

Given the amount required, all these strategies will have to be considered as **none of them can tackle the Nepal Infrastructure challenges on its own.**

# National Workshop on Infrastructure Financing Strategies for Sustainable Development in Nepal

Kathmandu, Nepal  
24th January 2017





Enterprise-friendly **middle-income country by 2030**

Achieve most of the **Sustainable Development Goals by 2030**

**Needs to mobilize an unprecedented volume of public revenue and private investment, domestic and foreign, to infrastructure services**

**Session 1: Where do we stand ?**

- Planned Investment
- Government -Capital Expenditure in Infrastructure sectors
- Fiscal Space of the country
- Public Private Partnership Initiation
- Current Investment- Commercial Banks and Institutional Investors

**Session 2: Where do we go from here ?**

The study proposes infrastructure financing strategies for sustainable development in the country.

# private investment, domestic

## Session 1: Where do we stand ?

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## Session 2: Where do we go from here ?

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# WHERE DO WE STAND?

4

Two more districts are yet to be connected to

Two more districts are yet to be connected to the roadways.

33% of the population live at least two hours walk from a road

Only **16 percent** of the population has access to higher/medium quality water services.

Since 2002 no transmission lines have been built by NEA or private, and only **92 MW** of generation capacity has been added to the system whereas **13000 Mw** of hydropower license has been issued 📶

Approximately **60 percent** population living in the rural area.

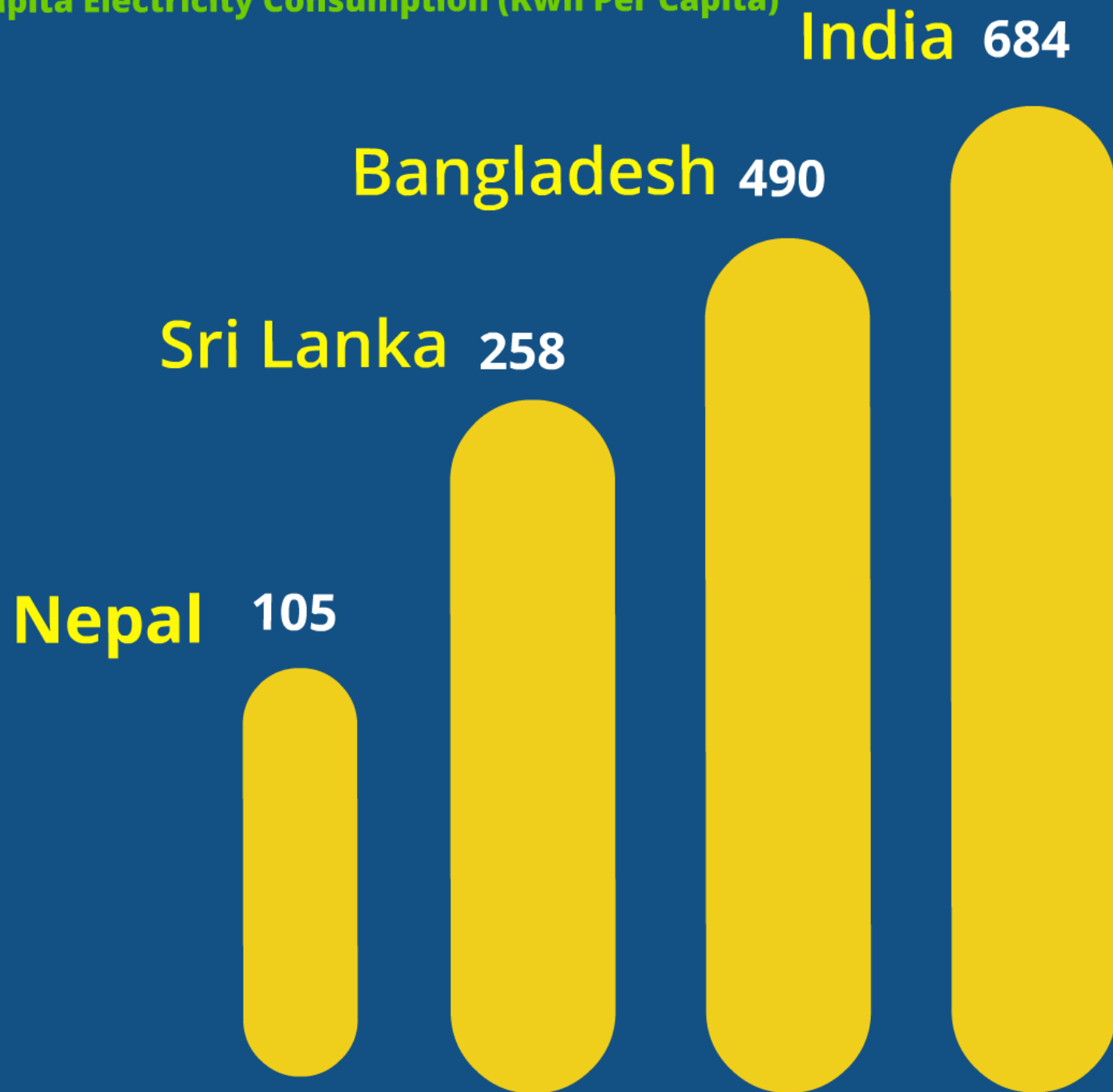


Road connectivity in Nepal stands at **139 km per 1000 km<sup>2</sup>**, where more than **60 percent of the road network** is concentrated in the **lowland (Terai)** areas of the country.

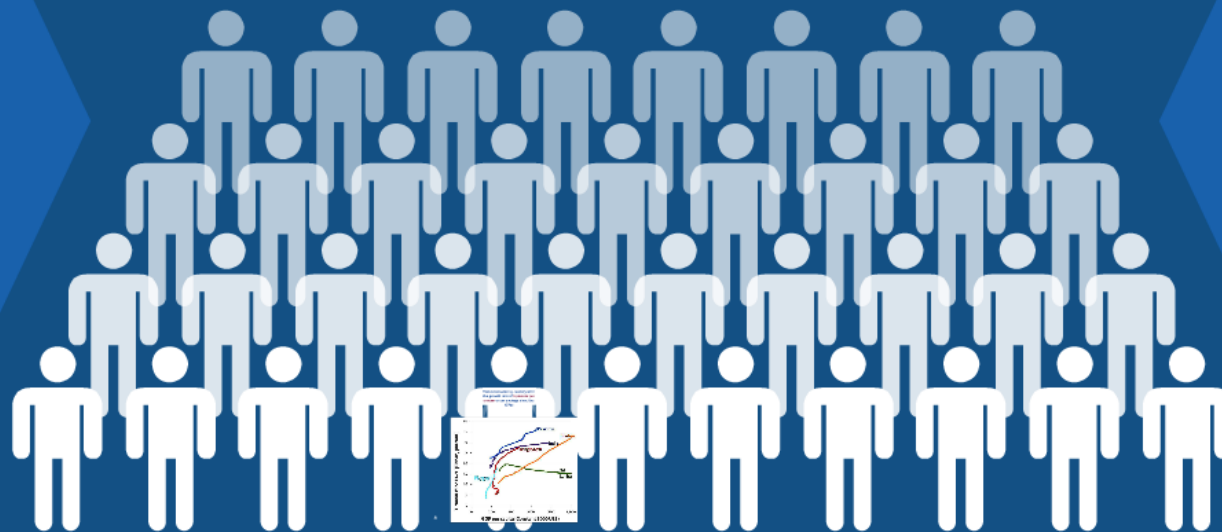
Global Competitiveness Report 2016

Nepal **144** of 148 in Infrastructure

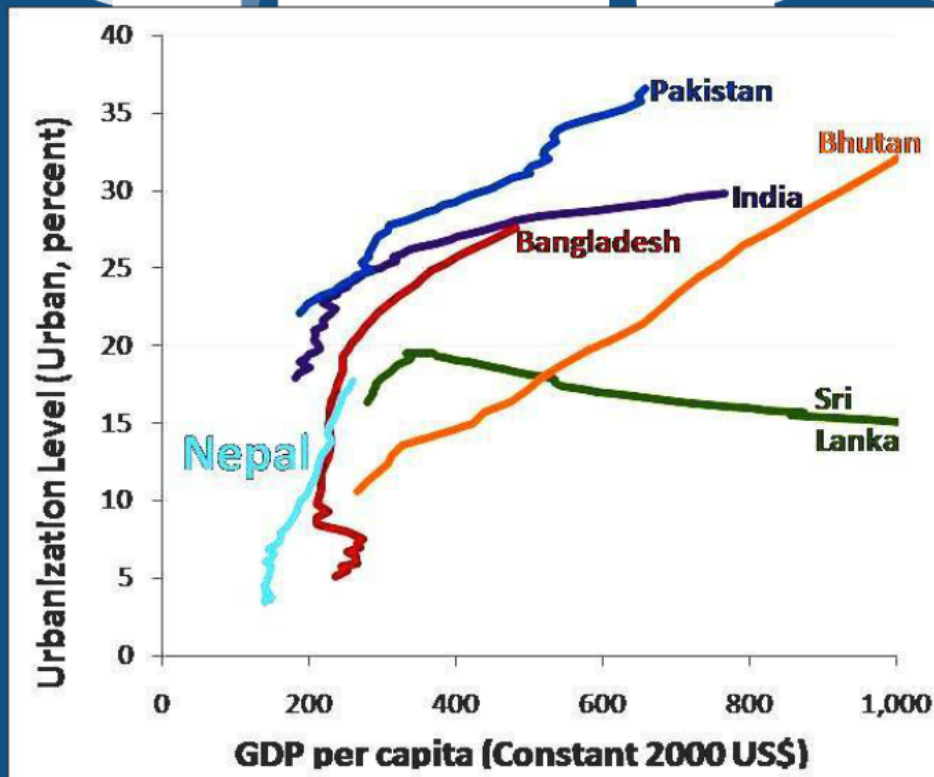
**Per Capita Electricity Consumption (Kwh Per Capita)**



Approximately **80 percent population** living in the rural area.



Fastest urbanizing country with  
the growth rate of 5 percent per  
annum on an average since the  
1970s



**Global Competitiveness Report 2016 -Ranking**

**Nepal 144 of 148 in  
Infrastructure**

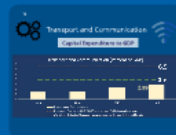
WHAT'S BEING DONE  
ABOUT IT?

# WHAT'S BEING DONE ABOUT IT?

## 10 Approach Paper-TYP (2016/2017-2018/2019)

**Planned Investment**

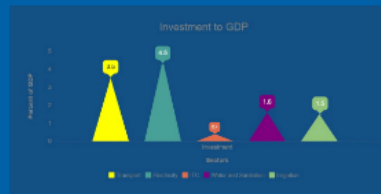
- NRS **100 billion** in Electricity, gas and Water by 2019
- 55 percent by Private Sector and 40 percent by Public, rest by Co-operatives
- NRS **80 billion** in Transport and Communication by 2019
- 50 percent by Private sector and 50 percent by Public, rest by Co-operatives



## Hydropower Development plan

**NRS 3.3 trillion** (USD 33.61 billion) over the period of 20 years to finance the development of **25,000 MW** (i.e. yearly budget of NRS 168 billion (USD 1.68 billion))

## Required : Investment to GDP (World Bank Estimates)





# Approach Paper-TYP (2016/2017-2018/2019)



## Planned Investment

- NRS **256 billion** in Electricity, Gas and Water by 2019  
3.2 percent of GDP on an average

56 percent by Private Sector and 40 percent by Public; rest by Co-operatives

- NRS **640 billion** in Transport and Communication by 2019  
8.3 percent of GDP on an average

18 percent by Private Sector and 78 percent by Public; rest by Co-operatives



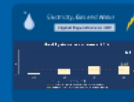
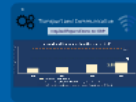
## Hydropower Development plan

**NRS 3.3 trillion** (USD 33.61 billion) over the period of 20 years to finance the development of **25,000 MW** (i.e. yearly budget of NRS 168 billion (USD 1.68 billion))

Maintaining the fiscal balance and invest in development of infrastructure.

Macroeconomic situation

## WHAT'S BEING DONE ABOUT IT?



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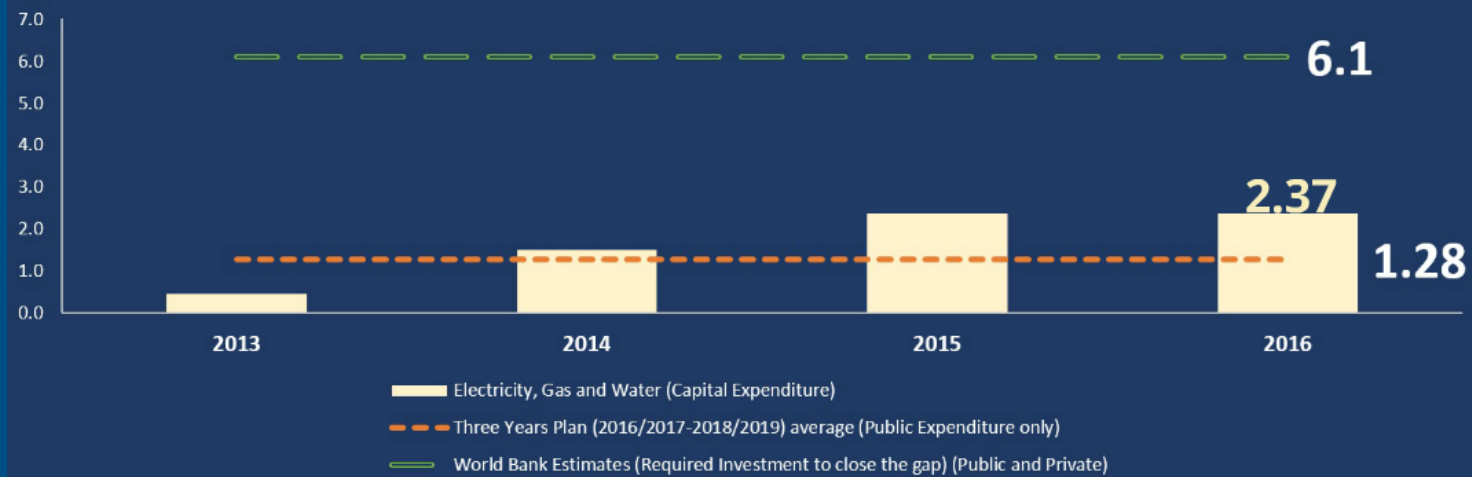


# Electricity, Gas and Water

## Capital Expenditure to GDP



### Electricity, Gas and Water (Percent of GDP)

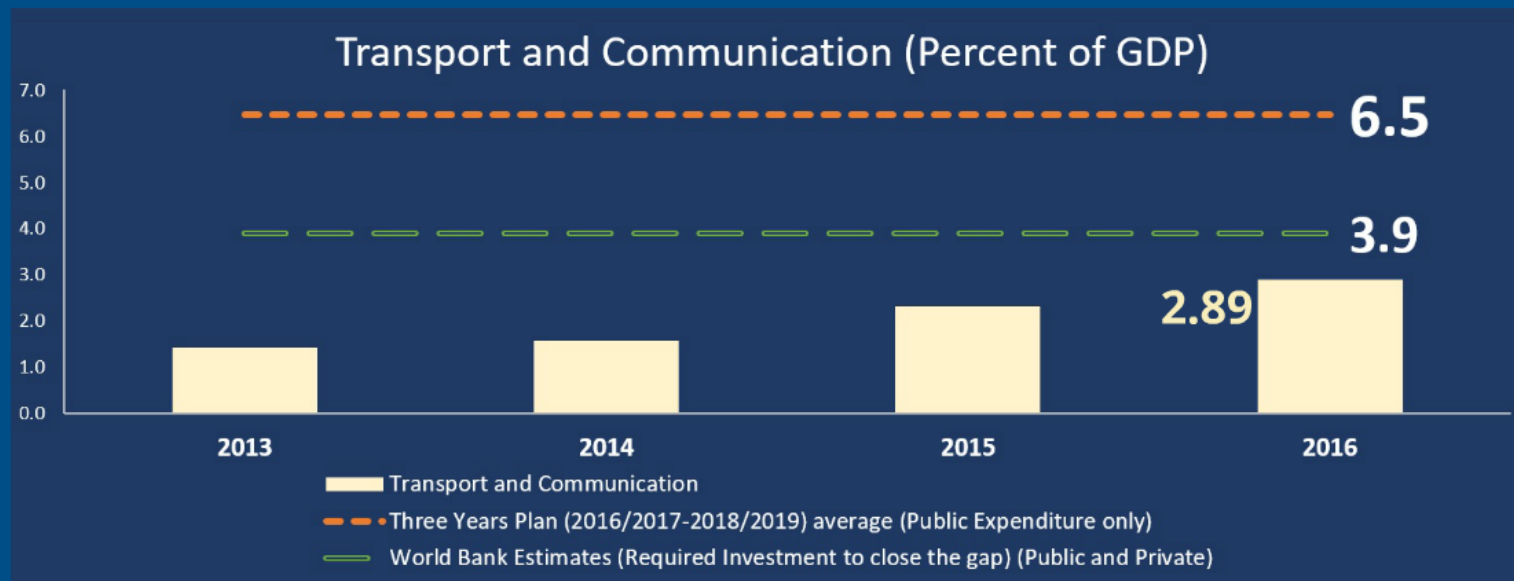




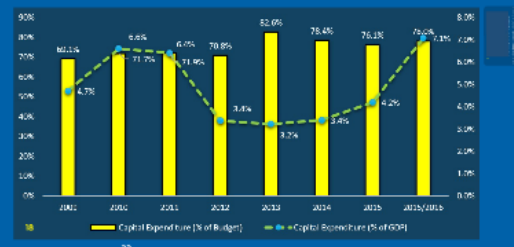
## Transport and Communication



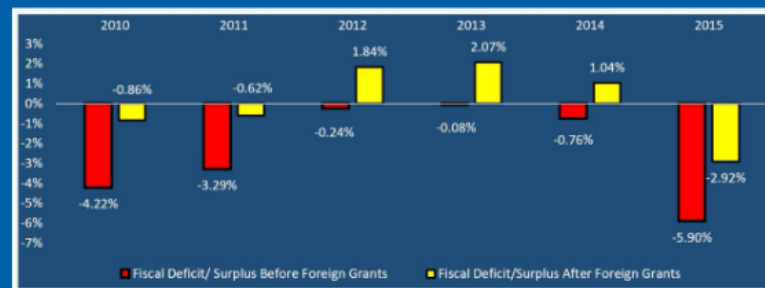
### Capital Expenditure to GDP

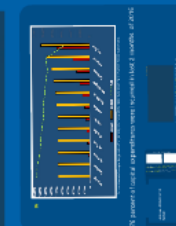
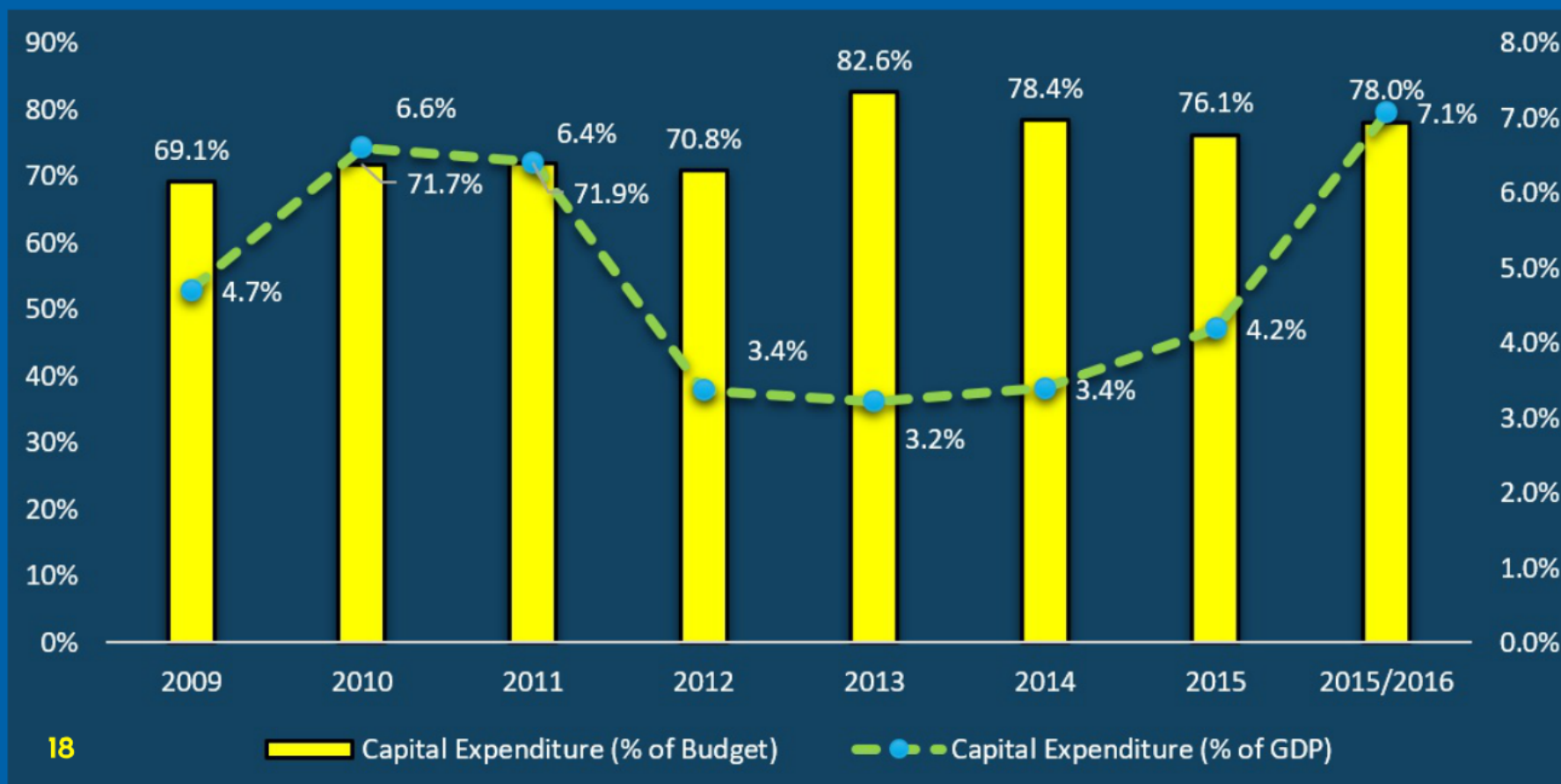


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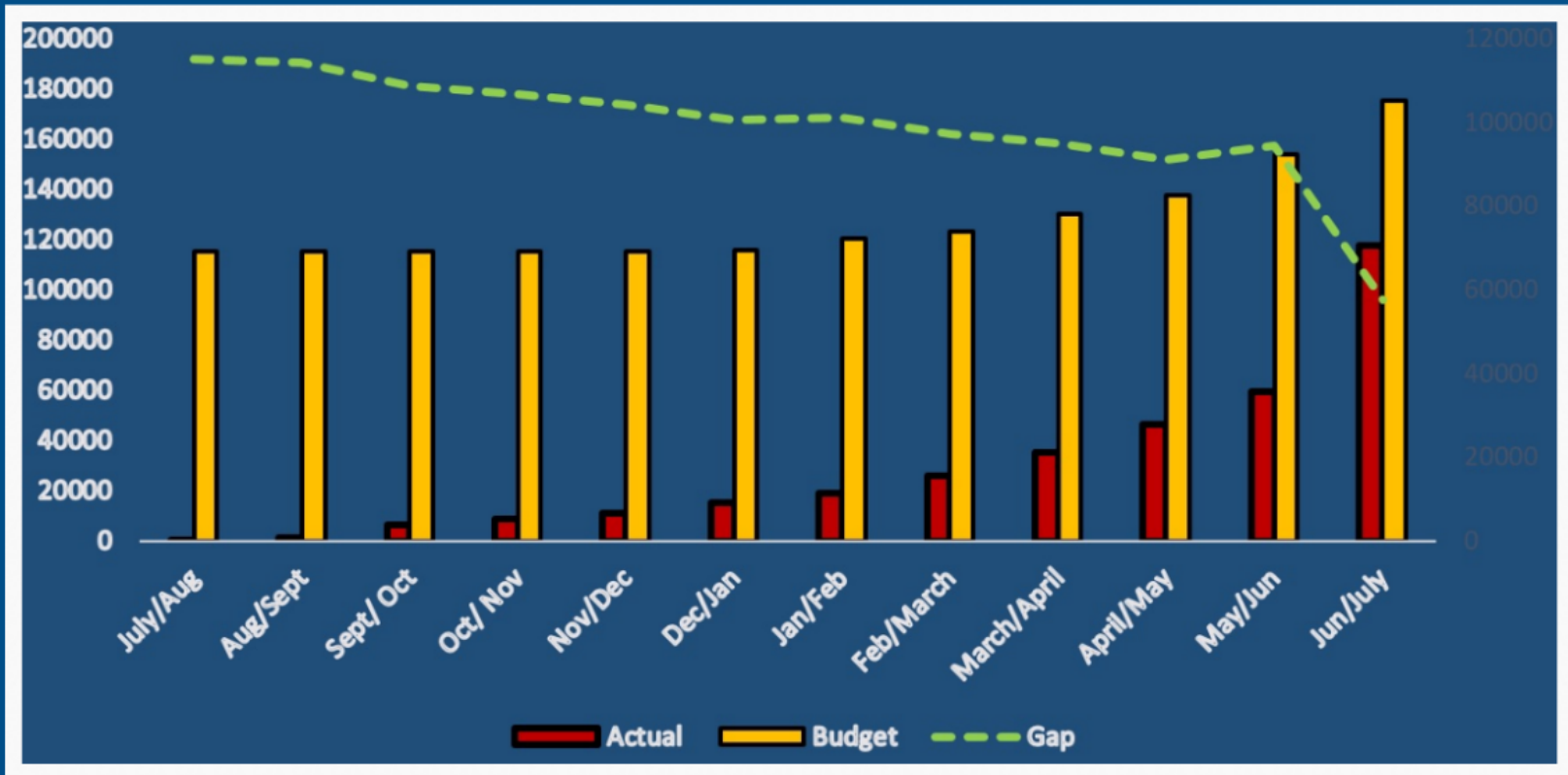


## Government Expenditure (Trends and Practices) and Fiscal Space





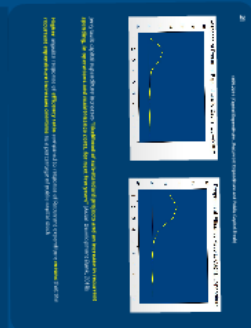
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Source: Financial comptroller general office (Ministry of Finance 2016). Note: Reb-budgeting takes place throughout the year.

76 percent of capital expenditures were incurred in last 2 months of 2016

HOW INEFFICIENT IS THE TREND?



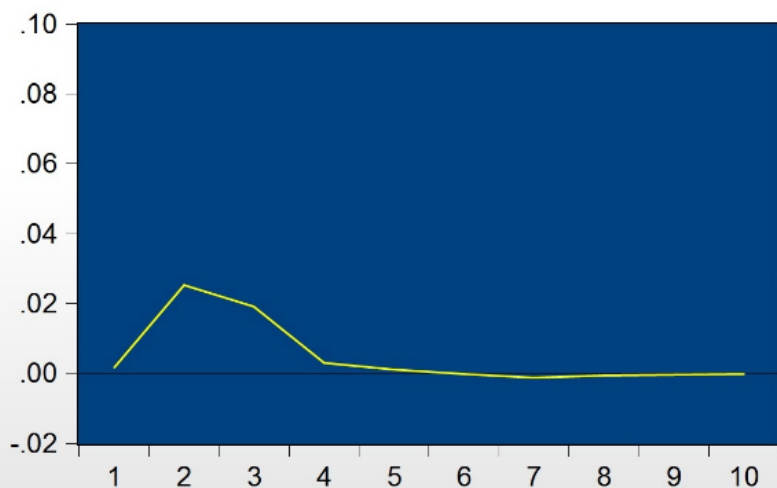
Annual development programs 2013/2014 (2016/2017) has 165 infrastructure projects making 57.8 percent of the total proposed budget. More than 80 percent of all proposed development programme have been categorized into P1 class.



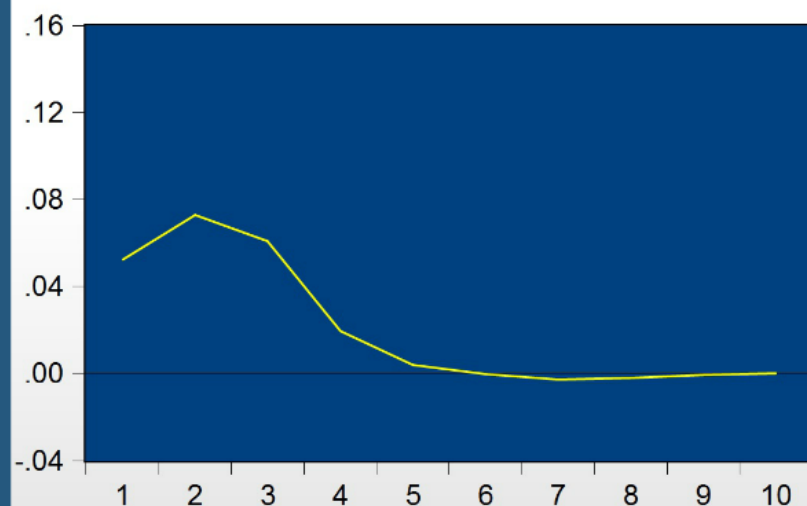
# HOW INEFFICIENT IS THE TREND?

## 1975-2011 (Capital Expenditure , Recurrent Expenditure and Public Capital Stock)

Response of Recurrent Expenditure to Capital Expenditure



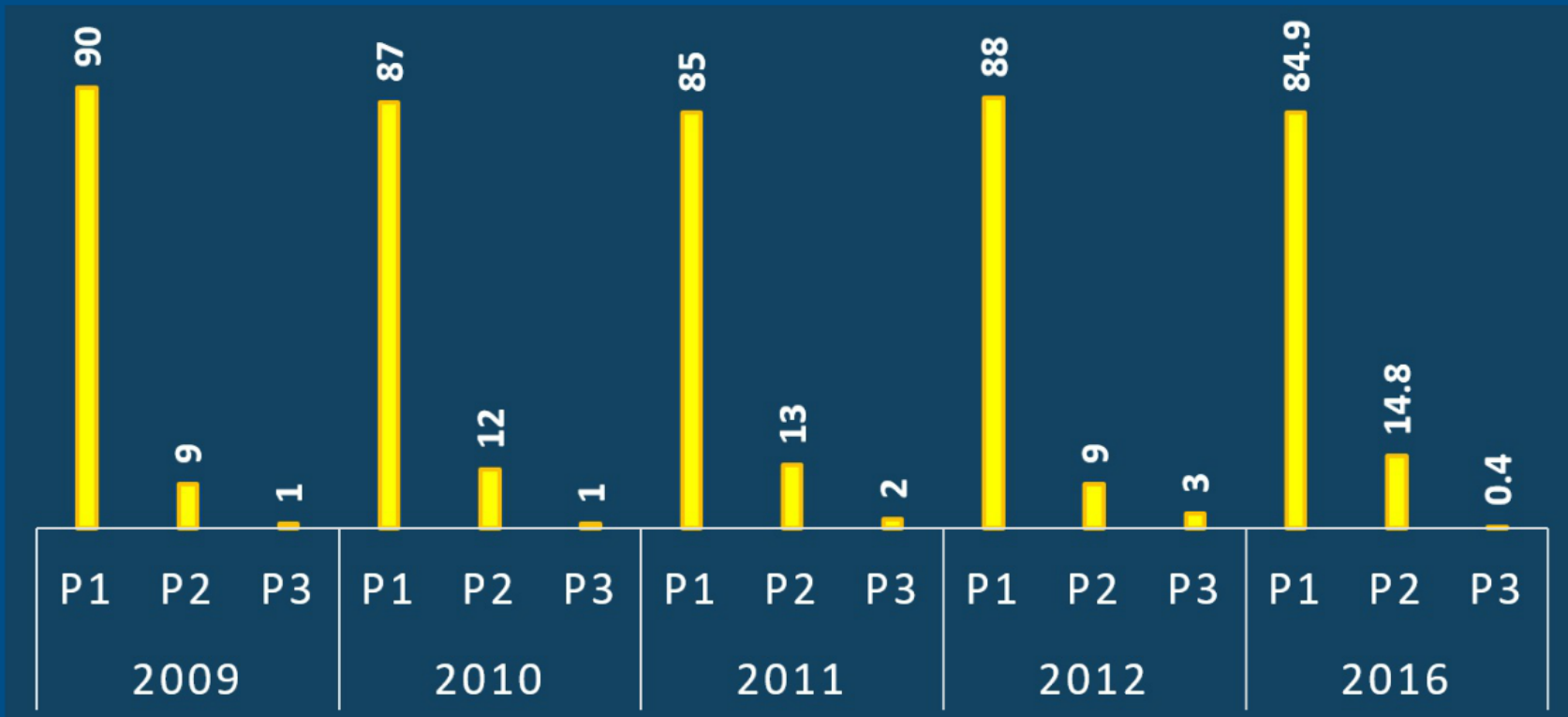
Response of Efficiency Ratio to Capital Expenditure



Jerry built capital expenditure increases **“likelihood of sub-standard projects and an increase in recurrent spending, in operations and maintenance costs, for next few years”** (Asian Development Bank, 2016).

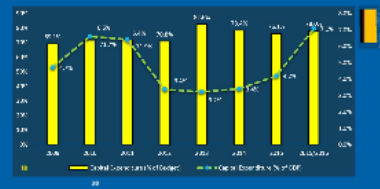
**Higher** impulse response of **efficiency ratio** compared to response of Recurrent expenditure **means** that the **recurrent expenditure increases overtime** as a percentage of public capital stock

Figures in percent

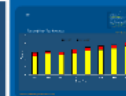
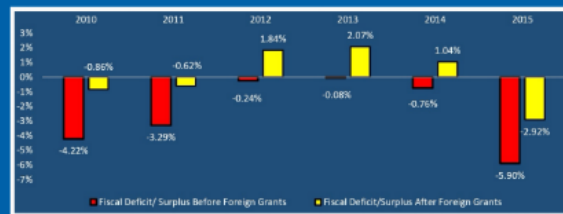


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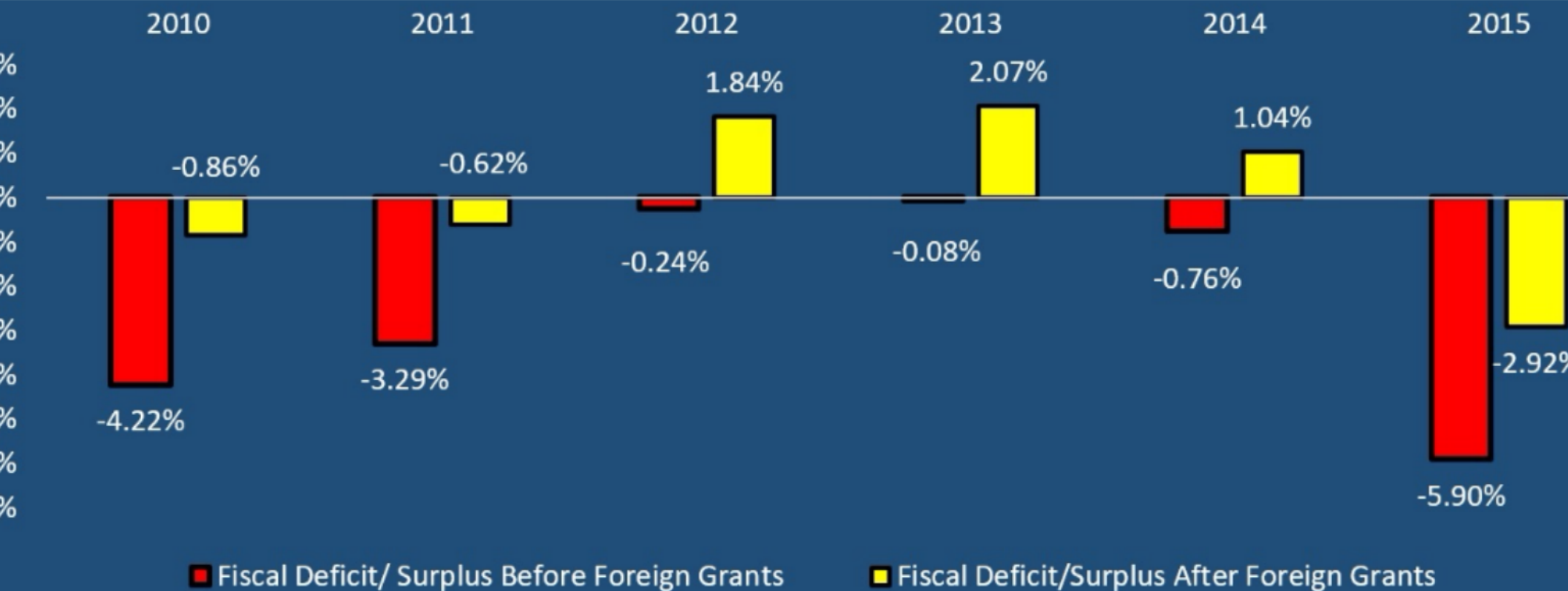
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## Government Expenditure (Trends and Practices) and Fiscal Space



# Fiscal Space



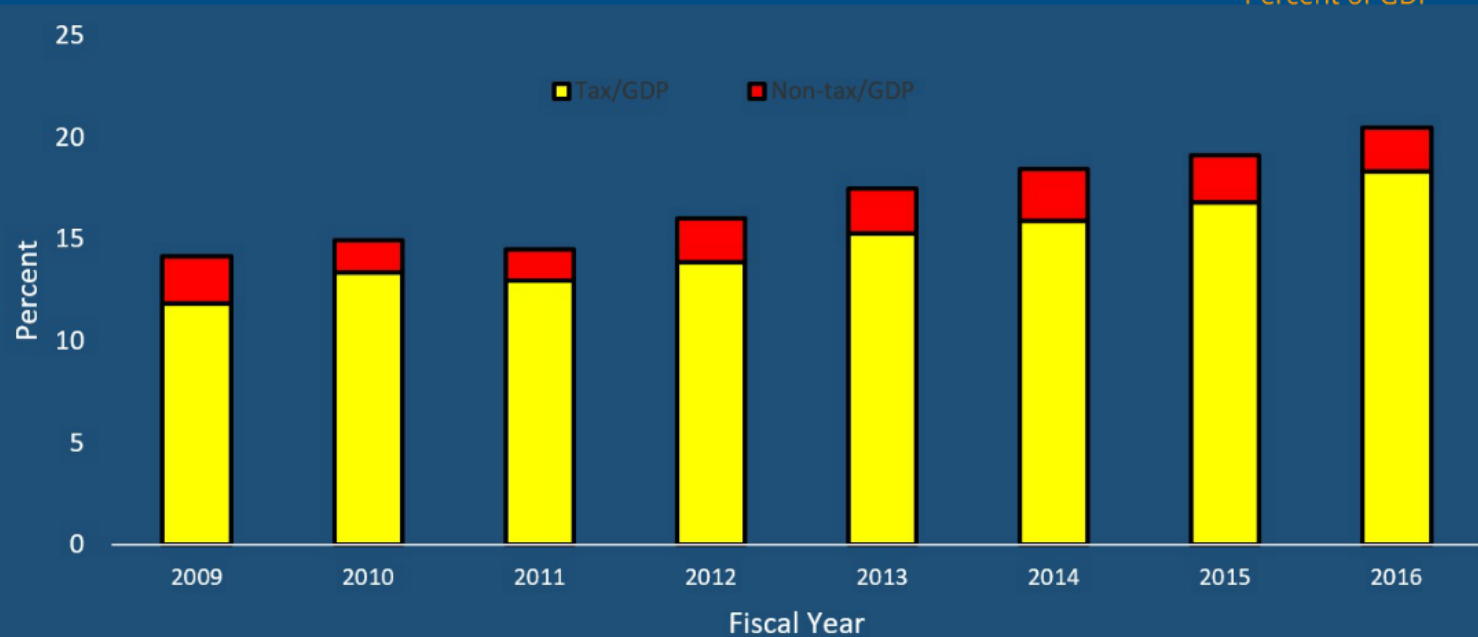
## Tax Expenditure ?

Tax exemptions, concessions and deductions that, otherwise the tax base, reduce the tax base.  
 Tax incentives in Nepal compared to other countries in the region appear to be weak in these four main aspects (IMF 2015):  
 1) Large tax holiday free periods;  
 2) Exemptions are narrow;  
 3) Accelerated depreciation rates which are seen as more effective form of incentive, which full payment to Nepal can be made in the region;  
 4) Exemption on VAT and customs in Nepal, many governments in neighboring countries.  
 The eligibility criteria for tax incentives apply widely and are not conditional on outcomes.

Nepal's tax expenditure is 2.2 percent of GDP

## Tax and Non-Tax Revenue

Percent of GDP



Source: (Ministry of Finance 2016)

# Tax Expenditure ?

**Tax exemptions, concessions and deductions** has rendered the tax bases narrow and **distorted resource allocations**.

Tax incentives in Nepal compared to other countries in the region appears to be weak in these four main aspects (IMF 2011).

- a) Longer Tax holiday time horizons.
- b) Indefinite tax rebates
- c) Accelerated depreciation rate which are seen as more effective form of incentive, seem not as prevalent in Nepal compared to the region.
- d) Exemption on VAT and customs in Nepal more generous than in neighboring countries

**The eligibility criteria for tax incentives apply widely and are not conditional on outcomes**

Nepal's tax expenditure is 2.2 percent of GDP

## FINANCIAL MARKET



## Public Private Partnership



## Institutional Investors



## State Owned Enterprises



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# Public Private Partnership

14th Three Years Plan (2016/2017-2018/2019) – Approach paper: The Government has provided space for private sector investment

In 2015, the Government of Nepal approved a PPP policy that defines the broader contours of private sector participation in the country.



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The policy provided the **space for a Viability Gap Fund** and project preparation facilities in order to help project developers and expedite PPP projects.

Though the **guidelines for Viability Gap** Funding are yet to be established.

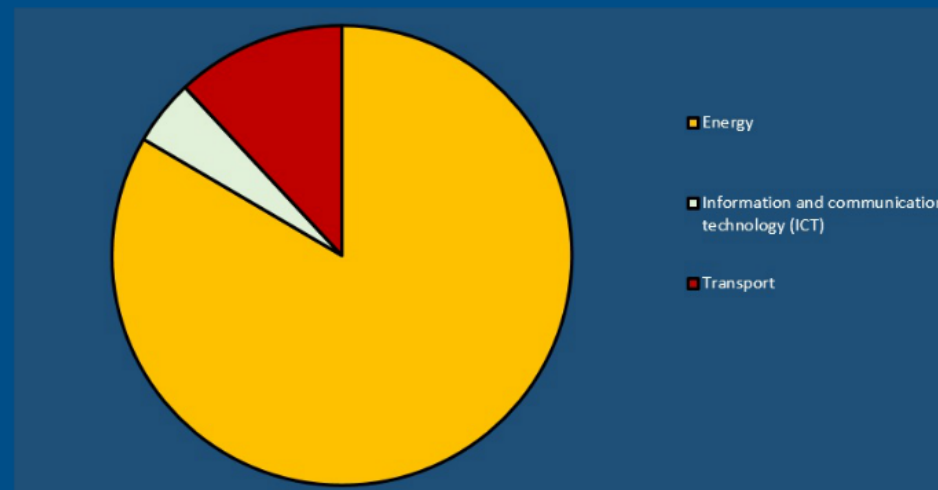
The government should also **identify the projects (long- and short-list)** to be built under PPP and finalize the guiding regulations.

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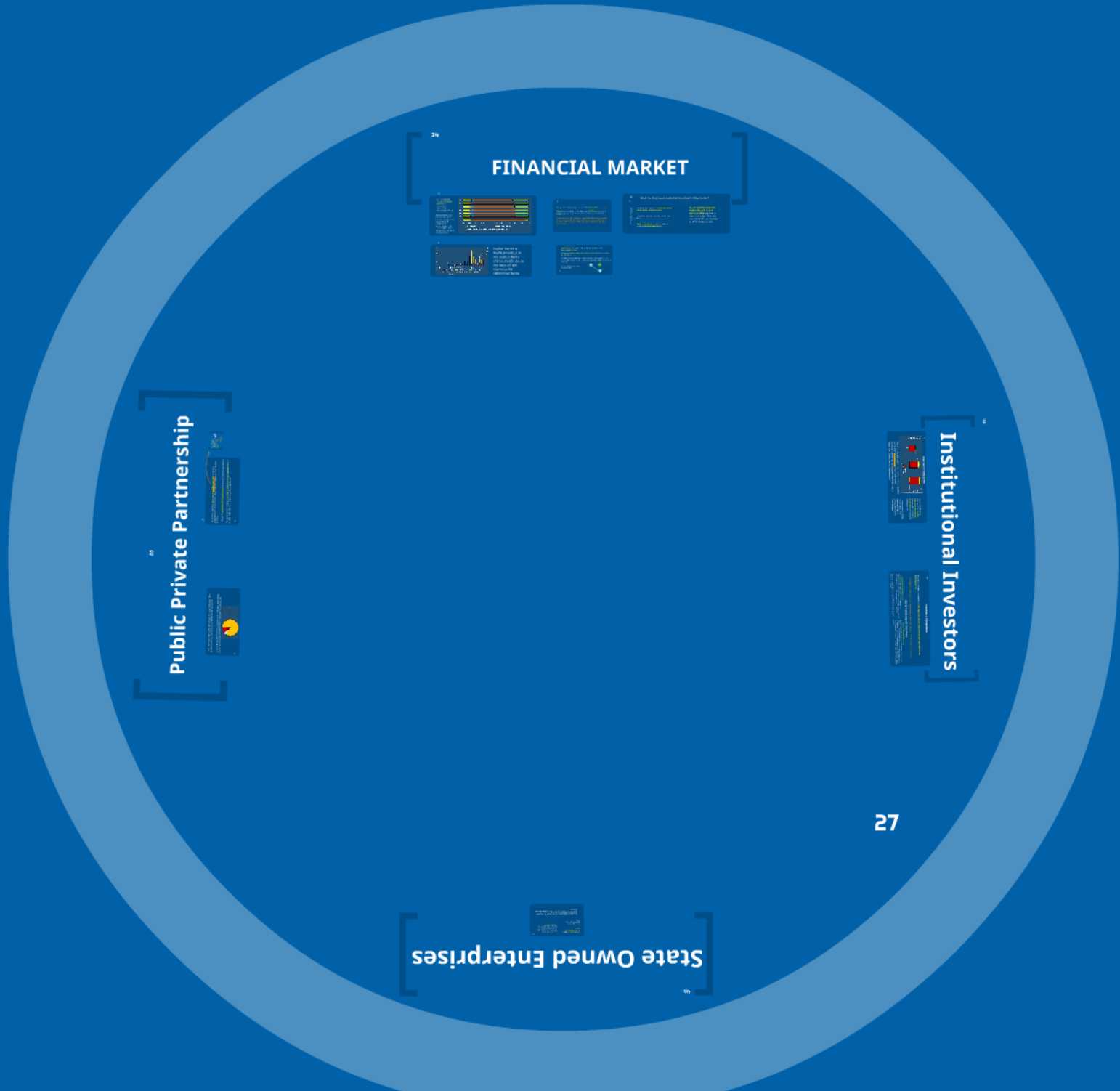
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A mechanism wherein **government support infrastructure sector projects** through capital grants and incentives **to make them commercially viable**



It helps mobilise private sector investment for development projects, while ensuring that the private sector still shares in the risks of infrastructure delivery and operation.



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### FINANCIAL MARKET

1. Market Overview

Market	Value	Change
US Market	1.2T	+0.5%
EU Market	0.8T	+0.2%
Asia Market	1.5T	+0.8%

2. Market Outlook

3. Market Analysis

4. Market Performance

5. Market Trends

Institutional Investors

1. Institutional Investors Overview

2. Institutional Investors Performance

3. Institutional Investors Outlook

4. Institutional Investors Analysis

5. Institutional Investors Trends

State Owned Enterprises

1. State Owned Enterprises Overview

2. State Owned Enterprises Performance

3. State Owned Enterprises Outlook

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Public Private Partnership

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2. Public Private Partnership Performance

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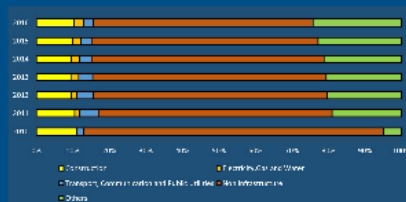
5. Public Private Partnership Trends

# FINANCIAL MARKET

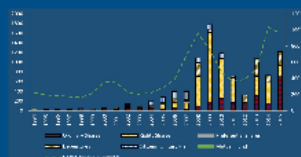
35

Commercial banks have very **minimum exposure** to investment in infrastructure and energy sector in Nepal.

The investment in the infrastructure sectors (Construction, Electricity, Gas and Water & transportation, communication, and utility sector) is around 15.5 percent of the total lending portfolio.



36



Capital market is highly simulated by the trade of banks shares, mostly due to the issue of right shares by the commercial banks.

36

The capital base of banks and financial institutions is **low** (around 10% of GDP).

The total investment exposure is limited to approximately 10% of the total assets and 10% of the total capital (for infrastructure sectors, allowing 10 percent of core capital to be used for infrastructure).

It is not enough to fund the infrastructure projects in Nepal. The major reason for this is the low capital base of banks and financial institutions. The capital base of banks and financial institutions is low, which limits their ability to fund infrastructure projects. The capital base of banks and financial institutions is low, which limits their ability to fund infrastructure projects.

37

What's the likely reasons behind low investment in Infrastructure ?

37

37

The majority of the funds are of **short-term nature** (Fixed Deposit - maximum 5 years).

These funds are treated as floating rate short-term loans.

**Based on the rollover** of these fixed deposits, commercial banks stretch their arm.

**Assets liability mismatch, Project risk and lack of technical skills** required to assess the project financing can explain this low allocation to infrastructure sectors.

The **bond market** in Nepal is not yet highly developed in fund long-term investments.

**Fixed deposits with banks generally provide the highest rate of return compared to government securities and bonds.**

The development of the bond market are imperative for the growth of financial market which in turn has substantial positive spillover effects in an economy.

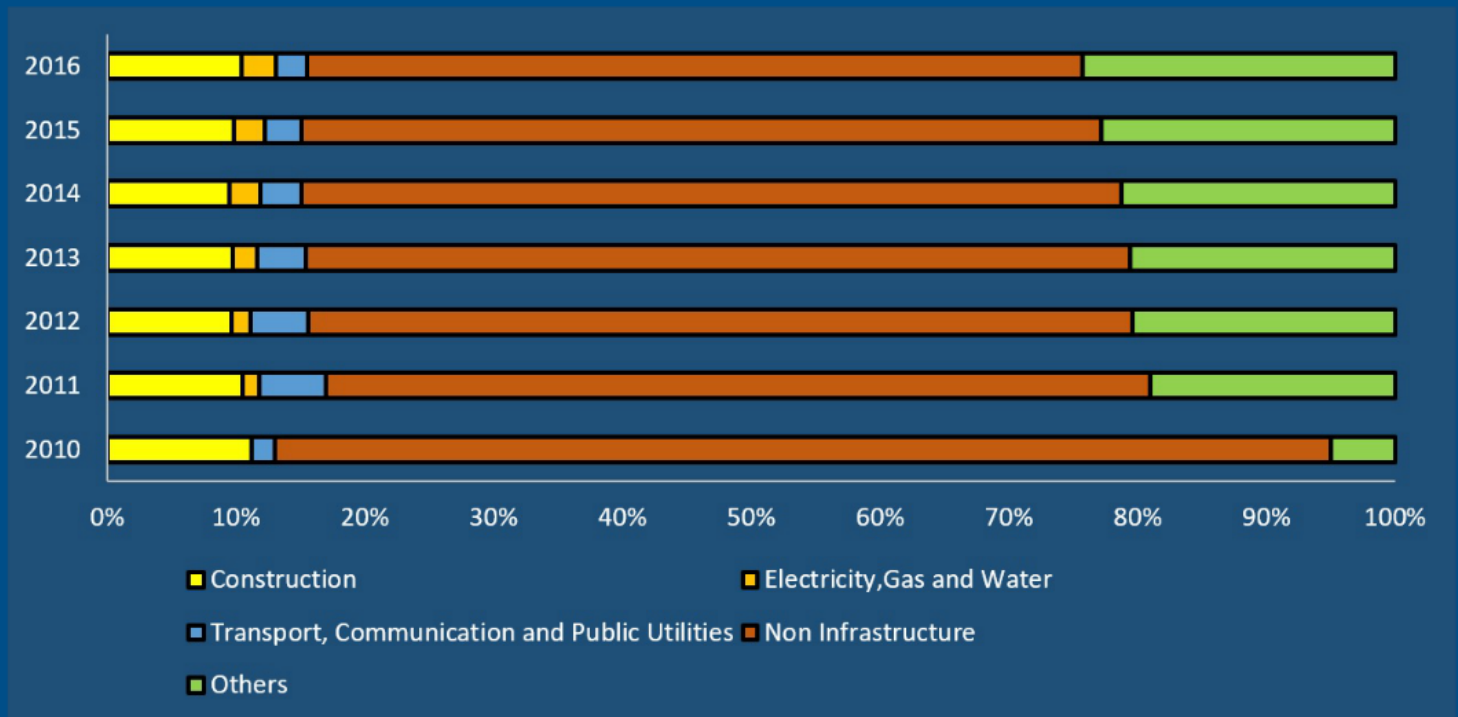
The active secondary market is still an active credit rating.



35

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Capital market is highly simulated by



The capital base of banks and financial institution NRS **160 billion (2015)** (Khatriwada et.al 2015)

The total maximum exposure limited to approximately **NRS 80 billion** Hydro and NRS **40 billion** in other infrastructure sectors. *(Investing 50 percent of core capital is allowed for Hydropower)* (Khatriwada et.al 2015)

*If it costs around NRS 200 million or more per MW ,400 MW is the largest project that can be financed with 100 percent domestic financing. This would be sufficient to finance two medium sized projects, but in an actual scenario, 100 percent domestic financing is not feasible, because it would be a highly complex deal and there is no guarantee that all the commercial banks in Nepal would have sufficient portfolio to diverse the risk.*

37

## What's the likely reasons behind low investment in Infrastructure ?

38

Asset Liability Mismatch

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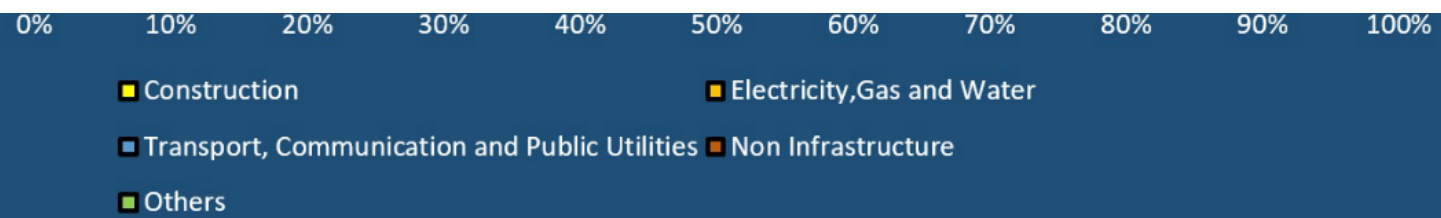
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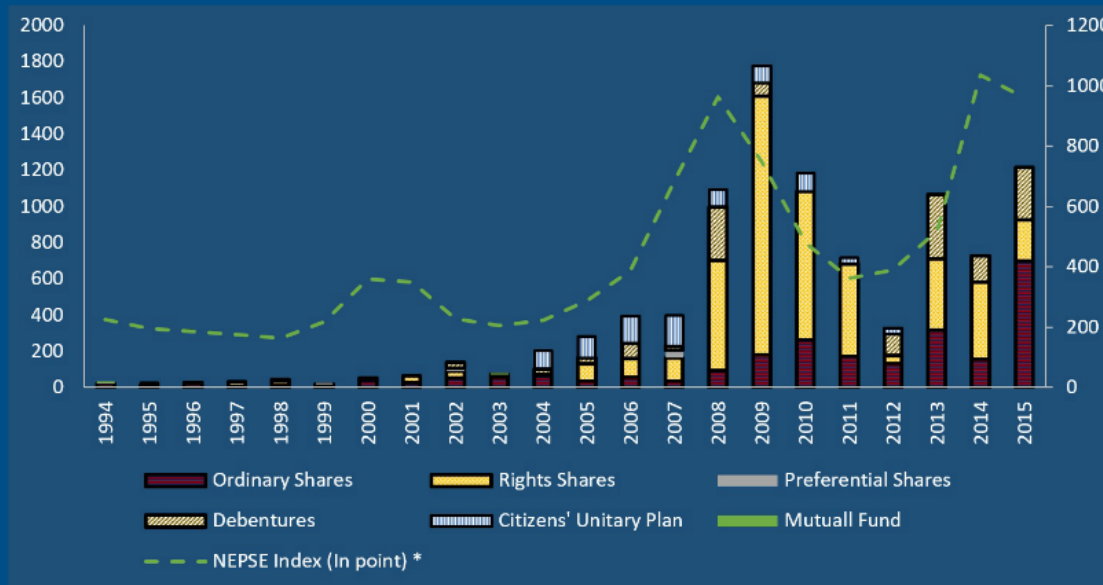
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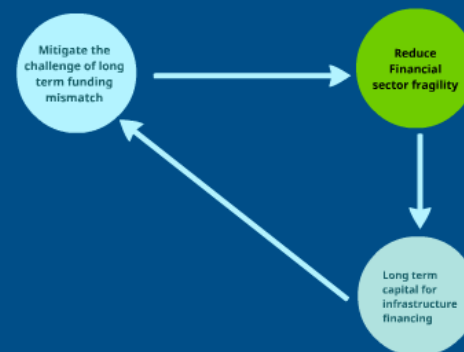
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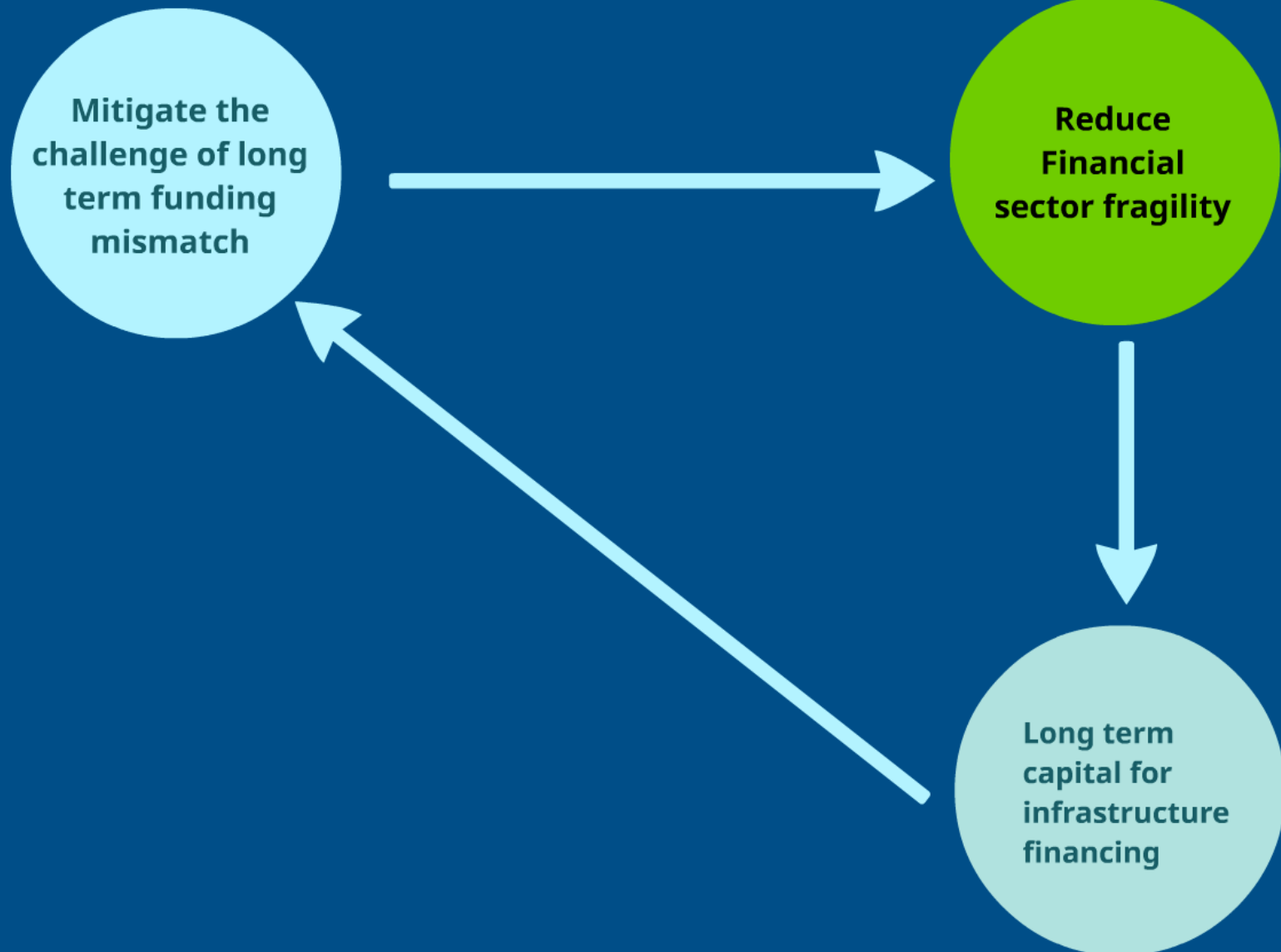
**The Bond market** in Nepal is not yet highly developed is fund long term investments

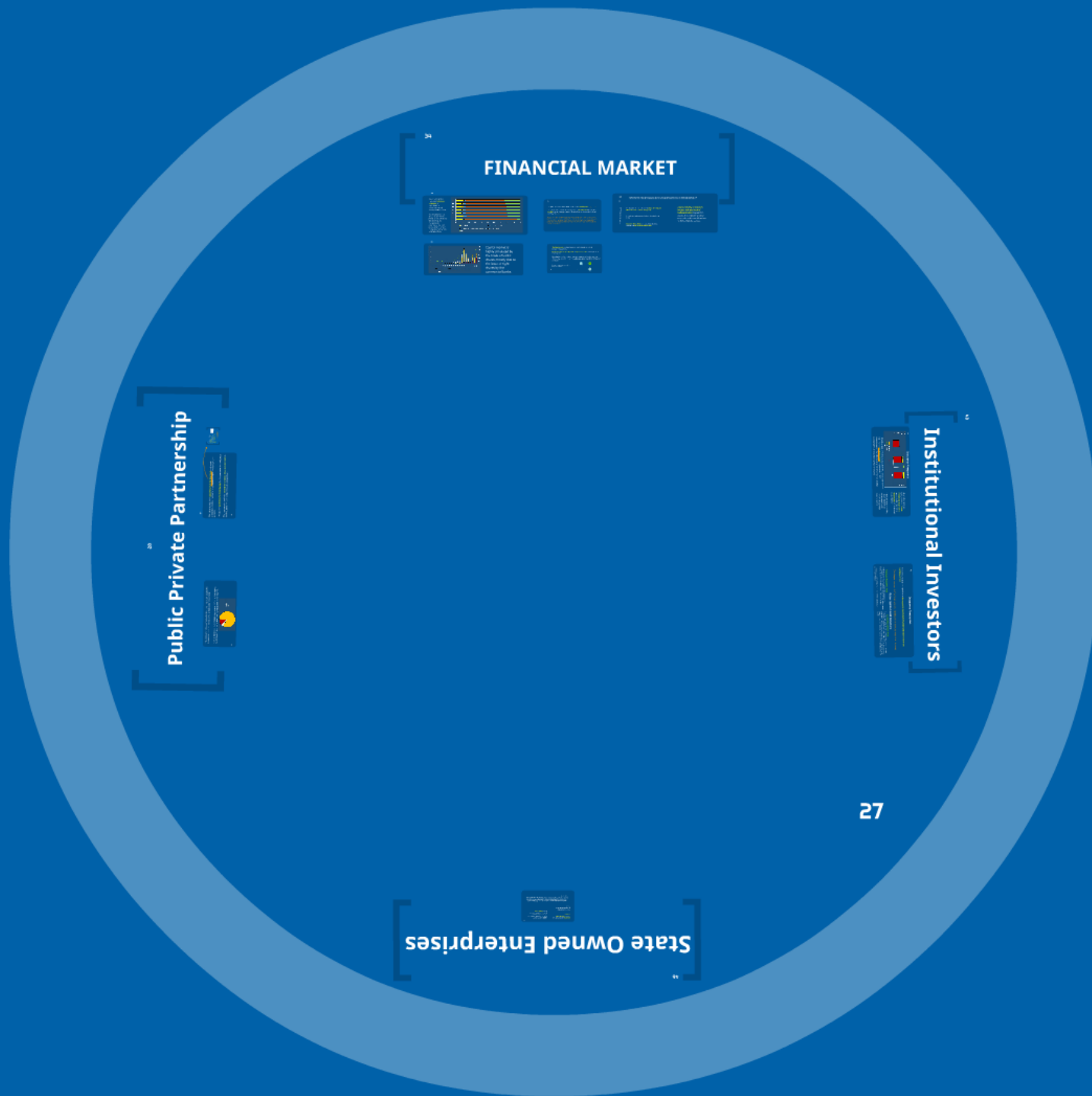
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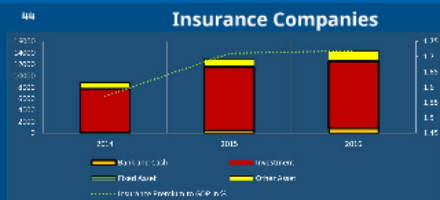
No active **secondary market** , neither **active credit rating**







# Institutional Investors



The directive also states that the insurance companies can invest **"no more than"** 5 percent of total investment in the shares of productive or nationally important sectors (For e.g Hydropower)

As per the directive, Life Insurance: **Invest minimum 70 percent** and non-life insurance **65 percent** of their total investment in:

- Government securities,
- Fixed deposits of commercial banks
- Citizen Investment Trust Schemes

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## Insurance Companies

Insurance companies experiences **the opposite assets-liability mismatch observed in the banking sector.**

(Fixed deposit matures in 1 to 2 years whereas liabilities remain active for more than 10 years).

## Other institutional investors

### Employee Provident Fund

Employee provident fund is investor in hydropower projects, Hydroelectric Investment and Development Company Limited (HIDCL) and financier for the new airline of Nepal Airlines Corporation.

The share of project loan in EPP's portfolio has been growing by 30 percent on an average.

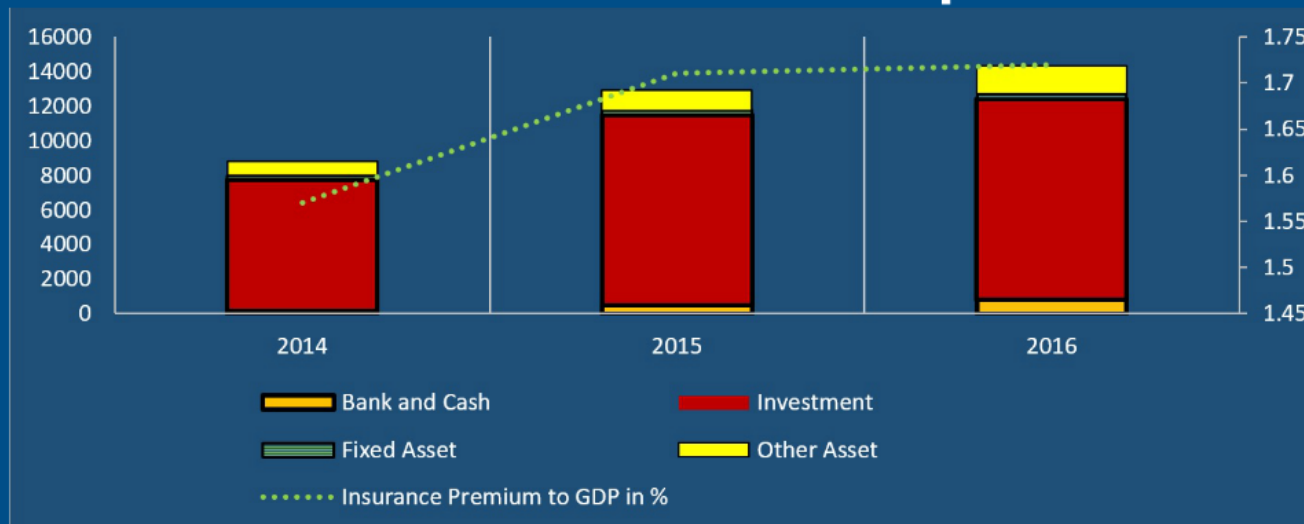
### Citizen Investment Trust

As of Fiscal year, 2014/2015 the trust has allocated 12 per cent of its investments in national pride infrastructure projects like hydropower development. The trust also plans to invest in roadways transmission lines, industry and increase the investment from 1 percent to 2 percent by 2018.



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# State Owned Enterprises

Increasing unfunded liabilities  
and other administrative  
expenditures

Which could ultimately  
become the government's  
burden.

The positive part is that among nine financial sectors PCL, Hydroelectric  
Investment and Development Company Limited has been set as special  
purpose vehicle to implement hydropower development programs of the  
government.

Despite the high level of  
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**Public  
Expenditure  
Inefficiency**

**Asset  
Liability  
Mismatch**

**Highly  
dependence on  
Import Tax  
Revenue**

**Underdeveloped  
Capital Market**

**Regulatory  
Norms**



# WHERE DO WE GO FROM HERE?

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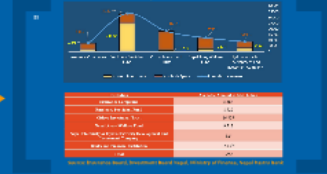
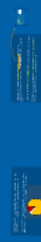
Financing Strategies for Sustainable  
Development in Nepal

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### FINANCIAL MARKET



### Public Private Partnership



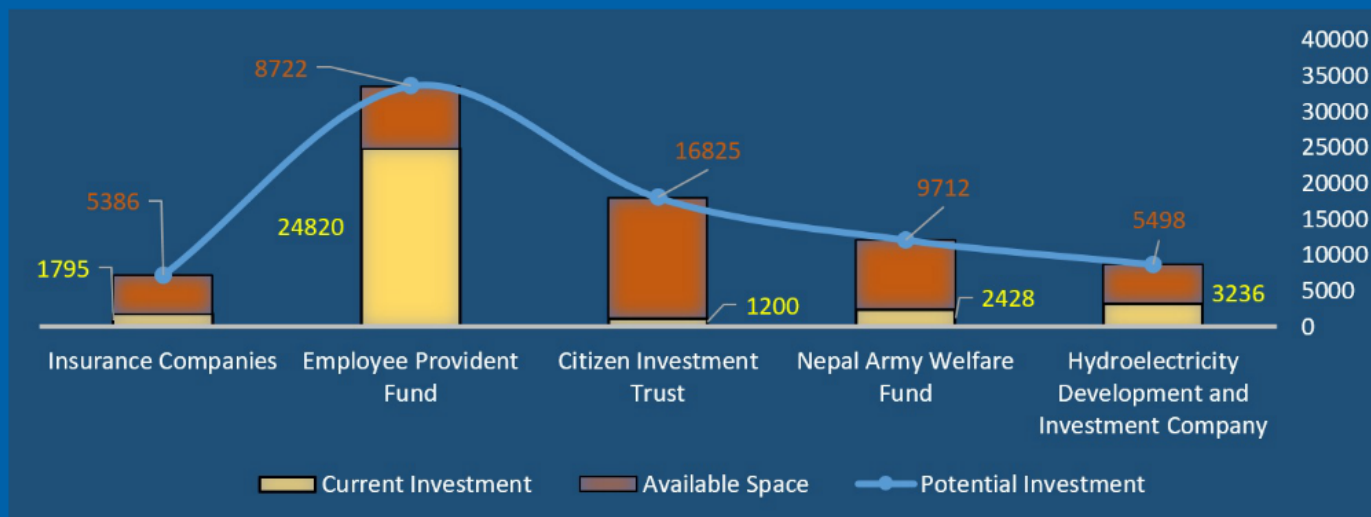
### Institutional Investors



### State Owned Enterprises



Figures in Ten millions



Institution	Available Amount in NRS billion
Insurance Companies	5.386
Employee Provident Fund	8.722
Citizen Investment Trust	16.825
Nepal Army Welfare Fund	9.712
Nepal Electricity or Hydroelectricity Development and Investment Company	5.5
Banks and Financial Institution	153.7 <sup>36</sup>
Total	199.8

Source: Insurance Board, Investment Board Nepal, Ministry of Finance, Nepal Rastra Bank



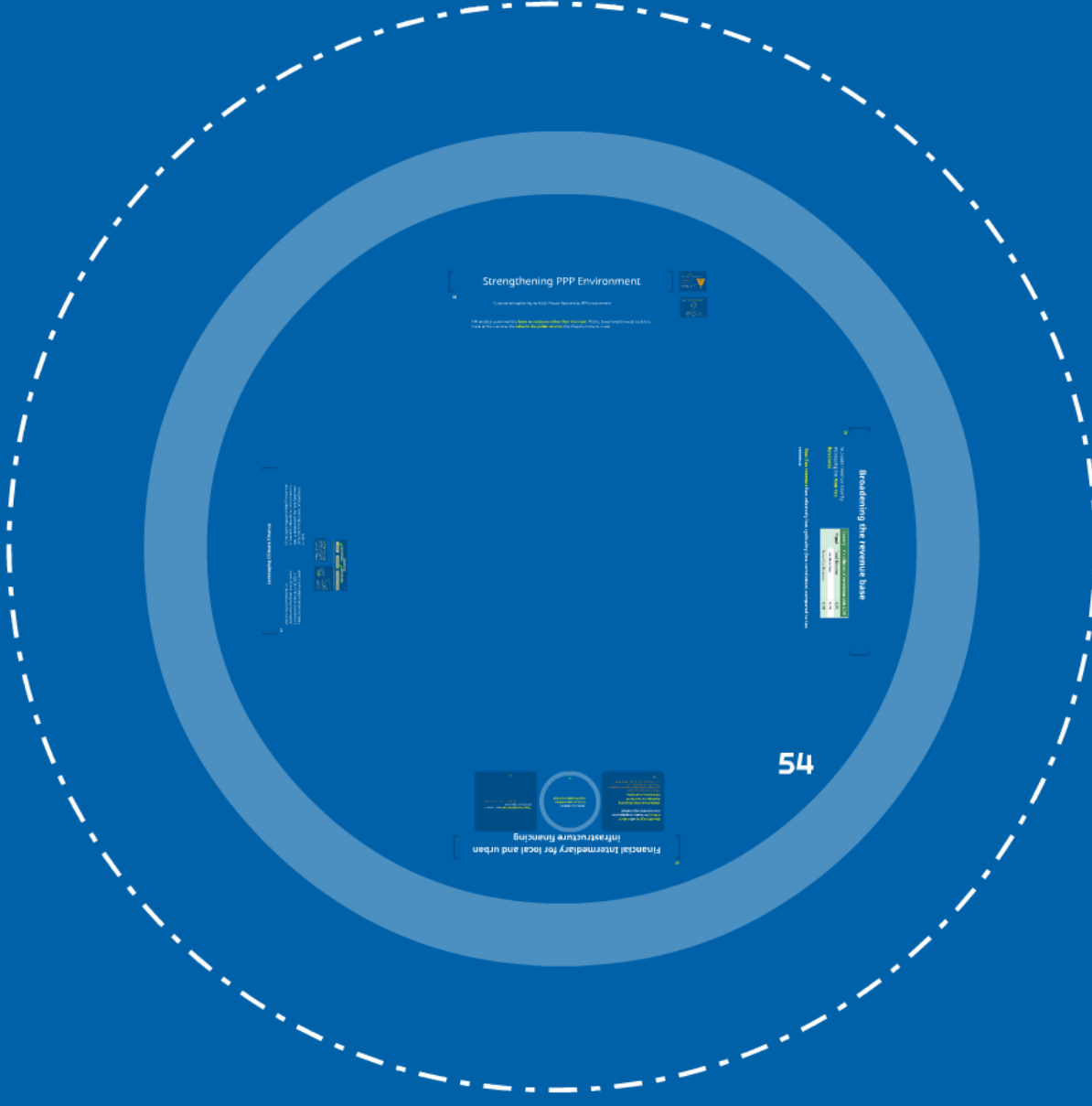
Such theoretical capacity could allow financing the equivalent of **1000 MW** of energy projects (assuming in total it costs NRS 200 million per MW). This is rather limited compared to the **25,000 MW** to be developed over 20 years as mentioned in the **Hydropower Development plan**.

Therefore, external resource will be needed, which could come from Multilateral and Bilateral institutions, capital market innovation and Foreign Direct Investment (channeling through PPP).

However, Official Development Assistance (ODA) **funds are also limited** and development finance institutions have country and **project loan limits.**

**Capital market is slowly developing** but not fast enough to catchup with the growth aspiration.

The regulatory regime has to develop a clear and consistent foundation for capital market development. The facets of supportive market infrastructure, including a large-value transfer system (LVTS), a security clearing and settlement system, and a centralized depository, needs to be put in place.



Strengthening PPP Environment

Cooperate strengthening the PPP Project Monitoring, Offshore project

PPP projects supported by the PPP Project Monitoring, Offshore project

PPP projects supported by the PPP Project Monitoring, Offshore project

Broadening the revenue base

Strengthening the revenue base

Strengthening the revenue base

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Strengthening the revenue base

Financial Intermediary for local and urban

Financial Intermediary for local and urban

Financial Intermediary for local and urban

Financial Intermediary for local and urban

# Strengthening PPP Environment

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Continue strengthening its Public Private Partnership (PPP) environment

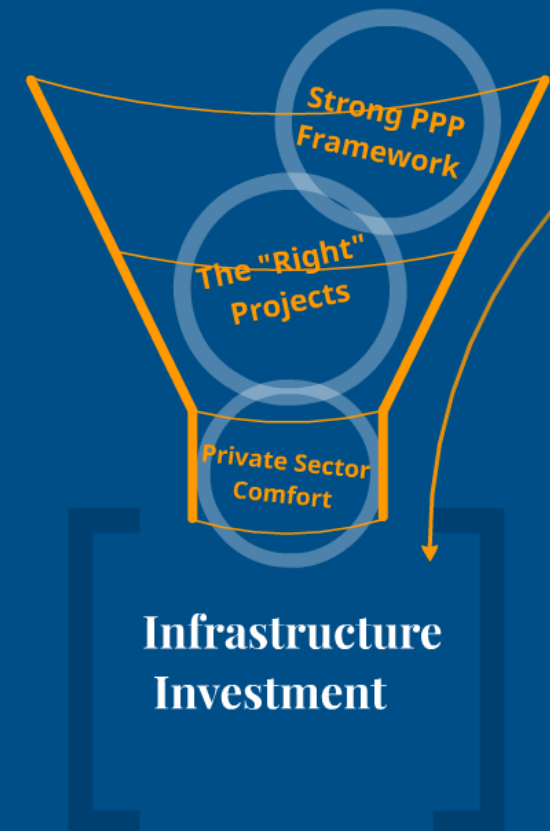
PPP enables government to **focus on outcome rather than the input**. That is, Governments would be able to focus on the outcome- the **value to the public services** that they are trying to create

## Legislative Environment

- Government is yet to come out with PPP act

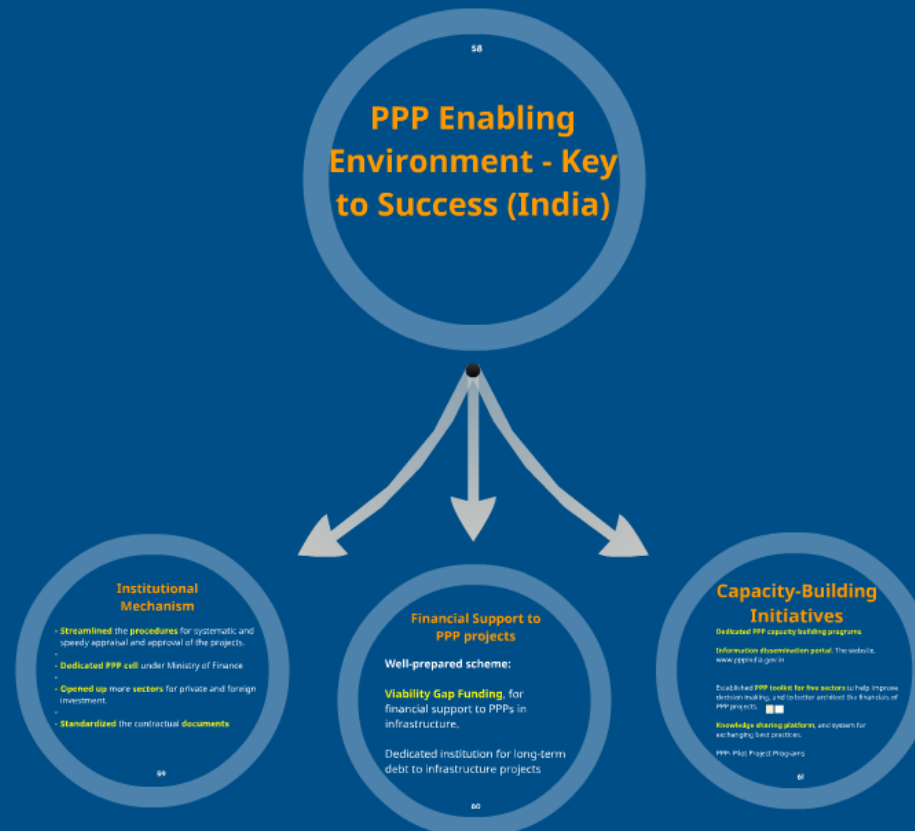
## Institutional Environment

- Structure its agencies
- Authority is yet to come up with viable project pipelines



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- Nepal could learn from other countries such as **India**, which has been largely successful in **mobilizing public and private financing** in infrastructure



# **PPP Enabling Environment - Key to Success (India)**

## Institutional Mechanism

- **Streamlined** the **procedures** for systematic and speedy appraisal and approval of the projects.
- 
- **Dedicated PPP cell** under Ministry of Finance
- 
- **Opened up** more **sectors** for private and foreign investment.
- 
- **Standardized** the contractual **documents**



## Financial Support to PPP projects

**Well-prepared scheme:**


**Viability Gap Funding**, for  
financial support to PPPs in  
infrastructure.

Dedicated institution for long-term  
debt to infrastructure projects

# Capacity-Building Initiatives

**Dedicated PPP capacity building programs**

**Information dissemination portal.** The website, [www.pppindia.gov.in](http://www.pppindia.gov.in)

Established **PPP toolkit for five sectors** to help improve decision making, and to better architect the financials of PPP projects. 

**Knowledge sharing platform**, and system for exchanging best practices.

PPP- Pilot Project Programs

## Screen shot of the PPP Family Indicator Tool

### PPP Family Indicator

[Go to My Tools](#)

The PPP 'family' indicator is structured as a decision tree. The user should work through the questions from the top down to identify the appropriate indicative 'family' of PPP options.

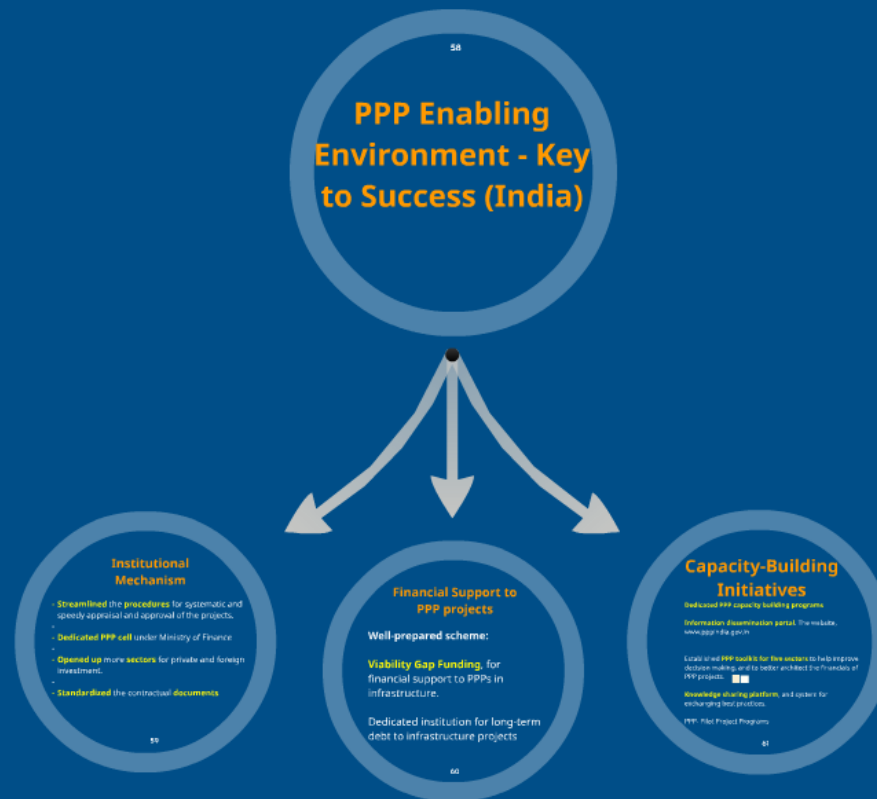
1. Does the project have a capital expenditure focus? Capex-focused project (includes opex also)	Operations and maintenance-focused project	Capex-focused project (includes opex also)
2. Would the private operator be responsible for both construction of assets and operating the project during its lifetime? Yes, the project is combined construction and operation	Yes, the project is combined construction and operation	No, the project is only for construction
3. Would assets under the proposed PPP be 'greenfield' (newly-built) or 'brownfield' (additions to existing roads)? Greenfield assets	Brownfield assets	Greenfield assets
4. Who would be responsible for design? Public sector	Public sector design	
5. All road projects will have public ownership. Public ownership	Public ownership	
6. For Capex roads PPPs the main finance source will be private sector. Private sector finance (more than 50% of new cap)	Private sector finance (more than 50% of new capex)	
7. What will the primary revenue source be For the private sector Annuity (unitary charge)	Annuity (unitary charge)	Toll from users (User-charge) Shadow toll (paid by public sector)

### Preferred PPP mode for comparison (Step 1)

BoT Toll					
				Yellow indicates allocation does not match Green indicates matching allocation	
Risk Type	Sensitivity	Relevance during the concession	Preferred Allocation (Step 2)	Allocation under BoT Toll	
A. PRE OPERATIVE TASK RISKS					
A.1 Delays in land acquisition	High	0-5 years	Public Sector	Public Sector	
A.2 External linkages	Low	0-5 years	Public Sector	Public Sector	
A.3 Financing risks	Medium	0-5 years	Private Sector	Private Sector	
A.4 Planning	Medium	0-5 years	Private Sector	Private Sector	
A.5 Approvals	High	0-5 years	Public Sector	Public Sector	
B. CONSTRUCTION PHASE RISKS					
B.1 Design Risk	Medium	0-5 years	Private Sector	Private Sector	
B.2 Construction Risk	Medium	0-5 years	Public Sector	Private Sector	
B.3 Approvals	Low	0-5 years	Private Sector	Private Sector	
C. OPERATIONS PHASE RISKS					
C.1 Technology Risk	Low	Throughout	Private Sector	Private Sector	
C.2 Operations & Maintenance Risk	Medium	Throughout	Public Sector	Private Sector	

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- Nepal could learn from other countries such as **India**, which has been largely successful in **mobilizing public and private financing** in infrastructure



## Strengthening PPP Environment

Government will strengthen PPP environment by...

PPP environment will be strengthened by...  
 PPP environment will be strengthened by...  
 PPP environment will be strengthened by...



## Broadening the revenue base

Revenue base will be broadened by...

Revenue Source	Revenue (Billion TL)
Corporate Income Tax	100
Personal Income Tax	100
Value Added Tax	100
Excise Tax	100
Stamp Duty	100
Other Taxes	100
<b>Total</b>	<b>500</b>

## Strengthening Urban Finance

Urban finance will be strengthened by...

Revenue Source	Revenue (Billion TL)
Corporate Income Tax	100
Personal Income Tax	100
Value Added Tax	100
Excise Tax	100
Stamp Duty	100
Other Taxes	100
<b>Total</b>	<b>500</b>

## Financial Intermediary for local and urban

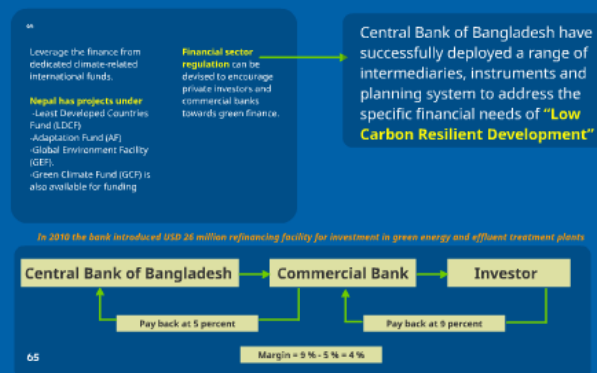


# Leveraging Climate Finance

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Incremental investments to decarbonize the Asian energy sector alone are estimated at a net USD 21 trillion or USD 600 billion per annum.

Of the current global climate finance that is needed to decarbonize economies in a way consistent with the Paris Agreement 2016, USD 17 billion went to South Asia in 2014.



Leverage the finance from dedicated climate-related international funds.

**Nepal has projects under**

- Least Developed Countries Fund (LDCF)
- Adaptation Fund (AF)
- Global Environment Facility (GEF).
- Green Climate Fund (GCF) is also available for funding

**Financial sector regulation** can be devised to encourage private investors and commercial banks towards green finance.

Leverage the finance from dedicated climate-related international funds.

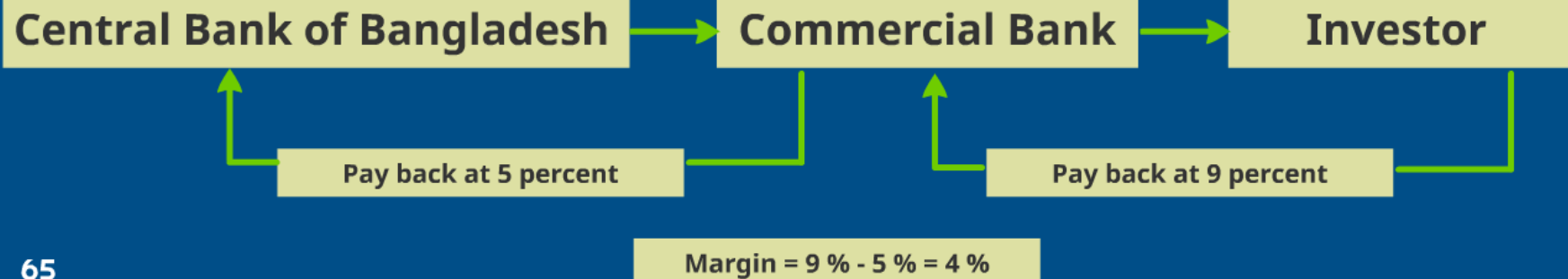
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**Financial sector regulation** can be devised to encourage private investors and commercial banks towards green finance.

Central Bank of Bangladesh have successfully deployed a range of intermediaries, instruments and planning system to address the specific financial needs of **"Low Carbon Resilient Development"**.

*In 2010 the bank introduced USD 26 million refinancing facility for investment in green energy and effluent treatment plants*





## Strengthening PPP Environment

Continue strengthening regulatory framework. It was identified that PPP environment

PPP projects are limited by **limited regulatory framework** and **lack of legal** framework. There is need to develop the ability to focus on the **regulatory framework** and **legal framework** for PPP projects.



## Broadening the revenue base

Revenue is generated from the

Revenue	Revenue	Revenue
Revenue	Revenue	Revenue
Revenue	Revenue	Revenue

Revenue is generated from the **regulatory framework** and **legal framework** for PPP projects.

## Revenue from PPP projects

Revenue is generated from the **regulatory framework** and **legal framework** for PPP projects.

Revenue	Revenue	Revenue
Revenue	Revenue	Revenue
Revenue	Revenue	Revenue

## Financial Intermediary for local and urban



# Financial Intermediary for local and urban infrastructure financing

**Basel III regime will make it difficult** for banks complying the international requirement

**Limited incentives financing municipal or local level infrastructure projects.**

"the need for banks to seek more stable longer term funding to better match long-term lending will potentially impact the way that projects are structured." (OECD 2015)

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There is a need for **financial intermediary outside BAFIA mandate**

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**"Town Development Fund** might involve in infrastructure financing"

(Municipal Infrastructure Financing Framework 2015)

70

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***"Town Development Fund** might involve in infrastructure financing"*

(Municipal Infrastructure Financing Framework 2015)

## Strengthening PPP Environment

Continued strengthening of Public-Private Partnership (PPP) environment

PPP enables governments to **boost the national capital risk on the table**. That is, Governments will not be able to raise on the national **debt ceiling for the public services** that they are trying to build.



## Broadening the revenue base

Category	Current	Target
Revenue	1.5%	2.0%
Revenue	1.5%	2.0%
Revenue	1.5%	2.0%

**Notes:** The revenue base (excluding non-systemic) has increased compared to the previous period.

## Strengthening Climate Finance

Climate change is a global challenge that requires urgent action. The Government of Maldives is committed to addressing climate change and is seeking to attract climate finance to support its efforts.



## Financial Intermediary for local and urban infrastructure financing



# Broadening the revenue base

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Increase revenue base by increasing the **Non-Tax Revenues**

Country	Co-efficient of correlation with GDP	
Nepal	Total Revenue	0.96
	Tax Revenue	0.94
	Non-Tax Revenue	0.91

**Non-Tax revenue** has relatively low cyclicality (low correlation) compared to tax revenue

McKinsey & Company

IMPROVING INFRASTRUCTURE  
PRODUCTIVITY CAN SAVE \$1 TRILLION GLOBALLY

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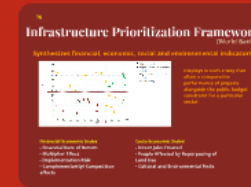




The study reveals that improving the selection, streamlining the delivery and optimizing the use of existing infrastructure could obtain the same amount of infrastructure project for less than 40 percent- or, put in a way, bringing 60 percent improved productivity. The analysis is produced after reviewing more than 400 cases of best practices.

## Improving project prioritization

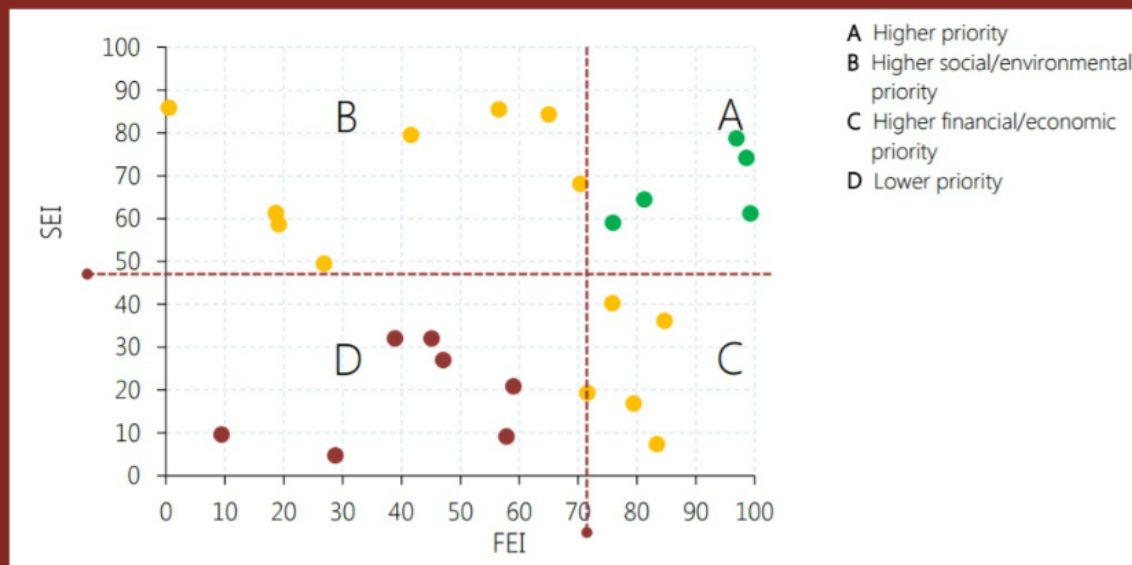
Saves upto 15 to 35 percent of  
new capital spending



# Infrastructure Prioritization Framework

(World Bank)

**Synthesizes financial, economic, social and environmental indicators**



**Displays in such a way that allow a comparative performance of projects alongside the public budget constraint for a particular sector**

## Financial Economic Index

- Financial Rate of Return
- Multiplier Effect
- Implementation Risk
- Complementarity/ Competition effects

## Socio Economic Index

- Direct Jobs Created
- People Affected by Repurposing of Land Use
- Cultural and Environmental Risks

## **Streamlining infrastructure project delivery**

**An efficient delivery system: saves 25 percent of the new project**

Using information technology in establishing intelligent transport system (ITS)

Reducing non-technical loss- transmission and distribution losses.

Reduce transmission loss: **Electricity leakage** was 25.78 percent in 2016, **ranked 4th** among the country with highest electricity leakage

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- Improved Asset utilization
- Optimized maintenance
- Extensive use of demand management techniques

### Making the most of infrastructure assets

**“potentially could reduce the global investment required for infrastructure by 15 percent”.**

*"Nepal, should move away from the build, neglect, and rebuild mentality and implement adequate infrastructure management system"*

## Using information technology in establishing intelligent transport system (ITS)

Reducing non-technical loss- transmission and distribution losses.

Reduce transmission loss: **Electricity leakage** was 25.78 percent in 2016 , **ranked 4th** among the country with highest electricity leakage

Invest heavily in up-front planning and design. Project report accounts for **only 1 or 2 percent** of total project cost, but overruns due lack of proper planning is **24 percent on an average**.

Use pilot project to facilitate the exchange of knowledge among central and local government.

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## Streamlining infrastructure project delivery

Investing time and money in early-stage planning and design of the project is a key source of saving in project delivery.

An efficient delivery can create a saving of as much as 25 percent of the new project

Invest heavily in up-front planning and design. Project report accounts for **only 1 or 2 percent** of total project cost. But overruns due lack of proper planning is **24 percent on an average**

Use pilot project to facilitate the exchange of knowledge among central and local government.



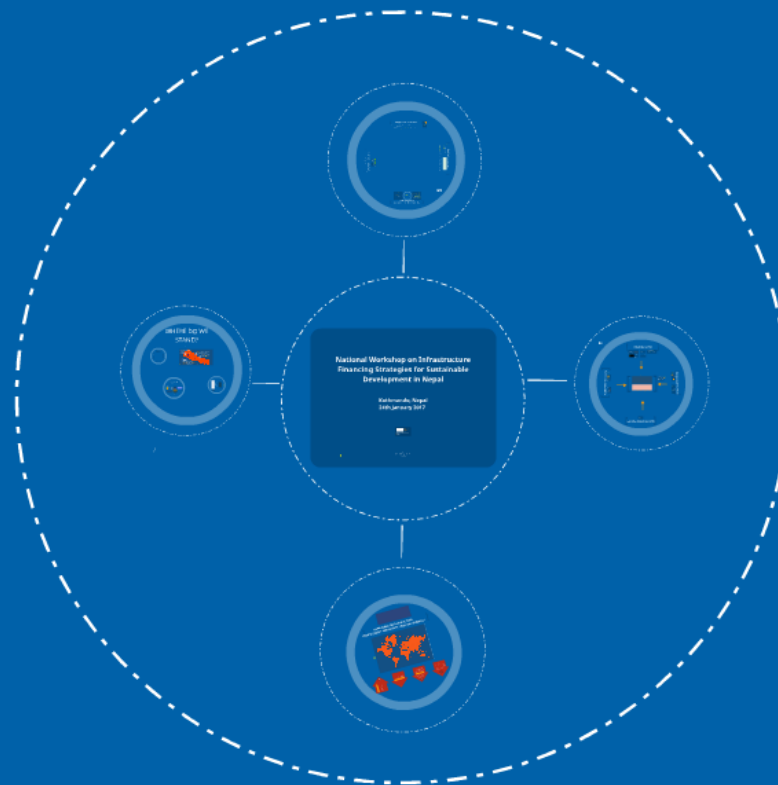
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IMPROVING INFRASTRUCTURE  
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Given the amount required, all these strategies will have to be considered as **none of them can tackle the Nepal infrastructure challenges on its own.**



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