, excluding buildings and dwellings

¹ Central and local governments, whenever both are available

² Includes projects with more than 50% private participation.

Infrastructure investment varies across countries



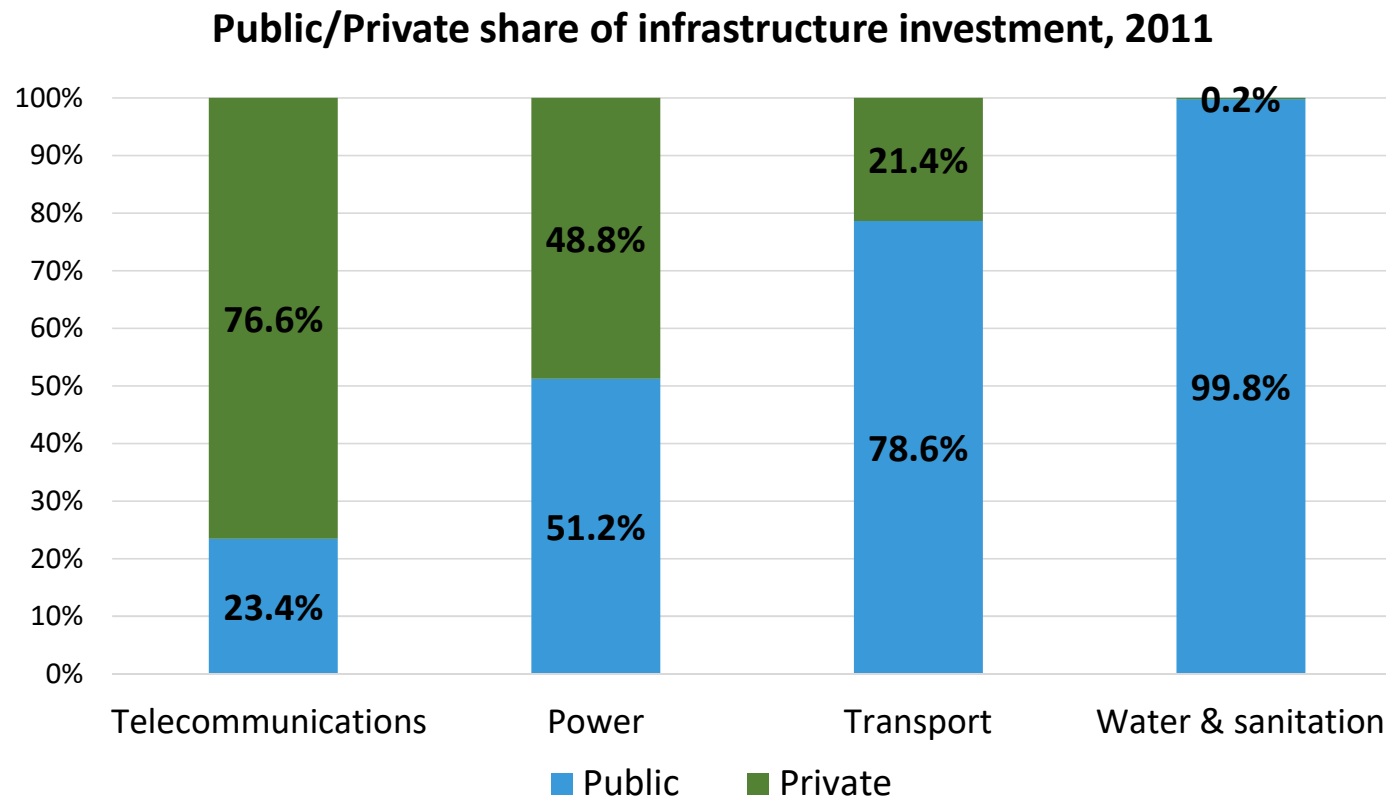
GDP = gross domestic product; PRC = People's Republic of China.

* Public sector includes central government budget only.

Note: Based on BUDGET + PPI measure. Actual budget investments except Armenia, Bhutan, Georgia, Maldives, Myanmar, and Thailand, which are planned or estimated budget investments.

Sources: Country sources for public sector investments; Private Participation in Infrastructure Database, World Bank; World Bank (2015); World Development Indicators, World Bank; ADB estimates.

Telecom and power more attractive to private finance



Source: ADB estimates based on country sources and Private Participation in Infrastructure Database, World Bank; World Development Indicators, World Bank.

A long-exposure photograph of a river at night. In the background, a large dam is illuminated by several bright lights, creating a series of starburst effects. Above the dam, a bridge with a complex steel truss structure spans the river. The water in the foreground is blurred, showing the flow of the river. Several large rocks are visible in the riverbed. The overall scene is dark, with the lights from the dam and bridge providing the main illumination.

Assessing the Region's Infrastructure Needs 45 Developing Member Countries of ADB, 2016-2030

Assessing infrastructure needs

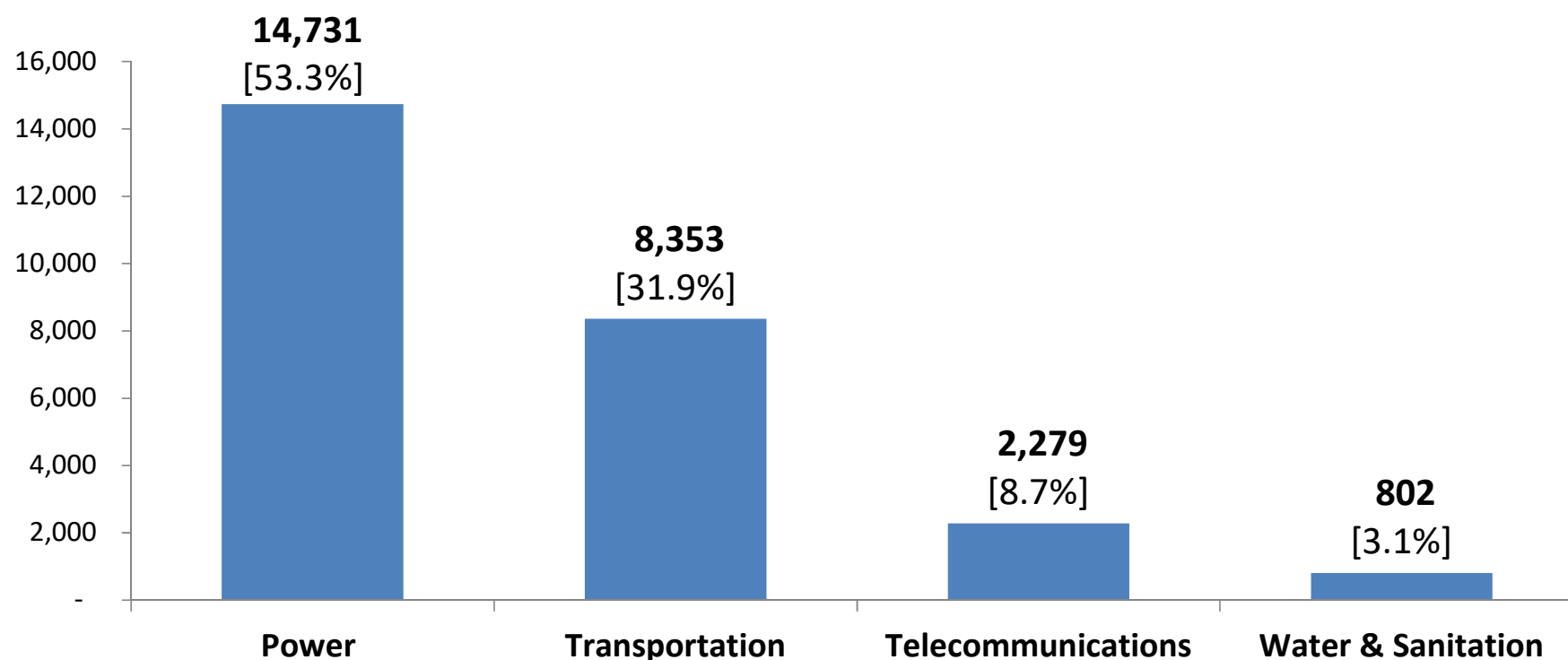
- **Baseline estimates:** Based on relationship between each type of infrastructure and economic/demographic factors
- **Climate-adjusted estimates:** Add climate mitigation and proofing costs
 - Climate mitigation to meet 2°C global climate goal
 - Climate proofing: ADB experience or existing studies

Infrastructure investment needs, 2016–2030 (\$ billion in 2015 prices)

	Baseline		Climate adjusted	
	Total	% of GDP	Total	% of GDP
Central Asia	492	6.8	565	7.8
East Asia	13,781	4.5	16,062	5.2
South Asia	5,477	7.6	6,347	8.8
Southeast Asia	2,759	5	3,147	5.7
The Pacific	42	8.2	46	9.1
Asia and the Pacific	22,551	5.1	26,166	5.9
Annual Average	1,503		1,744	

Sources: 2030 population projections from UN Population Division; others are ADB estimates.

Infrastructure investment needs by sector, 2016–2030 (\$ billion in 2015 prices)



Note: Figures inside the brackets are percentage shares of total.

Source: ADB estimates.

Meeting Asia's Infrastructure Needs 25 Developing Member Countries of ADB, 2016-2020



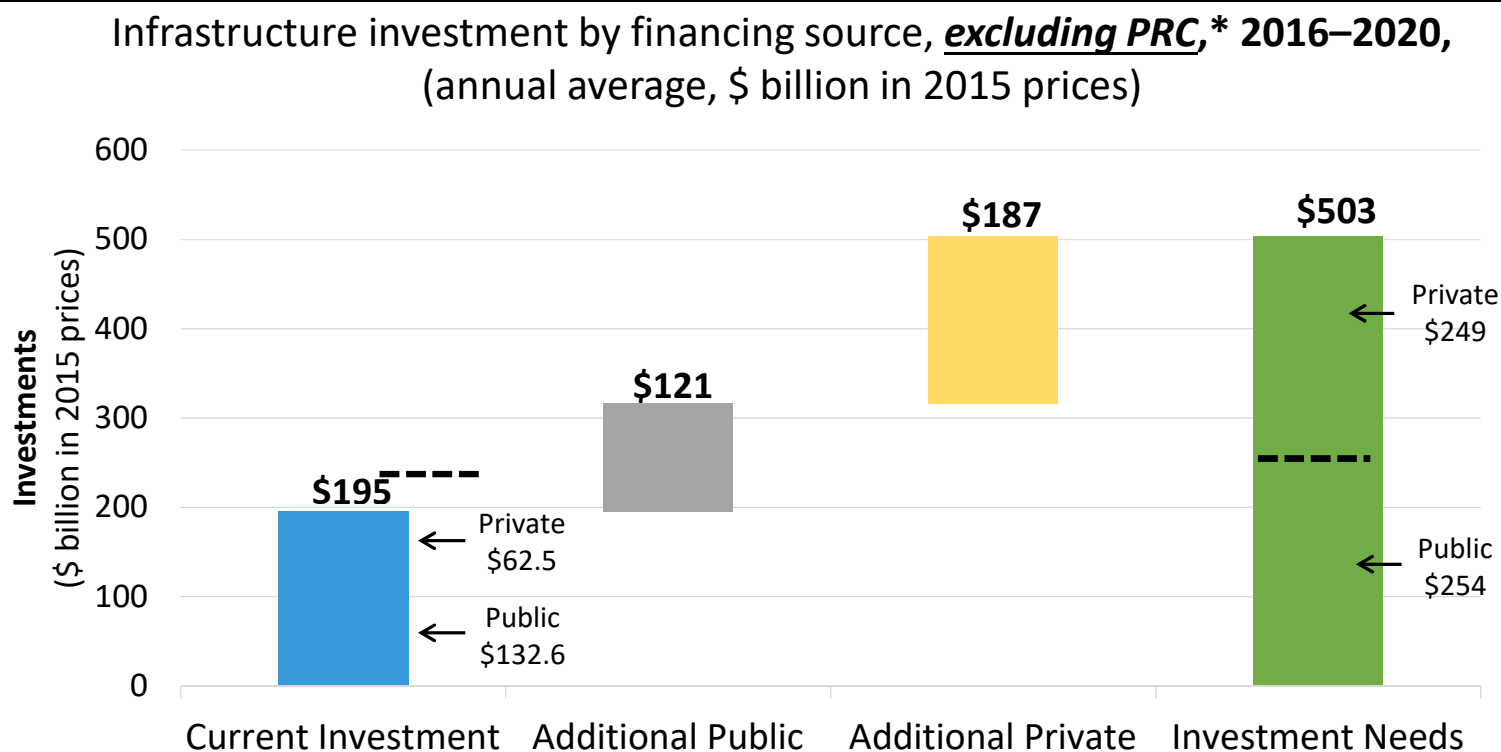
How big are infrastructure investment gaps?

Infrastructure investments and gaps, 2016–2020 (\$ billion in 2015 prices)

	Estimated current investment (2015)	Climate adjusted		
		Annual needs	Gap	Gap as % of GDP
Total (25 economies)	881	1,340	459	2.4
Total without PRC	195	503	308	5.0
PRC	686	837	151	1.2

Note: Gap = Investment Needs – Current Investment

Bridging the gap



* 25 countries minus the PRC

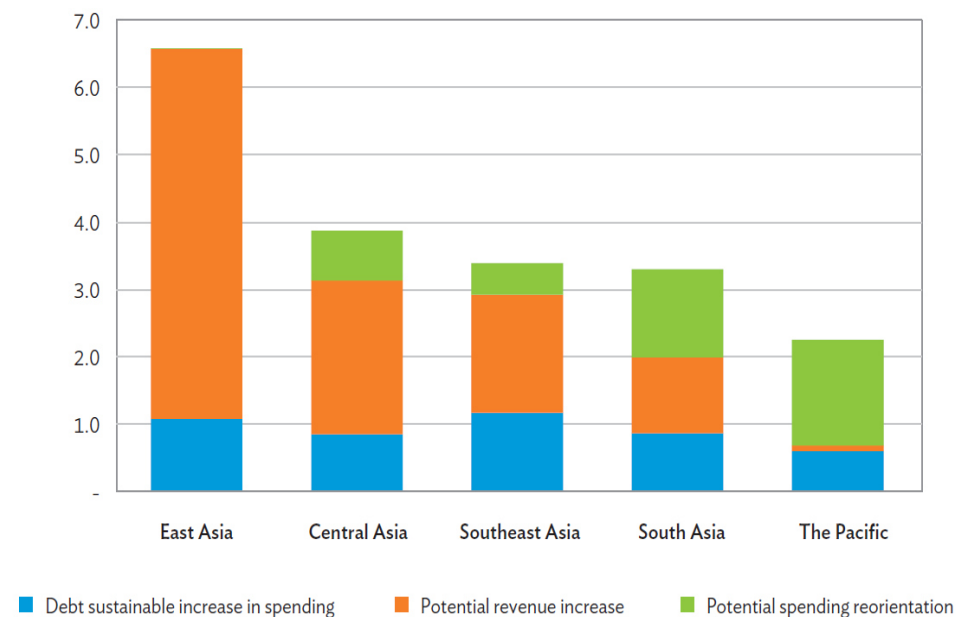
Note: Numbers may not add up to total due to rounding.

Source: ADB estimates based on data from country budget documents, NAS data from national statistic offices, IMF Investment and Capital Stock Dataset, Asian Development Bank Key Indicators 2016, World Bank World Development Indicators, World Bank Private Participation in Infrastructure Database.

Policies to close the gap

- **Fiscal reforms**
 - Tax reforms
 - Spending reorientation
 - Prudent borrowing
 - Nontax revenues
- **Promoting private participation**
 - Create conducive investment climate
 - Make greater use of public-private partnerships (PPPs)
 - Deepen capital markets
- **Better planning, design and execution**

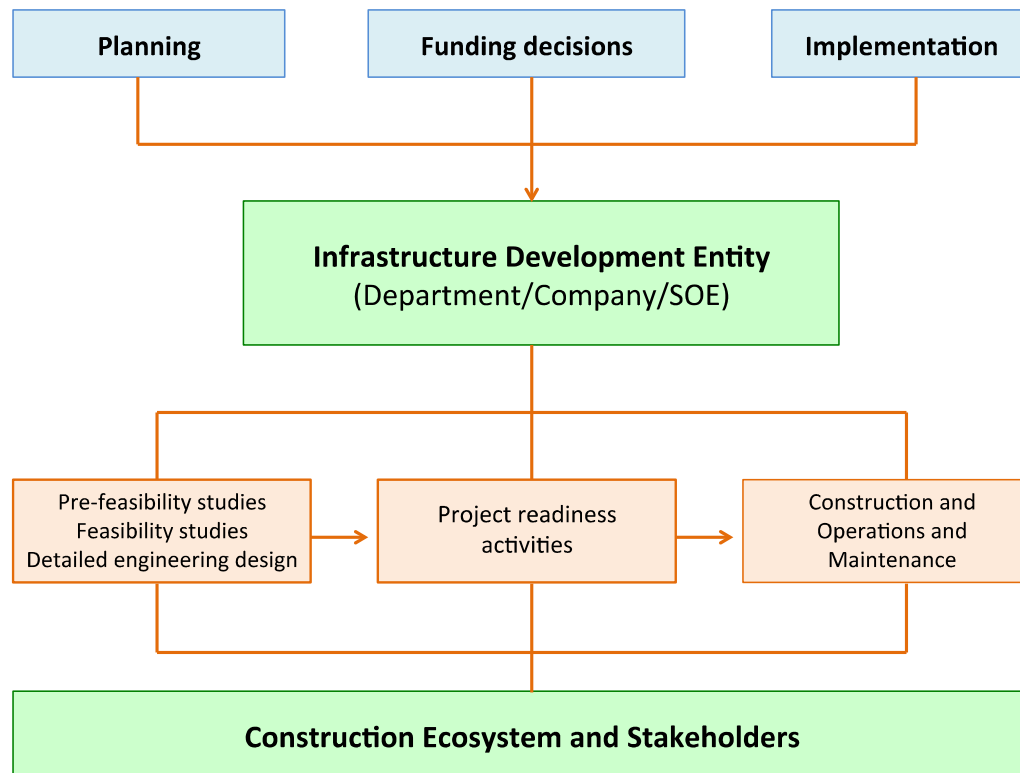
Fiscal Space in Developing Asia (% of GDP)



Role for MDBs

- MDB infrastructure financing in Asia is 2.5% of current investment
 - Without PRC and India: MDB share > 10%
- MDB finance for infrastructure will rise. For ADB
 - Scale up annual loan and grant approvals from \$17.5 billion in 2016 to more than \$20 billion by 2020
 - Growing share for the private sector
- Blending finance with expertise and knowledge, support policy reform, promoting regional cooperation

Strengthening the infrastructure “ecosystem”



Key messages

- Developing Asia needs \$26 trillion (in 2015 prices), or **\$1.7 trillion per year**, for infrastructure investment in 2016-2030
- Without climate change mitigation and adaptation, the needs are \$22.5 trillion, or **\$1.5 trillion per year**
- The infrastructure investment gap varies across countries
 - For **25 countries** in **2016-2020**, the gap is 2.4% of projected GDP; excluding PRC, this gap rises to 5% of projected GDP.
- Both public and private sectors must increase infrastructure finance—reforms are key

