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# NEPAL INFRASTRUCTURE SECTOR ASSESSMENT

**PRIVATE SECTOR SOLUTIONS FOR SUSTAINABLE  
INFRASTRUCTURE DEVELOPMENT**



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**PRIVATE SECTOR SOLUTIONS FOR SUSTAINABLE  
INFRASTRUCTURE DEVELOPMENT**

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# Abbreviations

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ADB	Asian Development Bank
IPO	initial public offering
BAU	business as usual
IPP	Independent Power Producer
CAAN	Civil Aviation Authority of Nepal
KM	kilometer
CIT	Citizen Investment Trust
LRN	local roads network
DFI	Development Finance Institution
M	meter
DOLIDAR	Department of Local Infrastructure Development and Agriculture Roads
MDB	multilateral development bank
DOR	Department of Roads
MOCTCA	Ministry of Culture, Tourism and Civil Aviation
DOTM	Department of Transport Management
MOEWRI	Ministry of Energy, Water Resources, and Irrigation
EGCL	Electricity Generation Company Limited
MOF	Ministry of Finance
EIA	Environmental Impact Assessment
MOFA&GA	Ministry of Federal Affairs and General Administration
EPA	Environment Protection Act
MOFALD	Ministry of Federal Affairs and Local Development
EPR	Environment Protection Regulation
MOFEP	Ministry of Finance and Economic Planning
ERC	Electricity Regulatory Commission
MOLJP	Ministry of Law, Justice and Parliamentary Affairs
FCCL	Fiscal Commitments and Contingent Liabilities
MOPIT	Ministry of Physical Infrastructure and Transport
FDI	Foreign Direct Investment
MOU	Memorandum of Understanding
FITTA	Foreign Investment and Technology Transfer Act
MOUD	Ministry of Urban Development
GDP	Gross Domestic Product
MOWSS	Ministry of Water Supply and Sanitation
GESI	gender equality and social inclusion
MW	megawatt
GWh	gigawatt hour
NEA	Nepal Electricity Authority
HIDCL	Hydroelectric Investment Development Company Limited
NIDFI	Nepal infrastructure development finance institution
IBN	Investment Board of Nepal
NPC	National Planning Commission
ICAO	International Civil Aviation Organization

NPR	Nepalese Rupee
IE	independent engineer
NPTCL	Nepal Power Trading Company Limited
IFC	International Finance Corporation
NRB	Nepal Rastra Bank
IIF	Indonesia Infrastructure Finance
O&M	operation and maintenance
InfraSAP	Infrastructure Sector Assessment Program
ODA	official development assistance
IPG	Infrastructure Finance, Public-Private Partnerships and Guarantees
OSR	own-source revenue
PIM	Public Investment Management
SBN	Securities Board Nepal
PMO	Prime Minister's Office
SOE	state-owned enterprise
PPA	Power Purchase Agreement
SPV	special purpose vehicle
PPI	Private Participation in Infrastructure
SRN	Strategic Roads Network
PPP	Public-Private Partnership
SWM	solid waste management
PPPI Act	Public-Private Partnership and Investment Act
T&D	transmission and distribution
PROR	peaking run-of-the-river
TDF	Town Development Fund
PV	present value
TIA	Tribhuvan International Airport
RBN	Roads Board of Nepal
UNCDF	United Nations Capital Development Fund
ROR	run-of-the-river
WHO	World Health Organization
RPGCL	Rastriya Prasaran Grid Company Limited



# Table of Contents

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<b>Acknowledgments</b>	<b>iii</b>
<b>Acronyms &amp; Abbreviations</b>	<b>iv</b>
<b>Executive Summary</b>	<b>x</b>
Priorities	xi
Energy Sector	xiii
Transport Sector	xv
Urban Sector	xvi
<b>Introduction</b>	<b>3</b>
<b>Country Environment</b>	<b>6</b>
Macro-Fiscal Environment	6
<i>Overview</i>	6
<i>Constraints and Areas for Reform</i>	9
Governance and Public Investment Management	9
<i>Overview</i>	9
<i>Constraints and Areas for Reform</i>	10
<i>Recommendations</i>	10
Private Participation in Infrastructure and Infrastructure Finance	11
<i>Overview</i>	11
<i>Constraints and Areas for Reform</i>	12
<i>Recommendations</i>	13
Financial Sector and the Investment Environment	14
<i>Overview</i>	14
<i>Constraints and Areas for Reform</i>	15
<i>Recommendations</i>	17
Gender Equality and Social Inclusion	19
<i>Overview</i>	19
<i>Constraints and Areas for Reform</i>	19
<i>Recommendations</i>	19
Environmental and Social Management	20
<i>Overview</i>	20
<i>Constraints</i>	20
<i>Recommendations</i>	21
Proposed Recommendations for the Country Environment	22
<b>Reforming the Energy Sector</b>	<b>27</b>
Introduction	27
Nepal's Energy Sector at a Glance	28
<i>Financing Needs (2018–40)</i>	28
Binding Constraints to the Scale-Up of Financing	34
<i>Constraints Affecting Capacity and the Enabling Environment</i>	35
<i>Constraints Affecting Financial Viability</i>	38

<i>Constraints Affecting the Availability of Long-Term Financing</i>	38
<i>Constraints Affecting Foreign Investment</i>	40
Roadmap to Unlock New Sources of Finance	41
<i>Build the Institutional and Regulatory Environment</i>	41
<i>Strengthen the Financial Viability of the Sector</i>	43
<i>Increase the Availability of Long-Term Finance</i>	44
<i>Create an Enabling Environment for Foreign Investment</i>	47
<b>Reforming the Transport Sector</b>	<b>51</b>
Introduction	51
Nepal's Transport Sector at a Glance	51
<i>Roads</i>	51
<i>Airports</i>	53
<i>Urban Transport</i>	56
Sector Constraints	57
<i>Roads</i>	57
<i>Airports</i>	58
<i>Urban Transport</i>	59
Roadmap	60
Summary of Recommendations for the Transport Sector	64
<b>Reforming the Urban Sector</b>	<b>67</b>
Introduction	67
Nepal's Urban Sector at a Glance	67
<i>Core Urban Services</i>	67
<i>Institutional Framework</i>	68
<i>Legal and Regulatory Framework</i>	68
<i>Funding and Financing</i>	69
<i>Investment Environment</i>	69
<i>Investment Priorities for the Focus Cities</i>	70
Sector Constraints	71
<i>Institutional Structure, Planning, and Implementation</i>	71
<i>Funding and Financial Management</i>	72
<i>Commercial Borrowing</i>	72
<i>Public-Private Partnerships</i>	73
<i>Land Value Capture</i>	74
Roadmap	74
Summary of Recommendations for the Urban Sector	78

## List of Figures

Figure 1: Indicators of public/publicly guaranteed debt under alternative scenarios, fy2017–FY2037	8
Figure 2: Actual and Projected Electricity Demand (GWh)	28
Figure 3: Electricity Sector Investments in Nepal with Private Sector Participation (US\$, millions)	31
Figure 4: Nepal Electricity Authority’s Net Income (US\$, millions)	39
Figure 5: Developing an Asset Recycling Framework	46
Figure 6: Institutional framework for roads	53
Figure 7: Financing needs in the road sector, 2020–30 (US\$, millions)	54
Figure 8: Institutional framework for airports	55
Figure 9: Conceptual project structure of a hybrid-annuity model PPP	63
Figure 10: Urban: Recurrent and CAPEX Per Capita	69

## List of Tables

Table ES.1: Cross-cutting areas – Short-term priority actions (up to 3 years)	xiii
Table ES.2: Short-term priority actions – Sectors	xvii
Table 1: Cross-Cutting Areas Roadmap	22
Table 2: Historical Investments (2010–17) and Projected Investment Needs (2018–40)	29
Table 3: Nepal electricity authority Debt Financing Requirement (US\$, millions)	30
Table 4: Sources of Financing in the Electricity Sector (US\$, Millions)	33
Table 5: Build the institutional and regulatory environment – Recommended actions	45
Table 6: Improve the financial viability of the sector – Recommended actions	46
Table 7: Increase the availability of long-term finance – Recommended actions	48
Table 8: Increase foreign investment – Recommended actions	49
Table 9: Road Maintenance budget needs, allocation, and funding gap in the past five years (NPR, millions)	53
Table 10: Major investments and financing needs for Airports (US\$, millions)	56
Table 11: Indicative sources of investment and the potential funding gap for roads, 2020–30 (US\$, millions)	59
Table 12: Indicative sources of investment and the potential funding gap for airports, 2020–30 (US\$, millions)	60
Table 13: Transport Sector Roadmap	64
Table 14: Access to core infrastructure in four cities	68
Table 15: Financial gap scenarios for 217 municipalities, 2016–31 (NPR, millions)	70
Table 16: Urban Sector Roadmap	78

## List of Boxes

Box 1: Upper Tamakoshi Hydropower Project	30
Box 2: Current dollar–denominated PPA and Foreign Exchange Risk Hedging Mechanisms	32
Box 3: International experience with large hydro projects	35
Box 4: Private Sector experience with large hydro projects	36
Box 5: Building Effective Institutions	37
Box 6: PT Indonesia Infrastructure Finance	40

# Executive Summary

**Despite several severe shocks in the past—conflict, unstable governments, earthquakes, and trade disruptions—Nepal has made strong progress in reducing poverty and boosting shared prosperity.** With the decade-long peace and constitutional process concluded, the Government of Nepal is keen to accelerate economic growth and become a middle-income country by 2030. Between 1996 and 2011, the proportion of households living in extreme poverty fell from 46 to 15 percent. Nepal’s macroeconomic fundamentals have remained sound.

**Nepal’s historic transition to a federal state system is expected to increase public expenditure, partly due to higher infrastructure spending, but the stock of public debt is projected to remain low.** In 2017, Nepal transitioned to a federal state system with about 3,400 village development councils consolidated into 753 local government units. In the next three years (2019–21), on average, total expenditure is likely to grow by 3–4 percent of gross domestic product (GDP) per year, because of the implementation of the federalism structure. In addition, increased borrowing of around 5 percentage points (between 2018 and 2021) is required. However, despite the projected increase in the fiscal deficit, the stock of public debt is projected to remain low, increasing from 30 percent in FY2018 to 36 percent by FY2021.

**Although the government’s prudent fiscal management and revenue collection have played a part in keeping debt levels low, underspending of capital expenditures has been a factor.** The system runs into chronic underspending of the capital budget, with spending averaging about 70 to 80 percent. According to the list of projects compiled from the Annual Development Plans of the National Planning Commission, projects have been ongoing on average for more than 11 years. In addition to delays, cost overruns mark the delivery of infrastructure and services. The lack of capacity to spend efficiently and effectively and future fiscal constraints will inhibit

the government from fully publicly financing its infrastructure needs.

**For Nepal to achieve its growth aspirations, it must close its infrastructure gap.** By 2022, Nepal wishes to graduate from its least developed country status and soon after to achieve its vision to become a middle-income country. However, currently, Nepalese citizens do not have reliable and adequate access to infrastructure services. For real benefits to accrue, the quality and sustainability of services need to improve, with substantial and efficient investment. Under the right conditions, infrastructure development can play a role in promoting growth and equity by providing access to basic services, jobs, and markets. In a geographically challenged country like Nepal, it will also help create reliable supply chains, allowing for more efficient movement of goods and services.

**Investment needs are quoted at 10–15 percent of GDP annually in the next decade, and they will require timely and appropriate solutions.** The government recognizes the magnitude of the infrastructure gap and the urgency of addressing it. However, despite a relatively low debt-to-GDP ratio, meeting the required investments is a challenging goal. Although public investment will continue to play a key role for infrastructure delivery, a stronger emphasis on private sector participation in infrastructure sectors could increase efficiencies by introducing private sector management expertise, technologies, and competition, and by transferring risks. No matter the delivery mechanism, value-for-money should be at the forefront of decision making.

**Experience and current project preparation have shown scope for infrastructure development and service provision through private sector solutions, including public-private partnerships (PPPs), in the energy, transport, and urban sectors, encompassing a range of contract types.** The nature of the project types currently found in Nepal ranges from

PPPs to operation and maintenance contracts. In 2015, the Government of Nepal introduced a PPP Policy, which emphasizes the importance placed on infrastructure development and, where appropriate, through private sector participation. A PPP Law is currently under preparation. Elevating Nepal's PPP program, which has had a mixed track record thus far, will require focused policy actions and reforms to introduce private finance efficiently and effectively where it fits the government's strategy and planning and is fiscally prudent.

**Unlocking private sector financing and expertise will require creating a conducive environment for private participation through (i) sector-level groundwork, (ii) sustainable project structures, (iii) systematic and strategic public investment management and project selection, and (iv) investment-friendly policies and regulations.** Public investment will remain key for infrastructure delivery in certain subsectors, particularly to ensure viability and affordability. In the short-to-medium term, this may be particularly true where there is no precedent for private finance. Some of this public investment could be in the form of viability gap funding in large projects. Therefore, each project should be carefully assessed for its most appropriate procurement mechanism in light of the government's capacity and strategic planning. The government may focus on contracting out the operations, maintenance, and service delivery of infrastructure assets, particularly for public investments that require careful maintenance over a longer period. For example, in hybrid-annuity models in the road sector, a majority of the capital expenditure is funded by the government, and the remaining capital expenditure, annual operations, and maintenance expenses are incurred by the private sector in return for periodic availability payments. Such variant schemes would help Nepal deliver quality infrastructure, address delayed and incomplete projects in the sector, and create incentives and increase experience among market participants to drive efficiency.

**It is an opportune time to put in place mechanisms to mobilize private sector solutions for infrastructure development in Nepal.** This report takes place as Nepal transitions to a federal structure. This poses

a unique and unprecedented opportunity to establish clarity of functions, expenditures, and revenue assignments, as well as changing jurisdictions across various levels of governments and agencies, including as they interface with the private sector. The new government is in place and emphasizing the need for stronger cooperation between the public and private sectors. Against this background, this report assesses the energy (electricity generation, transmission, and distribution), transport (roads, airports, and urban transport), and urban (water supply, sanitation, and solid waste management) infrastructure sectors. The report recommends interventions that combine short-term and longer-term structural and policy changes with tailored project implementation approaches. Completing projects will help stress test the framework and system and identify potential bottlenecks that can be corrected. Such a learning-by-doing approach will further help prioritize the implementation of the initiatives proposed in this report and target capacity development initiatives in the areas of greatest need.

## Priorities

**Several legal instruments related to good governance have been introduced in Nepal over the past two decades, but gaps in governance and the public investment management (PIM) system remain.** Building on recent interventions, such as the creation of public bodies to monitor and enforce good governance, it is suggested that the Government of Nepal improve its procurement and PIM system, including critical functions such as transparent project selection and budgeting, project implementation, adjustment of projects in construction, and ex post evaluation. Harmonization of the PIM and PPP processes could further improve project selection, as budgeting, affordability, and fiscal impact may be readily assessed and fed into the decision-making process. Delays and gaps in policy implementation and accounting require equal attention from the government.

**Building a robust PPP framework will help communicate Nepal's commitment to PPPs and foster efficiency, accountability, and transparency in the PPP program.** PPPs are not new in Nepal, and line

ministries have been able to procure them. However, scaling up PPPs will require that selected projects are aligned with the government's strategy, generate the greatest economic returns for society, and do not expose the government to excessive fiscal risks. Nepal could achieve this by comprehensively reviewing, introducing, and improving its policies, procedures, institutions, and rules that define how PPPs are identified, assessed, selected, prioritized, budgeted for, procured, monitored, and accounted for, and who will be responsible for these tasks. These actions will also help generate greater private sector interest and public acceptance of the PPP program.

**Addressing constraints that limit the ability of the financial market to lend to infrastructure projects and improving the investment environment will be key.** Nepal's domestic banks and financial services institutions are highly fragmented and require consolidation to enable more efficient deployment of capital. Banks in Nepal have a small capital base, which limits lending to individual projects. Due to an asset-liability maturity mismatch, banks have limited ability to lend in the long term. Identifying a "champion" government commercial bank (for example, Nepal Bank Limited) that can take national leadership in the domestic commercial bank lending market where new tenors, structures, and products may be deployed (outside a development finance institution (DFI)) may help address this issue.

**In addition, the fixed-income and equity capital markets require the government's attention.** The primary market for government bonds is available for corporates and retail customers, but these bonds are not often traded, and there are few investors outside financial institutions. The lack of active trading results in no meaningful yield curve. Equity capital markets are small. Foreign investors/lenders should be encouraged to invest/lend in foreign currency, which is currently not the case due to the provisions of the Banks and Financial Institutions Act. Obtaining a sovereign credit rating in the short-to-medium term could help the government gradually gain access to funding in international bond markets. Alternative sources of financing could be developed, including a

Nepal infrastructure DFI. Measures limiting foreign investment, including stringent foreign direct investment (FDI) restrictions and procedures, offshore capital repatriation problems, and double taxation issues, need to be addressed by easing restrictions and harmonizing regulations.

**Building gender equality and social inclusion measures into the planning and implementation of infrastructure from the beginning can help include marginalized communities, including increased access to basic services and jobs for all.** Infrastructure development requires combining supply-side issues of technical design specifications with demand-side dimensions of who uses infrastructure, for what purposes, how it is paid for, and with what impacts on individuals, households, and communities. Several common entry points to improving gender equality and social inclusion outcomes in the energy, transport, and urban sectors exist: (i) incorporating gender-specific features in infrastructure design, (ii) requiring minimum representation of women in construction and non-construction activities in projects, and (iii) collecting gender-disaggregated data on the use of infrastructure services.

**Key priorities for environmental and social issues within infrastructure development include the protection of cultural heritage and indigenous peoples; labor management, including labor health and safety; land acquisition; slope instabilities (landslides and erosion); forests, wildlife, and biodiversity; integrity of river ecology and environmental flow; and waste management and pollution.** It is imperative that environmental and social protection and the resilience and adaptability of infrastructure assets are taken into account when projects are planned and selected. To do so, compliance with already existing environmental and social frameworks can be improved. Furthermore, it is recommended that Nepal reviews the forest clearance processes and improves legislative provisions for land acquisition and land entitlements, to protect project-affected persons and intangible cultural heritage. Other measures include improvement of the protection of workers in infrastructure projects (table ES.1). Energy Sector

## Energy Sector

**The electricity sector is one of the most strategically important areas of Nepal's economy for two reasons.** First, the lack of adequate electricity is a barrier to higher economic growth and, accordingly, increasing access to electricity will pay significant economic dividends. Second, Nepal's vast hydropower potential creates an opportunity for the country to earn revenues by exporting power to the South Asia region. Recognizing this, the Government of Nepal has set an ambitious target of installing 3 gigawatts (GW) of generation capacity in three years, 5 GW in five years, and 15 GW in 10 years. Recovering from a severe electricity crisis, despite moderate economic growth, Nepal's electricity demand has risen rapidly. To keep

pace, electricity sector investments will need to accelerate substantially to an average of US\$1.3 billion to US\$2.1 billion annually between 2018 and 2040.

**Nepal has historically relied on a mix of public and private financing in the electricity sector.** A twofold to fourfold increase in public and private investments is needed to meet the projected demand in the country and utilize the sector's export potential. Bearing in mind the risks associated with both types of financing and the importance of careful risk assessment before deciding on one or the other, the country must not only efficiently utilize existing sources of financing, but also develop the capacity to access new sources of financing from domestic and international capital

**TABLE ES.1: CROSS-CUTTING AREAS – SHORT-TERM PRIORITY ACTIONS (UP TO 3 YEARS)**

<b>Governance and public investment management</b>	Create infrastructure unit to drive strategic planning and delivery of priority projects; establish public investment management mechanism; create processes for project screening, selection, and prioritization; establish budgeting mechanisms; establish performance management reporting; develop FCCL management framework; and establish internal audit systems.
<b>PPPs</b>	Enact PPPI Act; develop PPP Guidelines; develop PPP project pipeline; establish clear institutional setting; resource the PPP Centre; harmonize existing PIM/PPP processes; develop PPP FCCL framework; roll out communication strategy; strengthen disclosure of information framework and communicate key information on the PPP Centre website.
<b>Financial sector</b>	<p><b>Stimulate consolidation of the local private commercial bank market:</b> Increase paid-up capital requirements to NPR 16 billion.</p> <p><b>Develop the domestic banking sector's capacity to finance infrastructure projects:</b> Provide training to progressive local commercial and development banks; and issue and implement a code of best practice for infrastructure project financing.</p> <p><b>Increase the availability of long-term financing:</b> Permit state-owned/led banks to offer partially amortizing loans for 7-to-10-year tenors supported by a Government of Nepal/MDB refinancing guarantee instrument; and provide relief from restrictions to domestic and foreign lenders taking full charge of key assets of projects.</p> <p><b>Stimulate participation of foreign lenders and investors:</b> Provide foreign lenders pari-passu treatment with local lenders; provide relief from approvals from the Department of Industry and NRB for foreign lenders providing limited recourse project finance to priority projects in specific infrastructure subsectors; obtain sovereign credit rating; establish a hedging facility within a DFI with Government of Nepal/MDB support; and amend FITTA and Foreign Exchange (Regulation) Act 1962 to ease entry and exit restrictions.</p> <p><b>Consider developing alternative sources of financing:</b> Consider developing a Nepal infrastructure DFI (NIDFI) to (i) provide debt and equity financing and risk management instruments, and (ii) provide HIDCL access to capital; and issue guidelines for the use of hybrid instruments.</p>
<b>Gender</b>	Incorporate gender-specific design features in infrastructure; ensure minimum representation of women in construction and non-construction activities in projects; and collect gender-disaggregated data on the use of infrastructure services.
<b>Environmental and social</b>	Review and simplify forest clearance guidelines; prepare national guidelines for determination of environmental flow; revise EPA, EPR, and EIA Guidelines to strengthen the Environmental Assessment system and capacity; conduct a capacity needs assessment in the context of federalism; improve compliance with established Acts and regulations for managing environmental and social risk; draft the Land Use Act; introduce a performance indicator on compliance with inclusive programs for new projects; and improve consultation with, and participation of, indigenous peoples affected by infrastructure projects.

Note: DFI = development finance institution; EIA = Environmental Impact Assessment; EPA = Environment Protection Act; EPR = Environment Protection Regulation; FCCL = fiscal commitments and contingent liabilities; FITTA = Foreign Investment and Technology Transfer Act; HIDCL = Hydroelectric Investment Development Company Limited; MDB = multilateral development bank; NIDFI = Nepal infrastructure DFI; NRB = Nepal Rastra Bank; PIM = public investment management; PPP = public-private partnership; PPPI = Public-Private Partnership and Investment Act.

markets and investors, including institutional investors.

**Public and private financing will be key for advancing the sector, and appropriate solutions will have to be sought based on value-for-money and least-cost planning.** The domestic private sector and financial sector can continue to take the lead in the development of small hydropower projects and solar and wind energy projects. There is also potential to mobilize private investments in transmission. The public sector, with multilateral assistance, will have to play a strong role in structuring these projects, using long-tenor public financing and risk mitigation instruments to leverage financing from local and international investors and capital markets. It will also be important to create an enabling environment for foreign investment and financing to flow into the sector in a sustainable way, while managing fiscal commitments and contingent liabilities risk. Suggested interventions in the electricity sector are outlined as follows:

**Pillar 1: Build the institutional and regulatory environment.** There is a need to build the capacity of new public sector agencies in the electricity sector and assist them in mobilizing financing, including private and commercial financing. To improve public investment management, it is suggested that Nepal establishes a well-resourced central coordination mechanism, ideally in the Prime Minister's Office. In addition, it is necessary to strengthen the planning function to improve decision making. An effort to incorporate a planning culture, coupled with regularly updating the river basin plans and generation, transmission, and distribution masterplans, is necessary. Furthermore, there is a need for creating a level playing field in the private sector, as private independent power producers are expected to bring large-scale investments in hydropower generation, but are disadvantaged in transmission access, dispatch, and Public Procurement Act negotiations with the Nepal Electricity Authority (NEA), which prioritizes its own power plants. In addition to structural reforms, Nepal needs to develop a strong regulator by making key appointments in the near term and supporting its institutional development in the medium term. An efficient and effective regulatory framework will

provide confidence to private investors that they will be treated fairly in a rule-based sector and increase investments.

**Pillar 2: Strengthen the financial viability of the sector.** The financial situation of Nepal's electricity sector has been very weak in the past. Yet, a sustained focus on increasing revenue, reducing system losses, and financing costs will be necessary to enable the NEA to meet its obligations and maintain robust financial health. This can be achieved through policy actions to (i) improve the creditworthiness of electricity sector institutions, including through cost-reflective tariffs, reduction of transmission and distribution losses, and the NEA implementing its financial viability plan; and (ii) strengthen the enabling conditions for electricity trade with Nepal's neighbors through establishing the appropriate legal, regulatory, and institutional environment.

**Pillar 3: Increase the availability of long-term finance.** Electricity sector projects would benefit from greater availability of long-term, fixed-interest local currency finance through the domestic debt and capital markets. However, at present it is not possible to mobilize significant amounts of local financing, due to variable interest rates, short tenors, inefficient regulations, and low capacity. First, addressing these will call for a concerted effort to deepen and broaden Nepal's capital markets as an alternative channel of long-term finance, by addressing the capacity constraints faced by local commercial banks and enabling non-recourse project finance. Second, Nepal is advised to strengthen substantially the Hydroelectric Investment Development Company Limited's capacity to support hydropower development in the country, and to support greater investment from institutional investors. Finally, there is a need for creating conditions that would enable Nepal to raise financing from capital markets as needed.

**Pillar 4: Develop an enabling environment for foreign investments.** It is advisable that the government undertakes targeted policy actions to increase the role of foreign investors and financiers in the sector while closely monitoring the fiscal commitments and contingent liabilities that arise from such arrangements. Until Nepal's capital markets are sufficiently developed to support market-based hedging instruments, such as cross-currency swap transactions, it is recommended

that the country takes the following steps. First, the Nepal Rastra Bank would establish a hedging facility to reduce foreign currency risks and help attract foreign finance for projects. The regulator would incorporate provisions in electricity tariff guidelines that allow automatic pass-through of normal foreign exchange devaluation costs in electricity tariffs. Second, learning from past efforts, Nepal can facilitate foreign investment and financing by establishing a one-stop window for obtaining all government clearances for private sector investments above NPR 10 billion (equivalent to US\$88.5 million). The single window must be well resourced and have political support at the highest levels of the government. Third, to facilitate borrowing in foreign currency, the government would address foreign lenders' rights by facilitating the enforcement of collateral through local agent banks, and ease limits on foreign currency borrowings. This will enable greater participation by foreign lenders and access by investors to broader and competitively priced sources of funding. To ease restrictions on foreign ownership and borrowings by domestic investors, the government would facilitate foreign exchange-related transactions, including foreign investment-related funds transfer and repatriation, and promote the orderly development of a foreign exchange market. Fourth, to increase foreign investors' confidence, along with harmonizing legal and regulatory inconsistencies and improving the legal framework for FDI, the government would equip the current legal system with experts who are capable of handling FDI-related issues and disputes. Fifth, it is also important to listen to investors' concerns about the current dollar power purchase agreement/project development agreement and the gaps therein, and to consider improving certain aspects for improved bankability and attracting greater FDI.

## Transport Sector

**The transport sector is vital for Nepal's development.**

Safe roads and airports help connect the population to markets and opportunities. The tourism sector, which contributes over 8 percent to Nepal's GDP, and is therefore one of the country's biggest job creators, also relies heavily on adequate connective infrastructure. Currently, however, roads are often congested, not properly maintained, and often result in high vehicle operation cost. Consequently, the population pays higher prices

for basic daily goods and services. Therefore, the key objective of Nepal's transport sector in the medium term will be to address effectively chronic underinvestment, to improve connectivity, reduce travel time, and improve safety.

**Sustainable and affordable transport infrastructure is necessary for Nepal, and it will require judicious use of public and private sector resources.** For roads, achieving all-weather connectivity to district headquarters, ensuring adequate lane capacities in all high-density highways, and improving road safety are crucial goals. For airports, Nepal seeks world-class airports in Kathmandu and Pokhara, encourages regional air transportation, wishes to make airports disaster-ready, and aims to conform to International Civil Aviation Organization standards on safety and airport operations. For urban transport, enhancing road density in the Kathmandu Valley, establishing efficient public systems for mass movement, maintaining road safety, and planning for disaster management are key goals. Achieving these goals will require the following focused policy interventions:

**Pillar 1: Strengthen the legal, regulatory, and institutional framework for the road sector.** It is advisable that the Government of Nepal improves the planning, prioritization, and funding practices of public and private projects, and strengthens institutional and corporate governance arrangements for the road sector.

**Pillar 2: Improve the Strategic Roads Network through a programmatic approach.** Within the Strategic Roads Network, the government may focus attention on the most important elements of the network through a programmatic approach to construction and maintenance. Such pathfinder projects could be used as test cases to help shape the legal and policy changes that may be required, as well as the contract arrangements to implement them.

**Pillar 3: Strengthen the airport sector.** Given the development of new airports and the planned upgrade of the existing Tribhuvan International Airport, this is an opportune time for the Government of Nepal to partner with the international private sector to deliver airport management and operations expertise to run its airports in a safe, efficient, and profitable manner.

In addition to exploring PPP options for individual areas of operations, there is also significant potential for full-scale private management of selected airports. Separating regulatory and operational duties in the sector will further help strengthen the sector.

**Pillar 4: Strengthen the urban transport sector.**

Undertaking a detailed and comprehensive assessment of the needs and opportunities in the sector is suggested.

## Urban Sector

**Nepal is one of the world's least urbanized and fastest urbanizing countries.** This intense pressure on core urban infrastructure creates an important challenge: how can Nepal provide urban infrastructure services to its citizens in a more effective manner? The answer will lie in the nation's ability to solve problems creatively, strengthen the capacity of its government, and encourage a mindset for efficiently managing public resources.

**The paramount challenge facing Nepal's urban infrastructure sector is the ongoing transition to federalism.** To overcome this challenge, it is imperative that the federal government works with local governments to provide clarity on how the legal and regulatory frameworks affect various stakeholders, the division of responsibilities between the various levels of government, and how resource distribution occurs within the new structure. The top priority is to create an enabling environment for local governments to take charge of their responsibilities under the new Constitution. Nepal's short-to-medium-term focus should be to complete the process of transferring functions to local governments and amend/enact new legislation to ensure clarity and less ambiguity in taxation powers, functional responsibilities, and regulatory roles, in addition to compliance with the new Constitution.

**The solid waste management (SWM) and water supply and sanitation subsectors in four cities—Kathmandu, Pokhara, Damak, and Lahan—were examined.** The National Urban Development Strategy includes key objectives in all three subsectors.

In the SWM subsector, the National Urban Development Strategy aims to promote integrated SWM projects, wherever feasible, as well as a cluster-based approach to achieve economies of scale. In the water supply and sanitation subsectors, minimum water provisioning, water security, and sanitation coverage are articulated as part of the sector objectives. Recommended interventions in the urban sector focus on the following three pillars:

**Pillar 1: Improve the creditworthiness of local governments (one to three years).** The urban sector will not attract additional necessary capital unless local governments can demonstrate their creditworthiness. Therefore, it is imperative to strengthen the technical, financial, and managerial performance of local governments, to enhance their borrowing capacity and ability to make timely payments to vendors and PPP partners. Subnational borrowing will also require a well-designed legal and regulatory framework. Although the process of improving creditworthiness is likely to extend beyond five years, the process should be initiated over the next one to three years.

**Pillar 2: Encourage PPPs in the urban sector (short and medium term).** Although a few PPP projects involving public funding and private management could possibly be implemented over the next few years, private sector investments in urban sector projects will increase only if sector viability is established in the form of adequate user charges and a stable and conducive regulatory framework. Local governments are responsible for solid waste, water supply, and sewerage under the new Constitution. Therefore, it is recommended that the government establishes greater clarity about the responsibilities of local governments entering into and regulating PPP arrangements. In the medium term, consideration could be given to establishing PPP centers in selected key municipalities as well as allowing local governments to tap into national-level funds, including viability gap funding, project preparation funds, and land acquisition revolving funds.

**Pillar 3: Establish a framework for local government borrowing (three to five years).** In light of the ongoing devolution process, in the medium term, the govern-

ment could support interventions aimed at improving the “bankability” of urban projects. This would include obtaining credit ratings of local governments, developing a policy framework for local government borrowing, as well as developing appropriate legisla-

tion and regulations. The framework should enable local governments to tap into appropriate blended financing, for example, from commercial, bilateral, and multilateral sources, and capital grants through intergovernmental fiscal transfers.

TABLE ES.2: SHORT-TERM PRIORITY ACTIONS – SECTORS

<b>Energy</b>	<p><b>Institutional and regulatory environment:</b> Address capacity constraints in the private sector; prepare business plans for new institutions; carry out a diagnostic of NEA; outsource certain functions; corporatize distribution companies/ explore options for private sector participation; develop bidding framework for PPP procurement; adopt competitive bidding guidelines for hydropower and solar; establish central coordination and investment management mechanism; prepare river basin plan; and prepare least-cost generation and distribution masterplan.</p> <p><b>Financial viability of the sector:</b> Issue new electricity tariff guidelines; approve Loss Reduction Masterplan; implement NEA financial viability action plan; adopt electricity trading as a licensed activity; issue open-access guidelines, transmission guidelines, and grid code; and adopt NPTCL business plan and operating procedures.</p> <p><b>Availability of long-term finance:</b> Improve capacity of domestic banks; make legal/regulatory revisions to enable non-recourse project finance; undertake twinning arrangements for HIDCL with similar institutions in more advanced countries; adopt capital increase plan for HIDCL; issue revised investment guidelines to increase opportunities for insurance companies; develop strategy to raise financing from international and/or local capital markets using risk mitigation instruments; prepare strategy to pursue equitization of public shareholding in generation entities/assets; prepare bond market development roadmap; and prepare communication program on share investments in hydropower targeted at retail investors and local communities.</p> <p><b>Enabling environment for foreign investment:</b> Adopt foreign exchange hedging guidelines; develop guidelines for addressing foreign exchange risks in IPPs with FDI components; adopt regulations to facilitate equitable treatment of foreign lenders and increase limits on foreign currency borrowings; adopt framework to manage large PPP investments through a one-stop shop; and improve capacity of the legal system to manage FDI issues and disputes.</p>
<b>Transport</b>	<p><b>Roads:</b> Prepare a National Transport Masterplan; allocate sufficient budget to projects; improve capacity and business processes in MOPIT; identify high-priority corridors through prioritization; ensure adequate funding for programs and establish credible financing plans; adopt suitable contracting structures; develop five-year annual road management plan; introduce performance-based program for road maintenance; create sustainable funding to support RBN; and produce and publish annual report for RBN.</p> <p><b>Airports:</b> Enact an Integrated Civil Aviation Bill; separate OpCo from CAAN; develop appropriate regulatory models; prepare 10-year business plans for hub airports; prepare model O&amp;M contracts; launch O&amp;M contracts for upcoming airports and Tribhuvan International Airport; launch development of the Second International Airport.</p> <p><b>Urban:</b> Undertake comprehensive assessment of urban transport in Kathmandu.</p>
<b>Urban</b>	<p><b>Creditworthiness of local governments:</b> Pass appropriate legislation governing the local government functional domain to ensure consistency with the new Constitution and Local Government Operations Act 2017; build capacity; implement common accounting standards; improve own-source revenue collection; implement a multi-year fiscal transfer system; prepare long-term capital investment plans; and improve project planning, procurement, and execution.</p> <p><b>PPPs in the urban sector:</b> Pass the PPP Act and/or other legislation and guidelines with adequate recognition of the constitutional role of local governments in the urban sector; and clarify the roles of various institutions involved for entering into contractual arrangements with the private sector.</p> <p><b>Framework for local government borrowing:</b> Evaluate local government financial performance as a precursor to the credit rating process.</p>

Note: CAAN = Civil Aviation Authority of Nepal; MOPIT = Ministry of Physical Infrastructure and Transport; O&M = operation and maintenance; PPP = public-private partnership; RBN = Roads Board of Nepal.



# NEPAL INFRASTRUCTURE SECTOR ASSESSMENT PROGRAMME

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ROADMAP FOR INFRASTRUCTURE DEVELOPMENT





# Introduction

Despite several severe shocks in the past—conflict, unstable governments, earthquakes, and trade disruptions—Nepal has made strong progress in reducing poverty and boosting shared prosperity. With the decade-long peace and constitutional process concluded, the Government of Nepal is keen to accelerate economic growth and become a middle-income country by 2030. Between 1996 and 2011, the proportion of households living in extreme poverty fell from 46 to 15 percent. Nepal’s macroeconomic fundamentals have remained sound.

Nepal’s historic transition to a federal state system is expected to increase public expenditure, partly due to higher infrastructure spending, but the stock of public debt is projected to remain low. In 2017, Nepal transitioned to a federal state system, with about 3,400 village development councils consolidated into 753 local government units. In the next three years (2019–21), on average, total expenditure is likely to grow by 3–4 percent of gross domestic product (GDP) per year, because of the implementation of the federal structure. In addition, increased borrowing of around 5 percentage points (between 2018 and 2021) is required. However, despite the projected increase in the fiscal deficit, the stock of public debt is projected to remain low, increasing from 30 percent in FY2018 to 36 percent by FY2021.

Although the government’s prudent fiscal management and revenue collection have played a part in keeping debt levels low, underspending of capital expenditures has been a factor. The system runs into chronic underspending of the capital budget, with spending averaging about 70 to 80 percent. According to the list of projects compiled from the Annual Development Plans of the National Planning Commission, projects have been ongoing on average for more than 11 years. In addition to delays, cost overruns mark the delivery of infrastructure and services. The lack of capacity to spend efficiently and effectively and future

fiscal constraints will inhibit the government from fully publicly financing its infrastructure needs.

For Nepal to achieve its growth aspirations, it must close the infrastructure gap. By 2022, Nepal wishes to graduate from least developed country status, and soon after to achieve its vision to become a middle-income country. However, currently, Nepalese citizens do not have reliable and adequate access to infrastructure services. For real benefits to accrue, the quality and sustainability of services need to improve, with substantial and efficient investment. Under the right conditions, infrastructure development can play a role in promoting growth and equity by providing access to basic services, jobs, and markets. In a geographically challenged country like Nepal, it will also help create reliable supply chains, allowing for more efficient movement of goods and services.

Investment needs are quoted at 10–15 percent of GDP annually in the next decade, and they will require timely and appropriate solutions. The government recognizes the magnitude of the infrastructure gap and the urgency of addressing it. However, despite a relatively low debt-to-GDP ratio, meeting the required investments is a challenging goal for Nepal. Although public investment will continue to play a key role for infrastructure delivery, a stronger emphasis on private sector participation in the infrastructure sectors could increase efficiencies by introducing private sector management expertise, technologies, and competition, and by transferring risks. No matter the delivery mechanism, value-for-money should be at the forefront of decision making.

This Infrastructure Sector Assessment Program is a structured diagnostic and pragmatic joint planning exercise that informs how Nepal, in partnership with the World Bank, can improve infrastructure access and performance through mobilization of appropriate solutions—public, private, or a combina-

**tion of both.** The exercise requires assessing and systematically addressing how infrastructure is planned, procured, delivered, funded, financed, and governed, and how markets are operating, at the country and sector levels. Strengthening this “upstream” environment contributes directly to sector performance and is integral to a “cascade approach” to infrastructure financing and delivery—in which the potential for commercial financing is optimized and public and concessional resources are deployed judiciously.

**Against this background, this report assesses the energy (electricity generation, transmission, and distribution), transport (roads, airports, and urban transport), and urban (water supply, sanitation, and solid waste management) infrastructure sectors.** The report includes a diagnostic analysis of the conditions and constraints for investment in infrastructure: at the sector level, for each priority infrastructure sector or subsector, and at the country level, considering the broader macro-fiscal, market, and governance environment. Based on this assessment of the current state of infrastructure and the binding constraints on pursuing the preferred financing and delivery

options, the report recommends interventions that combine short-term and longer-term structural and policy changes with tailored project implementation approaches. The report draws heavily on existing documents, in particular ongoing World Bank Group work, such as the Country Private Sector Diagnostic.

**It is an opportune time to explore private sector solutions for infrastructure development in Nepal.** The report takes place as Nepal transitions to a federal structure. This poses a unique and unprecedented opportunity to establish clarity over functions, expenditures, and revenue assignments, as well as changing jurisdictions across various levels of governments and agencies, including as they interface with the private sector. The new government is in place and emphasizing the need for stronger cooperation between the public and private sectors. Completing projects will help stress test the framework and system and identify potential bottlenecks that can be corrected. Such a learning-by-doing approach will further help prioritize the implementation of the initiatives proposed by this report and target capacity development initiatives on the areas of most need.



# Country Environment

**The analysis of the country environment assesses “cross-cutting” areas that are key for sustainably maximizing finance in the energy, transport, and urban infrastructure sectors.** These areas are (i) the macro-fiscal environment, (ii) the governance and public investment management environment, (iii) private participation in infrastructure and infrastructure finance, (iv) the financial sector and investment environment, (v) gender equality and social inclusion, and (vi) environmental and social management. For each area, an overview and a section on key constraints are provided. The end of the section provides a table of key recommendations, with corresponding short- and medium-term actions.

## Macro-Fiscal Environment

### Overview

**Nepal’s macroeconomic fundamentals have remained sound despite severe shocks in the past, including conflict, unstable governments, earthquakes, trade disruptions, India’s demonetization, and introduction of the general services tax.** Nepal’s nominal GDP reached US\$28.81 billion in July 2018, compared with US\$24.9 billion the previous year.<sup>1</sup> A projected increase in the fiscal and current account deficits is supporting the needed spending for reconstruction following the floods and earthquake and the transition to a federal structure (including transfers to subnational governments). Although increased borrowing of around 5 percentage points (between 2018 and 2021) is required, the nominal share of debt to GDP will remain below 40 percent. In addition, a drawdown of reserves to the level of five months of imports over the medium term and reliance on concessional borrowing and grants will support the needed investments and spending for reconstruction and decentralization. Political risks are partially mitigated by the new government being in place and committed to federalism. In mid-August

2017, the worst flood in decades contributed to a reduction in the agricultural growth rate, translating to a reduction in overall GDP growth from 7.9 to 6.3 percent. With continued growth in hydropower capacity as well as earthquake reconstruction activities, the construction and industry sectors continued to expand to meet the demand gap. On the demand side, investment contributed the most to growth. Gross fixed capital formation reached 30 percent of GDP in FY2018, with over 80 percent of this increase coming from private investment. However, consumption will continue to ease with a slowdown in remittances.

**The share of remittances in GDP continues to decline and was estimated to reach 23.4 percent in FY2018.** The main destinations for Nepalese migrants are countries in the Gulf (Qatar, Saudi Arabia, and the United Arab Emirates) and Malaysia. Following the oil price slump in 2014 and subsequent austerity measures in host countries, the demand for migrant workers from Nepal weakened.

**Deposit mobilization eased due to the slowdown in incoming remittances, leading to a squeeze on the availability of loanable funds in banks.** Credit growth in February 2018 stood at 16.7 percent (year-on-year), a significant decline from the peak of 31.9 percent in February 2017. The credit-to-core capital and deposit ratio of the banks (capped at 80 percent) reached 78.1 percent in January 2017. The Nepal Rastra Bank (NRB) responded by introducing temporary restrictions on bank lending and temporarily changed the method of calculating the credit-to-core capital and deposit ratio of banks. Although these measures provided breathing space for banks, the fundamental issue of the credit crunch persists.

**The banking sector remains adequately capitalized, with an estimated capital adequacy ratio of 14.1 percent, compared with 14.72 percent in**

<sup>1</sup> IMF DataMapper, 2019; World Bank Open Data, 2019

**FY2017.** The capital position of banks has improved significantly, because of the retention of earnings, issuance of rights to shares, and mergers to meet the new capital requirement of NPR 8 billion. The non-performing loan ratio remains low, at 1.74 percent of the total loan portfolio (although it increased slightly from a historic low of 1.54 in FY2017). Loan loss provisions are more than adequate to cover the impaired assets.

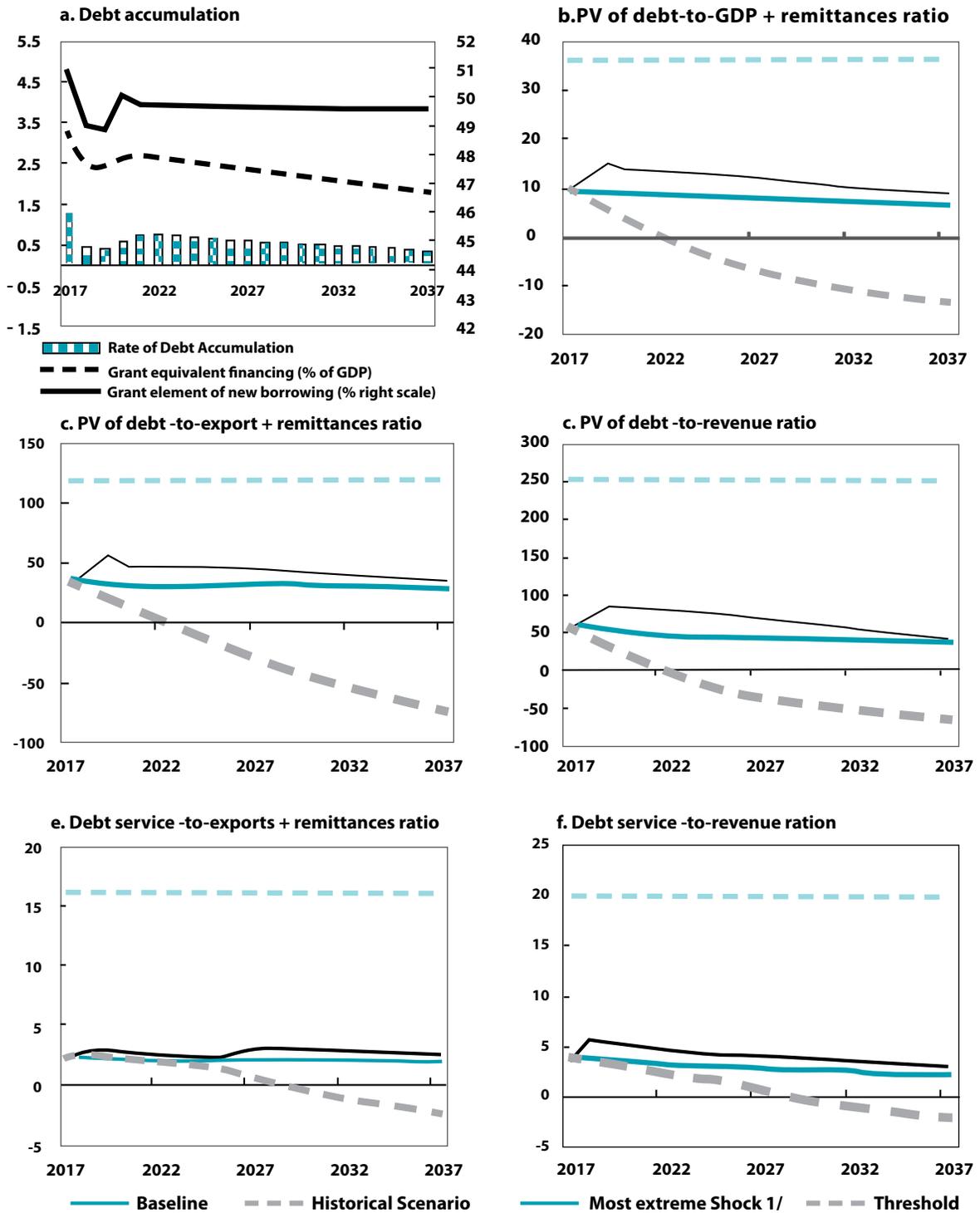
**Nepal's transition to a federal state system is expected to increase public expenditure, partly due to higher infrastructure spending.** In March 2017, Nepal transitioned to a federal state system, with about 3,400 village development councils consolidated into 753 local government units. Government spending as a percentage of GDP jumped by 5.5 percentage points between FY2016 and FY2017, primarily driven by a higher wage bill, larger transfers to local bodies to implement federalism, and earthquake-related cash assistance and reconstruction activities. The transfers to local governments are estimated to increase to around 5 percent of GDP per year over the medium term (compared with 3 percent in 2017). This is expected to increase to 7 percent of GDP beyond FY2021. In the next three years (2019–21), on average, total expenditure is likely to grow by 3–4 percent of GDP per year, because of the implementation of the federal structure. Although there is considerable uncertainty around the scope and pace of the implementation of fiscal federalism (particularly given underspending), higher spending is expected because of: (i) the establishment cost for state and local governments, (ii) increased infrastructure spending by state and local governments, and (iii) additional fund transfers for decentralized service delivery.

**Despite the projected increase in the fiscal deficit, the stock of public debt is projected to remain low, increasing from 30 percent in FY2018 to 36 percent by FY2021.** Public debt as a share of GDP has fallen dramatically, from around 64 percent in 2002 to around 27 percent in FY2017. Although prudent fiscal management by the government has played

a part in keeping debt levels low, revenue collection has been the key factor (annual growth of revenue of 0.5 percent of GDP), coupled with under-execution of capital expenditure. The Joint World Bank–International Monetary Fund Debt Sustainability Analysis (2017) maintains the “low” risk rating of debt distress. The baseline macroeconomic projections underlying this Debt Sustainability Analysis assume a pickup in government spending and an increase in deficit levels over the medium term. However, Nepal's risk of debt distress is expected to remain low in view of the continued high level of concessionality of official borrowing and limited scaling up of capital spending due to weak implementation capacity. In addition, the government remains committed to fiscal prudence and recently formed the high-level Public Expenditure Review Commission to carry out a spending review and suggest measures to cut spending, particularly considering federalism. Under the baseline scenario and stress tests, the indicators of the public external debt stock and public debt service ratios remain well below the policy-dependent indicative thresholds (figure 1).

**Since the 1950s, Nepal's state-owned enterprises (public enterprises) have played a strategic role in the government's social and economic development plans.** To drive growth, the government adopted a series of five-year economic plans, in which public enterprises were established as the principal drivers in building infrastructure, stabilizing prices, supplying essential goods, and creating jobs. Subsequently, during the 1970s and 1980s, the government established public enterprises in almost all sectors, with international assistance. Nevertheless, underperformance and limited efficiency led to a policy shift toward privatization in the 1990s. The 1991 Privatization Policy and the 1994 Privatization Act initiated asset sales, equity sales, and liquidations of public enterprises. By the end of 2008, the government had fully or partially privatized 30 public enterprises. Public enterprises operate in most key sectors of the economy and are prominent in the energy, financial, and utilities sectors. Eleven of the 41 public enterprises in Nepal belong to the financial sector and hold 62.37 percent of the public enterprise sector's total assets.

FIGURE 1: INDICATORS OF PUBLIC/PUBLICLY GUARANTEED DEBT UNDER ALTERNATIVE SCENARIOS, FY2017–FY2037



Source: World Bank/IMF Debt Sustainability Analysis.

Note: The most extreme stress test is the test that yields the highest ratio on or before 2026. In panels b, c, d, and e, it corresponds to a combination shock, and in panel f, it corresponds to a one-time depreciation shock. GDP = gross domestic product; PV = present value.

## Constraints and Areas for Reform

**Public expenditure and investment are marked by inefficiencies, compounded by a low level of public investment.** Nepal's public investment has averaged 4 percent of GDP, which is below average among South Asian and low-income countries. From 2001 to 2007, the Incremental Capital-Output Ratio for Nepal was 5.7, the highest among comparator countries, with an unacceptable level of 29 for energy and 9 for transport.<sup>2</sup> Inefficiency is manifested in the public investment process, which fails to deliver completed productive assets and infrastructure. The system runs into chronic underspending of the capital budget, with spending averaging about 70 to 80 percent. Several challenges have led to a lack of completion and cost and time overruns of projects. According to the list of projects compiled from the Annual Development Plans of the National Planning Commission, projects on average have been ongoing for more than 11 years. Some road and irrigation projects have been ongoing for more than 30 years. To address the problems faced by various national-level projects, in 2012 the government initiated "national pride projects." Although this is a recent development, these projects on average have not been implemented more swiftly than other projects.

**The budget does not sufficiently support service delivery or allocate resources for development priorities.** The main drawbacks include (i) an incremental budget preparation process that is not anchored in a strong, multi-fiscal year framework; (ii) low and poor quality of expenditures, manifested in a poor public investment management process; and (iii) erratic budget execution. The public financial management challenges are compounded by the move toward federalism. Local governments are not yet fully functional. The Public Finance Law has not been voted on yet, although the Parliament has approved core bills related to intergovernmental fiscal transfers and other areas. On the revenue side, although most buoyant taxes (including the value-added tax, income taxes, and certain duties) have been assigned to the federal government, the costliest expenditures (health, education, irrigation, and roads) are assigned

to subnational governments. This gap will be bridged by intergovernmental transfers, but weak public financial management capacity at the subnational level will constrain the management and local provision of public services.

Currently, there are no performance agreements or other monitoring tools in place for public enterprises. Memoranda of understanding were used in the past as ex ante bilateral agreements between public enterprises and the government, but the government has gradually moved away from this practice. Ministries and regulatory agencies monitor public enterprise performance, but the structured systems and tools to do so effectively are lacking. Although external audits of public enterprises' annual financial statements are legally required, the 2016 Yellow Book indicates that only two of the seven industrial sector public enterprises had submitted their audit reports in 2014/15. Similarly, only three of the six public enterprises in the trading sector, one of the seven in the services sector, and one of the five in the social sector had completed audits.

## Governance and Public Investment Management

### Overview

**Gaps in governance are a key binding constraint.** Poor governance is reflected in Nepal's low ease of doing business, which, across indicators, was worse in 2016 compared with 1996. The 2018 Doing Business report, which ranks 190 countries on the ease of doing business, ranked Nepal low on Dealing with Construction Permits (157), Enforcing Contracts (153), Paying Taxes (146), Getting Electricity (133), and Starting a Business (109), with an overall ranking of 105.47.<sup>3</sup>

**Several legal instruments related to good governance have been introduced in Nepal over the past two decades, leading to the creation of public bodies to monitor and enforce good governance.** These legal instruments and institutions are necessary tools

2 The Incremental Capital-Output Ratio is inversely correlated with efficiency.

3 The 2013 World Bank Enterprise Survey suggests that the number of major business climate issues is unusually high in Nepal. Several issues that were ranked by more than one-quarter of the respondents relate to governance.

but have proven to be insufficient to ensure good governance in Nepal. Political will and commitment and consensus among political leaders to fight corruption and maintain good governance can enhance the impact of these laws and bodies. The Good Governance Act (2008) aims to ensure good governance by making the public administration of the country accountable, transparent, inclusive, and participatory, and by making its outcomes available to the general public. The Act lays out responsibilities for various authorities, including ministers and departmental heads, for maintaining good governance within their jurisdictions. Although the Act includes information about acting in case of nonperformance, a clear definition of accountability and a specific provision for punishment are absent.

### Constraints and Areas for Reform

**Nepal's political culture needs to be more inclusive and policy driven.** The World Bank's 2017 Risk and Resilience report and the 2017 Country Economic Memorandum highlight the need to depoliticize the civil service, create a functional incentive system, and improve capacity, particularly at the local level. In addition, the institutions of the state intended to rein in political corruption need to be strengthened.

**Public procurement requires increased oversight and accountability.** Despite an increase in public procurement volume, the Public Procurement Monitoring Office lacks adequate capacity, resulting in weak compliance and enforcement. The Public Procurement Monitoring Office has not been able to play a lead role in the enforcement of the Public Procurement Act/Public Procurement Rules in the face of a challenging governance environment and rising fiduciary risk associated with public procurement. Nepal's governance issues have also led to procurement practices and policies that are implemented inconsistently.<sup>4</sup> Global evidence suggests that such a governance infrastructure increases the chances that procurement and policies are “captured” by a narrow group of larger firms. Polarized between a few large business houses and many small firms, Nepal's private sector is prone to this problem.

**The public investment management (PIM) system in Nepal is missing critical functions, such as project screening, prioritization and budgeting, assessment and management of fiscal risks, project implementation, adjustment of projects in construction, and monitoring and ex post evaluation.**<sup>5</sup> The PIM process in Nepal represents a mix of formal rules on the one hand, and a lack of application of the same rules at various stages of the process on the other. There is a disconnect between planning, policy, and budgeting. Various sectors may develop their own guidance for technical screening and appraisal of projects, but the process is not uniform and—more importantly—does not form an integral part of financing decisions. Monitoring of project execution is weak and does not link onward financing decisions. The parallel functioning of the National Planning Commission (NPC) and the Ministry of Finance (MOF), without an overarching medium-term expenditure framework, leaves the capital and recurrent budgets functionally and procedurally fragmented and perpetuates the missing link between multi-year investment and annual needs for maintenance and operation of assets.

**Policy implementation is slow and requires better coordination.** This is related to misaligned incentives, weak capacity in government agencies, and coordination weaknesses across government agencies. Government employees face high turnover, limited delegation of responsibility, and a lack of effective performance evaluation. There is ambiguity about the roles and responsibilities of different government agencies, resulting in coordination challenges.

**Nonfinancial asset management is weak.** This includes reporting on nonfinancial assets, which suffers from low adherence to international standards of accounting.<sup>6</sup> Nonfinancial assets usually provide benefits through their use in the production of goods and services or in the form of property income.

### Recommendations

**First, it is recommended that the Government of Nepal establishes a central coordination mechanism for infrastructure.** The unit, preferably located

4 World Bank Group, Country Private Sector Diagnostic, 2018.

5 This is compared with a standard World Bank assessment of PIM systems, which identifies eight key institutional features that countries need to adopt to ensure that public investments support growth and development.

6 Although the Nepal Financial Reporting System, which is based on the International Financial Reporting System, is mandated for most major businesses, it is not applied. Government accounting is cash-based.

in the Prime Minister's Office, would support (i) strategic infrastructure planning; (ii) project screening and prioritization and maintenance of a rolling pipeline of priority infrastructure projects; (iii) coordination of government agencies, the Investment Board of Nepal (IBN), and the Public-Private Partnership (PPP) Centre (as necessary); and (iv) transparent performance monitoring. Depending on province and project size as well as other criteria, local governments may or may not work through the centrally coordinated unit.

**Second, it is recommended that the government aims to achieve high-quality screening, appraisal, and prioritization of capital projects.** This can be done by: (i) strengthening guidelines and processes for capital project screening, appraisal, and prioritization and introducing sector- and scale-specific guidance; (ii) targeting capacity building to implement the revised guidelines in the NPC and selected large spending ministries; (iii) developing adequate data structures to establish an integrated database under the NPC's responsibility; and (iv) improving collection of data on the physical and financial progress of capital projects for selected subsectors. There would be merit in the government ensuring that funds are delivered in full to the amount approved where public funding has been approved for an infrastructure body. It is important that the budgeting process is credible and has integrity. This is desirable for investors, particularly where public funding is needed to co-finance or is a prerequisite for private investment.

**Third, it is recommended that the government manages assets and liabilities better through a multifaceted and phased approach.** Effective management of assets and liabilities ensures that public investments provide value-for-money, assets (particularly nonfinancial assets) are recorded and managed, and fiscal risks are identified and managed. Better reporting on fiscal risks involves better monitoring of fiscal commitments and contingent liabilities of public enterprises and subnational governments. Maintaining a register of fixed assets would allow the government to improve its utilization of assets and

plan investment programs and maintenance. The same applies to nonfinancial assets held by public enterprises, which are significant.

## Private Participation in Infrastructure and Infrastructure Finance

### Overview

**Given low stock of and access to infrastructure, low-quality service provision, and low levels of spending, there is potential for private solutions, including private financing to complement public and concessional sources, including in the energy, transport, and urban infrastructure sectors.** Generally, public-private arrangements encompass a range of contract types. Most PPP projects present a contractual term between 20 and 30 years; others have shorter terms; and a few last longer than 30 years. The precise length of the contract depends on the type of project and policy considerations. The “whole-life” approach, considering whole-life costs and whole-life benefits, maximizes the efficiency of service delivery.<sup>7</sup> A shift toward private investment or commercial finance in infrastructure investments, where relevant, could introduce efficiencies by transferring risks, inducing competitive pressure, and introducing management expertise. For example, PPP models can generate new revenue streams from greater asset utilization, which would in turn improve users' willingness to pay and facilitate cost recovery. PPPs can also increase revenue streams through better utilization of user fees by, for instance, creating incentives for operators to maintain roads at a quality level.

**The Government of Nepal supports scaling up private participation in infrastructure.** Infrastructure development in Nepal has been traditionally funded by government expenditure but, since 2015, the government has been promoting private sector participation in infrastructure. The 14th Three-Year Plan (2016/17–2018/19) provides a policy platform for infrastructure projects, with a focus on developing infrastructure in the energy, roads, and airport sectors. The importance

<sup>7</sup> World Bank, *Public-Private Partnerships: Reference Guide Version 3* (World Bank: Washington, DC, 2017), © World Bank. <https://openknowledge.worldbank.org/handle/10986/29052> License: CC BY 3.0 IGO. There is no standard, internationally accepted definition of PPPs, and different jurisdictions use different nomenclature to describe similar projects. For more information, please refer to the PPP Reference Guide Version 3.

of facilitating infrastructure development through PPPs was further recognized in 2015, when the government approved a PPP Policy. The policy emphasizes the importance placed on infrastructure development, particularly the role of private sector participation, and allows for a range of PPP structures. Priority sectors include physical infrastructure, the electricity sector, the information and communications sector, the urban and rural environment, education and health-related infrastructure and services, and urban amenities.

### Constraints and Areas for Reform

**Although the government passed a PPP Policy in 2015, Nepal requires additional features for a comprehensive PPP program.** Sector-level regulations and institutions that are conducive to infrastructure growth with private sector solutions are missing, and there is no systematic pipeline of projects in key sectors. Capacity within line ministries for effective preparation and implementation of projects is insufficient, and the local financing market is subscale for delivering sufficient financing to a PPP program. There is a pressing need for experience in project finance beyond the hydropower sector and a need for training various stakeholders, including the commercial bench in the court system, in dispute resolution and the protection of creditor rights.

**PPPs are not new in Nepal, and line ministries have been able to procure PPP projects despite the absence of a uniform PPP Law.** A draft Public-Private Partnership and Investment Act is ready to go to the Cabinet.<sup>8</sup> An initial review of the draft suggests significant gaps and need for clarity on, among other things, institutional arrangements, procedures, scope, procurement regime, and contract management mechanisms.<sup>9</sup>

**There is a risk of weakening the market perception of and appetite for PPPs in Nepal by having more than one entity claim it is coordinating, managing, or leading Nepal's PPP initiative.** At present there are at least three entities: line ministries, the PPP Centre, and the IBN. The draft Public-Private Part-

nership and Investment Act introduces a PPP Unit and an Investment Board. If and where more than one government entity must be involved, it is imperative that responsibilities do not overlap and are clear.

**Several issues are primarily related to the lack of coordination, standardization, capacity, and oversight.** A lack of standardized project preparation processes and contract design prevents PPPs from being truly effective. In addition, inadequate tender procedures, characterized by a lack of competition and transparency, prevent the most qualified bidders from success. There is also a lack of capacity among institutions to drive the PPP process. More recently, projects are often drawn from unsolicited proposals and conducted in an opportunistic manner rather than being embedded in project planning and public investment management. The most recent projects that were closed (five projects) were unsolicited proposals.

**Certain bottlenecks deter foreign investors.** These include the need for multiple approvals, delays in capital repatriation above US\$10,000, absence of clear provisions in Nepalese law to protect the rights of foreign lenders on loan collateral assets (exception: hydropower projects), challenges to enforce judicial awards against the government, wide-ranging authority of Nepalese courts to revise or revoke the enforcement of arbitral awards (Article 30 of the Arbitration Act), and relatively weak corporate governance and quality of disclosure.

**Finally, the combination of previous political instability and institutional gaps has created a high level of economic uncertainty for firms, deterring investment.** According to the World Bank's Enterprise Survey, nearly 49 percent of Nepalese firms cite political uncertainty as the biggest constraint to their business—a share that is considerably higher than the average for South and East Asia. Most Nepalese firms are small and do not have the resources needed to survive periods of policy disruption. Their response to the uncertainty is to remain small and not undertake large-scale, risky investments.<sup>10</sup>

8 As of December 2018.

9 A high-level review of the draft law was conducted and shared with the Government of Nepal.

10 World Bank Group, Country Private Sector Diagnostic, 2018.

## Recommendations

**This report recommends a learning-by-doing approach to help stress test Nepal's PPP framework.** With the PPP Policy in place, the Draft PPP Law in preparation, and some experience in PPPs, the government can (i) identify, prepare, and complete PPPs that deliver concrete improvements in the energy, transport, and urban sectors; and (ii) continue making progress on expanding and solidifying the foundations of a sustainable PPP program. As Nepal's PPP program matures, further actions can be taken, including the development of standardized documents, risk allocation matrixes, and templates, and a framework for managing fiscal commitments and contingent liabilities; the introduction of disclosure guidance; and the establishment of a Project Development Facility to provide sustained financing and quality assurance to project preparation in Nepal.

**First, it is recommended that the government finalizes and enacts the PPP Law.** Following international good practice for PPP legislation, it is recommended that the draft law defines PPPs, how the government will use PPP projects, how PPP projects should be structured, and what financial support the government may lend to a PPP project. Furthermore, the law should be as concise as possible in its terminology and only address general principles, for two reasons. First, laws are, by their nature, inflexible, and therefore should not include any details that may subsequently need to be adapted to a country's changing (PPP) needs. Rather than including details within the law itself, the PPP Law should define the need for issuing secondary legislation (such as regulations), standards, guidelines, and standard contract terms. Second, limiting the law to general principles ensures that the principles are clearly communicated and understood, and ambiguity is avoided. To build this consensus, it will be key to communicate and educate stakeholders on the benefits of PPPs and the specifics of the law.

**Second, it is recommended that the government develops a PPP pipeline based on a clearly defined project screening, scoring, and prioritization process.** In support of the development of a robust PPP pipeline, the government would harmonize or inte-

The type of asset, functions of the private party, and payment mechanism are characteristics that can be combined in various ways to create a wide range of PPP contracts. These contracts can be thought of as a continuum between public and private provision of infrastructure—transferring increasing responsibilities and risk to the private sector. Services contracts, turnkey design-build contracts, and short-term management contracts are not considered PPPs, as they are generally not performance or output based, nor do they transfer significant risk to the private sector.

Source: World Bank Group et al. (2017). PPP Reference Guide Version 3.

grate its PIM and PPP processes<sup>11</sup> such that budgeting, affordability, and fiscal impact may be readily assessed and fed into the decision-making process. The initial PPP pipeline would seek to incorporate new projects prioritized under the PIM framework, as well as projects identified as potential PPPs by line ministries and contracting authorities, which are already under discussion and have undergone a PPP screening process to assess their suitability for further detailed preparation. Under an integrated PIM and PPP framework, the government can work on prioritizing PPP investments by allocating financing according to risk, with commercial financing taking priority (if such financing is available and cost-effective). This recommendation applies to all three sectors covered by this report and is highlighted in each roadmap. For example, the Transport Sector Roadmap recommends launching a pathfinder PPP program for the priority Strategic Roads Network, using a hybrid availability-based payments approach. To move this forward, it will be key to plan and prioritize these projects systematically vis-à-vis other road projects.

**Third, it is recommended that the government creates the enabling frameworks and strengthens institutional arrangements for PPPs.** PPP Guidelines will be important for clearly articulating the functional roles and responsibilities of the PPP Centre vis-à-vis the contracting authorities. It is essential to achieve consensus on the treatment of local projects and other small projects in the PPP Law and Guidelines. Other areas of clarity include details on effective

11 In many countries, governments have sought to implement a centralized PIM framework to guide the project planning process.

Nepal has a mixed track record of implementing PPP projects. Since 1990, according to the Private Participation in Infrastructure Database, 40 transactions in Nepal have reached financial closure, generating a total investment of US\$2.5 billion. Thus far, experience with private investment and commercial finance in infrastructure has been focused on electricity generation, with total investment of active projects ranging from US\$0.5 million to US\$200 million per project. The majority of these projects (29) are categorized as small hydropower generation (<50 megawatts); and seven as large projects (>50 megawatts). Two information and communications technology projects are recorded as well as one transport (greenfield highway) project and one water project (management contract). Of the 40 projects, 39 are “active”; one project, NEA Tanah HPP (financial closure in 2012), is recorded as “distressed.” This is also the largest project in investment amount (~US\$460 million). Of the 40 projects, 24 closed between 2010 and 2017.

Source: PPI Database, 2019.

procurement and implementation of projects, institutional coordination, project preparation, affordability, value-for-money and fiscal impact assessments, details on processing unsolicited proposals, upstream project screening, and guidance on project disclosures. Learning from regional and global examples can support this process. Institutional arrangements need to be strengthened. The PPP Centre needs to be sufficiently resourced and have a clear mandate in the PPP environment. Sufficient funding and appropriate staffing of the PPP Centre with experienced staff is essential to progress PPPs and ensure consistency of development. Better collection and disclosure of data on the physical and financial progress of capital projects for selected subsectors with large capital spending can help to improve project monitoring and mitigate risks in a timely manner. Under the PPP Centre and/or the NPC’s responsibility, adequate data structures should be established so that past and ongoing projects can be properly tracked and monitored.

**Fourth, it is recommended that the government develops a fiscal commitments and contingent liabilities (FCCL) framework to support the long-term sustainability of the government’s financial**

**commitments to PPPs.** An appropriate institutional framework and methodology will be needed, with the MOF playing a key role. Given that FCCL may also arise from municipal and local PPPs, the framework will need to apply equally to those projects. This will allow the government to manage and assess all PPPs on a programmatic basis, with robust criteria for the approval of all government financial commitments. The rollout of the FCCL framework should be accompanied by appropriate training for the relevant agencies.<sup>12</sup>

**Fifth, it is recommended that the government builds awareness and capacity around PPPs.** The PPP Centre would need to address public perception and increase stakeholder engagement to ensure that bidders and investors know that the PPP Centre is the go-to place for PPP matters in Nepal. To demonstrate commitment and ownership of the PPP program, the government would design, deliver, and implement a communication plan for PPPs. The communication strategy should contain detailed content on the government’s objectives, an implementation timeline and approach, stakeholder mapping, and key messages for different stakeholders. The government would undertake consultations with market participants and key stakeholders on PPPs, to improve the regulatory, delivery, and operating environments and maintain investment interest and stability in the market. The government would plan and roll out a capacity-building program for public and private sector stakeholders. In addition, there is a need for training the commercial bench in the court system in dispute resolution and the protection of creditor rights. Although some capacity-building programs have already taken place, following a needs assessment, a structured and targeted training should be designed and offered to relevant stakeholders involved in upcoming projects.

## Financial Sector and the Investment Environment

### Overview

The ongoing Fourteenth Development Plan has accorded high priority to mobilizing the investment required for infrastructure development from public and private sources. According to the Develop-

<sup>12</sup> Per international best practice, it is recommended that institutional responsibilities and processes for the assessment and management of financial commitments to PPPs are included in the PPP Law prior to its finalization and enactment. If this is not possible, detailed guidance should be included in PPP Guidelines.

ment Plan, of the total investment requirement of NPR 2,425 billion (US\$23.55 billion) in the Fourteenth Plan period, around 55 percent is expected to come from the private sector. Tapping foreign investors and the Nepalese financial system is crucial for meeting the targeted investment by the private sector.

### Constraints and Areas for Reform

**The financial sector currently lacks scale and depth and is dominated by commercial banks.** The total assets of the financial sector stood at NPR 3,137 billion (US\$30.46 billion) as of 2018Q1 (mid-October 2017). Commercial banks account for 86 percent of the sector's assets. As of the end of 2017, bank credit to the private sector equaled 77 percent of GDP, significantly above the South Asia region's average of 47.6 percent of GDP.<sup>13</sup>

**The involvement of institutional investors in Nepal is relatively high, but, as in other developing countries in the region and globally, they lack the capacity to underwrite loans to large projects and suffer from regulatory constraints.** There are domestic institutional investors, including the Employees Provident Fund, the Citizen Investment Trust, and the insurance sector, but they rely on consortium partners and lead banks for credit appraisals. Regulatory constraints make investing difficult, increase risk and costs, and limit profits.

**The financial market can only lend limited capital because of several constraints.** Infrastructure projects face higher interest rates, a result of high-risk perception, particularly in the hydropower sector. The key risk sources are political risk and process inefficiencies, regulatory risk, increasing credit risk, and weak corporate governance.

#### Domestic Bank Market

**Nepal's domestic banks and financial services institutions are fragmented, subscale, and constrained in their capacity to finance, including those in the electricity sector.** Of the 151 bank and financial services institution entities that are regulated by the NRB, only commercial banks and development banks lend to hydropower projects. They fall significantly short of

the market potential to support hydropower and the broader infrastructure sector. As per a U.S. Agency for International Development study, the domestic banks and financial services institutions have made an investment of US\$755.60 million in hydro-electric power projects, against their full ability to lend US\$3,058 million (as of 2016) to the segment.<sup>14</sup>

**Banks have a small capital base, which limits lending to individual projects.** Currently, given prudential norms, local banks are unable to finance projects above US\$40 million. In the hydropower sector, meeting the levels of planned installed capacity requires increased capacity for domestic banks to lend, increased (ease of) market access to foreign sources of capital, systematic issuance and trading of government bonds domestically and offshore, and development of new sources of capital focused on the infrastructure sector.

**Due to an asset-liability maturity mismatch, banks have limited ability to lend in the long term, as evidenced by the 5-to-10-year average tenure of a term loan.** Bank lending is further limited by high collateral, considerable sponsor support requirements, and a lack of experience and capacity in structuring, assessing risk, and (leading) financing initiatives for limited-recourse financings.

#### Domestic Debt and Equity Capital Markets

**The fixed-income and equity capital markets are highly underdeveloped.** Although there is some potential to raise currency bonds, the market is nascent. The bond market is almost entirely dominated by Nepalese rupee government debt (>95 percent), of which 97 percent is Treasury bills and development bonds. Development bonds dominate volumes and have durations of between five and 15 years, with an average duration of around 9.5 years (2017). However, issuance tranches are small, at US\$40 million to US\$45 million and on the rare occasion extend to approximately US\$75 million. Where they are issued, corporate bonds are available for trading through the local exchange. However, there is no liquidity to speak of, and pricing remains at or near par, providing an unreliable reference.

13 Nepal Rastra Bank's Monthly Statistics: FINSTATS, 2015.

14 U.S. Agency for International Development (USAID), "Nepal Hydropower Development Project (NHDP): The Role of the Nepali Banking, Financial Services & Insurance Sector in Financing Hydropower Investment" (Deloitte, 2016).

**The primary market for government bonds is available for corporates and retail customers.**

These bonds are not traded often and, outside financial institutions, there are very few investors. Treasury instruments are bought largely by banks to satisfy statutory liquidity requirements. Some development partners, such as the Asian Development Bank (ADB) and International Finance Corporation, are trying to support raising local currency bonds. As there is no active trading of government bonds, there is no meaningful yield curve, as understood in the context of international finance.

**Equity capital markets are small, with a market capitalization of approximately US\$12 billion (July 2018) and daily trading volumes of approximately 1.2 million shares across 196 listed companies.** Shares in five hydropower companies are available for trading and represent around 4 to 5 percent of the overall market, which has declined by around 22 percent in the past year. Recent missteps in well-intentioned technology upgrades have resulted in reduced trading volumes and impacted investor confidence.<sup>15</sup>

### Foreign Capital

**The provisions of the Banks and Financial Institutions Act do not encourage foreign investors/lenders to invest/lend in foreign currency.** Borrowers are hesitant to borrow in foreign currency due to currency risk and the high cost of hedging. In addition, the central bank has set strict limits on lending by foreign institutions, which is allowed only in the case of unavailability of domestic debt and is subject to an interest rate cap of LIBOR +5.5 percent. Moreover, a foreign lender does not enjoy the same level of protection as the local banks in terms of creditors' rights. Hence, international lenders have to partner with a local bank or a consortium under a pari-passu security arrangement and would need to depend heavily on the capability of a local partner/consortium lead bank for debt recovery. Foreign currency lending is further constrained due to the lack of a cost-effective foreign currency hedging facility (except for short-term/trade finance transactions that are offered by commercial

banks). Other issues include restrictive administrative approval procedures for repatriating capital, dividends, and interest.

**The equity capital market environment is weak and unsuitable for private equity investments.**

Nepal does not have a specific legal and regulatory framework for private equity and venture capital, although a few private equity funds operate in the country. In the absence of a specific framework, a combination of laws and regulations (for example, Company Law, Laws on Banking, foreign direct investment (FDI), and so forth) regulate private equity and venture capital funds. It is unclear whether private equity and venture capital funds can provide capital in the form of debt rather than equity, given that these funds are not licensed under the Banks and Financial Institutions Act. Stock market initial public offering (IPO) rules are inadequate for private equity exits for several reasons. First, only new shares can be listed—existing shareholders are not allowed to divest their shares at IPOs and are subject to a three-year lock-in period. Second, shares can only be priced above book value if the company has at least three consecutive years of profits and dividends; even in this case, pricing is not determined by the market but by the valuation rules of the NRB. The Securities Registration and Issuance Regulation 2016 (2073) allows shareholders of unlisted shares to exit through an offer document and with approval from the Securities Board of Nepal. However, this provision has not yet been tested, and it presents a risk to promoters seeking to offload unlisted shares. In addition, there is a limited track record of IPOs outside the banking sector (75 percent of stocks are financial institution stocks); trading volumes are low (US\$7 million daily average around October 2017); and foreign investors are not allowed to trade actively.

**Several factors hinder the investment environment, including FDI restrictions and procedures, offshore capital repatriation problems, and double taxation.** FDI restrictions and procedures in Nepal are stringent, stemming from a general distrust of foreign investment and desire to protect local industries.

<sup>15</sup> Automating trading and settlement is a given direction of evolution for young/small exchanges. In the case of Nepal, upgrading the technology for automation was a positive move, but its execution was poor, resulting in reduced trading volumes (unplaced/misplaced orders rather than just normal market moves up or down). When implementing operational advancements in exchanges, this increased risk will naturally cause investors to hold off entering the market for fear of not being able to enter/exit trades as they would like. This impacts liquidity, which may normalize only once the risk and the perception of the risk have diminished.

Foreign entities are not allowed to invest in the retail and trading sector or in a negative list of 21 manufacturing and services sectors. For sectors that are eligible, a laborious approval process is in place. Offshore funds and onshore vehicles with foreign shareholders are considered foreign investors. They require FDI approval for each investment in a Nepalese company, despite having sought initial entry as a foreign investor. Approvals are granted by the Department of Industry (Ministry of Industry, Commerce and Supplies) and the central bank and can take several months. Strict blacklisting rules are in place for the domestic shareholders and directors of any Nepalese company that defaults on a loan. These include the seizing passports and cessation of any financial activities. For a fund, it implies the cessation of activities if only one investment in the portfolio goes sour. This is a major impediment to private equity investments, which are typically funded with a mix of equity and debt. Nepal has several double taxation agreements, but there has been some uncertainty about enforcing them, which could result in yet another layer of uncertainty for foreign investors when exiting investments.

### Recommendations

**First, it is recommended that the government seeks to consolidate the banking sector to enable it to become a focused and more efficient deployer of capital.** At present, the subscale size and high market fragmentation leads to market destabilizing behavior and low loan volumes relative to lending capacity, especially to the infrastructure sector. The balance sheet size of commercial banks needs to increase to enable them to offer sensible loan volumes to support the infrastructure sector. Reducing the number of commercial banks from 28 to fewer than 15 would start to reshape the sector and provide banks with scale and efficiency to deliver consistent loan volumes. Further consolidation should be encouraged over the medium-term horizon along with partnerships with international banks to achieve up to 10 local banks. This can be achieved by increasing the “paid-up capital” as defined by the NRB to over NPR 16 billion. Banks with a clear commitment to lend to the infrastructure sector, as demonstrated by loan commitments

and involvement in specific priority projects, could be exempted.

**Second, along with consolidation, it is recommended that the government helps ease the nonfinancial constraints faced by the domestic banking sector.** Capacity building of local banks for underwriting infrastructure project financing is essential, given the low level of knowledge of these transactions. It is suggested that the NRB issues a code of best practice for infrastructure project financing for banks lending to the sector. Best practice would include the application of risk matrixes, clarity on and guidelines for pricing credit with special purpose vehicle structures, and building-in meaningful credit protection concepts, appropriate calculations, and levels for covenants. A best practice code could draw from experience and lessons in the hydropower sector. Furthermore, in the medium term, a “champion” government commercial bank (for example, Nepal Bank Limited) would be identified that can take national leadership in the domestic commercial bank lending market, where new tenors, structures, and products may be deployed (outside a development finance institution (DFI)). During the first year, capacity-building efforts would focus on areas such as project credit analysis, structuring, and risk management. Similar efforts could then be rolled out to other banks. The government would expect the champion bank to promote actively and engage in taking lead local currency infrastructure lending roles, including those alongside multilateral development banks (MDBs), domestic DFIs, and international banks. In addition, given the new federal structure, it will be essential to prepare banks and nonbanking financial institutions for subnational financing. This will require a degree of decentralization of expertise and enhancement of risk management capacity.

**Third, it is recommended that the government takes focused measures to increase the availability of long-term sources of finance for large infrastructure investments.** These include shorter-term and longer-term measures. As an example, the provision of government refinancing guarantees for seven to 10 years, partially amortizing loans in year one to

enable tenors to be extended without requiring banks to book longer-tenor loans, could help increase the availability of long-term finance. The guarantee may then be limited to longer tenors as the market develops. Another example would be where a project is financed on a limited recourse basis, the government could provide relief from any limitations or restrictions to lenders being able to take full charge over key (fixed) assets of the project, such as land and buildings. These measures would be instrumental in developing a market for longer-tenor financing. Finally, in the longer term, consideration should be given to deepening the debt capital markets and creating a plausible yield curve over the longer term, through assessment of and planning for the cash needs of the government. This could be followed by the implementation of a systematic program of government Nepalese rupee and U.S. dollar bond issuances at 2-5-10-15-year tenors to a regular timetable, subject to fiscal responsibility and prudent budget management. To support this, (i) primary dealer(s) should be appointed to allow a market to be made on such securities involving systematic collection of trading data, and publishing relevant parts of it for market consumption; (ii) selected tax concessions could be offered to target holders of new government issuances; and (iii) in the medium term, and with assistance from international rating agencies, capacity could be developed within the local rating agency community to apply rating methodologies that are more consistent with those of international rating agencies.

**Fourth, it is recommended that the government enables the participation of foreign providers of capital as required.** To expand the pool of capital available to support infrastructure development in Nepal over and above the available public and concessional financing, the government can take steps to enable and encourage international capital participation. Establishing a conducive environment will require several sequenced actions in the medium-to-long term. The first is regulatory reform to provide foreign lenders pari-passu treatment with local lenders for creditor rights in creating and enforcing security. Greater comfort for foreign lenders would follow, knowing that they are a senior creditor on project and corporate lending. Second, relief from

requiring Department of Industry (Ministry of Industry, Commerce and Supplies) and NRB approvals would be advantageous for foreign lenders providing limited recourse financing to specific infrastructure subsectors where there is a dearth of public or concessional financing relative to the requirement, for example, in energy and transport. Initially, such relief could be applied narrowly to projects on a priority infrastructure pipeline and, as liquidity and interest builds, over a two-to-three-year period. Gradually, the pipeline condition should be entirely relaxed to make it a sector-wide exemption. Third, there should be a move toward market-based loan pricing with the removal of regulatory caps on interest rates charged to corporate entities involved in and financing the infrastructure sector. Fourth, hedging facilities to enable investors to manage liquidity constraints during periods of (excessive) exchange rate and/or interest rate fluctuations should be established. Such facilities could be supported by government/MDB funding and be managed centrally by the NRB or another suitable entity that has an understanding of foreign exchange markets. Fifth, the Foreign Investment and Technology Transfer Act and Foreign Exchange (Regulation) Act 1962 should be harmonized to ensure consistent interpretation. This could be readily achieved in the form of supplemental guidance to authorities, to ensure rapid harmonization and alleviate immediate administrative bottlenecks. Legislative amendments may follow in due course. Sixth, a revision and expansion should be undertaken of the valuation rules for repatriation of proceeds to accommodate infrastructure assets and businesses for varying types and stages of development, to ensure that infrastructure businesses are optimally valued when they are sold or purchased. Seventh, tax rebates should be permitted for investors on the portion of proceeds of a sale that is reinvested (into the infrastructure sector) within 12 months from the date of completion of the sale. This would remove a disincentive (or hurdle) for an investor to exit and reinvest, thus hampering the ability of the market to trade infrastructure assets easily and attract additional sources of capital. Eighth, private equity/venture capital investment could be promoted by having a regulatory framework for this pool of investors to help them clearly navigate and implement capital deployment in Nepal. This would

include but would not be limited to having the ability to establish various fund structures with accompanying tax treatments to attract public and private institutional investors and retail clients.

**Fifth, in the medium term, the government could consider developing alternative sources of financing, including a Nepal infrastructure DFI (NIDFI).** The NIDFI would provide financing to “plug” the capital structure of projects with debt and (minority) equity capital, as needed. It would initially be capitalized to at least US\$1.5 billion, primarily with government and MDB funding, with minority interests held by selected international project finance banks. This offering would expand to permit hybrid instruments as regulators become familiar with its operations, rolling project pipelines for each sector are established, and NIDFI financing gains momentum. The NIDFI can be established as the implementation arm of an infrastructure unit and act as the counterparty for refinancing guarantees and as the provider of hedging facilities. In addition to a provider of capital and financial instruments, it could be the go-to entity in Nepal for developing knowledge and structuring financial instruments to support the sector. Generally, global experience with such institutions has been mixed. The establishment of NIDFI should follow a comprehensive plan that includes best-in-class governance and decision-making structures and a strong capacity to monitor and enforce robust environmental and social standards.

## Gender Equality and Social Inclusion

### Overview

**Nepal’s legal and policy frameworks that govern infrastructure issues are largely silent on recognizing gender equality and social inclusion (GESI) as a factor requiring specialized treatment.** Gender-neutral laws and regulations inadvertently exacerbate existing gender and social biases. Key issues include a lack of representation in decision making and policy design, a lack of GESI issue awareness within the policy and political community, and a lack of access to information. Even where legal or institutional

progress has been made in addressing GESI issues, a lack of awareness hinders progress.

### Constraints and Areas for Reform

**Infrastructure development requires combining supply-side issues of technical design specifications for provision of infrastructure services with demand-side dimensions of who uses the infrastructure, for what purposes, how it is paid for, and with what impacts on individuals, households, and communities.** Infrastructure development is not neutral. Policy choices regularly have disparate impacts on women and other marginalized communities. For example, the unequal division of roles in the labor market and division of time spent on domestic tasks can have an impact on the way in which women and men use or need certain types of infrastructure.

**There are several common entry points to improving GESI outcomes within the energy, transport, and urban sectors.** A key one is building policy and institutional capacity to address GESI-specific issues. This can be achieved by training government staff in key GESI issues and setting minimum targets for women and other marginalized groups in policy design and decision making.

**Infrastructure design and construction must also be approached from a GESI-specific perspective.** Women and marginalized groups should be included in decision making, and targets for employment within design and construction should be set. To facilitate employment in the sector, women should be provided with vocational and technical training. In addition, infrastructure should be designed with GESI-specific physical design features that meet the needs of women and other marginalized groups.

### Recommendations

**It is recommended that the Government of Nepal builds gender equality into the planning and implementation of infrastructure** by including the following requirements in bid documents and contracts for all infrastructure projects: (i) incorporation of gender-specific design features in infrastructure, (ii) minimum representation of women in construction and non-construction activities in projects, and (iii)

collection of gender-disaggregated data on the use of infrastructure services.

## Environmental and Social Management

### Overview

**Across all environmental and social priorities, there is a need for timely, efficient, and meaningful citizen engagement throughout the infrastructure project life-cycle.** Key priorities for environmental and social issues within infrastructure development include the protection of cultural heritage, the protection of indigenous peoples, labor management, labor health and safety, land acquisition, slope instabilities (landslides and erosion), forests and wildlife and biodiversity, integrity of river ecology and environmental flow, resilient and adaptable infrastructure, and waste management and pollution.

### Constraints

**Nepal's mountainous terrain is fragile and susceptible to landslides and erosion.** Without proper consideration, construction may trigger or exacerbate slope instabilities or mass movement. Technical planning and design in infrastructure projects are often found to be inadequate in assessing and addressing this issue, and mitigation measures in the Environmental Assessment/Environmental Management Plans lack site-specific details.

**Nepal is rich in biodiversity, and infrastructure development is one of the causes of pressure on forests, wildlife, and biodiversity, as development is increasingly pushed to forest areas to avoid private land and property.** Pressure on forests and natural habitats may be in the form of direct loss or degradation; loss or pressure through illegal activities, encroachment, and poaching due to improved accessibility; and fragmentation of habitat and obstruction of wildlife movement routes.

**Delays in obtaining forest clearance are often cited as a cause for delays in infrastructure project development.** It is a lengthy bureaucratic process, further compounded by the low quality of technical planning and design.

**Water resource projects, including hydropower projects, face the challenge of determining and releasing the minimum downstream flow (or ecological flow), which is directly linked with the economic and financial viability of a project.** Water diversion from rivers may make the downstream stretch completely dry, creating adverse impacts on the aquatic and terrestrial ecosystem as well as affecting livelihoods, cultural practices, and other water uses. Although certain provisions may form a basis, clear legal guidance is not available on the environmental flow or minimum downstream release. Compliance with minimum water release is poor—the amount released is inadequate or there is no release of environmental flow. The approach currently used for quantifying the e-flow is not scientific.

**Nepal's existing environmental safeguard system needs further strengthening and improvement.** There is no requirement for strategic Environmental Assessment, and when Environmental Assessments are conducted, they typically identify direct potential impacts from the infrastructure project; indirect impacts are rarely or weakly covered. Consideration of strategic alternatives is not an explicit requirement for the Environmental Assessment process, and specific provisions for projects located in areas prone to natural hazards are not available. Environmental monitoring to check performance and compliance is rarely conducted.

**Experience in infrastructure construction reveals that compliance with workers' health and safety standards is weak.** Generally, there is a lack of adherence to safety standards among workers and contractors, a lack of formal processes around terms and conditions for workers, unsatisfactory living conditions provided to workers, inconsistencies in what constitutes child labor across relevant laws and guidelines, lack of equality in employment and employing local labor, and inadequate mechanisms for raising grievances. Lack of clear contractual provisions and construction oversight and inadequate enforcement mechanisms are other reasons for inadequate compliance with health and safety.

**The absence of an all-embracing regulatory framework on land acquisition and concomitant issues of resettlement and rehabilitation and benefit sharing is one of the longstanding challenges to**

## NEPAL INFRASTRUCTURE DEVELOPMENT FINANCE INSTITUTION (NIDFI)

NIDFI's role could also include the following (based on global best practice):

- Issue its own debt across various tenors for purchase by domestic and international institutional investors and retail customers.
- Cooperate with Hydroelectric Investment Development Company Limited (HIDCL) to cover and expand capital available for developing the hydropower sector.
- Eventually acquire HIDCL to create a single, cross-sector national development finance institution (DFI) focused on infrastructure; provide countrywide leadership in infrastructure finance under a single DFI; and deliver efficient management, operation, coordination, and deployment of capital.
- Reinvest any surplus into contributing to the deployment of finance, hedging and guarantee instruments, and/or facilities; develop infrastructure finance products fit for the Nepalese market; and, thereafter, potentially provide some contribution to viability gap funds/grants and funding to the national PPP Centre for procuring feasibility studies.
- Hold and disburse direct government and donor funds in accordance with the terms of such support, for example, to provide funds/grants to reduce the cost of construction, acquire land, and pay for bid costs or major rehabilitation.
- As NIDFI matures and stabilizes, it may reinvest a dedicated but minor part of its profits into providing a consistent source of funds for supporting target subsectors, and also directly into selected social funds/programs to support the advancement of communities affected by infrastructure development. NIDFI could stand out as a destination for investment funds from domestic institutional investors, providing long-term, relatively stable exposure to the infrastructure sector without investors needing to develop the inhouse capability to assess each project, which would be addressed by NIDFI.

Source: Nepal InfraSAP Team.

**infrastructure development projects in Nepal.** In the absence of an official land valuation system, land valuation in Nepal is ad hoc and does not have clear guidelines or methods. The current legal regime does not recognize the difference between taking land from people who live on (and from) it and taking land from individuals or organizations for which it is only an “asset.” Land records and measurements are often ill-maintained or inaccurate.

**Despite constitutional acknowledgment, there is a lack of effective legal provisions protecting intangible cultural heritage.** In many cases, concerned communities, agencies, and institutions have developed their own programs to help bridge this gap in formal legislation and enforcement. To address disputes over approaches to the conservation of heritage sites in Nepal, it is crucial that meaningful consultations are carried out to identify cultural heritage that may be affected by infrastructure projects.

**Nepal does not have a stand-alone policy on protecting indigenous peoples from the impacts of develop-**

**ment projects.** Although the current policy and regulatory framework is broadly supportive of indigenous peoples, gaps exist, including the failure to recognize indigenous peoples' rights over land. A key issue is weak mainstreaming and participation of indigenous peoples in development projects. Considering the gaps, there is a need to ensure consultation with and input from indigenous people in infrastructure decisions.

### Recommendations

**First, review forest clearance processes and compensatory plantation.** There is a clear need for simplification of forest clearances, given the complexity and steps involved in the current process.

**Second, issue national guidelines for determining environmental flow.** Clear guidelines and a technical manual for Nepal for determining minimum ecological flows as well as training professionals in water resources and environmental management are an important subject for water resource-related projects, particularly hydropower projects, which are a focus area for the development of Nepal.

**Third, improve compliance with already existing environmental and social frameworks and guidelines.** The Environmental Assessment system and capacity should be strengthened. A good Environmental Assessment and an Environmental Management Plan that identifies specific risks and impacts and their respective mitigation measures are key to preventing erosion-related issues. There is need to improve technical planning and design as well as the Environmental Assessment and Environmental Management Plan, including carrying out alternative analysis of potential sites (selecting better sites), selecting less destructive construction methods, managing surface runoff water, using controlled disposal of spoils and mucks, developing environmental buffers, and increasing vegetation cover.

**Fourth, improve legislative provisions for land acquisition and land entitlements, to protect project-affected persons and intangible cultural heritage.** To do so, it is advisable to amend the Land Acquisition Act to include the following: transparent consultations with project-affected persons in project design and implementation arrangements; landless persons' and indigenous people's customary right to land without title and their right to compensation on acquisition of such land; requirement for free, prior, and informed consent; recognition of vulnerable groups among affected populations and their need for special attention; provision of upfront budget for projects for use in payment of compensation and rehabilitation of affected populations; and provision

for payment of compensation jointly to male and female members of the family. The practice of land zoning should be introduced. Furthermore, in the short term, the Guthi Corporation Act 1972 should be amended to include mandatory consultation with stakeholders in all infrastructure projects, to identify and protect intangible cultural heritage. Consultations with indigenous peoples should be required, including obtaining free, prior, and informed consent for all projects.

**Fifth, improve protections for workers under infrastructure projects.** There would be merit in improving the occupational health and safety of the labor force on construction sites. The Labor Act 2017 should include provisions for penalties for violations of health and safety standards, including cost allocation by the contractor for occupational health and safety-related measures, and mandatory training in occupational health and safety should be required for all contractors.

## Proposed Recommendations for the Country Environment

Several issues affect the whole infrastructure sector. Mindful of that, in table 1, the focus is limited to a few cross-cutting recommendations that will have the widest impact. Within each recommendation, actions are limited to the short term (those that can be executed within one to two years) and the medium term (those that can be executed within two to five years).

TABLE 1: CROSS-CUTTING AREAS ROADMAP

RECOMMENDATION	SHORT-TERM ACTIONS (UP TO 3 YEARS)	MEDIUM-TERM ACTIONS (3-6 YEARS)
<b>GOVERNANCE AND PUBLIC INVESTMENT MANAGEMENT</b>		
<b>1. Establish a central coordination mechanism for infrastructure</b>	Create a highly visible infrastructure unit directly reporting to the PMO to drive strategic planning and delivery of priority projects.	
<b>2. Improve the quality of investment decisions</b>	<p>Establish public investment management mechanism through issuance of appropriate guidelines.</p> <p>Create methodologies and processes for screening, selection, and prioritization of capital projects.</p> <p>Establish appropriate budgeting mechanisms.</p>	<p>Create an integrated project bank of strategic and economically viable investment projects.</p> <p>Create and implement a project performance tracker.</p>

<b>3. Improve management of assets and liabilities through a multifaceted and phased approach</b>	<p>Sign MOU with all public enterprises and subnational governments on performance management reporting.</p> <p>Establish an FCCL management framework for fiscal commitments and contingent liabilities of public enterprises and national and subnational governments.</p> <p>Establish internal audit systems for all layers of government.</p>	<p>Assess the stock of existing liabilities.</p> <p>Complete one round of internal audits for all provincial and at least half the local governments.</p>
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### PRIVATE PARTICIPATION IN INFRASTRUCTURE

<b>1. Finalize and enact the PPP Law</b>	<p>Seek market feedback on the Draft PPP Law and consider amendments accordingly.</p> <p>Enact the PPP Law.</p>	
<b>2. Develop the PPP pipeline</b>	<p>Adopt robust screening criteria to filter and prioritize PPP projects.</p> <p>Include selected PPP projects in the national rolling pipeline of priority projects.</p>	<p>Train project implementing agencies in screening methodology.</p> <p>Keep the rolling PPP pipeline updated (e.g., semi-annually) and feed into the national rolling pipeline of priority projects.</p>
<b>3. Create and implement enabling frameworks and strengthen institutional arrangements</b>	<p>Develop PPP Guidelines.</p> <p>Ensure clarity of roles of different institutions involved in the PPP process.</p> <p>Harmonize existing PIM/PPP processes.</p> <p>Strengthen the framework and processes for collection and disclosure of information at all stages of the PPP process.</p> <p>Resource the PPP Centre appropriately.</p>	<p>Adopt and implement PPP Guidelines.</p> <p>Disclose information, including performance information, on at least 50% of operational projects and all new projects.</p>
<b>4. Manage fiscal commitments and contingent liabilities</b>	<p>Develop the PPP FCCL framework.</p>	<p>Train debt management, PPP, and project implementing agency staff in FCCL methodologies.</p> <p>Implement FCCL assessment in all new projects.</p> <p>Assess the stock of FCCL in operational projects.</p> <p>Include FCCL reporting in the annual debt statement.</p>
<b>5. Increase stakeholder engagement by designing and delivering a communications strategy and capacity-building program</b>	<p>Roll out the communication strategy to emphasize institutional structure.</p> <p>Establish the PPP Centre website to disclose key information on policy and projects.</p>	<p>Roll out the capacity-building program customized to different stakeholder groups.</p>

### FINANCIAL SECTOR AND INVESTMENT ENVIRONMENT

<b>1. Stimulate consolidation of the local private commercial bank market</b>	<p>Increase paid-up capital requirements for private commercial banks to NPR 16 billion.</p>	<p>Target market consolidation to 15 banks.</p>
<b>2. Develop domestic banking sector capacity to finance infrastructure projects</b>	<p>Provide focused training in credit assessment, due diligence, and loan management to at least 10 progressive local commercial and development banks.</p> <p>NRB to issue and implement a code of best practice for infrastructure project financing in Nepal.</p>	<p>Identify one bank with substantial government ownership (e.g., Nepal Bank Limited) to champion commercial bank lending to infrastructure projects and co-lead arranger roles on larger projects alongside MDBs and international project finance banks.</p>

**3. Increase availability of long-term financing**

Permit state-owned/led banks to offer partially amortizing loans for 7-to-10-year tenors supported by a Government of Nepal/MDB refinancing guarantee instrument to keep domestic lender(s) whole in the event there is no market at maturity.

Provide relief from restrictions to domestic and foreign lenders taking full charge over key assets (e.g., land and buildings) of projects.

Year 2: Roll out the guarantee to selected local private commercial banks that have a credible appetite for lending to economically viable infrastructure projects.

Year 3: Apply guarantee only to tenors greater than or equal to 12 years, if the market demonstrates sufficient depth and liquidity at the year 10 tenor.

Develop domestic capacity to provide credit ratings using methodologies consistent with international practice.

To develop a yield curve, implement a systematic program of local and foreign currency government bond issuances and establish a primary dealer/market maker to create a market in government bonds.

Implement a tax rebate for investors on any portion of sale proceeds that are then reinvested into the infrastructure sector within 12 months from the date of sale completion.

**4. Stimulate participation of foreign lenders and investors**

Undertake regulatory reform to provide foreign lenders pari-passu treatment with local lenders.

Provide relief from approvals from the Inland Revenue Department and NRB for foreign lenders providing limited recourse project finance to priority projects in specific infrastructure subsectors.

Obtain sovereign credit rating.

Establish a hedging facility within a DFI with Government of Nepal/MDB support to enable projects to overcome liquidity constraints during periods of (excessive) foreign exchange rate fluctuations, and interest rate hedging for priority infrastructure projects.

Amend FITTA and Foreign Exchange (Regulation) Act 1962 to ease entry and exit restrictions, reduce documentation requirements, and ensure consistency between regulations.

Move to market-based loan pricing and remove caps on interest rates charged on foreign currency loans made to entities extending financing to the infrastructure sector.

Implement legislation to enable limited partnership structures.

Create a regulatory framework to attract and retain private equity/venture capital investments in Nepal.

Streamline and automate repatriation processes.

Implement a program to educate investors, including retail, on bonds, in preparation for issuances of DFI retail debt tranches.

**5. Develop alternative sources of financing**

Develop a Nepal infrastructure DFI (NIDFI) capitalized with US\$1.5 billion to (i) provide debt and equity financing and risk management instruments to projects, and (ii) provide HIDCL access to capital to optimize project development in the short term.

Issue guidelines for the use of hybrid instruments to facilitate private sector investment.

Develop and implement Alternative Investment Fund Regulations.

Year 2:

- i Initiate a program of 10- and 15-year debt issuances in NPR and US\$ by NIDFI for international and domestic institutional investors.
- ii Expand product offerings to include hybrid instruments.
- iii Harmonize operating best practices from NIDFI and HIDCL, including integration of selected common support services.

Year 3:

- i Combine HIDCL with NIDFI to focus on infrastructure finance and financial products relevant to each subsector.
- ii Expand the investor base to include stronger domestic and (selected) international commercial banks to become minority investors in NIDFI.
- iii Issue retail-focused securities (NIDFI).

## GENDER EQUALITY AND SOCIAL INCLUSION

**1. Build gender equality in planning and implementation of infrastructure**

Incorporate gender-specific design features in infrastructure.

Ensure minimum representation of women in construction and non-construction activities in projects.

Collect gender-disaggregated data on the use of infrastructure services.

## ENVIRONMENTAL AND SOCIAL MANAGEMENT

**1. Improve forest clearance and compensatory plantation**

Revise guidelines for forest clearance.

Create an entity for compensatory plantation.

**2. Issue national guidelines for determination of environmental flow**

Commission a study to prepare the guidelines.

Issue guidelines.  
Organize training.

**3. Strengthen the Environmental Assessment system and capacity**

Revise EPA, EPR, and EIA Guidelines to strengthen Environmental Assessment system and capacity

Develop robust internal environmental and social guidelines.

Conduct a capacity needs assessment in the context of federalism.

Introduce Strategic Environmental Assessment, Cumulative Impact Assessment, and Basin Planning.

Improve compliance with established Acts and regulations for managing environmental and social risk.

Implement system- and capacity-strengthening measures.

**4. Improve legislative provisions for land acquisition and land entitlements to protect project-affected persons and intangible cultural heritage**

Draft the Land Use Act.

Amend the Land Acquisition Act.

Introduce a performance indicator on compliance with inclusive programs in reporting norms for all new projects.

Adopt the Land Use Act.

Improve consultation with, and participation of, indigenous peoples affected by infrastructure projects, and ensure meaningful engagement throughout the project life-cycle.

Ensure that 50% of new projects include inclusive programs.

Amend the Guthi Corporation Act 1972.

Ensure that all projects obtain Free Prior and Informed Consent from indigenous peoples where required.

**5. Improve protection for workers under infrastructure projects**

Amend the Labor Act 2017.

Provide for penalties for contractors that do not provide contractual arrangements for workers outlining their rights and entitlements.

Introduce mandatory transparent, timely, and meaningful citizen engagement throughout all stages of the project life-cycle.

Provide a grievance redress mechanism in all projects for project-affected persons.

Note: DFI = development finance institution; EIA = Environmental Impact Assessment; EPA = Environment Protection Act; EPR = Environment Protection Regulation; FCCL = fiscal commitments and contingent liabilities; FITTA = Foreign Investment and Technology Transfer Act; HIDCL = Hydroelectric Investment Development Company Limited; MDB = multilateral development bank; MOU = memorandum of understanding; NIDFI = Nepal infrastructure DFI; NRB = Nepal Rastra Bank; PIM = public investment management; PMO = Prime Minister's Office; PPP = public-private partnership.



# Reforming the Energy Sector

## Introduction

**The electricity sector is one of the most strategically important areas of Nepal's economy for two reasons.** First, the lack of adequate electricity is a barrier to higher economic growth. The Nepalese consume, on average, just a twentieth of the global average and a fifth of the South Asian average. Load shedding imposed economic costs of up to US\$1.6 billion per year during 2008–16. Accordingly, increasing the electricity supply would create a large economic benefit. Second, Nepal has an opportunity to earn revenues by exporting valuable hydropower to the South Asia region. Recognizing this, the government has set an ambitious target of installing 3 gigawatts (GW) of generation capacity in three years, 5 GW in five years, and 15 GW in 10 years. The government is pursuing reforms to increase the capacity of public sector institutions and improve the investment climate in the sector.

**Achieving the full economic potential of the electricity sector will require a paradigm shift in the way Nepal approaches electricity sector financing.** Nepal has historically relied on a mix of public and private financing in the electricity sector. The country's installed generation capacity is now almost equally divided between the Nepal Electricity Authority (NEA) and independent power producers (IPPs)—the latter mostly in the form of small hydropower projects developed with local investments. However, a twofold to fourfold increase in investment is needed to meet the projected demand in the country and utilize the sector's export potential. For this, Nepal must not only efficiently utilize existing sources of financing, but also develop the capacity to access new sources of financing from domestic and international capital markets and investors, including institutional investors.

**Nepal will need to deploy a wide range of PPP models in the electricity sector.** In general, small hydropower projects and most solar and wind energy projects have a risk profile and relatively short con-

struction periods that are conducive to private sector investment and commercial financing. However, Nepal's domestic private sector does not yet have the capacity to mobilize large amounts of long-term financing and appraise and manage the significant technical, hydrological, and environmental risks of large-scale projects. Public sector entities and foreign investors can play a strong role, with assistance from multilateral development agencies, in structuring large hydro projects. Public and private financing may be used for large hydropower; risk mitigation instruments can be applied to leverage significant commercial financing from local and international investors. Such large infrastructure provides an opportunity to also deepen local capital markets (see, for instance, box 1 on the Upper Tamakoshi project and box 3 on international experience with large hydropower projects). A more integrated regional electricity market, which will enable selling electricity produced in Nepal to other countries in South Asia, will open further opportunities for commercial debt and equity financing of Nepal's large hydropower, while mitigating the sector's exposure to foreign currency fluctuations. Nepal has already awarded some larger hydropower projects to foreign investors (private and state-owned) and is accumulating experience through these investments. A significant number of large hydropower projects have been constructed with the private sector globally and can provide valuable lessons on how foreign investment and financing can flow into the sector in a sustainable way, while managing associated risks and contingent liabilities as compared with direct liabilities in public sector projects (see box 3 on private sector experience with large hydropower projects).

**This roadmap attempts to lay the groundwork for maximizing the financial resources for Nepal's electricity sector.** The report identifies financing needs and constraints for the power sector in the short-to-medium term and outlines a roadmap for overcoming these constraints and seizing opportunities to achieve sectoral transformation over time.

## Nepal's Energy Sector at a Glance

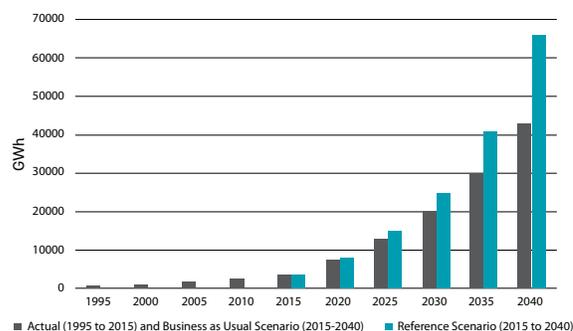
Nepal has recovered from the severe electricity crisis that adversely affected the country between 2008 and 2016. Yet, substantial new investments are required to avoid another crisis. Nepal's electricity imports from India have increased fourfold since 2010 and now comprise more than a third of the electricity consumption in the country. Combined with more efficient management of existing generation resources and reduced transmission and distribution (T&D) losses, the NEA has resolved load shedding. The NEA has also achieved progress in improving its financial performance and creating a robust pipeline of public and private sector projects, by signing power purchase agreements (PPAs) for more than 4 GW of new projects. However, questions remain on how many projects from this 4 GW of pipeline are progressing and how they will be financed through local sources. In any case, Nepal would need to increase investment in the electricity sector substantially beyond this pipeline, to realize the government's ambitions for the sector and achieve higher economic growth.

### Financing Needs (2018–40)

**Despite moderate economic growth, electricity demand in Nepal has risen rapidly.** Since 1995, the compound annual growth rate of demand has been 8 percent, resulting in a doubling of electricity consumption every eight years. The government is targeting an acceleration of average economic growth to 7.2 percent during 2018–40, from 4.5 percent during 1998–2018. Under the Reference Case Scenario, the government expects electricity demand to increase at a compound annual growth rate of 12.0 percent, implying a doubling of electricity consumption every six years. Under the Business as Usual Scenario, economic growth and electricity demand are expected to increase at historic rates of 4.5 and 10.0 percent, respectively (figure 2).

**From 2010 to 2017, Nepal's electricity sector achieved investments of US\$527 million per year on average.** Over 70 percent of this investment was

FIGURE 2: ACTUAL AND PROJECTED ELECTRICITY DEMAND (GWH)



Source: Nepal Electricity Authority and Water and Energy Commission Secretariat.

Note: GWh = gigawatt hours.

concentrated in the power generation segment, and almost all of this went to hydropower projects. Two-thirds of the investment in generation was undertaken by NEA subsidiary companies, followed by local IPPs and NEA. Although it is significant, the sum falls short of the required annual investments for 2018–40.

**To keep pace with demand, electricity sector investments will need to accelerate substantially to an average of US\$1.3 billion to US\$2.1 billion annually between 2018 and 2040.**<sup>16</sup> The total investment need in the power sector for the forecast period of 2018 to 2040 is estimated at US\$29 billion to US\$46 billion. This includes total investments of more than US\$16 billion in transmission and distribution and US\$2 billion in solar and wind energy during 2018 to 2040. The estimated annual need for US\$1.3 billion to US\$2.1 billion is two to four times higher than achievements in the recent past. Although run-of-the-river and peaking run-of-the-river hydro continue to dominate generation investments (60 percent of the generation mix), there is increased prioritization of storage hydropower plants (30 percent of the generation mix) and new renewable energy (10 percent of the generation mix).

**Moreover, incremental investments of between US\$0.5 billion and US\$1 billion may be required annually in large, export-oriented hydropower projects.** The takeoff of export-oriented projects will depend

16 The investment amounts of US\$1.3 billion and US\$2.1 billion correspond to the government's Business as Usual and Reference Case Scenario demand projections, respectively. The breakdown of investment in the reference scenario is provided in table 2.

on the underlying economics of these projects as well as the development of an effective institutional and regulatory framework for electricity trade (table 2).

**Under the Business as Usual Scenario, the NEA will continue to play an important role and be responsible for about a third of the total sector investment requirements until 2030.** Over 95 percent of NEA capital expenditure is expected in the transmission and distribution network. The NEA will also continue to make equity investments in subsidiary companies to develop generation projects. About half of the additional generation capacity between 2018 and 2030 is expected to be developed by NEA subsidiary companies. From 2019 to 2025, NEA debt financing requirements to meet capex needs range between US\$250 million and US\$500 million annually (table 3). However, by removing constraints to greater private sector participation—in the ownership, operations, and financing of power projects—the government can leverage its public sector resources by utilizing a range of PPP models. Sources of Financing (2010–17)

### Sources of Financing (2010–17)

The electricity sector relied on state financing for more than two-thirds of its investment program between 2010 and 2017. This was almost equally divided between the NEA and NEA subsidiary com-

panies. Between 2010 and 2017, the NEA's entire capital expenditure, amounting to US\$1.4 billion, was financed by the government. Four-fifths of this investment was estimated to have gone into transmission and distribution, and the remaining fifth into generation. About half of the NEA's capital expenditure and investment was loaned to the NEA by the government, which had borrowed it from a variety of development partners. The remaining half was passed to the NEA as government equity. The NEA's long-term debt obligations to the government increased from US\$0.5 billion to US\$1.1 billion, and the government's equity contributions to the NEA increased from US\$358 million to US\$961 million in this period.

**The Government of Nepal is using NEA subsidiary companies to develop large hydropower projects, by leveraging financing from institutional investors and state-owned enterprises.** Projects led by NEA subsidiary companies invested US\$1.5 billion and accounted for more than a third of the sector's investments from 2010 to 2017. The NEA's equity investment in its six subsidiary companies increased by US\$232 million between 2010 and 2017. NEA subsidiary companies mobilized an additional US\$1.1 billion of equity and debt financing from institutional and public sector investors in addition to IPOs on the stock market during this period. More than 800

TABLE 2: HISTORICAL INVESTMENTS (2010–17) AND PROJECTED INVESTMENT NEEDS (2018–40)

	Average Annual Investments (US\$, millions, 2018 Prices)					Total investment financing needs (US\$, millions)
	Historical Investments	Forecast Periods -Reference Scenario				
	2010–17	2018–25	2026–30	2031–35	2036–40	2018–40
Hydro-storage	-	393	404	631	1,017	13,012
Hydro (ROR+PROR) <sup>a</sup>	372	301	485	757	1,221	14,424
Solar	-	43	34	54	87	1,177
Wind	-	26	23	36	58	768
T&D	156	414	539	842	1,356	16,587
Total	527	1,177	1,487	2,320	3,739	45,968
<b>Total (% of GDP)</b>	<b>2.1</b>	<b>2.7</b>	<b>2.4</b>	<b>2.6</b>	<b>3.0</b>	<b>2.0-3.0</b>

Sources: Historical investments based on PPI database and NEA Annual Report 2018. Projected investments are World Bank estimates based on the Water and Energy Commission Secretariat's 2017 reference case electricity demand projections.

Note: GDP = gross domestic product; NEA = Nepal Electricity Authority; PPI = private participation in infrastructure; PROR = peaking run-of-the-river; ROR = run-of-the-river; T&D = transmission and distribution.

a. Run-of-the-river hydroelectricity is the type of hydroelectric generation plant whereby little or no water storage is provided. Peaking run-of-the-river hydropower plants are defined by the NEA as hydropower plants that can provide at least four hours of electricity during peak hours.

**TABLE 3: NEPAL ELECTRICITY AUTHORITY DEBT FINANCING REQUIREMENT (US\$, MILLIONS)**

2019	2020	2021	2022	2023	2024	2025
455	476	435	413	421	270	305

megawatts (MW) of generation projects developed by NEA subsidiary companies reached financial closure between 2010 and 2017 and are currently under construction. The 456 MW Upper Tamakoshi Hydropower Project, Nepal's largest hydropower project to date, accounts for half of this capacity. This project is being developed with debt and equity investments from the Employees Provident Fund, Citizens Investment Fund, and Rashtriya Beema Sansthan (box 1). NEA subsidiary companies have raised or have provisions to raise at least 25 percent of the equity financing from local communities, employees of sponsor agencies, and the public through IPOs.

**The domestic private sector, alone and in joint venture with foreign partners, is an active participant in the development of hydropower projects that are less than 100 MW (figure 3).** IPPs contributed about a fifth of the total electricity sector investments between 2010 and 2017. They invested more than US\$700 million in 406 MW of hydropower genera-

tion during 2010 to 2018. A third of this was equity investments, and the remaining two-thirds was debt financing from local and foreign financial institutions and bilateral and multilateral donors. The NEA offers differentiated PPA rates ranging from US¢4 to US¢8 for run-of-the-river projects of less than 100 MW capacity in the dry and wet seasons, respectively. The NEA has signed local currency PPAs for more than 2,000 MW of new capacity with the domestic private sector. Most of these projects are looking to reach financial closure or in the early stages of construction.

**There was limited foreign investment in the electricity sector between 2010 and 2017, all in the form of a joint venture with local companies, accounting for approximately a tenth of the sector investments.** Although the first hydropower project in Nepal was built in 1911, until 2000 state-owned utilities had added less than 280 MW total cumulative generation capacity in the country, while in

### BOX 1: UPPER TAMAKOSHI HYDROPOWER PROJECT

The Upper Tamakoshi Hydroelectric Project is a 456-megawatt peaking run-of-the-river hydroelectric project on the Tamakoshi River, near the Nepal-Tibet border. The project is being developed by Upper Tamakoshi Hydropower Limited, a subsidiary of the Nepal Electricity Authority (NEA). The majority shares (51 percent) of the company are held by four public entities: NEA (41 percent), Nepal Telecom (8 percent), Citizens Investment Fund (3 percent), and Rashtriya Beema Sansthan (3 percent). The remaining shares (49 percent) were issued through initial public offerings to Employees Provident Fund contributors, employees of Upper Tamakoshi Hydropower Limited, NEA, lending institutions, local communities, and the public. The debt is provided by Em-

ployees Provident Fund, Nepal Telecomm, Citizens Investment Fund, Rashtriya Beema Sansthan, and the Government of Nepal.

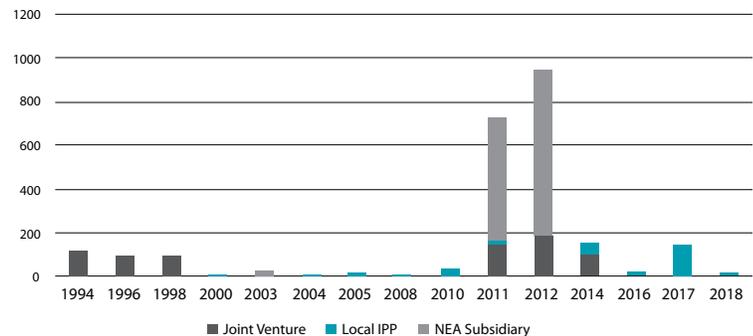
The project has run into significant cost and time overruns due to disruptions caused by the 2015 earthquake, the subsequent blockade at the Indian border, and depreciation of the Nepalese currency. The project cost was initially estimated to be US\$305 million, but it is now expected to reach more than US\$430 million (US\$565 million including interest during construction). Nevertheless, the project continues to be one of the lowest-cost developments in the country in US\$/megawatt terms. The commercial operation date of the first four units of the project has been delayed, from December 2015 to July 2019.

2002 the NEA completed the country's largest, plant Kali Gandaki (144 MW), with ADB financing. Nepal's first two IPPs, the Himal Khimti Hydropower Project and Upper Bhotekoshi Hydropower Project, were developed by foreign investors in the late 1990s, with dollar-denominated PPAs, and provided an additional 86 MW by 2001. These two IPPs not only increased the generation capacity by 30 percent within a few years in a country with significant generation capacity deficits, but also helped to promote an alternative way to build generation and developed significant domestic technical capacity outside the NEA. The government's decision not to allow increases in the electricity tariffs throughout 2001–12, combined with increasing payment obligations in local currency terms under these two dollar-denominated PPAs, contributed to a continuous decline of the NEA's financial condition. In this context, the NEA decided to sign only a few partially dollar-denominated PPAs between 2000 and 2016.<sup>17</sup> In 2017, under newly adopted PPA guidelines, the NEA signed two new partially dollar-denominated PPAs. The level of currency exposure in these PPAs is not likely to be adequate to attract foreign investment in the sector going forward (see box 2 on current dollar-denominated PPAs).

**The flow of private investment to transmission, distribution, and solar and wind generation was limited, but it is likely to increase.** The government is keen to attract private investment to these areas and is gradually putting in place a framework to attract investments. The NEA has established a feed-in tariff of US¢6.3/kilowatt hour for solar energy and has issued net metering policy for grid-connected rooftop solar. The NEA is also providing viability gap funding to solar projects under an ADB project. In transmission, the government used PPP arrangements to build the Dhalkebar-Muzzafarpur interconnection between India and Nepal. Going forward, the government would like to use build and transfer and engineering procurement construction finance arrangements to develop transmission infrastructure in the country.

**After years of delay, Nepal finally broke ground on its first export-oriented hydropower project, with US\$1 billion in Indian investment.** The 900 MW Arun 3 hydropower project, developed by state-owned Sut-

**FIGURE 3: ELECTRICITY SECTOR INVESTMENTS IN NEPAL WITH PRIVATE SECTOR PARTICIPATION (US\$, MILLIONS)**



Source: PPI Database 2018.

Note: IPP = independent power producer; NEA = Nepal Electricity Authority; PPI = private participation in infrastructure.

lej Jal Vidyut Nigam Limited with the backing of the Indian government, has reached financial closure and is under construction. The US\$1 billion project has a 30 percent equity contribution from Sutlej Jal Vidyut Nigam Limited. Indian and Nepalese commercial banks are providing 60 and 10 percent of the debt financing, respectively. Under the terms of the agreement of the project, Nepal will receive 22 percent of the electricity generated by the project as free power. Sutlej Jal Vidyut Nigam Limited will hand over the project to Nepal after 25 years. Although the project has faced many challenges, this is an important milestone and achievement for the expansion of the sector in Nepal and the region, and, at a high level, this model has key features that can be replicated successfully to facilitate other such developers. The government has also signed a Project Development Agreement for the development of the 950 MW Upper Karnali project with India's GMR Group, which is seeking to reach a PPA with Bangladesh.

**Domestic commercial banks have provided local currency debt to projects led by the domestic private sector.** Nepal's central bank requires the country's banks to lend at least 5 percent of their loan portfolio to hydropower. Yet, only about 4 percent of their loan portfolios, or US\$784 million, was channeled to the hydropower sector as of FY2018,<sup>18</sup> indicating some upside potential in the domestic debt market (table 4). However, the willingness and ability of local financial institutions to finance hydropower projects is limited. Local banks are constrained in financing

17 These include the 50 MW Upper Marshyangdi Hydro Electricity Project 'A' and Kabeli A hydropower project.

## BOX 2: CURRENT DOLLAR-DENOMINATED PPA AND FOREIGN EXCHANGE RISK HEDGING MECHANISMS

**Current dollar-denominated power purchase agreements (PPAs).** In 2017, the Nepal Electricity Authority (NEA) adopted new guidelines on foreign currency-denominated PPAs and subsequently signed partly dollar-denominated PPAs with two new projects: the 216 megawatt (MW) Upper Trishuli Project and the 120 MW Rasuwa-Bhotekoshi Hydropower Project. Under these new dollar-denominated PPAs, in addition to the coverage of the debt financing being limited to the first 10 years of operation and the portion of foreign debt financing, the developers/shareholders' equity investments are fully exposed to currency devaluation risk. Furthermore, as currently structured, the terms of the recent dollar PPAs require equity investors to share one-third of the NEA's exposure to limited dollar purchase obligations by making additional financial contributions to a hedging mechanism or to foreign exchange risk exposure of the NEA. Dollar-denominated PPAs with this risk allocation and level of exposure for the developers have not been seen elsewhere.<sup>a</sup> The current risk allocation is not likely to be adequate to attract investment by sponsors in foreign currency. Nevertheless, compared with the sector's trajectory over the past 15 years, the structure is progressing in the right direction.

**Foreign exchange risk hedging mechanisms.** The Government of Nepal is keen to establish a hedging mechanism for better management of foreign exchange risks in the sector. One current proposal where foreign financiers would lend to Nepal Rastra Bank, which would then onlend to the beneficiary projects through a commercial bank, has several structural flaws and cannot be implemented. Another concept that is currently under discussion—a hedging facility (or “hedge fund”) approach, in which developers/lenders are also required to participate—is complex and has not been observed in power sectors in other countries.

**Global experience.** Global experience has shown that as countries are able to establish contractual structures to attract foreign direct investment, the developers are willing to take an increasingly greater proportion of currency devaluation risk on their equity investment. Foreign exchange risk management of the remaining investment—whether through a pass-through to the end-consumer or a government subsidy—is often managed at the sector/country level rather than at each individual project level (except in countries where long-term, cross-currency swap markets exist).

long-term hydro projects with their mostly short-term deposits. Moreover, local financial institutions perceive hydropower to be riskier than other sectors. Banks have a small capital base, which limits lending to individual projects. Currently, given prudential norms, including the single-borrower limit, local banks are unable to finance projects above US\$40 million.<sup>19</sup>

**Nepal's institutional investors have shown a growing appetite for hydropower investments.** Their exposure to hydropower investments stood at about US\$300 million as of FY2017, about 8 percent of

the investments in hydropower during this period. Institutional investors have provided debt and equity financing to hydropower projects developed by NEA subsidiary companies. The Employees Provident Fund, which manages the pensions of government and army staff, is the most prominent of these investors, followed by Citizens Investment Fund and Rashtriya Beema Sansthan. Given that the combined asset size of the local institutional investors is more than 15 percent of GDP (US\$4 billion), there is potential to mobilize higher amounts of financing from Nepal's institutional investors by addressing regulatory and institutional barriers.

<sup>18</sup> Since some banks meet their hydropower lending requirements through short-term import letters of credit, not all of this is long-term loans for hydropower projects.

<sup>19</sup> The single-borrower limit of 50 percent of the banks' equity capital constrains lending from many of the banks and necessitates lending from a consortium of banks for projects above US\$40 million.

Nepal's capital market had a limited role in mobilizing sector investments during this period, although it could become an important source of funds. The government is keen to establish broad-based ownership of the country's hydro assets through the stock market under its "People's Investment in Nepal's Water Resources" program. From 2010 to 2017, 11 hydropower companies went public and raised approximately US\$19 million through their IPOs from the public and another US\$10 million from local communities. The IPOs of another 10 hydropower companies, including three NEA subsidiaries, have been completed or were underway in 2018 and could raise another US\$50 million from the share market. The market capitalization ratio of the hydropower sector (US\$624 million) to the total market capitalization

(US\$13.2 billion) in Nepal is around 4.7 percent; 19 of the 242 listed companies in the Nepal Stock Exchange are hydropower companies.

Nepal's bond market is underdeveloped and dominated by government securities. To meet short-term financing needs, the government issues short-term Treasury bills and national savings certificates. The government also issues longer-tenor instruments, development bonds, which are admitted for trading through the Nepal Stock Exchange. However, development bonds are rarely traded, and the size of the bond is small to satisfy institutional investor demand. Moreover, under the prevailing market conditions, fixed deposits with banks provide the highest rate of return compared with government securities and are

TABLE 4: SOURCES OF FINANCING IN THE ELECTRICITY SECTOR (US\$, MILLIONS)

Institution	Instrument	Benchmark fund	Hydro Financing	Share (%)	Comments
Commercial banks	Debt	21,717	784	4	FY2019 monetary policy requires 5% of total loan portfolio of commercial banks to be in hydropower. If a PPA has been signed, banks can invest up to 50% of their core capital in a single project; 25% of core capital otherwise.
Insurance companies	Equity & debt	1,643	20	1	Insurance companies can have up to 5% of their total investments in hydropower projects as share capital.
Employee Provident Fund	Equity & debt	1,070	230	21.5	Investment up to a maximum limit of 25% of issued debentures. Provides loans to companies against guarantees of banks or financial institutions. Investment in any area against securities or guarantees and after obtaining the government's approval.
Citigen Investment Trust	Equity & debt	920	28	3	Invest in securities up to 20% of share capital of the company or 20% of Investment Fund of CIT, whichever is lower. Invest in a consortium with banks up to 20% of total fixed assets (up to 50% if company owned by Government of Nepal) or 20% of Investment Fund of CIT, whichever is lower.
Hydroelectricity Investment and Development Company Limited	Equity & debt	99	50	50	HIDCL can invest in a consortium with banks up to 25% of its capital fund. Company can invest up to 20% in the hydropower company's shares or 25% of its capital fund, whichever is lower. Company can invest up to 25% of its capital fund in hydropower project as loans, bonds, or debentures.

Sources: NRB Annual Report 2018, Economic Survey 2018, EPF Annual Report 2018, CIT Annual Report 2018, World Bank estimates.

Note: CIT = Citigen Investment Trust; EPF = Employees Provident Fund; HIDCL = Hydroelectric Investment Development Company Limited; PPA = power purchase agreement.

thus an obvious choice for investment managers. The government has on several occasions taken the initiative to mobilize funds by issuing remittance and foreign employment bonds targeted at overseas Nepalese, but, due to poor design and marketing, these have been undersubscribed.

**Nepal is embarking on a significant infrastructure expansion program in the electricity sector that will require two to four times the level of investment achieved in the recent past.** This expansion program seeks to correct the chronic underinvestment in the sector over many decades, which left the country with a severe electricity crisis and substantial suppressed demand. The Government of Nepal envisions roles for the public and private sectors in the infrastructure expansion, based on their respective comparative advantages. The NEA has signed local currency PPAs for more than 2,000 MW of new capacity under these guidelines with the domestic private sector. Most of these projects are looking to reach financial closure or are in the early stages of construction. The NEA anticipates developing more than 4,000 MW of hydropower projects between 2020 and 2030 through subsidiary companies.

**This will require a paradigm shift in the way Nepal approaches energy sector financing.** Recently, Nepal has poorly utilized the public and private sources of financing available to the sector. Prolonged political instability and poor governance have undermined public investments and de-incentivized private investment. On average, power sector projects have taken more than nine years to implement. The efficiency of power sector investments has been low, with an Incremental Capital-Output Ratio of 29 for the power sector as opposed to 5.2 economywide. The financial viability of the sector has been weak in the past, undermining the bankability of power projects. The institutional and regulatory framework has been inadequate. These factors have increased the risk perception of the electricity sector and limited the amount of commercial and private sector financing available to the sector. However, the return to political stability, the government's ambitious plan to increase generation capacity, and recent improvements in the dollar-denominated PPA structure are encouraging and steps in the right direction for greater pri-

ate sector interest and may lead to additional foreign investment.

**The specific risk characteristics of large hydropower mean that the public sector will need to have a strong role in developing these projects.** All electricity projects face common issues. However, large hydropower faces additional risks and constraints resulting from: (i) site specific nature of the projects; (ii) high construction risk and long construction periods; (iii) the capital-intensive nature and long payback periods; (iv) broader water management constraints; (v) environmental and social issues; (vi) political sensitivities; (vii) multipurpose benefits such as irrigation for agriculture; and (viii) unpredictable hydrology and geology. Many of these risks (e.g. i, ii, iii, v, viii) have been managed successfully by experienced private sector developers globally but the public sector may retain a critical role in: (i) the preparation and due diligence of large hydropower projects; (ii) the development of realistic public-private risk-sharing arrangements; (iii) targeted long-term financing support; (iv) broader water management; (v) land acquisition in some cases; and (vi) management of multipurpose benefits (see box 3 on international experience with large hydropower and box 4 on private sector specifics). The specific context of Nepal will determine the final structure that prevails.

## Binding Constraints to the Scale-Up of Financing

**To achieve its sector goals, Nepal needs to achieve a twofold to fourfold increase in investments.** It will be critical for Nepal to address the constraints that are currently limiting the scale-up of financing in the electricity sector. Constraints in four main areas affect the mobilization of additional finance in the sector: (i) capacity and the enabling environment, (ii) financial viability, (iii) availability of long-term financing, and (iv) foreign investments.

**The seasonality of Nepal's hydro sector offers win-win opportunities for Nepal and its neighbors but requires substantial investments and regulatory and institutional reforms.** Once the extensive pipeline of run-of-the-river projects comes online by 2020, Nepal could have a surplus in the wet season but a shortage in the

dry season. Electricity trade with its neighbors would improve the efficiency and reliability of Nepal's electricity system in a cost-effective way. Furthermore, Nepal could benefit from the growing market for hydropower to provide ancillary services to balance variable renewable energy resources, such as solar and wind in India.

### Constraints Affecting Capacity and the Enabling Environment

Nepal is embarking on a significant infrastructure expansion program at a time when local capacity to undertake these investments is limited and the efficiency of sector investments is low. Two decades of conflict and political instability together with depletion of pay and benefits have sapped the morale and culture of government agencies. There has been a massive outmigration of skilled and unskilled labor. There is a scarcity of medium-to-high-skilled technical and managerial workers in Nepal, and this poses a challenge for the sector expansion program. Nepalese firms will increasingly need to compete at the regional and international levels for expertise and talent.

Strict visa regulations for foreign workers, the lack of a distinction between temporary and permanent movements of workers, and the nontransparent and expensive visa process exacerbate the situation. Lack of international developers in the recent past has also reduced the knowledge transfer that took place with the early IPPs.

There is a need to build the capacity of new public sector agencies in the electricity sector and assist them in leveraging additional financing, including private and commercial. The government has established new institutions in the electricity sector—NEA subsidiary companies, Electricity Generation Company Limited (EGCL), National Grid Transmission Company Limited, Nepal Power Trading Company Limited (NPTCL), and Nepal Engineering Services Limited—to support the infrastructure expansion program (see box 5 on building effective institutions). NEA subsidiary companies have mobilized substantial resources to develop priority hydropower projects, but they need capacity building to manage risks and complete complex hydropower

#### BOX 3: INTERNATIONAL EXPERIENCE WITH LARGE HYDRO PROJECTS

Given their unique risk characteristics and the additional work and time involved in structuring and delivering a public-private partnership project, most large hydro projects in the world have historically been publicly financed. More than 70 percent of the hydro projects that are larger than 100 megawatts and were commissioned between 2014 and 2016 involved some form of public ownership; 90 percent of the largest were exclusively public projects. The private sector proportion increases as the scale diminishes.

OWNERSHIP	PROJECTS COMMISSIONED, 2014–16	SHARE (%)
Wholly public	42	58
Wholly private	21	29
Public-private	1	1
Foreign state-owned enterprise involvement		11

Source: International Hydropower Association 2017.

Benefits of project phasing. Given high capital expenditure costs and long construction times, interest during construction can significantly increase the cost of the project when financing is committed before it is required. Sequential financing can help remedy this, where the funding is raised when required. Of the 10 largest hydropower projects in the world, eight have been constructed in more than one phase, thereby raising financing in sequences and using early generation as a source of income. For instance, in the case of the Grand Renaissance Dam, the Government of Ethiopia is progressively raising bonds to finance different phases of the project. Similarly, the Government of Pakistan is using sequential financing to develop the Dasu hydropower project. A phased approach can be adopted by public and private sector projects to save on interest during construction.

## BOX 4: PRIVATE SECTOR EXPERIENCE WITH LARGE HYDRO PROJECTS

With power market liberalization and increased private sector participation in emerging markets over the past few decades, governments have welcomed private developers to develop, finance, construct, and operate hydropower projects, including large hydropower projects around the world. There are several such examples, including many financed by International Finance Corporation, such as the 500 megawatt (MW) Pangu Hydroelectric project in Chile, the 500 MW Boyabat project in Turkey, and the 690 MW Barra Grande project in Brazil. Since 2000, 54 gigawatts (GW) of large hydropower projects have been developed with private sector participation in World Bank markets, with investment volume totaling over US\$73 billion.<sup>a</sup> Among the larger examples is the 3,000 MW Engie-sponsored Jirau project in Brazil.

Given the geological, hydrological, seismic, environmental, social, and other complexities and associated uncertainties related to the construction of hydropower projects, cost overruns and construction delays are a common feature of greenfield projects. Governments and public sector utilities have been able to allocate a significant portion of such risks to the private sector in hydro independent power producers, alleviating the risk to the public sector and end-consumers. For private developers and lenders, managing such risks has required thorough project as-

a. World Bank PPI database.

essment, careful selection of parties with strong experience in hydro development, and significant engagement in project implementation and supervision. Furthermore, robust contingency and sponsor support arrangements have helped to mitigate financing risk. With the right approach and the right sponsors, private developers and lenders have helped drive success in the development and execution of private sector-led hydropower projects. Although the risks are more pronounced in hydro development, project sponsors have a strong financial incentive to deliver projects on time and on budget, which also helps to align interests.

The most successful projects are often those that are cost competitive in the country's power generation mix and have low cost overrun risks or highly committed sponsors, falling into one of the following categories: (i) greenfield hydros with limited underground works (for example, the 250 MW Bujagali project in Uganda); (ii) privatization and/or rehabilitation/expansion of existing hydros, where rehabilitation/expansion requires limited underground works (for example, the 404 MW Vorotan hydro project in Armenia); and (iii) more complex greenfield projects with highly committed sponsors that have the technical sophistication, balance sheets, and dedication to address problems as they arise (for example, the 300 MW La Higuera and La Confluencia projects in Chile, where Norway's Statkraft played such a role in a commercially-driven structure, voluntarily injecting additional equity and expertise when it was needed most).

**Table 1 - Breakdown of investment in PPI database for all countries**

Type	Investment (\$ million)	Capacity (MW)	Share of investment	Share of capacity
Foreign SOE	16591.7	9844	23%	18%
PPP	40488.18	31330	55%	58%
Private	16417.09	13155.4	22%	24%
<b>Grand Total</b>	<b>73496.97</b>	<b>54329.4</b>	<b>100%</b>	<b>100%</b>

**Table 2 - Breakdown of investment in PPI database for IDA countries**

Type	Investment (\$ million)	Capacity (MW)	Share of investment	Share of capacity
Foreign SOE	13987	8614	87%	91%
PPP	2160	900	13%	9%
<b>Grand Total</b>	<b>16147</b>	<b>9514</b>	<b>100%</b>	<b>100%</b>

## BOX 5: BUILDING EFFECTIVE INSTITUTIONS

The performance of institutions depends not just on formal organizational rules and structures, but also the informal norms and incentives of people responsible for implementing these rules. Once poor systems are in place, they can be very difficult to dislodge. Strong interests develop in maintaining the status quo, however inefficient or unfair.

Therefore, institution-building efforts must focus on shaping incentives in addition to providing knowledge, training, and modern equipment. Effective institutions need to be incentive compatible. Institutions with internal enforcement mechanisms are effective because there is a mutually recognized system of rewards and penalties. An important issue in the design of public institutions is ensuring that the incentives that are created lead to desired behavior.

Source: World Development Report 2017.

projects on time and within budget. EGCL needs to be developed as a specialized agency with in-depth technical and project development expertise in storage hydro projects, which the NEA and IPPs currently lack. NEA subsidiary companies and EGCL need to be enabled to leverage additional financing from different sources, including private and commercial, for the development of the sector.

**The public investment management and planning process is highly inefficient and has recently failed to deliver completed productive assets and infrastructure on time.** Power sector projects on average have taken more than nine years to finish, significantly longer than international benchmarks. Investments are selected on a project-by-project basis without adequate consideration of the technical and economic merits of the projects or coordination with other investment decisions. The use of formal river basin plans and least-cost plans to inform the priority order of investments is absent. The public investment management process in Nepal is relatively weak compared with similar countries. Nepal has failed to enforce public investment management features such as project selection and budgeting, project implementation, adjustment of projects in construction, and ex post evaluation.

**The private sector is eager for a greater role in the development of the sector but lacks a level playing**

**field against the NEA.** NEA functions include power generation and system dispatch in addition to owning and operating the national transmission and distribution system. Private IPPs are expected to bring large-scale investments into hydropower generation, but they are at a disadvantaged position in transmission access, dispatch, and PPA negotiations with the NEA, which prioritizes its own power plants. Private developers do not have unfettered access through the transmission system to large buyers in the domestic and regional markets and are thus not able to develop projects without a PPA with the NEA.

**The absence of a strong, transparent, and professional regulatory agency has increased the risk perception of the sector among investors.** A strong regulatory system is designed to ensure fair treatment of customers and investors. It gives confidence to investors that their investments will be safeguarded to earn a fair return. Despite consensus on the need for an independent regulator, Nepal had not been able to establish one for the past decade. Nepal's Parliament passed the enabling legislation for an independent regulatory agency in September 2017. The regulator needs to be operationalized to ensure the development of a receptive investment climate. In Nepal's context, it is urgent that the regulator comes up with guidelines on electricity tariffs, transmission pricing, grid code, and open-access/third-party access, to send the right signals to investors and facilitate competition in the sector.

### Constraints Affecting Financial Viability

The financial viability of the sector needs to be strengthened to enable it to mobilize the resources it needs from debt and capital markets. The financial situation of Nepal's electricity sector has been very weak in the past. In the years leading to FY2017, the NEA posted large losses due to below-cost retail electricity tariffs and high system losses. The NEA's cumulative losses between 2008 and 2016 (US\$643 million) equaled 3 percent of GDP (figure 4).<sup>20</sup> T&D losses in Nepal, at 25.8 percent in FY2016, were significantly higher than regional and international benchmarks. This severely limited the NEA's ability to make new investments and sign PPAs with IPPs, which contributed to the country's electricity sector crisis. After 10 years, the NEA turned from operating at a loss to a profit in FY2017, largely because of a 14 percent increase in tariffs and implementation of a financial restructuring plan. Yet, a sustained focus on increasing revenue, reducing system losses, and financing costs will be needed in the coming years to enable the NEA to meet its PPA obligations and maintain robust financial health.

This will mean developing a framework and capacity for electricity trade with Nepal's neighbors. Electricity trade will have an important role in improving the affordability of electricity in Nepal and ensuring the financial viability of the sector. The average cost of electricity in Nepal's electricity system is projected to be at least 30 percent lower with electricity trade than otherwise. Without a strong institutional and regulatory framework to manage the country's electricity trade, Nepal will not be able to find markets for its surplus generation in the wet months and cheap imports in the dry season. As a result, the average cost of electricity served to Nepal's consumers would increase, which could adversely affect the sector's financial viability. Nepal currently lacks a dedicated institution to manage the country's electricity trade, and a legal and regulatory framework for electricity trade at the national and regional levels is lacking.

With financial viability, the NEA would improve its ability to mobilize financing from debt and capital markets on its own without government support.

With improvements in its operational and financial performance, the NEA would increasingly be able to raise its own capital directly from commercial banks or by issuing corporate bonds, reducing the need for direct budgetary support from the government. The NEA would need to demonstrate sound financials through a combination of efficient performance, a stable but flexible tariff regime, and reliable budget support, as quantified by an adequate credit rating from a reputable risk rating agency.

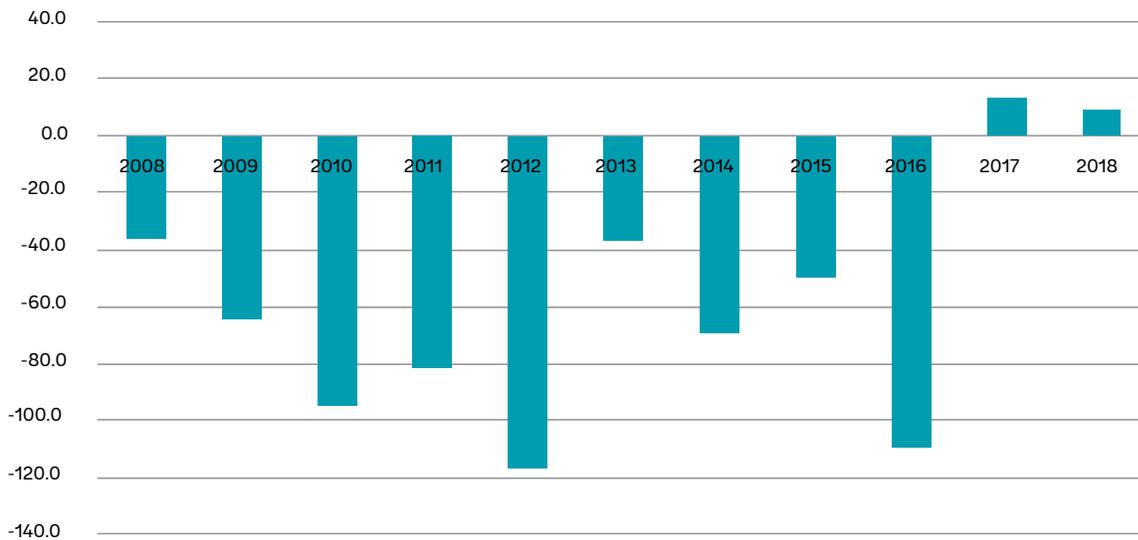
### Constraints Affecting the Availability of Long-Term Financing

The ability of banks, which dominate the financial sector, to intermediate and provide long-term finance to the electricity sector is constrained by several factors. Nepal's banks face a significant asset-liability mismatch in lending to long-term hydropower projects because of the banks' mostly short-term deposits. There is a lack of non-recourse project finance in the sector, because NRB regulations discourage non-collateral-based lending. Bank lending is further constrained by the limited capacity of banks to conduct detailed due diligence; the high-risk perception of the hydropower sector, given past cost and time overruns; high collateral requirements; and the prevailing weak standards of corporate governance, especially relating to timely corporate actions and release of information. With loan growth far exceeding deposit mobilization, electricity sector projects face high interest rates. The single-borrower limit of 50 percent of the banks' equity capital constrains lending and necessitates lending from a consortium of banks for projects above US\$40 million.

Sector-specific financiers cannot fill the gap left by commercial banks. In 2011, the Hydroelectric Investment Development Company Limited (HIDCL) was set up as a special purpose vehicle to make debt and equity investments in medium-size and large hydropower projects. It has authorized capital of US\$435 million and paid-in capital of US\$87 million. The company is majority-owned by the Government of Nepal (50 percent), with institutional investors (30 percent) and public investors (20 percent) making the

20 There was no increase in electricity tariffs between 2001 and 2012 and then again until 2016. Tariffs were perennially below the cost.

FIGURE 4: NEPAL ELECTRICITY AUTHORITY'S NET INCOME (US\$, MILLIONS)



Source: NEA Annual Report 2018.

remaining equity contributions. So far, HIDCL has provided debt and equity financing of about US\$50 million to 11 hydropower projects. The sizes of the commitments range from US\$1.7 million (Bagmati Small Hydropower project, 20 MW) to US\$5.2 million (Lower Sulu, 82 MW). Furthermore, HIDCL has invested in the Nepalese portion of the cross-border Dhalkebar-Muzaffarpur transmission line. It has incorporated a fully owned subsidiary, Remit Hydro Limited, to raise funds from the Nepalese diaspora for investment in hydro generation and transmission. Similar to domestic banks and financial institutions, HIDCL's institutional and financial capacities need to be strengthened substantially to support the infrastructure expansion program in the sector (box 6).

**Nepal's capital markets are at an early stage of development and need deepening to play a significant role in the provision of long-term finance to the electricity sector.** Long-term, committed funding for infrastructure projects is best supported by a mature and vibrant bond market. Nepal's bond market remains constrained, accounting for about 13 percent of GDP at the end of 2017. The debt market is dominated by short-term government debt, and there is no active yield curve. There are few investors in debt instruments, and Treasury instruments are bought largely by banks to satisfy statutory liquidity requirements. The lack of a reliable issuance calendar, minimal volumes

in the primary market, and negligible liquidity in the secondary market all contribute to the lack of a liquid sovereign benchmark. Nepal's policies and regulations governing the financial markets, banking sector, and government securities tend to discourage the development of the bond market. Secondary trading is negligible, due to the lack of an investor base and inadequate clearing and settlement systems. Attention needs to be given to improving laws, regulations, and supervision for bond market development.

**The equity market is shallow, limiting the government's ambitions to utilize it to mobilize investments in hydropower.** The stock market needs modernization. The Securities Board of Nepal lacks autonomy and capacity to provide effective risk-based supervision. Private equity and venture capital lack a specific legal and regulatory framework. The government has launched a program to broaden the ownership base of hydropower in the country through requirements for public projects to issue 10 percent of the shares to local communities and at least 15 percent of the shares to the public through IPOs. This investment model offers great potential to create local ownership and increase public support for hydropower projects. However, it will be important to address the widespread lack of understanding of how the market mechanism works and institute effective safeguards to reduce risk to investors and local communities.

## BOX 6: INDONESIA INFRASTRUCTURE FINANCE

PT Indonesia Infrastructure Finance (IIF) provides a model for Hydroelectric Investment Development Company Limited's future development. IIF is a quasi-private, nonbank financial institution that was established in 2010, under an initiative of the Government of Indonesia, in cooperation with the World Bank, Asian Development Bank, and other international multilateral agencies. IIF provides a wide range of long-term, fund-based products, such as senior loans, mezzanine finance, hybrid securities, refinancing, and equity investment, in addition to non-fund-based products, such as guarantees and standby finance.

To enhance IIF's project appraisal and risk management capacity, Sumitomo, Japan was introduced as a strategic investor, which helped to bring in international best practices, and staff received international training. With the improved capacity combined with deep local knowledge, IIF now provides advisory services for project planning, financial structure, risk management, policy consultation, and capacity building to the private sector in addition to its investment business.

**Local institutional investors are underdeveloped and mostly invest in short-term instruments.** The assets of insurance companies, pension funds, and mutual funds can be critical in safely funding long-term investment. There are potential domestic institutional investors, including the Employees Provident Fund, Citizen Investment Trust, and the insurance sector, with a combined asset size of around 15 percent of GDP. An important factor inhibiting the development of institutional investors is the capacity of the regulator, with priority needed on risk-based supervision along with risk-based capital, as well as stronger asset-liability management. Insurance companies need capacity building to underwrite loans to large projects and PPPs, product diversification, and price diversity.

### Constraints Affecting Foreign Investment

**Foreign exchange risks significantly constrain the attraction of foreign investment to the sector.** In recent years, the government has shown greater appreciation of the importance of foreign investment for meeting sectoral investment targets and receiving skills and knowledge transfer in the hydropower sector. The government adopted PPA guidelines in 2017 that offer partial foreign currency-denominated PPAs for projects larger than 100 MW with foreign financing, with a provision to cover the foreign debt incurred by developers through U.S. dollar-denominated payments

for 10 years. The government is also keen to establish a hedging mechanism for better management of foreign exchange risks in the sector. Although both mechanisms are progress in the right direction, as currently structured, they are not expected to be adequate to attract foreign investment (box 3).

**FDI inflows have been hurt by unclear policies, complex procedures, and inadequate investment facilitation.** Offshore funds and onshore vehicles with foreign shareholders are considered foreign investors; therefore, they require FDI approval for every new investment in a Nepalese company. FDI approvals can take several months and include lengthy processes to hire foreign workers. Many of these problems derive from practice more than from the law itself. For example, although firms are formally allowed to open U.S. dollar-denominated accounts, small firms and individuals report that this is difficult in practice. Even with such an account, it is difficult to pay for services in U.S. dollars, due to caps on the size of U.S. dollar-denominated contracts. In addition, many FDI guidelines are only available in Nepalese and have not been translated into English.

**There is limited access to foreign currency lending.** The provisions of the Banks and Financial Institutions Act make foreign currency investment and lending difficult. The central bank, the NRB, has set strict limits on lending by foreign institutions, which is al-

lowed only in the case of unavailability of domestic debt and is subject to an interest rate cap of LIBOR +5.5 percent. Moreover, foreign lenders do not enjoy the same level of protection as local banks in terms of creditors' rights. Although land and buildings are the main forms of collateral for lending, mortgaging of property in favor of foreign lenders needs cabinet approval, and enforcement of security requires a court order. Furthermore, foreign lenders are subordinated to local banks in priority of repayment, and borrowing is capped in terms of amount and pricing.

**Nepal has a complicated process for offshore capital repatriation.** Nepal has a fixed currency regime (pegged to the Indian rupee). Offshore funds require approval of the NRB to repatriate the proceeds of their divestments. Approvals are granted only for amounts calculated under valuation rules set by the regulator, not for the actual proceeds. Strict foreign exchange controls create an incentive for undervaluing transactions so that less foreign exchange leaves the country. Furthermore, despite the country's many double taxation agreements, there has been uncertainty about their enforcement, which increases uncertainty for foreign investors when exiting investments.

## Roadmap to Unlock New Sources of Finance

**A coordinated policy effort in four areas is required to meet the financing needs of the electricity sector.** Nepal's investment needs are two to four times higher than its recent investments in the sector. Nepal needs to utilize available financing, but this will not be sufficient to meet the large financing needs of the sector. To do so, the country must develop and tap into newer and larger sources of local and international financing. To seize this opportunity, the government is advised to exert a sustained and concerted policy effort in four main areas:

- Pillar 1: Build the institutional and regulatory environment**
- Pillar 2: Strengthen the financial viability of the sector**
- Pillar 3: Increase the availability of long-term finance**
- Pillar 4: Develop an enabling environment for foreign investment.**

## Build the Institutional and Regulatory Environment

**Any effort to increase financing in Nepal's electricity sector must start by improving the utilization and efficiency of available financing.** This will help lower the risk perception of the electricity sector in Nepal and enable additional sources of financing to come into the sector. By addressing the knowledge and capacity gaps in the sector and providing a level playing field to the private sector, the government will enable the private sector to increase its role in the electricity sector (see table 5).

### Address Knowledge and Capacity Gaps

- **In the private sector.** Nepal's private sector currently lacks the contractor capacity, technical and managerial expertise, project appraisal and risk management expertise, and trained workers that are necessary to undertake successfully a large infrastructure program in the electricity sector. There is a need to assess and address the workforce, contractor capacity, education, and training constraints in the sector. For FDI projects, partnerships between local developers and experienced international developers can enable development of this local capacity in the areas of project management, technology transfer, contract management, and construction methods.
- **In the public sector.** The Government of Nepal established EGCL and National Grid Transmission Company Limited to support electricity sector expansion. These institutions need to be developed into modern, capable, and efficient institutions that can attract and retain talent. At the same time, the NEA should be corporatized and modernized in preparation for its planned restructuring. It is recommended that the government ensures that the functioning of these institutions is not adversely affected by political interference, and that these institutions have the capacity and resources to deliver their mandate. Public sector companies could outsource selected operation and management functions to experienced private sector companies.
- **In public investment management.** It is advised that the government establishes a well-resourced, central coordination mechanism for the energy

sector, preferably in the Prime Minister's Office. The unit would support the following activities: (i) strategic planning, (ii) prioritization and selection of projects and maintenance of a rolling pipeline of priority infrastructure projects, (iii) coordination of government agencies and the IBN, (iv) transparent performance monitoring, and (v) preparation and implementation of initiatives in favor of private sector investment in priority infrastructure. The new mechanism would apply a clear decision-making framework to prioritize private financing and leverage scarce public resources.

- **In power system planning.** There is a need for substantial strengthening of the planning function in the energy sector and using it to inform decisions. It would be advisable for the government to complete and regularly update the river basin plan and the generation, transmission, and distribution masterplans. Moreover, there is need for a concerted effort to incorporate a culture of planning in electricity sector institutions. The NEA should introduce competitive bidding in the next wave of IPPs in hydropower and solar and bid out selected high-voltage transmission lines to the private sector using the build-and-transfer model.
- **In environment and social inclusion.** As Nepal prepares to develop large run-of-the-river and strategically important storage hydropower projects, it will need clear and consensus-based guidelines for resettlement and rehabilitation, land acquisition, and other mitigation support for people affected by the projects. It will also need strengthened and streamlined environmental and social provisions for investment. It would be advisable for the government to adopt new forest clearance guidelines, right-of-way, and gender and social inclusion guidelines and strengthen its capacity to implement these guidelines.

#### Create a Level Playing Field for the Private Sector

- **Operationalize an independent regulator.** Until now, Nepal has not had an independent electricity regulator. Nepal's Parliament approved the Electricity Regulatory Commission Act in

September 2017. The regulator is expected to set prices, ensure efficient provision of services, monitor the abuse of market power, and ensure open and fair access to the transmission system. The government is advised to develop a strong regulator, by making key appointments in the near term and supporting its institutional development in the medium term. An efficient and effective regulatory framework will help provide confidence to private investors that they will be treated fairly in a rule-based sector and help increase investments. There is a need for greater transparency and stronger regulations on the use of the NEA's transmission infrastructure by IPPs to export power. Currently, there is no transparency on how IPPs can access this physical infrastructure, and there is no regulation, for example, on wheeling charges.

- **Complete the sector restructuring process.** It is recommended that Nepal pursues structural reforms in the electricity sector to increase investments. Given the prospect of surplus generation in the wet season and the inability of the NEA to offer take-or-pay contracts to all developers, investors' access to large domestic customers and the Indian and regional electricity markets would ensure the viability of their investments. A new Electricity Act to redefine the roles and responsibilities of different sector institutions and a sector restructuring plan are crucial for ensuring unfettered access to the domestic and regional electricity markets for private developers. For instance, a single buyer could negotiate PPAs with IPPs rather than the NEA, which has its own generation assets and PPAs with semi-private subsidiaries and a potential conflict of interests. Alternatively, the government could consolidate all the public generation companies into a single entity, which would not be the off-taker for IPPs.
- **One-stop window for private sector IPPs.** It is recommended that the government sets up a one-stop window for private sector IPPs or enhances the role of IBN to act effectively as a single processing entity.

## Strengthen the Financial Viability of the Sector

Improved financial viability would increase the ability of electricity sector institutions to mobilize financing from the capital market (table 6). A financially viable sector means full recovery of the cost of electricity services, reasonable revenue for reinvestment, system losses on par with international benchmarks, and a subsidy mechanism in place to ensure affordable electricity services for the poor. This can be achieved through policy actions to improve the creditworthiness of electricity sector institutions and by strengthening the enabling conditions for electricity trade with Nepal's neighbors.

### Improve the Creditworthiness of the Sector

- **Ensure cost-reflective tariffs.** The regulator will establish a cost-reflective tariff framework to improve the NEA's financial health and provide predictability for sustainable investment in the power sector. This will improve the NEA's ability to make new investments and sign PPAs with IPPs.
- **Reduce T&D losses.** T&D losses in Nepal, at 20 percent in FY2018, have decreased in the past two years but are still significantly higher than global and regional benchmarks. To address this, the NEA should adopt and implement a Loss Reduction Masterplan. This would entail assessing baselines and targets for the technical and commercial losses in the distribution networks, appraising investment needs to reinforce and upgrade the electricity distribution system and implementing comprehensive institutional and investment measures. Loss reduction will help reduce the cost of supply and thus improve the financial viability of the electricity sector.
- **Implement the NEA's financial viability plan.** The NEA adopted a financial viability action plan in 2018 to sustain the short-term improvement and ensure the long-term viability of the sector. The NEA's financial viability action plan, with a 10-year outlook, calls for actions to optimize (i) cost through integrated generation and transmission planning, energy banking, reduction in T&D losses, and appropriate management of foreign exchange risks; and (ii) revenue through restructuring the financial arrangements between the

NEA and its subsidiaries, strengthening the power trading and export strategy, waiving past liabilities of the NEA, separating transmission and system operation functions, and implementing energy efficiency measures. Going forward, the NEA needs to update and implement the action plan on a consistent basis. Once it has established a sustained track record of positive financial performance, the NEA can explore options to be rated on local and international capital markets.

### Strengthen the Framework for Electricity Trade

- **Through new regulations and guidelines.** Electricity trading will have an important role in improving the affordability of electricity in Nepal and ensuring the financial viability of the sector. The average cost of electricity is projected to be at least 30 percent lower with electricity trade than otherwise. Adoption of electricity trading as a licensed activity in the proposed Electricity Act would facilitate electricity trading. The new electricity regulator will need to issue guidelines on transmission pricing, open-access/third-party access to the transmission system, and the grid code. Nepal would also need to harmonize its guidelines and regulations with neighboring countries.
- **Through the institutional development of NPTCL.** The Government of Nepal established NPTCL in 2016, to promote domestic and regional trade of electricity. In the short term, NPTCL will focus on bridging the supply gap through imports from India. In the medium term, once substantial generation capacity that is currently under construction comes online, NPTCL will help find a market for the surplus generation from NEA generation plants and take-and-pay IPPs. NPTCL will also have a role in maximizing the revenues from the sale of free power allocated to the Government of Nepal in various export-oriented projects and attracting viable investments by entering into commercial arrangements with sellers and buyers through back-to-back PPAs. Implementation of NPTCL's business plan will facilitate the institutional development of NPTCL. Initially, the plan will be supported by NPTCL's paid-in capital. Over time, its trading fees and income will fund NPTCL.

## Increase the Availability of Long-Term Finance

There is an urgent need to increase the availability of long-term local finance in the sector (table 7). Electricity sector projects would benefit from greater availability of long-term, fixed-interest local currency finance through the domestic debt and capital markets. Local currency financing is attractive because it helps avoid the additional risks associated with exchange rate variations and currency convertibility. Nepal's public debt level, at 30 percent of GDP, is low compared with regional and international benchmarks, indicating the potential to mobilize additional financing. Nevertheless, at present, it is not possible to mobilize significant amounts of local financing, due to variable interest rates, short tenors, inefficient regulations, and low capacity. Addressing these will call for a concerted effort to deepen and broaden Nepal's capital markets, as an alternative channel of long-term finance. Some actions for consideration are highlighted as follows.

### Address Constraints Faced by Local Commercial Banks

- **In project appraisal.** Many local banks are unfamiliar with hydropower projects. This makes it difficult for them to appraise projects and manage risks. For local banks to play a greater future role in electricity finance, it will be important to undertake capacity-building activities with the banks.
- **In non-recourse project finance.** NRB regulations need to be revised to enable non-recourse project finance where future cash flows and the assets and rights of the project are the sole collateral for lenders. Current regulations discourage lenders from taking security for loans against intangible assets. Furthermore, enabling conditions for project finance need to be developed, such as due diligence capacity, alternative financial instruments for debt and insurance products that protect against key risks during development and operations, security arrangements (getting well accustomed to the assignment rights and step-in rights in the project), and waterfall mechanisms.<sup>21</sup>

## Strengthen HIDCL and Institutional Investors

- **Increase institutional capacity.** In the near term, twinning arrangements with similar institutions, training and capacity-building project due diligence, and financial structuring are recommended for these institutions to strengthen their capacity to support hydropower development in the country (see table 1). In the medium term, the government could invite a strategic investor that can improve HIDCL's management and project appraisal capacity, and/or pursue a close partnership or combination with a domestic commercial bank. Such partnership with a commercial bank would help HIDCL: (i) take advantage of existing financial risk management and governance mechanisms in the commercial bank; (ii) improve the sectoral diversification of the collective portfolio; (iii) overcome some of the regulatory challenges, such as the need for a licensed commercial bank to deploy some of the financing; and (iv) quickly strengthen its capital base. Care must be taken not to put regulatory functions or privileged resources (such state-backed hedging facilities) within one financing institution, because this would stifle competition among financiers and give an undue advantage to one financier.
- **Support greater investment from institutional investors.** Institutional investors, such as pension funds and insurance companies, have a greater capacity to provide fixed interest rate, longer-term financing; therefore, the entities need to be incentivized to provide further financing to the sector and provided capacity-building exposure similar to domestic commercial banks. The Insurance Board should issue revised investment guidelines for insurance companies, which provide for more investment opportunities and partly address asset-liability mismatches.

## Increase Financing from Capital Markets

- **Use multilateral guarantees and other risk mitigation mechanisms.** It is recommended that the government develops a strategy to mobilize finance from capital markets, using multilateral guarantees, stapled finance structures,<sup>22</sup> and other risk mitigation mechanisms, and pilots the strategy in a national priority electricity project.

21 A cash waterfall mechanism is the basis on which the various entities have the rights on the project cash flows in a project finance transaction. The lenders monitor the project accounts and ensure that payments are made in line with the waterfall mechanism.

22 In a stapled finance structure, the entire procurement process is supported by pre-approved financing from development partners and credit enhancement structures in conjunction with the government. It is available with the option of exploring financing outside the pre-approved structure, and removes the risk of financing for the bidders.

TABLE 5: BUILD THE INSTITUTIONAL AND REGULATORY ENVIRONMENT – RECOMMENDED ACTIONS

KEY CONSTRAINTS (RESPONSIBILITY)	SHORT-TERM ACTIONS	MEDIUM-TERM ACTIONS
<b>LIMITED CAPACITY AND KNOW-HOW IN THE SECTOR</b>		
<b>Private sector</b> (MOEWRI)	Prepare diagnostic and strategy to address capacity constraints in the private sector.	Implement the strategy.
<b>Public sector</b> (MOEWRI)	<p>Prepare business plans for new electricity sector institutions such as EGCL and RPGCL.</p> <p>Carry out an organizational stocktaking and diagnostic of NEA.</p> <p>Corporatize distribution companies and explore options for private sector participation.</p> <p>Develop a robust and transparent bidding framework for procuring energy projects by PPP, including developing internationally bankable PPAs and Project Development Agreements.</p> <p>Adopt competitive bidding guidelines for hydropower and solar.</p>	<p>Implement the business plans.</p> <p>Implement the recommendations of the NEA diagnostic.</p>
<b>Public investment management</b> (MOF/MOEWRI)	Establish a central coordination and investment management mechanism for energy projects.	Implement mechanism to ensure close coordination between federal and provincial entities in implementation of energy projects.
<b>Planning</b> (NEA/ERC)	<p>Prepare the river basin plan.</p> <p>Prepare least-cost generation masterplan.</p> <p>Prepare distribution masterplan.</p>	<p>Monitor and update the plans.</p> <p>Use competitive bidding for next wave of hydro and solar IPPs.</p> <p>Use a build-and-transfer model to develop transmission projects with private sector participation.</p>
<b>Environment and social</b> (MOFEP/NEA/MOF)	Adopt improved land acquisition, forest clearance, right-of-way, and gender and social inclusion guidelines.	Strengthen the capacity of relevant agencies to implement these guidelines.
<b>ABSENCE OF LEVEL PLAYING FIELD FOR THE PRIVATE SECTOR</b>		
<b>Independent regulator</b> (MOEWRI/ERC)	<p>Appoint ERC Chairman and Commissioners.</p> <p>Prepare ERC Business Plan</p>	Implement ERC Business Plan that covers the points above on fixing a new tariff-setting mechanism for IPPs and establishing power-wheeling charges for the use of NEA transmission facilities.
<b>Sector restructuring</b> (MOEWRI)	<p>Prepare and approve the new Electricity Act</p> <p>Issue a sector restructuring plan.</p>	Complete the separation NEA's generation, transmission, and distribution business under a holding company structure. Clarify how the entities created from unbundling NEA relate to the existing public sector companies EGCL and RPGCL.

Note: EGCL = Electricity Generation Company Limited; ERC = Electricity Regulatory Commission; IPP = independent power producer; MOEWRI = Ministry of Energy, Water Resources, and Irrigation; MOF = Ministry of Finance; MOFEP = Ministry of Finance and Economic Planning; NEA = Nepal Electricity Authority; PPA = power purchase agreement; PPP = public-private partnership; RPGCL = Rastriya Prasaran Grid Company Limited.

TABLE 6: IMPROVE THE FINANCIAL VIABILITY OF THE SECTOR – RECOMMENDED ACTIONS

KEY CONSTRAINTS(RESPONSIBILITY)	SHORT-TERM ACTIONS	MEDIUM-TERM ACTIONS
<b>POOR CREDITWORTHINESS OF ELECTRICITY SECTOR INSTITUTIONS</b>		
<b>Cost-reflective tariffs</b> (ERC)	Issue new electricity tariff guidelines.	Approve tariff revisions annually based on tariff guidelines.
<b>Loss reduction</b> (NEA)	Approve the Loss Reduction Masterplan.	Implement the masterplan.
<b>Financial viability plan</b> (NEA)	Prepare NEA to access capital and debt markets on its own by implementing the NEA financial viability action plan.	Explore options to get a credit rating for the NEA and its subsidiary companies.
<b>WEAK ENABLING FRAMEWORK FOR ELECTRICITY TRADE</b>		
<b>Regulations and guidelines</b> (MOEWRI/ERC)	Adopt electricity trading as a licensed activity. Issue open-access guidelines, transmission guidelines, and grid code.	Harmonize with regional trading guidelines and codes.
<b>Institutional development of NPTCL</b> (NEA/MOEWRI)	Adopt NPTCL business plan and operating procedures.	Commence power trading through NPTCL.

Note: ERC = Electricity Regulatory Commission; MOEWRI = Ministry of Energy, Water Resources, and Irrigation; NEA = Nepal Electricity Authority; NPTCL = Nepal Power Trading Company Limited.

- Pursue divestiture/equitization of public entities/assets.** As part of the sector restructuring process, it is recommended that the government pursues equitization of NEA generation assets. As a growing number of generation plants developed by NEA subsidiary companies become operational, this strategy can also be extended to them. This would allow the government to release and recycle some of its capital for new T&D projects, while also providing the opportunity to generate investor and lender interest in operating assets in addition to greenfield IPPs. As part of its equitization/divestiture strategy, it would be advisable for the government to develop a comprehensive asset recycling framework and create an enabling environment for asset recycling tools (figure 5), including stock market modernization and capacity building.
- Implement a bond market development roadmap.** The government is advised to adopt and implement a bond market development roadmap to enable raising bonds from domestic and foreign markets (that is, diasporas) for the electricity sector. Progress on this agenda will be vital to provide channels for longer-term finance in the sector. Among the critical steps to be taken are (i) developing short-term benchmark interest rates, (ii) taking measures to increase liquidity in the longer end of the government bond market, and (iii) plugging regulatory gaps. The roadmap

FIGURE 5: DEVELOPING AN ASSET RECYCLING FRAMEWORK



Source: World Bank 2018

should investigate options for project companies and special purpose vehicles to issue bonds.

- **Reduce transaction costs in the stock market and improve communication.** To reduce the cost of owning shares in hydropower projects for local communities and the public, the government is advised to decentralize the current brokerage service, by requiring current brokers to offer services at the district level and allowing banks to provide this as an additional service. The government is advised to prepare and implement a well-designed communication program targeted at retail investors and local communities on the obligations, risks, and opportunities of investing in the capital market and specific hydropower projects.

### Create an Enabling Environment for Foreign Investment

The large investment needs of the sector mean that public and local financing alone will not be sufficient, and foreign investment and financing will be needed (table 8). There is a need to mobilize foreign investment and financing for large hydropower projects, utility-scale renewable energy projects, and transmission projects, while closely monitoring the fiscal commitments and contingent liabilities that arise from such arrangements. To increase the role of foreign investors and financiers in the sector, it is recommended that the government undertakes policy actions in the following areas.

### Manage Foreign Exchange Risk

- **Manage forex risk through foreign exchange risk mitigation mechanisms.** The risks of foreign exchange movements should be shared between the developer, the end-user, and the Government of Nepal. The regulator should incorporate provisions in electricity tariff guidelines that allow automatic pass-through of normal foreign exchange devaluation costs in electricity tariffs. For catastrophic devaluation of currency, it is recommended that the government considers a structural solution, such as establishing a facility like the Petroleum Products Price Stabilization Fund, to bear this risk. Other mitigation mechanisms that the government could consider include implementing rupee-based PPAs,

with foreign exchange indexation reflecting the actual foreign exchange risk being passed through and maximizing local content with partial or full take-out financing after completion, provided this can be done cost-effectively. Until Nepal's capital markets are sufficiently developed to support market-based hedging instruments, such as cross-currency swap transactions, the NRB currently plans to establish a hedging facility to reduce foreign currency risks and expects this will help attract foreign finance for projects (see box 3 for discussion on challenges and issues with currently proposed mechanisms).

### Facilitate Foreign Investment and Financing

- **Establish a one-stop window for clearances.** To ease and expedite the private investment approval process for large projects, it is recommended that the government implements a single window for obtaining all government clearances for private sector investments above NPR 10 billion (equivalent to US\$88.5 million). The window should make all policies, laws, and regulations related to FDI available in English and facilitate the efforts of foreign investors to comply with them. Given that past efforts at establishing a single window have not been successful, it will be important to learn from experience. The single window must be well resourced and have political support at the highest levels of the government.
- **Remove barriers to foreign currency borrowing.** To facilitate borrowing in foreign currency, it is recommended that the government addresses foreign lenders' rights by facilitating the enforcement of collateral through local agent banks, and eases limits on foreign currency borrowings. This will enable greater participation by foreign lenders and access by investors to broader and competitively priced sources of funding. To ease restrictions on foreign ownership and borrowings by domestic investors, the government would facilitate foreign exchange-related transactions, including foreign investment-related funds transfer and repatriation, and promote the orderly development of a foreign exchange market.

TABLE 7: INCREASE THE AVAILABILITY OF LONG-TERM FINANCE – RECOMMENDED ACTIONS

Key constraints (Responsibility)	SHORT-term actions	Medium-term actions
<b>Limitations of domestic financing institutions</b>		
Project appraisal (NRB)	Implement a capacity-building program for domestic banks on project appraisal of hydropower.	
Project finance (NRB)	Make legal and regulatory revisions to enable non-recourse project finance and issue a Code of Practice for Project Finance.	Pilot non-recourse finance in a national priority project .
<b>Limited institutional and financial capacity of HIDCL and Institutional Investors</b>		
Institutional capacity (MOEWRI/HIDCL/MOF)	Undertake twinning arrangements for HIDCL with similar institutions in more advanced countries and carry out capacity building and training for HIDCL staff.	Use strategic investors and/or a partnership or combination with a domestic commercial bank to improve HIDCL's risk management and project appraisal capacity.
Financial capacity (HIDCL/Insurance Board/ MOF)	Adopt a capital increase plan for HIDCL.  Issue revised investment guidelines to increase investment opportunities for insurance companies and partly address asset-liability mismatches.	Strengthen the capital base of HIDCL through additional equity infusions from the Government of Nepal and/ or development partners and/or other strategic investors and/or a partnership or combination with a domestic commercial bank.  Adopt regulations related to asset-liability management and solvency capital requirements of insurance companies.
<b>Limited financing from capital markets</b>		
Multilateral guarantees  Stapled finance structures (MOF/MOEWRI)	Develop a strategy to raise financing for the sector from international and/or local capital markets using multilateral guarantees, stapled finance structures, and/or other risk mitigation instruments.	Pilot the use of multilateral guarantees, stapled finance structures, and/or other risk mitigation instruments to raise financing from capital markets in a national priority project.
Equitization (MOF/MOEWRI/NEA)	Prepare a strategy to pursue equitization of public shareholding in generation entities/assets (including an asset recycling framework) in the electricity sector.	Implement the strategy and framework.
Bonds (MOF/NRB)	Prepare and adopt a bond market development roadmap with a medium- and long-term vision.	Implement bond issuances (such as hydro and diaspora bonds) to meet financing needs in the electricity sector according to the calendar laid out in the roadmap.
Stock market (MOF/Securities Board of Nepal)	Prepare and implement a communication program on share investments in hydropower targeted at retail investors and local communities.	Decentralize brokerage service by requiring current brokers to offer services at the district level and allowing banks to provide this as an additional service.

Note: HIDCL = Hydroelectric Investment Development Company Limited; MOEWRI = Ministry of Energy, Water Resources, and Irrigation; MOF = Ministry of Finance; NEA = Nepal Electricity Authority; NRB = Nepal Rastra Bank.

TABLE 8: INCREASE FOREIGN INVESTMENT – RECOMMENDED ACTIONS

Key constraints (Responsibility)	SHORT-term actions	Medium-term actions
<b>Foreign exchange risk</b>		
<b>Risk mitigation mechanisms</b> (NRB/MOEWRI)	Adopt foreign exchange hedging guidelines. Develop appropriate and enabling guidelines for addressing the foreign exchange risks in IPPs with FDI components, including a relevant review and recommendations by an international expert.	Include provisions allowing pass-through of foreign exchange costs in electricity tariff guidelines. Establish stabilization fund to smooth tariff increases in the case of catastrophic devaluation.
<b>Foreign investment and financing</b>		
<b>Foreign currency borrowing</b> (MOF/NRB)	Adopt regulations to facilitate equitable treatment of foreign lenders and increase limits on foreign currency borrowings.	Ease restrictions on foreign ownership and borrowing by domestic investors and broaden the scope of foreign currency transactions. Simplify foreign exchange repatriation guidelines.
<b>One-stop window</b> (MOF/IBN)	Adopt a framework to manage large PPP investments through a one-stop shop.	Use the framework to implement a national priority project in the electricity sector.
<b>Legal system</b> (MOLJP)	Implement a capacity-building program to improve the capacity of the legal system to manage FDI issues and disputes.	

Note: FDI = foreign direct investment; IBN = Investment Board of Nepal; IPP = independent power producer; MOEWRI = Ministry of Energy, Water Resources, and Irrigation; MOF = Ministry of Finance; MOLJP = Ministry of Law, Justice and Parliamentary Affairs; NRB = Nepal Rastra Bank; PPP = public-private partnership.

- **Strengthen the legal system.** To increase foreign investors' confidence, along with harmonizing legal and regulatory inconsistencies and improving the legal framework for FDI, it is recommended that the government implements a capacity-building program to equip the current legal system with experts capable of handling FDI-related issues and disputes.
- **Listen to investors' concerns.** To tap the vast amounts of foreign capital, it is also important to listen to investors' concerns about the current dollar PPA/project development agreement and the gaps therein, and to consider improving certain aspects for improved bankability and attracting greater FDI. To this end, the sector would benefit from a review of the dollar-denominated PPA structure by an international expert, recognizing the country's generation expansion needs and domestic funding and development constraints.



# Reforming the Transport Sector

## Introduction

The transport sector is vital for Nepal's development. Safe roads and airports help connect the population to markets and opportunities. The tourism sector, which contributes over 8 percent to Nepal's GDP and is therefore one of the country's biggest job creators, also relies heavily on adequate connective infrastructure. Currently, however, the roads are often congested and not properly maintained, which often results in high vehicle operation cost. The country's only international airport has exceeded capacity and the road network does not adequately connect tourism areas.<sup>23</sup> Consequently, the population pays higher prices for basic daily goods and services. Therefore, the key objective of Nepal's transport sector in the medium term will be to address chronic underinvestment to improve connectivity, reduce travel time, and improve safety.

**Sustainable and affordable transport infrastructure is necessary for Nepal, and it will require judicious use of public and private sector resources.** This will take place in the context of the new federal system: Nepal's new Constitution places national highways, railways, national transport policy, civil aviation, and international airports under the federal government's responsibility. Provincial governments manage provincial highways and provincial-level transport. Local-level governments are responsible for local-level roads in urban and rural municipalities, including agricultural roads.

**This roadmap attempts to lay the groundwork for improving the transport infrastructure environment in the short and medium term.** To provide safe and reliable means for movement of people and goods, there is an urgent need to assess the key challenges in Nepal's transport sector, identify opportunities to address the gaps, and formulate an action plan to overcome them by mobilizing untapped potential for harnessing private sector capital and efficiencies.

Nepal's road network comprises two major networks: the central road network and the local road network. The largest component of the central road system is the Strategic Roads Network, which includes national highways, including Asian Highways, as well as feeder roads and a few urban roads of national importance. The local road network comprises urban roads and local roads, including agricultural roads within the districts, and roads in urban and rural municipalities. The local road network is not discussed in this report.

This report focuses on three selected subsectors, the Strategic Roads Network (SRN), airports, and urban transport. For roads, achieving all-weather connectivity to district headquarters, ensuring adequate lane capacities in all high-density highways, and improving road safety are crucial goals. For airports, Nepal seeks world-class airports in Kathmandu and Pokhara, encourages regional air transportation, wishes to make airports disaster-ready, and aims to conform to International Civil Aviation Organization (ICAO) standards on safety and airport operations. For urban transport, enhancing road density in the Kathmandu Valley, establishing efficient public systems for mass movement, focusing on road safety, and planning for disaster management are key goals. Achieving these goals will require focused policy interventions.

## Nepal's Transport Sector at a Glance

### Roads

In Nepal, the SRN (13,060 kilometers (km)) constitutes the primary road network. The SRN includes national highways, feeder roads, and a few urban roads of national importance. About 40 percent (5,300 km) of SRN roads are national highways, which are considered commercial road infrastructure; of these, 60 percent are blacktop roads. Nationwide,

23 World Bank, Country Private Sector Diagnostic, 2018.

53 percent of roads are blacktop. The rest are gravel (16 percent) or earthen roads (31 percent). The road density of the SRN is 9.26 km per 100 square meters (m<sup>2</sup>), compared with 50 km per 100 m<sup>2</sup> for the SRN and local road network together.

**Transport costs are high due to poor road quality at high gradients, leading to long journey times and high fuel consumption.** Commercial vehicles face constraints, including inadequate road width (many of the roads have intermediate lanes), narrow road curvatures, and high gradients. The quality of the roads, including poor pavement, also directly affects vehicle operation cost.<sup>24</sup> A survey assessing pavement condition found that national highways were 77 percent bad or poor.<sup>25</sup> Likewise, the condition of feeder roads was found to be 82 percent bad or poor.<sup>26</sup> Similarly, the cost and time related to transport/logistics is an issue highlighted by many stakeholders, for example in the agribusiness value chain. Highly dispersed production locations, low road density, and poor road quality create high access-to-market costs and increased levels of post-harvest losses. Poor transport infrastructure also increases the cost of transacting among regional, central, and border markets, fragmenting Nepal's value chains and undermining the competitiveness of Nepalese products.<sup>27</sup>

**The road sector has suffered from chronic underinvestment, creating a high investment backlog.** According to a study carried out by the National Planning Commission in early 2017, Nepal needs to invest 2.3 to 3.5 percent of GDP annually in transport infrastructure during 2010–20. As per the Strategic Investment Plan prepared by the Department of Roads (DOR) and the Ministry of Physical Infrastructure and Transport (MOPIT), the subsector will require US\$6.5 billion between 2016 and 2020. Given the budgetary constraints and procurement, most of this will likely be delayed and spill beyond 2020.

**Likewise, the annual funding allocation for SRN maintenance in the past five years has been, on average, 60 percent short of the annual requirement,<sup>28</sup> and spending efficiency can be improved.** The current sources of funding are primarily the annual budget allocation and grants and loans from development partners. An alternative funding source is available through the Roads Board of Nepal (RBN), which, per the RBN Act, collects and allocates funds for road maintenance. On average, the funding gap was 68 percent between 2014 and 2018 (table 9). In addition, of the allocated budget, actual spending by the RBN was on average 81 percent (2012–17; during the one outlier year, 2015/16, only 68 percent of the allocated budget was spent).

**Due to the devolution process, the legal and institutional setup for roads is currently in flux.** For roads under the purview of the federal government, the MOPIT is the apex body for the preparation of plans, policies, and programs. Under its aegis, the DOR oversees the development, maintenance, and management of the SRN. The new Constitution and federalization may make a reclassification of roads necessary. Some national highways and feeder roads that are currently part of the SRN would fall under the jurisdiction of provincial- or local-level governments. The RBN, also under MOPIT, manages funding for the operation and maintenance (O&M) of the SRN and local road network. The MOF collects fuel levies and vehicle registration charges and allocates funding to the DOR for construction, improvement, upgrading, and rehabilitation of the SRN. The MOF is also responsible for donor coordination (figure 6).

**On the legal and regulatory side, the Public Roads Act (1974) is one of the core legal documents regulating the SRN.** The Public Roads Act lists different road classes and includes provisions on right-of-way, temporary acquisition of land, and development tax collection

24 Traffic, Surface Distress and Road Roughness Survey on SRN, 2015.

25 According to the International Roughness Index.

26 The survey was conducted on 2,626.59 km of national highways and 1,952.36 km of feeder roads (total 4,878.94 km). Detailed results: national highways: 45 percent bad, 32 percent poor, 15 percent fair, and 8 percent good; feeder roads: 44 percent bad, 38 percent poor, 15 percent fair, and 3 percent good.

27 World Bank Group, Country Private Sector Diagnostic, 2018.

28 Available funding has been on average NPR 4 billion versus the average annual requirement of NPR 14 billion.

TABLE 9: ROAD MAINTENANCE BUDGET NEEDS, ALLOCATION, AND FUNDING GAP IN THE PAST FIVE YEARS (NPR, MILLIONS)

Fiscal Year	Funding requirement	Budget allocation	Budget gap	Budget gap (%)
2012/13	-	2,722	-	-
2013/14	-	3,657	-	-
2014/15	10,398	3,685	6,713	65
2015/16	12,135	4,960	7,175	59
2016/17	16,776	5,607	11,169	67
2017/18	16,186	3,099	13,087	81

Source: Department of Roads/Roads Board of Nepal.

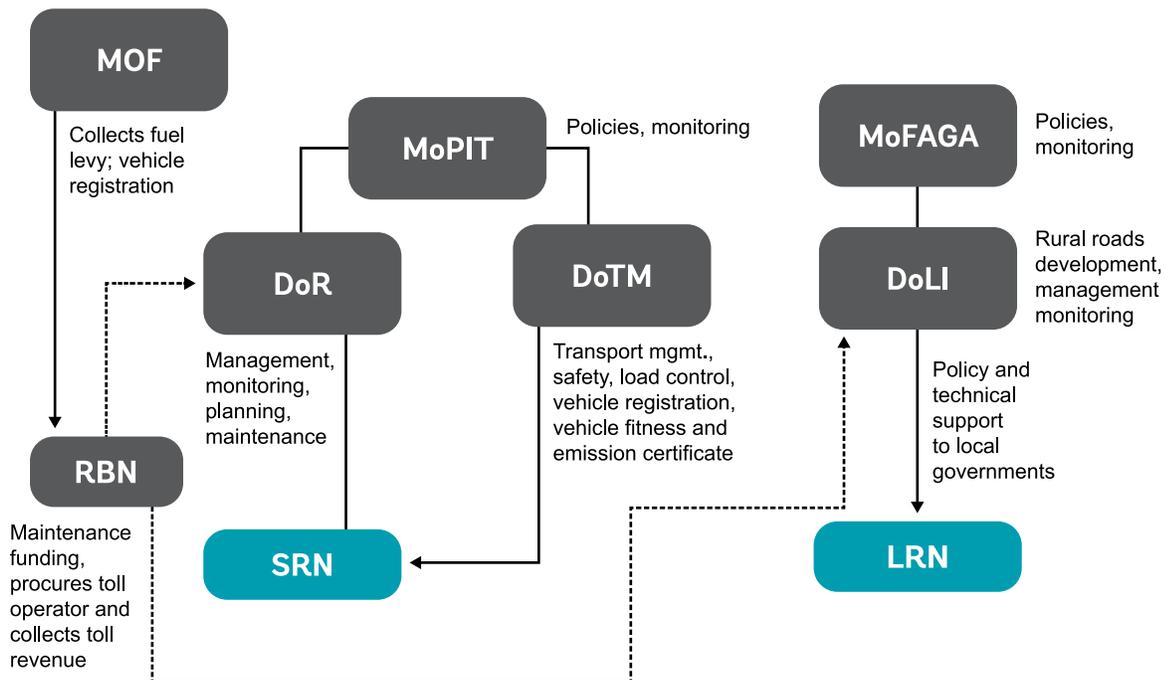
from owners of land bordering the road. The law is currently being amended. The Roads Board Act (2002) and Regulations (2004) regulate the RBN, which is an autonomous body responsible for generating and managing funds for routine, recurrent, periodic, and emergency maintenance of roads. The Motor Vehicles and Transport Management Act (1993) and Regulations (1997) are the only legal instruments dealing with road safety. The Road Safety Act has been drafted by the government and is currently awaiting approval by the Parliament.

Based on various government agencies’ plans, the Government of Nepal estimates an annual funding requirement of US\$1.15 billion per year until 2025 to meet the investment backlog in the country’s road infrastructure. Financing from a variety of sources will be required to meet this gap (figure 7).

### Airports

Nepal’s lack of adequate air connectivity is a constraint to economic growth. The country’s only in-

FIGURE 6: INSTITUTIONAL FRAMEWORK FOR ROADS



Source: Nepal InfraSAP Team.

Note: DOLIDAR = Department of Local Infrastructure Development and Agriculture Roads; DOR = Department of Roads; DOTM = Department of Transport Management; LRN = local roads network; MOF = Ministry of Finance; MOFALD = Ministry of Federal Affairs and Local Development; MOPIT = Ministry of Physical Infrastructure and Transport; RBN = Roads Board of Nepal; SRN = Strategic Roads Network.

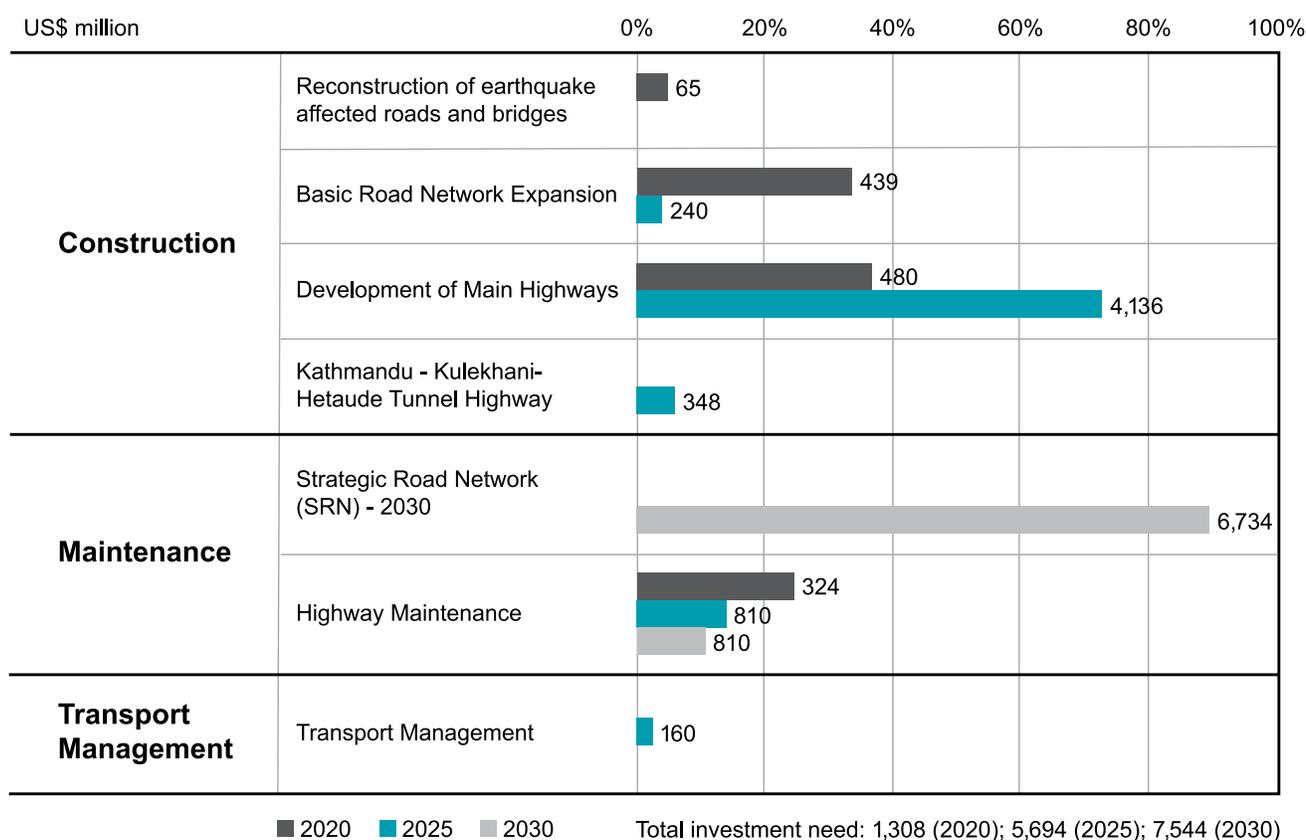
International airport, Tribhuvan International Airport, exceeds capacity. This is inhibiting economic growth by stifling the movement of the domestic population and hindering the tourism sector. Civil aviation policies are outdated and unpredictable, and the airline sector has safety concerns and congestion issues. Encouraging regional air transportation, upgrading existing and building new international airports, making airports disaster-ready, and conforming to ICAO standards on safety and airport operations are the principles that guide the analysis of this sector.

**The airport sector has not received sufficient attention in the past decade and requires substantial investment.** International arrivals exceed the official capacity of Nepal’s international airport, Tribhuvan

International Airport, and air routes to enter Nepal are limited for long-haul markets. The number of airports serving mountainous areas is insufficient. Operation and management of key airports is subpar. Nepal’s domestic carriers have a poor safety record. Currently, 25 international airlines fly into Nepal and two Nepalese airlines fly internationally. Nineteen domestic carriers offer flights in Nepal.

**Recognizing the need for improvements, two new international airports, in Pokhara and Bhairahawa, are under development.** Furthermore, a masterplan has been prepared for the construction of a new international airport for Kathmandu, the Second International Airport in Nijgadh. Financing, implementation, and operation modality have not been decided.

**FIGURE 7: FINANCING NEEDS IN THE ROAD SECTOR, 2020–30 (US\$, MILLIONS)**



Sources: Strategic Plan of the Department of Roads, Ministry of Physical Infrastructure and Transport, 2016-2020; Investment Board of Nepal project profiles; Nepal InfraSAP Team.  
 Note: Assumptions: Strategic Roads Network upgrading during 2030 assumed as ~50 percent of the 26,935-kilometer network needing paving or strengthening. Average cost assumed ~US\$0.5 million per kilometer. Road maintenance expenditure based on average annual expenditure between 2012 and 2017.

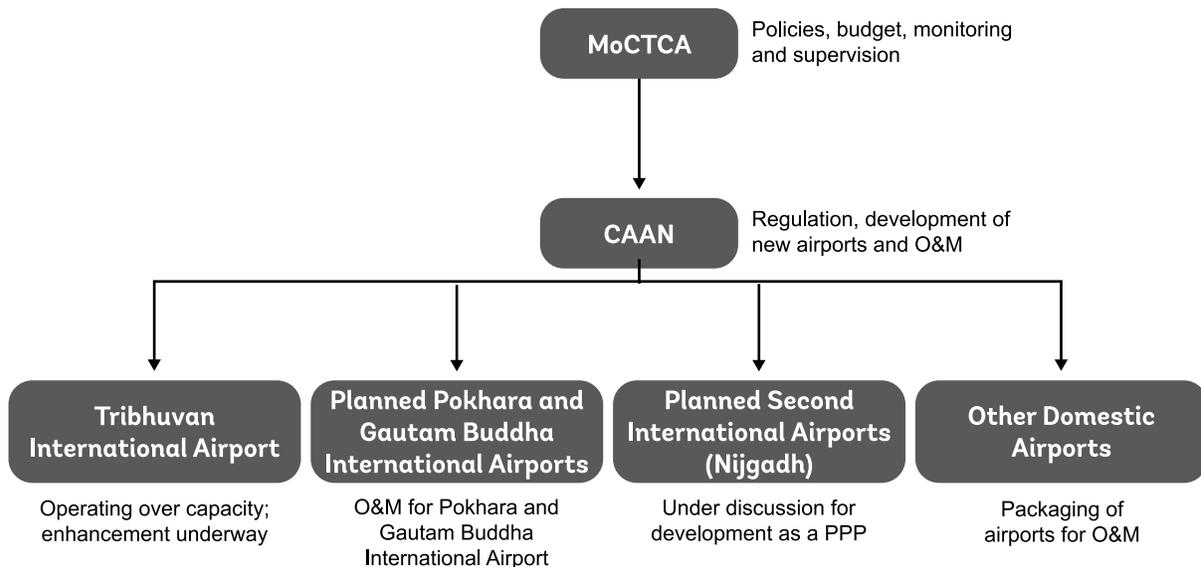
The Civil Aviation Authority of Nepal (CAAN) manages and operates all 34 airports (one international and 33 domestic) in the country. CAAN is responsible for the overall development and management of airport infrastructure and services. The Ministry of Culture, Tourism and Civil Aviation is responsible for planning and monitoring all air transport-related infrastructure and services. Figure 8 details the institutional framework for airports.

The Civil Aviation Act and Multimodal Transportation of Goods Act (2006) govern the development, management, and operation of civil aviation, but a new bill is expected to be enacted soon. The transition process in Nepal’s airport sector is expected to be initiated with the enactment of the draft Integrated Civil Aviation Bill. The bill envisages splitting CAAN into a regulator and a separate service provider entity for airport and air navigation services. The service provider, which will be a public limited company, will be responsible for airport management, terminal management, ground handling, airport security,

rescue and firefighting, airport infrastructure development, airport fee and tax collection, and air traffic control. Similarly, the regulator will be responsible for licensing and regulating aviation professionals and pilots, engineers, air traffic controllers, airlines, and aerodromes.

Estimates for various airport upgrades and new developments indicate a funding requirement of US\$600 million per year until 2030. This includes funding for the anticipated expansion of Tribhuvan International Airport in Kathmandu (proposed for funding by the ADB), and the development of Pokhara Regional International Airport (with financing from the Government of China) and Gautam Buddha Regional International Airport in Bhairahawa (presently, it is under land acquisition and proposed financing from the ADB and other development partners). Due to the lack of data for other airport investments, suitable assumptions have been made to estimate the government’s probable investment needs during 2026–30 (table 10).

FIGURE 8: INSTITUTIONAL FRAMEWORK FOR AIRPORTS



Note: CAAN = Civil Aviation Authority of Nepal; MOCTCA = Ministry of Culture, Tourism, and Civil Aviation; O&M = operation and maintenance; PPP = public-private partnership.

TABLE 10: MAJOR INVESTMENTS AND FINANCING NEEDS FOR AIRPORTS (US\$, MILLIONS)

AIRPORT <sup>a</sup>	2020	2025	2030
1. Tribhuvan International Airport Upgrade <sup>b</sup>	90	120	395
2. Second International Airport (Nijgud) <sup>c</sup>		545	2,553
3. Pokhara International Airport		215	
4. Bhairahawa International Airport		91	
5. Other airports <sup>d</sup>			290
<b>Airports: total investment need</b>	<b>90</b>	<b>971</b>	<b>3,238</b>

Sources: Strategic Plan of the Department of Roads, Ministry of Physical Infrastructure and Transport, 2016-2020; Investment Board of Nepal project profiles; Nepal InfraSAP Team.

a. Since details for other airports were not available, suitable assumptions have been made to estimate their probable investment needs during 2026–30.

b. Estimates for capital expenditure for Tribhuvan International Airport were based on the Asian Development Bank's tranche for Phase 1: US\$90 million, and the Investment Board of Nepal's project note citing US\$605 million is the capital expenditure estimate for all phases.

c. Estimates for capital expenditure for the Second International Airport at Nijgud were taken from the Investment Board of Nepal's project note for Phases 1 and 2.

d. Estimates for capital expenditure for other airports assumed as: Nepalgunj and Biratnagar at US\$50 million each (-50 percent of capital expenditure at Bhairawa airport). Assumptions for other airports at -US\$20 million (for high-traffic regular domestic airports) and US\$5 million (regular domestic airports).

## Urban Transport

Overall, the existing public transport system in Kathmandu Valley is complex and provides a low level of service to users.<sup>29</sup> It is comprised of seven bus routes, 93 minibus routes, 73 microbus routes, and 20 tempo routes, totaling approximately 200 routes. The public transport network suffers from an oversupply of vehicles on some routes as well as a duplication of routes with multiple uncoordinated operators. The complex and inefficient routes require a multitude of terminals and loading areas, most of which are inadequate for passengers or in poor condition and contribute to ever-growing traffic congestion. The congestion is exacerbated by many low-capacity vehicles operating on high-volume routes, leading to poor air quality and environmental degradation. Finally, weak regulation and execution allow old, poorly maintained vehicles to operate and contribute to poor quality of service to users.

Under the Kathmandu Sustainable Urban Transport Project, the possibilities for restructuring Kathmandu's public transport system were assessed and restructuring was recommended.<sup>30</sup> The project focuses on addressing inefficiencies and correcting the imbalance between supply and demand. Reducing

road congestion in Kathmandu Valley, establishing appropriate mass transport systems, improving road safety, and planning for disaster management are all key goals of the government and the project. The Kathmandu Sustainable Urban Transport Project recommends restructuring the current public transport routes into eight primary, 16 secondary, and 40 tertiary routes. The criteria for different routes are passenger volume, directional distribution of passengers, support for access to economic hubs and key infrastructure, road geometry, congestion, and operator structures. In addition to this route structure reform, the report recommends implementing a business model based on bus service contracting. The business model proposed for use on the restructured public transport network requires implementation of higher quality services operated by the private sector under contract to the public sector.

In addition, the government has undertaken studies to assess options for improving urban transport infrastructure in Kathmandu Valley by adding new means of transportation. The options include, among others, suburban and intercity railway systems. At present, an ADB-funded study on "Mass

29 Asian Development Bank, "Kathmandu Sustainable Urban Transport Project: Public Transport Restructuring Report," draft report, 2017.

30 Asian Development Bank, "Kathmandu Sustainable Urban Transport Project: Public Transport Restructuring Report," draft report, 2017.

Transit Options and Prioritization in Kathmandu Valley<sup>31</sup> has recommended a metro rail system comprising about 73 km as the most appropriate mass transport option for Kathmandu Valley.<sup>32</sup> The cost is estimated at US\$100 million per km, plus investment for rolling stock and operation cost (only indicative numbers are available). No investment plans for the improvement of urban transport infrastructure in the Kathmandu Valley have been firmed up.

## Sector Constraints

**Nepal's transport infrastructure faces significant challenges.** To meet the needs of the country and its short- and long-term development goals, Nepal will have to address significant capacity constraints.

### Roads

**Planning and prioritization in the road sector require improvement.** Capex planning and prioritization in the road sector tend to be strongly influenced by political priorities rather than objective criteria and planning processes. Funding is “shared” and sprinkled over a large collection of road projects, with these projects often taking several years to finish. This has reduced the effectiveness and efficiency of road sector investments.

**For maintenance, the usual practice is for the DOR to prepare a National Integrated Annual Road Maintenance Plan based on expected availability of the budget ceiling set by the RBN.** The funds are usually inadequate to cover the entire network, and the process lacks careful prioritization and is unable to cover the priority maintenance needs of the SRN.

**Although the RBN has its own board chaired by the Secretary, MOPIT, and has 13 members from the public and private sectors, it currently has a limited role in implementation.** Furthermore, the frequency of board meetings and ability of the board to drive a change agenda are limited, a problem further constrained by the small RBN team (17 staff). Therefore,

it is critical to strengthen the RBN, to enable it to drive a reform agenda in road maintenance.

**Available funds are not fully utilized, due to weak capacity for procurement, contract management, and implementation.** Government agencies in procurement management, construction supervision, and contract management suffer from weak institutional capacity. At present, funding made available through the government budget (including approximately 40 percent of development partner financing) is not fully utilized. The primary reason is weakness in the procurement and contract management processes. The DOR faces lack of sufficient, qualified personnel for construction supervision and contract management. Even low budget allocations are not fully absorbed: the RBN only spends 81 percent of the funds that are allocated by the MOF. The funds allocated by the MOF have typically been about 30 percent of the actual maintenance fund requirements. From the RBN's perspective, it could be argued that longer-term and better (performance-based) contracting could be undertaken if more funding was available and assured. It would substantially improve the absorption and performance of maintenance expenditure. Notwithstanding which position one takes, it will be key to address issues on both sides by defining a medium-term corporate plan that helps plan projects better. In addition, in the medium term, the RBN will need to explore additional sources of resource raising, such as additional toll roads, fines, additional fees (for example, on export-import cargo, transporters, and the tourism sector), domestic bonds, and other external sources.

**Private sector capacity is weak.** Delays in project completion and poor-quality construction are common, and these are mainly due to inefficient management and low financial capacity. The role of international companies in international competitive bidding contracts has been limited to providing the necessary financial and experience-related documents to local companies solely for bidding purposes and leaving the entire implementation responsibility to local partners.

31 This report is currently in draft form.

32 The lines would connect (i) Bhaktapur-Koteshor-Maitighar-Sahidgate-Lazimpat-Gongbu Buspark, (ii) Jorpati-Chabheel-Lazimpat-Tripureshwar-Kalan-ki-Naikap, and (iii) Godavari-Lagankhel-Thapathali-Sahidgate-Lazimpat-Narayangopal Chowk-Budhanilkantha.

Example of Delays in Road Projects: The Jajarkot Section of the Mid-Hill Highway Construction began eight years ago, and the project is still to be completed due to inability to complete a 5-kilometer section that has been abandoned by the contractor due to the presence of hard rocks.

Source: News report in The Kathmandu Post, December 17, 2017.

The maintenance budget is low, and the MOF does not always transfer funds to the RBN. Maintenance allocations are particularly low for periodic and specific maintenance needs. The funding gap for maintenance is estimated at NPR 11.17 billion (2016/17, real terms). Even if the RBN is provided all the revenue that it is entitled to, the funds would be insufficient to meet the network's requirements. According to the RBN, on average, only about 36 percent of the total requirement was available for SRN maintenance, leaving a funding gap of approximately 64 percent. In practice, the MOF transfers less revenue than what the RBN is entitled to, which, in turn, affects the amount the RBN would provide to the DOR for maintenance. This has resulted in a maintenance backlog.

Combined financing sources from the government and development partners fall short of meeting the funding requirements for Nepal's road sector. The estimated funding shortfall in the road sector is stark (table 11). The assumptions used in estimating total financing from various investment sources included government funding and development partners. Given the institutional and financial constraints of transport state-owned enterprises, commercial borrowing was not considered. Based on these high-level estimates, Nepal requires additional financing of US\$4.2 billion by 2025 and US\$5.6 billion for 2026–30 to meet its capital investment requirements in the road sector.<sup>33</sup> Tapping into commercial sources could help fill the gap, subject to the ability of the sector and the government to mobilize the requisite additional resources in due course to offer adequate returns on such resources.

### Airports

CAAN's weak institutional and financial capacity constrains its ability to respond adequately to needs in the sector. CAAN represents the regulator and owner of airport infrastructure in Nepal. CAAN's weak institutional and financial capacity constrains its capacity to make new investments in airports. The

## DELAYS IN BRIDGE CONSTRUCTION IN THE POSTAL HIGHWAY PROJECT

	Total bridges	Delayed (%)
PO Dhangadi	12	100
PO Nepalgunj	6	83
DRP Bhairahawa	6	83
PO Birgunj	25	60
PO Janakpuri	17	65
PO Itahari	14	100
<b>Total</b>	<b>80</b>	<b>78</b>

Causes for delays for Postal Highway projects include payment delays, design mistakes, approval delays, political interference, subcontractor negligence, extreme weather conditions, over-committed contractor due to multiple contracts, strikes, geological complications, poor inter-agency coordination and site management, and inadequate planning.

Source: Journal of Advanced College of Engineering and Management, 2016: Causes of Delays of Motorable Bridge Construction under Postal Highway Projects, Department of Roads, Arjun Suwal, SDE Department of Roads, Santosh Kumar Shrestha, Lecturer, Department of Civil Engineering, Pulchowk Campus, T.U.

33 Assumptions included: (i) Government: The projected funding by the Government of Nepal is based on historical averages for capital works and maintenance works and the amounts committed by development partners in the loan pipeline for roads. Given the institutional and financial constraints of transport state-owned enterprises, no commercial borrowing programs have been considered as of now. (ii) Development partners: The estimates are based on historical patterns of lending in roads and the loan commitments made or actively being proposed. Typically, the road sector has witnessed ~40 percent as development partner financing.

TABLE 11: INDICATIVE SOURCES OF INVESTMENT AND THE POTENTIAL FUNDING GAP FOR ROADS, 2020–30 (US\$, MILLIONS)

SOURCE	2020	2025	2030
Roads: total investment need	1,308	5,694	7,544
Private	0	0	0
Government (including SOEs)	502	1,255	1,255
Internal accruals	502	1,255	1,255
Spend toward capital works BAU	435	1,088	1,088
Spend toward maintenance BAU	67	167	167
Commercial borrowings	0	0	0
Development partners	290	725	725
Roads: total investment source	792	1,980	1,980
Roads: investment financing gap	-516	-3,714	-5,564

Note: BAU = business as usual; SOEs = state-owned enterprises

transition process in Nepal's airport sector is expected to be initiated with the proposed enactment of the draft Integrated Civil Aviation Bill. The bill envisages splitting CAAN into a regulator and a separate service provider entity for airport and air navigation services. The ICAO's Universal Safety Oversight Audit Program recommended the split to make the aviation sector more efficient.

**The absence of a clear sector strategy and roadmap to make sustainable investments in airports creates uncertainty.** At this stage, the absence of clarity on policy and legal issues impedes commercial investors. Tribhuvan International Airport serves as an example where investment delays and the lack of a business plan have negatively impacted performance and improvement plans. A clear sector development strategy and roadmap are required even with an enacted Civil Aviation Bill. Careful prioritization based on a masterplan will help create predictability of upcoming investments.

**Financing from a variety of sources will be required to meet the funding gap in the airport sector.** The gap between funding and the capital investment requirement to meet the sector's

needs is estimated at US\$560 million by 2025 and US\$3.2 billion for 2026–30 (table 12).<sup>34</sup> Although there is potential for the government to commit additional funding, private sector capacity is largely untapped.

### Urban Transport

**Syndicates inhibit competition between operators.** Public transport in Nepal's urban areas is entirely managed by private operators. Operators' associations have created a syndicate system, abandoning free competition. The syndicate system is further strengthened by weak monitoring of the regulating authorities. This has led to deteriorating quality of service for customers. Typically, transportation is not safe or reliable. This has become the primary incentive for more and more urban residents to purchase their own private vehicles, particularly two-wheelers (there are almost one million in Kathmandu alone). The increasing number of private vehicles contributes to congestion and poor air quality.

**The urban transport system is poorly regulated and monitored.** Public transport vehicles are owned by individuals or private companies and cooperatives. Typically, these vehicles are very

<sup>34</sup> Assumptions included: (i) Government: the projected funding by the government is based on historical averages for amounts committed by development partners in the loan pipeline for airports. (ii) Development partners: the estimates are based on historical patterns of lending and loan commitments made or actively proposed. Typically, the airport sector has had loan commitments for three larger airports.

TABLE 12: INDICATIVE SOURCES OF INVESTMENT AND THE POTENTIAL FUNDING GAP FOR AIRPORTS, 2020–30 (US\$, MILLIONS)

source	2020	2025	2030
Airports: total investment need	90	971	3,238
Private	0	0	0
Government (including SOEs)	20	25	0
Internal accruals (committed for ADB-TIA modernization loan)	20	25	0
Commercial borrowings	0	0	0
Development partners	70	388	0
Airports: total investment source	90	413	0
Airports: investment financing gap	0	-558	-3,238

Note: ADB = Asian Development Bank; SOEs = state-owned enterprises; TIA = Tribhuvan International Airport.

old and not well maintained, and the Department of Transport Management does not monitor or check the state of these vehicles or whether they are fit for purpose. Furthermore, there are not enough routes and public transportation vehicles covering urban areas, leaving many residents dependent on private vehicles.

## Roadmap

The roadmap suggests that the Government of Nepal, Ministry of Physical Infrastructure and Transport, RBN, and CAAN combine short-term interventions with long-term planning to address the needs in the sector (table 13).

**Pillar 1: Strengthen the legal, regulatory, and institutional framework for the road sector.** The government is advised to focus on improving the planning, prioritization, and funding practices of projects and strengthening institutional and corporate governance arrangements. This can be achieved by way of the following actions:

- **Prepare a National Transport Masterplan and update the Priority Investment Plan in line with MOPIT's Five-Year Strategic Plan in the transport sector.** This would include identifying the projects that will be financed by only the government and those that can be financed with the participation of the private sector, prioritizing fund allocation based on justified prioritized criteria, prioritization of the projects on a ranking basis,

and ensuring adequate fund allocation by fixing completion targets.

- **Allocate sufficient budget to projects and deliver all approved funds.** Stipulate that at least 75 percent of funding goes toward prioritized projects only and thereby eliminate “sharing” of the budget between many projects. Where budget approval has been given to fund a public entity, the MOF is to deliver the full funds in the amount approved.
- **Improve capacity and business processes.** This is critical in the areas of public procurement, financial management, ethics, contract supervision, and performance management. It can be gradually achieved by improving internal expertise through deployment of adequate staff and training, simplification and automation of business processes, and introducing external expertise to provide independent advice and augment departmental resources.
- **Develop a medium-term corporate plan for the RBN and strengthen corporate governance and performance management functions.** The plan should assess existing gaps and inefficiencies in the RBN's current operations and develop appropriate interventions to address them. The funds received should be published in an RBN annual report by source, disbursements made, procurement and awards, and progress of work in the year, and made available to the public. The use of independent engineers for a group of projects

could be explored. In addition to project-level supervision, the RBN could consider setting up a dedicated monitoring unit to focus exclusively on overseeing the supervision and quality assurance of projects. Finally, independent external agencies could undertake periodic performance and process audits of contracts.

**Pillar 2: Improve the SRN through a focused programmatic approach.** Within the SRN, the government may focus attention on the most important elements of the network through a programmatic approach to construction and maintenance. Such pathfinder projects could be used as test cases to help shape the legal and policy changes that may be required, as well as the contract arrangements to implement them. Specifically, the program would need to incorporate the following institutions and actions:

- **Identify high-priority corridors through prioritization and launch a program with a credible funding plan.** The government is advised to establish a framework to identify and prioritize an initial set of high-volume and strategic roads in the SRN (for example, 30 percent of the network), with the objective of ensuring optimum working condition within five years. The pathfinder projects could be used as test cases to help shape the legal and policy changes that would be required and the specific modalities to implement them. To be credible, it will be key to establish a funding plan and ensure it is available for the entire program. Such funding may have to be fully based on multi-year budgetary allocations spanning the entire (initial) duration of the program. In addition, the funding plan could include direct and indirect user charges, such as tolls and fuel or other specific levies. It is recommended to ring-fence the sources, so they are non-lapsable and can be suitably deployed and leveraged to support the program.<sup>35</sup>
  - **Adopt efficient contracting structures.** Given the limited financial capacity and expertise of private road construction players and the financial sector
- to structure and fund such large projects, the government could turn to variants of PPP contracts, such as the hybrid-annuity model. In this structure, a majority of the capital expenditure (for example, 50 percent) is funded by the government, and the remaining capital expenditure, annual operations, and maintenance expenses are incurred by the private sector in return for periodic (semi-annual or annual) availability-based payments (see figure 9 for a conceptual project structure based on this model). This could help (i) reduce the burden of managing many contracts, and (ii) encourage the contracting industry to harness economies of scale and adopt more efficient equipment, technology, and construction management practices.
- **Undertake an evaluation and prioritization of road maintenance needs.** The RBN is advised to develop a detailed five-year annual road management plan to cover a comprehensive maintenance and rehabilitation work program for the road network, focusing on high-volume and strategic routes. Procurement should be synchronized with needs and resources assessment to ensure that sufficient annual budgets are allocated and fully used, and works are completed within the planned program year.
  - **Create sustainable funding to support making the RBN a performance-based road maintenance program.** The RBN is advised to transition toward a performance-based road maintenance program and, to ensure sustainable funding for the same, explore additional means of resource raising. This may include tolls, fines, additional fees (for example, on export-import cargo, transporters, and the tourism sector), and through other external sources. On the expenditure side, a move toward performance-based maintenance contracts will also help improve the cost-effectiveness of maintenance expenditures. Similarly, output and performance-based road contracts could be used for upgrading and rehabilitating existing roads. Such contracts would be short-term (five to seven years) and address specific sections of roads.

<sup>35</sup> It is important to calibrate the expectations for such additional revenues in line with their feasibility in economic and political terms as well as their affordability. For instance, although tolls and other road user charges may be very useful sources for meeting capital and operational expenditures, they would require appropriate legislative actions/approvals. The same applies to other direct/indirect forms of user charges, such as levies on fuel, vehicle registrations, and vehicle purchases.

- **Explore additional funding sources, such as private sector financing, additional tolling, additional fuel tax, and vehicle tax in the medium term.** Tolling is currently limited to four roads since 2002, which could be increased, for example, by combining rehabilitation of roads with tolling. These additional funds should flow into an earmarked fund.<sup>36</sup>

**Pillar 3: Strengthen the airport sector.** Given the development of new airports and the planned upgrade of the Tribhuvan International Airport, it is an opportune time for the government to partner with the international private sector to deliver airport management and operations expertise to run its airports in a safe, efficient, and profitable manner. In addition to exploring PPP options for individual areas of operations, there is significant potential for full-scale private management of airports. Therefore, the government could do the following:

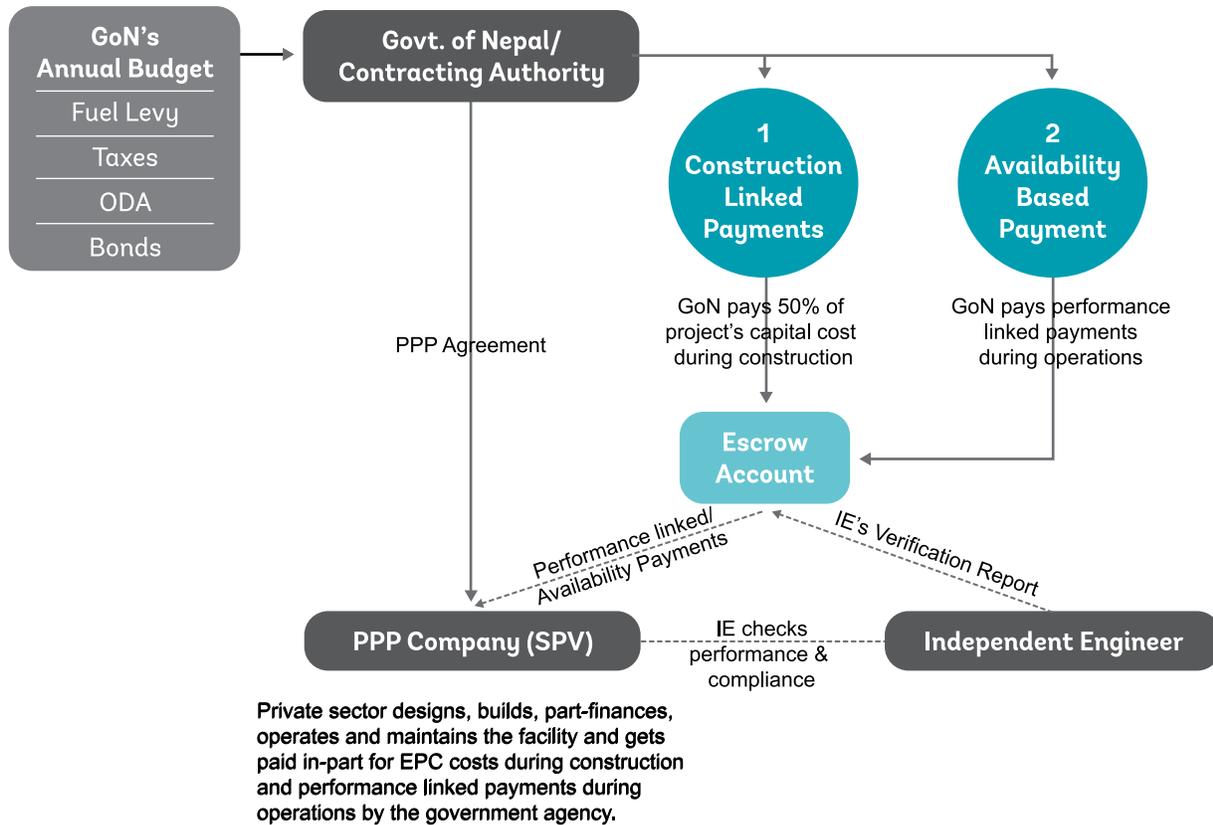
- **Separate regulatory and operational duties.** The draft Integrated Civil Aviation Bill contemplates separating CAAN into a regulator and a separate operations entity. This is an important step in the evolution of Nepal's airport sector and should be progressed and expedited. The nonregulatory entity (OpCo) should have its own management team reporting to a board. Board representatives should be experienced in the business of international airports to help drive commercial performance and development of key airports in Nepal. It is recommended that the regulator (CAAN), under consultation, develops and determines a preferred regulatory model that would attract private capital to the airport sector. There is also a need to overhaul procurement practices to improve tendering processes, contractor selection, and negotiation of contracts.
- **Develop a strategy to prioritize development of airports and allocate funding.** The existing CAAN (or preferably OpCo) is advised to prepare a 10-year business plans for 12 airports,<sup>37</sup> covering international, hub, and high-traffic airports in Nepal. The plans should also specify planned investments and provide pro forma financial statements and airport-specific risk matrixes (including safeguards) for each airport. In addition to the masterplans for the three larger airports,<sup>38</sup> it is recommended that the government also develops its own airport sector roadmap that includes regulatory goals and specific actions related to regulation, safety, structural reforms, and management.
- **Produce a model form for airport O&M contracts.** A model contract should be produced, which may then be negotiated and amended on a case-by-case basis for each airport or groups of airports. The model should not materially depart from a risk allocation matrix approved by the PPP Centre.
- **Launch O&M concession contracts for new and existing airports, including Pokhara Airport, which will be completed in 2019, and Lumbini Airport.** Both airports are currently under construction, with Lumbini scheduled for completion in 2019 and Pokhara in 2020; therefore, there are no legacy issues. This should make negotiating and commencing O&M contracts substantially easier. An O&M contract for the Tribhuvan International Airport could be considered, to provide relief for poor asset management, safety issues, and congestion while expansion plans for the airport are being developed.
- **Finalize modalities for the development of the Second International Airport in Kathmandu and launch construction.** The government has assessed and confirmed the need for an additional international airport in Kathmandu. To meet growing demand, the appropriate development mode for the Second International Airport (engineering, procurement, and construction, or PPP) should be decided as soon as possible, and construction should be launched in the short term.

<sup>36</sup> A move toward performance-based maintenance contracts can improve the cost-effectiveness of maintenance expenditure. Globally, substantial savings from the use of performance-based road maintenance programs have been reported by New Zealand (15-22 percent), Australia (10-35 percent), Brazil (15 percent), the United States (10-18 percent), Finland (18 percent), and Alberta, Canada (20 percent).

<sup>37</sup> These include Tribhuvan International Airport (international); Biratnagar, Gautam Buddha, Nepalgunj, and Pokhara (hubs); and Bharatpur, Chandragadhi, Dhangadhi, Janakpur, Simara, Surkhet, and Tumlingtar (high-demand domestic airports).

<sup>38</sup> Tribhuvan International Airport, Pokhara Regional International Airport, and Gautam Buddha Regional International Airport.

FIGURE 9: CONCEPTUAL PROJECT STRUCTURE OF A HYBRID-ANNUITY MODEL PPP



Source: Nepal InfraSAP Team.

Note: GoN = Government of Nepal; IE = independent engineer; ODA = official development assistance; PPP = public-private partnership; SPV = special purpose vehicle.

- **Expedite plans for the Tribhuvan International Airport.** The proposed modernization of the Tribhuvan International Airport has witnessed setbacks due to the 12-month absence of performance by the contractor appointed to undertake runway expansion works. The contract has been terminated. It is unclear what the approach and timeline is to restarting work, and what claims will be made for nonperformance. Although a short-term O&M contract for the Tribhuvan International Airport will help relieve some of the pressure, it is crucial that the government clarifies the expansion plans.

**Pillar 4: Strengthen the urban transport sector.** Many suggestions have been proposed by different stakeholders, including gondolas, ropeways, metro, and bus rapid transit, but the sector requires integrated planning rather than individual planning and development.

- **Undertake comprehensive assessment of urban transport in Kathmandu.** A proper needs assessment is recommended, to identify and plan appropriate and cost-effective interventions for urban transport in Kathmandu, and potentially beyond, for example, in other bigger cities such as Pokhara. Actions should be closely coordinated with all key stakeholders, including donors.

## Summary of Recommendations for the Transport Sector

TABLE 13: TRANSPORT SECTOR ROADMAP

PILLAR	SHORT-TERM ACTIONS (UP TO 3 YEARS)	MEDIUM-TERM ACTIONS (3-6 YEARS)
Pillar 1: Strengthen the legal, regulatory, and institutional framework for the road sector	<ol style="list-style-type: none"> <li>1. Prepare a National Transport Masterplan and update the Priority Investment Plan in line with MOPIT's Five-Year Strategic Plan.</li> <li>2. Allocate sufficient budget to projects.</li> <li>3. Improve capacity and business processes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop a medium-term corporate plan for the RBN and strengthen corporate governance and performance management functions.</li> <li>2. Undertake an evaluation and prioritization of road maintenance needs.</li> </ol>
Pillar 2: Improve the SRN through a focused, programmatic approach	<ol style="list-style-type: none"> <li>1. Develop methodology and identify high-priority corridors through prioritization for program. Ensure adequate funding for entire program and establish credible financing plan.</li> <li>2. Adopt efficient, suitable contracting structures, such as such as hybrid-annuity models.</li> <li>3. Develop a five-year annual road management plan with maintenance and rehabilitation works for specific routes. Introduce a performance-based program for road maintenance.</li> <li>4. Create sustainable funding to support RBN. Produce an annual report showing funding, disbursements, procurement, and status of work, and publish it on the RBN website.</li> </ol>	<ol style="list-style-type: none"> <li>1. Explore avenues for mobilization of additional revenues.</li> <li>2. Undertake preparation and implementation of high-priority projects through suitable and efficient contracting structures, including those with potential for private participation.</li> </ol>
Pillar 3: Strengthen the airport sector	<ol style="list-style-type: none"> <li>1. Enact an Integrated Civil Aviation Bill.</li> <li>2. Separate OpCo from CAAN, secure additional budget from the Government of Nepal, and build out OpCo.</li> <li>3. Develop appropriate regulatory models for CAAN for international, hub, high-volume, and other airports in the country.</li> <li>4. Prepare 10-year business plans for five airports covering the international and all hub airports.</li> <li>5. Prepare model O&amp;M contracts based on the PPP Centre risk allocation matrix.</li> <li>6. Launch O&amp;M contracts for upcoming airports and for Tribhuvan International Airport.</li> <li>7. Launch development of the Second International Airport.</li> </ol>	<ol style="list-style-type: none"> <li>1. Complete separation of CAAN and OpCo.</li> <li>2. Complete business plan preparation for seven high-traffic airports.</li> <li>3. Expand and refine model contracts.</li> <li>4. Expedite plans for Tribhuvan International Airport.</li> </ol>
Pillar 4: Strengthen the urban transport sector	<ol style="list-style-type: none"> <li>1. Undertake comprehensive assessment of urban transport in Kathmandu.</li> </ol>	

Note: CAAN = Civil Aviation Authority of Nepal; MOF = Ministry of Finance; MOPIT = Ministry of Physical Infrastructure and Transport; O&M = operation and maintenance; PMO = Prime Minister's Office; PPP = public-private partnership; RBN = Roads Board of Nepal; SRN = Strategic Roads Network.





# Reforming the Urban Sector

## Introduction

Although Nepal is one of the world's least urbanized countries, its urban population growth is among the fastest globally, with an annual rate of 3.2 percent between 2010 and 2015.<sup>39</sup> Nepal's rapid urbanization has increased pressure on the country's core urban infrastructure, creating an urgent need to assess key challenges in the country's urban sector and identify opportunities to overcome them by maximizing largely untapped private capital and expertise.

The country's historic shift from a unitary to a federal government system has expanded the role of local governments, particularly in the delivery of basic public services, such as education and health, and core infrastructure, including water supply, sanitation, and solid waste management (SWM). However, the ability of local governments to undertake these newly assigned functions is extremely limited, due to institutional gaps and resource constraints. Local governments face a paradoxical situation: despite huge unmet demand for urban civic services, they are unable to spend capital grants and budget allocation is regularly below annual budgets. The private sector faces capacity constraints in implementing projects and difficulty tapping financing, due to the low revenue-generating potential of many of the public infrastructure projects prepared by local governments.

This roadmap delineates a strategy for strengthening the investment climate in the urban sector over the next five years, with the expectation that financially sound and well-managed local governments will be able to apply for commercial borrowing or attract private sector investments in the medium and long term. The purpose of the roadmap is

threefold: (i) assess the current state of urban infrastructure in water supply, sanitation, and SWM; (ii) explain the key constraints facing the urban sector; and (iii) provide a short- and medium-term roadmap for the government to improve urban infrastructure. The sector diagnostic relies on secondary data from various reports as well as primary data collected from site visits to four municipalities: Kathmandu, Pokhara, Damak, and Lahan.<sup>40</sup> The scope of this report is limited to the provision of urban services through private participation in SWM.

## Nepal's Urban Sector at a Glance

### Core Urban Services

**Core urban service delivery is insufficient.** Just 62 percent of municipal solid waste was collected as of 2012, although the collection rate varied substantially across municipalities (major towns had higher percentages than smaller ones). As of 2013, only six of 58 municipalities used sanitary landfill sites for final disposal; 45 municipalities practiced open dumping, including riverside and roadside (table 14).<sup>41</sup> Despite near-universal access to drinking water,<sup>42</sup> the quantity and quality of the water supply in urban areas pose a challenge. Access to piped water supply in urban areas decreased from 68 to 58 percent from 2003 to 2010, largely due to the rapidly growing urban population adding pressure on water service infrastructure. Although access to toilets in urban Nepal increased from 81 to 85 percent from 2003 to 2010, many toilets remain unsanitary. Only 48 percent of urban households had toilets connected to septic tanks, many of which are not designed properly.<sup>43</sup>

39 Currently, only 19 percent of the population lives in urban areas, compared with the global average of 54 percent. Furthermore, the global average annual urban population growth rate between 2010 and 2015 was about 2 percent. The corresponding rate for Central and South Asia was 2.5 percent (United Nations Department of Economic and Social Affairs, Policies on Spatial Distribution and Urbanization: Data Booklet, ST/ESA/SER.A/394, 2016).

40 The World Bank team conducted interviews and consultations with mayors, finance officers, municipal planning officers, civil engineers, and/or other staff at local government offices in Kathmandu, Pokhara, Damak, and Lahan, to identify their local priorities, investment needs and capacity gaps, and ongoing engagement with the private sector in financing and implementing the delivery of core urban services. The World Bank team also consulted with private construction companies and commercial banks to understand their perspectives on emerging opportunities and existing bottlenecks for their engagement in financing and delivering core urban infrastructure. Some baseline budget data for the municipalities were also collected through the site visits.

41 Asian Development Bank (ADB), "Solid Waste Management in Nepal: Current Status and Policy Recommendations" (ADB, Manila, 2013).

42 UNICEF and World Health Organization (WHO), Progress on Drinking Water and Sanitation 2012 Update (Geneva and New York: UNICEF and WHO, 2012).

43 Ministry of Water Supply and Sanitation (MOWSS), Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016-2030) (Kathmandu: Sector Efficiency Improvement Unit, MOWSS, 2016): 34.

TABLE 14: ACCESS TO CORE INFRASTRUCTURE IN FOUR CITIES

City	Population In 2001	Population in 2011	Population growth rate, 2001–11	Access to piped water	Toilet	Solid Waste Collection	Storm drain-age	Sewer-age
Kathmandu	671,846	975,453	45%	64%	99%	91%	70%	79%
Pokhara	208,692	313,841	50%	94%	99%	31%	21%	39%
Damak	35,009	75,102	115%	35%	90%	21%	14%	0%
Lahan	81,918	91,766	12%	28%	59%	50%	6%	0%

Source: 2011 Census.

### Institutional Framework

In line with the 2015 Constitution and the Local Government Operations Act (2017), local governments now have greatly expanded functional mandates. The Constitution<sup>44</sup> vests power in local governments to plan and provide services in basic sanitation, water supply, and local roads. SWM is separately regulated by the Solid Waste Management Act of 2011, which assigns construction, operation, and management of infrastructure for collection, treatment, and final disposal of medical and solid waste to local bodies, which include municipalities, sub-municipalities, and village development councils. The 2015 Constitution mandates that provincial governments oversee policy planning for statewide land use and infrastructure projects, specifically in managing province-level water supply and highway systems. The federal government is primarily responsible for national-level policy surrounding urban planning, infrastructure development, national transportation, rail and highway management, and land use. Urban planning and infrastructure development policy are under the purview of the Ministry of Drinking Water and Urban Development, while the Ministry of Federal Affairs and General Administration (MOFA&GA)<sup>45</sup> coordinates across tiers of government and provides technical advice and support for urban governance (for example, regulation and standardization) and administration.

### Legal and Regulatory Framework

Two Acts dictate the regulatory framework for land pooling projects: The Town Development Act, 1988, and the Local Self-Governance Act, 1999. The Town Development Act authorized town development com-

mittees to undertake land pooling schemes. It states that land pooling can be carried out in any part of the town planning area with the consent of a minimum of 75 percent of the landowners. Land pooling can also be initiated by local government bodies per the Local Self-Governance Act, 1999. The primary laws for the provision of land use and valuation are the Country Code (1962), Land Survey and Measurement Act (1962), Act Concerning Land (1964), Guthi Corporation Act (1976), Land Acquisition Act (1977), and Land Revenue Act (1978).

The government's 2017 National Urban Development Strategy provides strategic direction for urban infrastructure development and guides investment decisions in the sector under the new federal structure of governance. The National Urban Development Strategy articulates a long-term vision for urban development, including augmenting urban sector financing and changing the legal and institutional framework to facilitate project implementation. In the SWM sector, the National Urban Development Strategy promotes integrated SWM projects, wherever feasible, as well as a cluster-based approach to achieve economies of scale. In the water supply and sanitation sectors, minimum water provisioning, water security, and sanitation coverage are articulated as part of the sector objectives. The strategies for achieving these include protection of freshwater sources, integration of rainwater harvesting within the building permit system, promotion of community water storage facilities, and facilitation of private sector investments in water and wastewater treatment systems and supply augmentation.

<sup>44</sup> See Article 57 Clause (4).

<sup>45</sup> MOFA&GA was created after the merger between the Ministry of Federal Affairs and Local Development and the Ministry of General Administration.

## Funding and Financing

The 2015 Constitution grants local governments the authority to impose a wide range of taxes and fees.<sup>46</sup> Such own-source revenue (OSR) collection is conducive to the process of urban development and institution building, as it promotes accountability and strengthens taxpayer oversight. However, Nepal's local OSR collection capability is limited due to weak tax administration and enforcement.<sup>47</sup> Metropolitan cities and larger local governments tend to have greater capacity to collect OSRs than smaller ones. A higher concentration of wealth and economic activities, better access to public services, and more robust fiscal institutions in place all coalesce to yield greater local revenues, so this is not surprising. In FY2016, Kathmandu and Lalitpur were in the top three local governments by per capita amount of OSR collection. OSRs account for roughly 10 percent of total local revenues, but this share was projected to decline to less than 5 percent in FY2018, due to the projected increase in intergovernmental fiscal transfers following the enactment of the new Constitution.

**In the short term, local government capacity to plan and execute projects and use available funds judiciously is a major constraint.** Intergovernmental fiscal transfers complement local government resources, accounting for roughly 90 percent of local revenues. This rate was projected to increase to 95 percent in FY2018. This is a significant jump of intergovernmental fiscal transfers, from NPR 96 million (US\$0.96 million) estimated in FY2017 to NPR 330 million (US\$3.30 million) budgeted in FY2018. Although overall urban infrastructure funding needs more resources over the long term, fiscal flows in the short term seem to be greater than local government absorption capacity.

The Natural Resource and Fiscal Commission's intergovernmental fiscal transfer allocation process is also evolving and moving from a system of untied grants in the first year to a combination of untied grants and earmarked funds in the second year. Predictability of fiscal transfers will enable local gov-

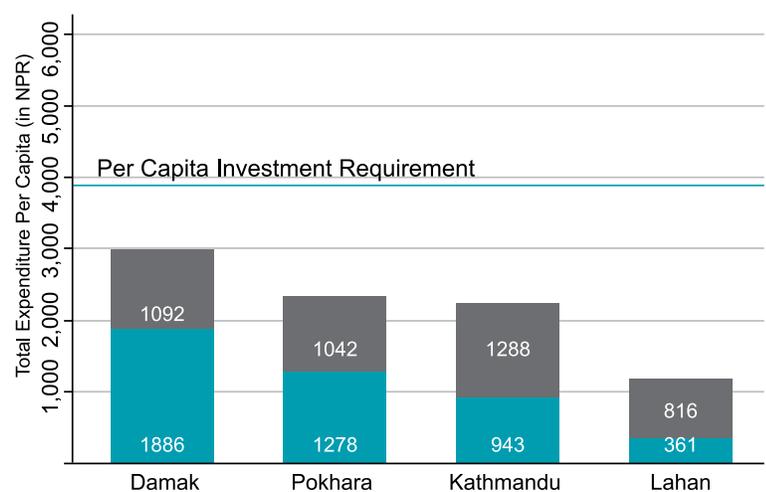
ernments to plan capital expenditure effectively and provide comfort to future lenders and investors.

**The allocation of intergovernmental fiscal transfers varies considerably across local governments.** Larger metropolitan cities receive lower levels of grants per capita than sub-metropolitan or smaller municipalities. The inverse relationship between the size of cities and the per capita transfer amounts could lead to greater capital investment funding gaps for larger cities.

## Investment Environment

**The current level of capital expenditure in urban infrastructure expenditure is not sufficient to meet demand.** The Ministry of Urban Development (MOUD) and Town Development Fund (TDF) estimate that if municipal revenues were drawn solely from public sources, the investment gap would range from NPR 372 billion (US\$3.72 billion) to NPR 1.0 trillion, depending on the target levels of physical infrastructure.<sup>48</sup> The depth of the investment gap varies depending on the sizes of the cities and their revenue sources, but the current level of capital expenditure is not sufficient to “even close the high backlog of basic urban infrastructure.”<sup>49</sup> For a municipality to achieve the minimum desired level of infrastruc-

FIGURE 10: URBAN: RECURRENT AND CAPEX PER CAPITA



46 Revenue sources assigned to local governments in the new Constitution include property tax, house rent tax, land tax, business tax, vehicle tax, entertainment tax, advertisement tax, tourism fee, service charges/fees, and penalties and fines.

47 R. Bahl, “Intergovernmental Fiscal Transfers in Developing and Transition Countries: Principles and Practice” (World Bank, Washington, DC, 2000).

48 United Nations Capital Development Fund (UNCDF), “Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal” (UNCDF, New York, 2017).

49 E. Muzzini and G. Aparicio, Urban Growth and Spatial Transition in Nepal. An Initial Assessment (Washington, DC: World Bank, 2013): 81.

TABLE 15: FINANCIAL GAP SCENARIOS FOR 217 MUNICIPALITIES, 2016–31 (NPR, MILLIONS)

	Scenario 1 (60% of target)	Scenario 2 (75% of target)	Scenario 3 (90% of target)
Own-source revenue	622,600	622,600	622,600
Recurrent expenditures	389,040	389,040	389,040
Previous debt service	4,100	4,100	4,100
Revenue surplus	229,530	229,530	229,530
Unconditional grant	424,830	424,830	424,830
Revenue sharing	81,150	81,150	81,150
Conditional grant	277,560	277,560	277,560
Total intergovernmental fiscal transfer	783,540	783,540	783,540
<b>Summary of Financing Sources</b>			
Revenue surplus	229,530	229,530	229,530
Total intergovernmental fiscal transfer	783,550	783,550	783,550
Market borrowing (25% of revenue surplus)	57,390	57,390	57,390
Amount Available for Capital Investment	1,070,470	1,070,470	1,070,470
<b>Total Investment Need</b>			
Scenario 1: Meet 60% of physical target	1,397,940	-	-
Scenario 2: Meet 75% of physical target	-	1,747,430	-
Scenario 3: Meet 90% of physical target	-	-	2,096,910
Financing gap	-327,470	-676,960	-1,026,440

Source: United Nations Capital Development Fund 2017.

Note: The table shows different financial gap scenarios for meeting 60, 75, and 90 percent of the physical infrastructure target set by the Department of Urban Development and Building Construction. The Ministry of Urban Development and the Town Development Fund projected the amount of own source revenues, intergovernmental fiscal transfers, as well as recurrent expenditure and previous debt service to arrive at the estimated amount of available capital for infrastructure investments in the next 15 years.

ture between 2015 and 2031,<sup>50</sup> approximately NPR 3,890 (US\$39) of capital investment per capita (in NPR 2015)<sup>51</sup> would be required annually. As shown in figure 10, none of these municipalities spends the capital needed to meet this number.<sup>52</sup> Table 15 shows the financial gap scenario for all 217 municipalities.

### Investment Priorities for the Focus Cities

Kathmandu, Pokhara, Damak, and Lahan do not have capital investment plans or expenditure frameworks for the medium or long term. Under the new Constitution, local governments are now responsible for water supply and sewerage in addition to SWM and city roads. Discussions with the focus municipal-

ities indicated a lack of systematic planning. Generally, local officials considered urban roads and SWM to be investment priorities, with SWM potentially being the most appropriate for PPP-type investment.<sup>53</sup> However, other infrastructure, like local roads, could be financed by municipal borrowing under the right conditions.

Water supply services are being re-organized to comply with the new Constitution. Two types of entities deliver water supply services: the Nepal Water Supply Corporation (which provides drinking water to 22 towns, including Pokhara) and one or more water user associations in smaller towns. The latter are mainly

50 Based on 2011 prices, MOUD and TDF (2016) estimate that a per capita investment requirement of about NPR 58,400 needs to be met to bring the then-existing 58 municipalities (including Kathmandu, Pokhara, Damak, and Lahan) to the minimum desired level of infrastructure. To arrive at the annual per capita investment needed until 2031, this amount was divided by 15 years, yielding NPR 3,890 per capita.

51 Ministry of Urban Development (MOUD) and Town Development Fund (TDF), "Municipal Finance Framework for the National Urban Development Strategy (NUDS) of Nepal" (MOUD and TDF, Kathmandu, 2016).

52 Municipal budget data were collected by a consultant. The comparability across municipalities on spending patterns is limited because of the lack of standardized budget codes assigned to different types of expenses in budget statements. Therefore, there may be significant inconsistencies in the types of spending that are captured as capital (or recurrent) expenditure and the estimates should be treated with caution.

53 A PPP model for SWM is also being explored in the Dharaan municipality, which was referred to as a potential project finance deal by a commercial bank that was interviewed for this study.

present where capital investment and O&M are driven by user needs and may not be part of an overarching capital investment and management plan for the entire town. Given that water supply is a core local government function under the new Constitution, the Nepal Water Supply Corporation assets and staff will have to be transferred to local governments moving forward. Towns served by water user associations will need to clarify contractual arrangements on the roles, responsibilities, and service delivery benchmarks. These changes will benefit from a clearer and strengthened institutional structure.

**PPP schemes for water supply have been attempted in Kathmandu and are forthcoming in other municipalities.** Kathmandu Upatyaka Khanepani Limited was set up under a PPP model to operate and maintain the water supply and sanitation system of Kathmandu Valley, which was previously operated by the Nepal Water Supply Corporation. The shareholders of this company include the federal government (30 percent), municipalities in Kathmandu Valley (50 percent), the private sector (15 percent),<sup>54</sup> and an employee trust with a contribution from the Government of Nepal (5 percent). Similar initiatives are under implementation in Bharatpur and Hetauda. These PPP initiatives still rely heavily on public funding, even in the case of water supply systems constructed and managed by water user associations. The institutional structure and tariff-setting mechanisms for the water sector need to be strengthened before PPPs can be taken forward.

## Sector Constraints

**Unlocking private sector investment in urban infrastructure development requires an understanding of the key constraints.** These include factors arising from the new federal system, as well as constraints specific to the three typical private investment modalities for municipal infrastructure delivery: commercial borrowing, PPPs, and land value capture.

### Institutional Structure, Planning, and Implementation

**Institutional gaps and capacity constraints inhibit effective spending in and delivery of urban infrastructure.** Most cities and towns across Nepal lack

adequate institutional capacity, including financial management, budget planning and execution, procurement, and human resources to perform their newly assumed roles under the federal system. MOUD recognizes these institutional deficits at the municipal level and defines the following constraints: (i) a shortage of qualified staff and lack of technical and administrative capacity to plan, implement, operate, and maintain urban infrastructure facilities; (ii) inefficient delivery due to the overlapping/unclear implementation mandates of implementing agencies; (iii) insufficient legal and administrative frameworks for PPP; and (iv) lack of frameworks and processes for transparent and reliable planning and procurement processes and improved/accrual accounting systems in municipalities.<sup>55</sup>

**The responsibilities of the central government and local governments are unclear and not aligned to the new decentralized system.** Most local bodies do not perform many of their newly assigned constitutional responsibilities. Their de facto responsibilities are constrained to funding small-scale local projects, due to their lack of financial and institutional capacity to undertake larger infrastructure projects. These larger projects are inevitably taken up by the central ministries and agencies instead. Even in major metropolitan cities, such as Kathmandu and Pokhara, the role of local governments is limited to SWM, drainage, and maintenance of small, local urban road systems, while the central ministries and agencies run larger road projects and water systems. There seems to be a lack of clarity on local governments' new sectoral role in delivering public services like education and health, which were under the purview of the central ministries and agencies. Without further clarification about their sectoral responsibilities and a robust institutional system in place, newly elected local governments will continue to be unable to deliver these services.

**None of the four municipalities has a medium- or long-term capital investment plan.** There are no clear guidelines on how local governments should prepare or update their capital investment plans, nor is there a strong incentive for local governments to do so, given the limited or unpredictable nature of

54 FNCC- 3%, Lalitpur Chambers of Commerce – 1.5%, Nepal Chamber of Commerce – 9%, Bhaktapur Chambers of Commerce -1.5%.

55 MOUD 2017, p. 45.

future revenues. Necessary large-scale, citywide infrastructure projects focusing on core urban services are largely absent in their project pipelines. Instead, local governments tend to focus their resources on financing many small-scale initiatives.<sup>56</sup>

**The existing procurement system suffers from a lack of consistency.** Manual and online procurement systems are currently used, depending on the size of the project.<sup>57</sup>

### Funding and Financial Management

**The Natural Resource and Fiscal Commission is in the process of developing a system for transferring funds from the Government of Nepal to the local governments.** Although the amount of fiscal transfers to local governments has increased significantly, there is no predictability to this mechanism in the absence of clearly defined guidelines for fiscal transfers.

**Financial management systems currently in place at the municipal level are highly fragmented and in flux.** Kathmandu and Pokhara, for instance, are currently using a manual billing system, which compromises efficiency and accuracy in transactions and tax administration. Although Kathmandu Metropolitan City is prepared to implement an online billing system (for example, a Municipal Administration and Revenue System), this transition has not been implemented, mainly due to the inadequacy of trained personnel for operating an information technology-based public financial management system. The lack of accountability, reliability, and transparency in financial management systems also undermines the creditworthiness of local governments, which in turn deters commercial borrowing at the local level. Although the fragmentation is partly due to the ongoing transition to federalism, there is a pressing need for reliable and transparent financial management.

### Commercial Borrowing

**The legal and regulatory framework for local government borrowing is not yet fit for purpose.** Subnational borrowing requires a well-designed legal and regulatory framework. The 2015 Constitution con-

tains various clauses that point to the right of states to borrow and receive guarantees from the federal government and for local-level entities (municipalities and villages) to borrow and receive guarantees from the federal and state governments. However, Article 228 states that states and local governments can take loans only after a new federal law is approved, which allows state and local governments to borrow internally. However, this law, and the policy framework underlying it, has not yet been drafted. Therefore, municipal borrowing is restricted to loans from the TDF—whose sources of finance derive almost exclusively from multilateral and bilateral donor agencies—until the revised regulations are put in place. In addition, TDF's relationships with commercial lenders and local governments and its role in on-lending activities are not appropriately defined.

**Weak institutional and fiscal capacities of local governments sap the incentive for commercial banks to finance municipal infrastructure.** The 2015 Constitution allows local governments to borrow funds from private sources (for example, bonds and loans from commercial banks) to meet expenditure needs. However, to date, commercial borrowing is virtually nonexistent at the municipal level. Interviews with commercial banks and private construction companies revealed a general lack of interest in extending loans to municipalities to finance their infrastructure investment needs. Most local governments have low revenues and poor financial management systems and are therefore not attractive investment targets or credit risks. Lack of predictability in intergovernmental fiscal transfers also compounds the uncertainty of cash flows for potential lenders.

**Despite a growing banking sector, capacity to lend to local governments is limited.** The banking sector has expanded rapidly in Nepal, registering a 140 percent increase in assets between July 2009 and June 2016.<sup>58</sup> The volume of domestic credit to the private sector increased from 33 percent of GDP in 2005 to 75 percent in 2016, due to the rapid growth of private commercial banks. However, several persisting supply-side challenges undermine the capacity

56 United Nations Capital Development Fund (UNCDF), "Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal" (UNCDF, New York, 2017).

57 Projects that are worth more than NPR 1 million are managed through e-procurement systems, whereas smaller projects are administered through the manual procurement process.

58 United Nations Capital Development Fund (UNCDF), "Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal" (UNCDF, New York, 2017).

of commercial banks to finance public infrastructure projects, including a shortage of savings and longer-term funds and an underdeveloped bond market, including the lack of a yield curve. Banks are inexperienced in lending to local governments, as they lack financial information and means to evaluate local governments' creditworthiness.<sup>59</sup>

**The largely underdeveloped Nepalese capital market limits local governments' ability to raise capital.** The capital market in Nepal has remained largely underdeveloped. Market capitalization is relatively low, signaling low participation of companies in the stock market (compared with the size of the economy) and/or undervaluation of shares. The debt market in Nepal is mainly driven by short-term government debt, and no local government has ever issued debt, although they are permitted to do so.<sup>60</sup> The private bond market is very small, and no trading takes place. In 2010, corporate bonds were 5 percent of the market. Although most debt issues are well-subscribed, investor interest in bonds is said to be still adversely affected by the failure of some debentures to repay in the 1980s and 1990s.<sup>61</sup> Finally, local governments' lack of creditworthiness also likely impacts borrowing from the market.

### Public-Private Partnerships

**Lack of capacity, frequent staff turnover, and bureaucratic inefficiencies hamper private sector involvement in the delivery of urban public services through PPPs.** Thus far, PPP experience in the urban sector has been very limited and restricted to a few contracts for collection and transportation of solid waste. In addition to general constraints to PPP implementation, there are several institutional and administrative barriers to private sector engagement in the urban sector. These include bureaucratic and political interference, which delays the approval and implementation of such infrastructure projects, as well as frequent staff turnover. Furthermore, there is a lack of capacity at the national and municipal levels to prepare a pipeline

of bankable projects and implement them.<sup>62</sup> Lack of transparency and accountability in the procurement and contracting procedures has also generated significant skepticism among private companies about the fiduciary risks of PPPs.

**The relationships and divisions of responsibilities between key bodies and provincial and municipal authorities are largely unclear.** There is a lack of clarity on the powers of local governments to enter into and regulate PPP arrangements, set tariffs, pledge revenues, provide resources (for example, land and labor), spell out authorizations and approvals needed before contracts are signed, and stipulate the functions of other government agencies, such as the IBN and PPP Centre, in this process. In a similar vein, although the draft law mandates federal, provincial, and local-level governments to identify and prepare PPP projects, the process for such projects is unclear.

**The integrated SWM project in Kathmandu Valley could serve as a case study for the evolution of the legal and regulatory framework for urban sector PPP projects.** This project is one of the first PPP projects in the urban sector under the aegis of the IBN.<sup>63</sup> The potential project shows the need for more clarity of the responsibilities of the various institutions involved.

**The private sector in Nepal faces technical and financial resource constraints to engage successfully in municipal PPPs.** These constraints undermine the private sector's ability to bid for and enter into PPP contracts for public infrastructure projects. There is a lack of access to credit, with high interest rates of 11–14 percent from commercial banks, and trained personnel with entrepreneurial and managerial skills are scarce.<sup>64</sup> Furthermore, a lack of price competitiveness and difficulties meeting standards and requirements perpetuate the problem. And there is little appetite for private companies to finance urban infrastructure projects because of their limited revenue-generating

59 United Nations Capital Development Fund (UNCDF), "Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal" (UNCDF, New York, 2017): v.

60 United Nations Capital Development Fund (UNCDF), "Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal" (UNCDF, New York, 2017): v.

61 United Nations Capital Development Fund (UNCDF), "Designing a Framework for Sustainable Government Financing through Borrowing in the Context of Fiscal Federalism in Nepal" (UNCDF, New York, 2017): 66–67.

62 Based on interviews with private sector companies.

63 IBN promotes PPPs in integrated SWM, among other sectors.

64 According to interviews with private construction companies.

potential, particularly in the water supply and sewerage sectors. The private sector may prefer annuity payment-based projects linked to predictable local government cash flows over projects involving different risks (revenue, financing, construction, performance, and other risks), as well as lack of efficiency and local government capacity to deliver projects.

### Land Value Capture

**Alternative financing through land value capture is limited by institutional and regulatory gaps.** Municipalities can potentially tap alternative sources of finance by leveraging development taxes, improvement fees, development rights, construction density options, and regulations to capitalize on the value of land appreciation in fast-growing, urbanizing cities. However, these instruments often require sound land and real estate markets with secure property rights and cadastral systems, which are not guaranteed in Nepal. These instruments also often require conducive legal and regulatory frameworks, which are essentially absent in Nepal. Moreover, local governments' capacity to collect property taxes and impact/development fees is weak due to poor enforcement and valuation systems, incomplete or outdated revenue base information, and a lack of political will. The absence of capital gains tax mechanisms, which would otherwise allow local governments to capture the real value of infrastructure development and promote benefit sharing of urban development, makes it difficult for local governments to utilize land value capture instruments. Supply-side barriers, including a lack of willingness of private land owners to contribute their land for development (often rooted in inadequate valuation of land, slow payments, and fear of displacement) also hinder land value capture.<sup>65</sup> Private land is the most dominant form of land tenureship in Nepal, and there is a high level of skepticism among landowners to contribute their land for land pooling projects. Land acquisition negotiations with landowners often falter because of speculative prices demanded by landowners, absent landlords, and indecision by family members. In many cases, even acquiring consent from

a simple majority for land pooling from landowners has proven difficult.

**The policy and regulatory system for land value capture does not contain a standardized land valuation system, nor does it guarantee the deeds of the land transaction process.** There is no official and standardized land valuation system in Nepal except ad hoc land valuation for compensation during land expropriation.<sup>66</sup> The valuation of land and housing hardly reflects actual market values, due to the deficient records kept at the local level. Various land acts and regulations are used for land valuation, creating complexity and confusion and undermining the credibility of the valuation system as a whole. The poor quality of land valuation also stems from scarce and outdated information on land or property records held by local governments. There is no formal land information system, and, in many instances, there is a significant discrepancy between information in land ownership records and cadastral maps. As a result, information on land transactions is often not credible. Furthermore, the government does not guarantee the deeds of the land transaction process, thereby putting the investment of land buyers and sellers at risk. As MOUD (2015) highlights, “these factors add uncertainty to the land market to such an extent that the location decisions of the buyers often do not reconcile with rational choices.”<sup>67</sup>

### Roadmap

**This roadmap focuses on creating an unambiguous enabling environment for local governments to take charge of their new constitutional responsibilities.** The roadmap suggests that the government should ensure prompt completion of transferring functions to local governments and anchoring of functional responsibilities and regulatory roles through appropriate legislation. Furthermore, it recommends that the government, along with the Natural Resource and Fiscal Commission, puts transparent and predictable arrangements in place for fiscal transfers to local gov-

65 Ministry of Urban Development (MOUD), National Urban Development Strategy 2015 (Kathmandu: MOUB, 2015).

66 S. Ghimire, A. Tulandhar, and S. R. Sharma, “Governance in Land Acquisition and Compensation for Infrastructure Development” (American Journal of Civil Engineering 5 (3), 2017): 169–78.

67 Ministry of Urban Development (MOUD), National Urban Development Strategy 2015 (Kathmandu: MOUB, 2015): 15.

ernments, with a longer time horizon than the current annual budgeting and transfer process. For example, the Natural Resource and Fiscal Commission should announce the basis for fiscal transfers over the next three to five years, to allow local governments to prepare medium-term capital investment and financing plans. The roadmap recommends that the government also transfers staff, completes recruitments, and contracts specialist technical staff to overcome capacity gaps. These short-to-medium-term measures, along with interventions aimed at strengthening local government performance and creditworthiness, will be key to improve the capacity of local governments before embarking on reforms aimed at addressing the demand- and supply-side constraints to maximizing finance for urban sector development. Within this broad context, the roadmap makes specific suggestions for enhancing potential private financing of urban infrastructure through commercial borrowing by municipalities and municipal PPPs (table 16).

**Pillar 1: Improve the creditworthiness of local governments (one to three years).** It is imperative to strengthen the technical, financial, and managerial performance of local governments, to enhance their borrowing capacity and ability to make timely payments to vendors and PPP partners. Although it is likely to extend beyond five years, the process needs to be initiated over the next one to three years. The urban sector will not attract additional capital unless local governments can demonstrate their creditworthiness. The following measures are worthwhile to that end:

- **Strengthen the legal framework.** The Government of Nepal has already passed the Local Government Operations Act, 2017, and the Inter-Governmental Fiscal Arrangement Act, 2017. But many of the earlier acts governing the services and responsibilities of local governments may need to be amended for consistency with the new Constitution. It is important to make these amendments within the next year or two, to give local governments clarity on their functional domain, taxation powers, and regulatory responsibilities. Furthermore, laws relating to land valuation, land pooling, and use of other value capture financing tools need to be enacted.
- **Improve urban management capacity.** Newly elected mayors and councilors are becoming acquainted with their new responsibilities under the new Constitution. There is a need for training in governance systems and planning for economic development, including mobilizing private finance. In addition, the technical, contracting, and project supervision capabilities of technical staff need to be improved to facilitate timely execution of urban infrastructure projects. This includes training accounts and administration staff in double entry accounting, long-term capital investment planning and budgeting, financial management, cash flow management and leveraging, and the use of geographic information system tools to improve tax administration, value capture financing, tax increment financing, and other approaches to improving OSRs.
- **Improve procurement, financial management, and contract management frameworks.** Each of the cities in this study had different classifications of revenue sources and expenditure items, which made comparing performance difficult. It is advisable that the government considers implementing a double entry accounting system and common accounting standards across all local governments. In addition, the government could improve OSR through better administration and collection, and it could collect additional revenues through the use of value capture financing mechanisms, levies, and periodic revisions in user charges. These measures are needed to support debt servicing and future investments in this sector. In addition, it is recommended that the government implements a predictable and transparent system of fiscal transfers to local governments through the newly created Natural Resource and Fiscal Commission, to facilitate predictable funding of local governments' operating and capital expenditures. Appropriate institutional frameworks for efficient project planning, procurement, and execution are key. For example, a

dedicated SWM unit within local governments, with adequate capacity to bid out projects, supervise implementation, and carry out O&M post implementation, could help in this process.

**Pillar 2: Encourage PPPs in the urban sector (short and medium term).** Although a few PPP projects involving public funding and private management could possibly be implemented over the next few years, investments by the private sector in urban sector projects will increase only if sector viability is established in the form of adequate user charges and a stable and conducive regulatory framework.

- **Establish a legal and regulatory environment for PPPs in the urban sector.** The draft PPP Act is largely unclear on the relationship and division of responsibilities between the key bodies and provincial and municipal authorities. Given that local governments are responsible for SWM under the new Constitution, greater clarity about the responsibilities of local governments to enter into and regulate PPP arrangements is necessary. The PPP Act will need to be harmonized with the Local Government Operations Act and other proposed amendments to other Acts governing local governments' functions and powers.
- **Establish provincial PPP Units.** As stated in the PPP Policy and Draft PPP Act, a PPP Unit will be established at the national level. In addition, consideration could be given to establishing PPP centers in key municipalities. Potential roles for these centers include supporting PPP project screening, feasibility analysis, project structuring, customizing model PPP contractual documents for each sector/project, and assisting local governments in contract negotiations with the private sector. The first step would be to undertake a study to examine the scope, benefits, costs, and potential impacts of such centers, followed by an in-principle decision on whether to proceed or rely on a different approach (for example, the national PPP Centre) to provide the technical support that local governments will require. If a "provincial urban PPP center" model is found to be desirable, one or more such centers could then be established on a pilot basis where demand is highest.
- **Allow local governments to tap into national-level funds, including viability gap funding, project preparation funds, and a land acquisition revolving fund.** If targeted financial and risk mitigation support to local governments is needed, local governments should be able to tap into appropriate funds. It would be advisable for the government to formulate frameworks and processes to enable municipalities to access such support. The appropriate frameworks and processes for municipalities to access such funds need to be in place.

**Pillar 3: Establish a framework for local government borrowing (three to five years).** The following initiatives aim at improving the "bankability" of urban projects. It would be advisable for the Government of Nepal to support the development of a policy framework for regulating local government borrowing, as well as appropriate legislation and regulations.

- **Create a legal and regulatory framework for local government borrowing.** The framework for local government borrowing should be based on commercial principles whereby domestic lenders and bond market investors are able to finance bankable projects sponsored by highly rated local governments. The framework should enable local governments to tap into appropriate blended financing, including commercial, bilateral, and multilateral sources; capital grants through intergovernmental fiscal transfers; and beneficiary contributions for the long-term capital investment program, as needed. Issues covered should include definition and types of debt, conditions under which local governments may borrow (credit rating, limits for borrowing linked to debt servicing capacity, and so forth), loan tenors, collateral, debt issuance process, whether local governments may borrow in foreign currency, events in cases of default, and issues of information disclosure and mechanisms to monitor local borrowing. In developing this framework, the government will need to consider the impacts of,

for example, opening access to local government current accounts and tax collection facilities to all commercial banks (as opposed to only government-owned banks). The transparency of local government cash flows could support municipal lending by commercial banks in the long term.

- **Create the necessary regulations for direct lending to local governments by banks and financial institutions.** Under the NRB's leadership, local governments should be classified as a separate borrower class, and capital provisioning norms and security requirements must be brought out in the guidelines. The Securities Board of Nepal is advised to pass regulations for issuance and listing of municipal bonds. Regulations pertaining to investments by provident funds, insurance funds, and the Citizen Investment Trust (the largest investment vehicle for citizens in Nepal) in local government debt (term loans and municipal bonds) will also need to be developed.
- **Redefine the role of the TDF.** In the context of a broader policy and regulatory framework for municipal borrowing, the government will need to review and appropriately define the role of the TDF in on-lending activities and its relationship to commercial lenders and local governments. This aspect needs further consideration and is not covered in detail in this roadmap.
- **Develop a framework for the financial assessment and credit rating of local governments.** Two credit rating agencies, ICRA Limited and CARE Ratings Limited (Nepal), are already registered with the Securities Board of Nepal. These agencies should be engaged to develop a framework for local government credit rating (although a system of intergovernmental fiscal transfers and national accounting standards must precede it), to develop the market for local government borrowing. In the interim, a checklist/toolkit for evaluating local government financial performance, including the ability to meet recurring expenditures (salaries and O&M) from OSRs, collection efficiency for property tax and other OSRs, days payable, and so forth, may be developed as a precursor to the credit rating process.

## Summary of Recommendations for the Urban Sector

TABLE 16: URBAN SECTOR ROADMAP

PILLAR	SHORT-TERM ACTIONS (UP TO 3 YEARS)	MEDIUM-TERM ACTIONS (3-6 YEARS)
Pillar 1: Improve the creditworthiness of local governments	<ol style="list-style-type: none"> <li>1.Pass new/amend acts governing local government functional domain or specific services to ensure consistency with the new Constitution and Local Government Operations Act 2017.</li> <li>2.Transfer staff to local governments and fill vacant posts.</li> <li>3.Build capacity of LG staff on financial management systems, OSR mobilization, procurement and contract management, and project design and implementation.</li> <li>4.Implement double entry accounting system and common accounting standards across all local governments.</li> <li>5.Improve OSR through better administration and collection and additional revenues.</li> <li>6.Implement predictable and transparent multi-year system of fiscal transfers to local governments through the Natural Resource and Fiscal Commission.</li> <li>7.Prepare long-term capital investment plans.</li> <li>8.Create appropriate institutional frameworks in local governments for efficient project planning, procurement and execution.</li> </ol>	
Pillar 2: Encourage PPPs in the urban sector (short and medium term)	<ol style="list-style-type: none"> <li>1.Pass PPP Act and/or other legislation and guidelines with adequate recognition of the constitutional role of local governments in the urban sector.</li> <li>2.Clarify roles of various institutions, including IBN, the proposed PPP Unit and local governments in the proposed PPP Act (or other legislation) for entering into contractual arrangements with the private sector.</li> </ol>	<ol style="list-style-type: none"> <li>1.Establish PPP Units in one/more provinces on pilot basis or rely on other models to provide technical PPP support to local governments.</li> <li>2.Consider options for providing targeted funding support to local PPPs, including viability gap funding, risk mitigation measures, project preparation funding support, and land acquisition support.</li> </ol>
Pillar 3: Establish a framework for local government borrowing (3 to 5 years)	<ol style="list-style-type: none"> <li>1.Evaluate local government financial performance based on a checklist as precursor to the credit rating process.</li> </ol>	<ol style="list-style-type: none"> <li>1.Formulate policy, legal, and regulatory framework for local government borrowing and related measures.</li> <li>2.Nepal Rastra Bank to develop regulations for direct lending to local governments by banks.</li> <li>3.Government of Nepal to ensure level playing field for government and private banks lending to local governments.</li> <li>4.Review and adjust the role of the TDF, finalize business plan for TDF, and enable its transition to the new role.</li> <li>5.Develop credit rating methodologies for local government borrowing. SBN and Ministry of Federal Affairs and General Administration with international credit rating agency support to oversee/facilitate the process.</li> <li>6.SBN to announce guidelines for issuance and listing of municipal bonds, including credit rating requirements.</li> </ol>

Note: IBN = Investment Board of Nepal; OSR = own-source revenue; PPP = public-private partnership; SBN = Securities Board of Nepal; SWM = solid waste management; TDF = Town Development Fund.



The World Bank Group provides assistance to governments in developing countries to improve access to infrastructure and basic services through public-private partnerships (PPPs). When designed well and implemented in a balanced regulatory environment, PPPs can bring great efficiency and sustainability to the provision of such public services as water, sanitation, energy, transport, telecommunications, healthcare, and education.

The World Bank Group's unique value proposition rests with its capacity to provide support along the entire PPP cycle—upstream policy and regulatory guidance, transaction structuring advice, as well as financing and guarantees to facilitate implementation.



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