

# Infrastructure investment and needs in Nepal by 2030

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Need for infrastructure (transport, energy, water and sanitation, urban development)

- For desired economic growth
- To increase access to basic services
- To improve standard of living
- To reduce poverty
- To meet international commitment (SDG goals)

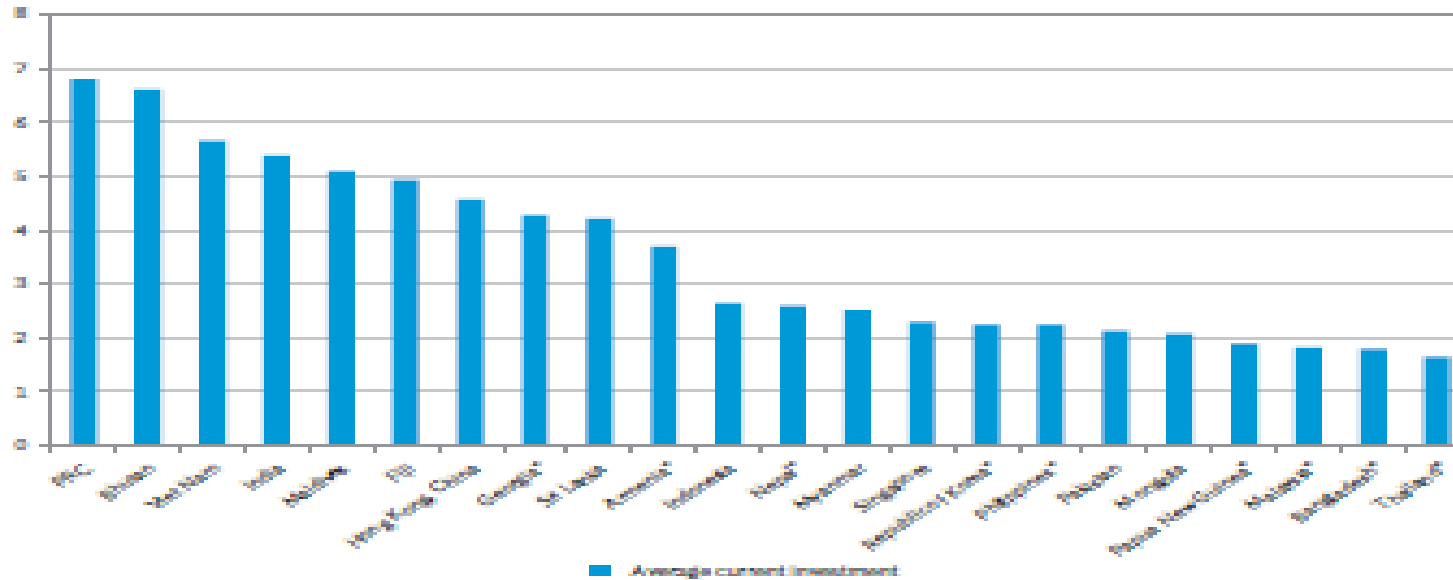
# Where Nepal stands

Country	GDP per capita	Forecast GDP 2017	2016 GDP	Global Competitiveness Report rank Out of 137	Infrastructure Score for rank (0-100)
Nepal	USD 729.53	6.9	0.6	88	17
India	USD 1709	7	7.1	66	51.4
Bangladesh	USD 1359	7.2	7.1	111	31.5
Pakistan	USD 1468	5.3	5.7	110	35.1
Sri Lanka	USD 3835	4.5	4.4	85	54.6
Vietnam	USD 2185	6.3	6.2	55	56.3
Thailand	USD 5907	3.5	3.2	32	62.2
LAO PDR	USD 2353	7	7	98	34.2

Source: ADB (2017), World Bank national account data, Global Competitiveness Report 2017-18

# Investment in infrastructure

Figure 2.2: BUDGET + PPI Infrastructure Investment Rate, various years (% of GDP)



GDP = gross domestic product, PPI = private participation in infrastructure, PRC = People's Republic of China.

\* Central government budget only.

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, 2000–2014 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: Country sources, Private Participation in Infrastructure Database, World Bank, World Bank (2015a and 2015b), World Development Indicators, World Bank, ADB estimates.

# Estimating the Investment needs

- Top down approach-macro-economic approach has baseline estimate and estimate adjusted for climate change for three growth scenarios: normal (5%), Optimistic growth (7.5%) and highly optimistic (10%)
- Bottom up approach

Energy	Transport	Water and Sanitation	Urban Development
<p>i)Power requirement of meet household consumption need and to meet development vision of universal energy access target</p> <p>ii)Structural changes in energy sector: increasing demand from transport sector and industry sector</p> <p>iii)Completing identified projects in the pipeline</p> <p>iv) Considers scenario of achieving 9000, 11,000 and 14,000 MW of electricity by 2030.</p>	<p>i)Giving continuity to current programs</p> <p>ii)Projection based on SDG targets</p> <p>iii)Up scaling investment to meet the challenge of economic growth and prosperity</p> <p>iv)Climate proofing</p>	<p>i)Estimation based on cost per capita for various program in water and satiation projects based on Sector Development Plan (SDP) and SDG</p> <p>ii)Climate resilience and social development factors</p>	<p>i) Estimates financing needs based on estimates of Town Development Fund (TDF) which is based on National Urban Development Strategy (NUDS).</p> <p>ii) Estimates baseline estimate and climate change adjusted estimates.</p> <p>iii) Considers four scenarios: meeting 100%, 90%, 75%, and 60% of infrastructure needs by target year 2030.</p>

# Top down baseline estimate (in billion of USD)

Sectors	Under 5% growth rate (normal)	Under 7.5% growth rate (optimistic)	Under 10% growth rate (highly optimistic)
Road	52	78.23	114.28
Electricity	3.05	3.41	3.79
Water	4.58	4.58	4.58
Sanitation	5.22	5.1	4.99
Total investment need	64.86	91.33	127.63
GDP 2019-2040	883.28	1195.57	1637.92
Total investment need as% of GDP	7.34	7.64	7.79

# Top down climate adjusted estimate (billion of USD)

Sectors	Under 5% growth rate (normal)	Under 7.5% growth rate (optimistic)	Under 10% growth rate (highly optimistic)
Road	56.06	84.33	123.19
Electricity	3.06	3.42	3.8
Water	4.67	4.67	4.67
Sanitation	5.32	5.2	5.08
Total investment need	69.11	97.62	136.74
GDP 2019-2040	883.28	1195.57	1637.92
Total investment need as% of GDP	7.82	8.17	8.35

# Bottom up energy sector investment estimate (billion of USD)

Anticipated Supply Gap (MW)	RoR 60%, Storage 40%		RoR 70%, Storage 30%		RoR 75%, Storage 25%	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
9,000	20	31.70	19.44	30.17	19.16	29.42
11,000	23.96	38.21	23.27	36.40	22.94	35.47
14,000	29.9	48.04	29.02	45.71	28.59	44.55



# Bottom up transport sector estimate (billion of USD)

	Required Investment
Giving continuity to the current program	12
Resource demand based on SDG target	48
Up scaling investment to meet the upcoming challenges to meet economic growth	24.88

# Bottom up approach Water and Sanitation (billion of USD)

S. No	Infrastructure	2020 USD Billion	2025 USD Billion	2030 USD Billion
1	Safe piped water supply system	2.388	8.029	19.374
2	Wastewater with treatment system	1.289	4.333	10.457
3	Industrial wastewater treatment	0.004	0.015	0.036
4	Public toilet	0.013	0.044	0.105
5	Drainage system	0.237	0.797	1.925
Total		3.932	13.219	31.898

# Urban Development (billion of USD)

Particulars	Physical Targets			
	100%	90%	75%	60%
(1) Without climate change adjustment				
Desired level of selected infrastructure#	45.41	40.87	34.06	27.24
Unleashing local and regional development potential including specialized infrastructure needs for provincial capitals (25-35%)*	11.35 to 15.89	10.22 to 14.30	8.51 to 11.92	6.81 to 9.54
Project preparation, implementation/management safeguards, institutional development, building community resilience and land provisioning and rehabilitation support (22-32%)*	9.99 to 14.53	8.99 to 13.08	7.49 to 10.90	5.99 to 8.72
Total financing needs	66.75 to 75.84	60.07 to 68.25	50.06 to 56.87	40.05 to 45.50
Total financing needs (climate change adjusted)	77.36 to 87.90	69.62 to 79.1	58.02 to 65.91	46.42 to 52.73

# Summary of estimated investment needs (billion USD)

Sector	Estimate from top down approach	Estimate from bottom up approach	Remark
Energy	3.05-3.8	20-48	Bottom up estimation considers achieving 9000, 11,000 and 14,000 MW with combination of Run of River and Storage projects.
Transport	52-123	84	Primarily considers road upgrading, expansion and construction projects
Water and Sanitation	9.8-9.99	8.92	Based on SDG and Sector Development Plan
Urban Development	N/A	40-87	Bottom up estimation considers achieving 60, 75, 90 and 100 percent of target set by Town Development Fund

# Our capacity

Source	Total capacity of Funds	Remark
Government Revenue	Around 50% of GDP is the budget of the country. Current capital expenditure is NRS 335 billion (3.35 billion USD)	30% of total budget is capital expenditure that has to be allocated to various sectors.
Banks	NRs 160 billion (1.6 billion USD)	(Capital base). There is restriction on sectors that banks can invest and also restriction on percentage loan that can be given to individual or groups.
Insurance companies	NRs 116 billion (1.1 billion USD)	They can invest only up to 5% in productive/infrastructure sectors
Employee Provident Fund (EPF)	NRs 190 billion (1.9 billion USD)	Invests in hydropower sectors
Citizen Investment Trust (CIT)	NRs 18 billion (.18 billion USD)	Around 12% allocated in hydropower projects

# Way forward (with reform)

- Promotion of Public Private Partnership/Role of private sector
- Conducive environment for private sector to invest (easier approval process)
- Easier Land Acquisition/Forest clearance Process
- Changes in Procurement Act (for timely completion and quality of infrastructure)
- Promote foreign investment in infrastructure
- Promotion of system of project based loan/project financing instead of collateral based loan/financing
- Promote projects with social and economic benefit rather than political benefit

Thank You