INFRASTRUCTURE OPPORTUNITIES IN Nepal

CII iCEMA Feedback

DISCLAIMER

Foreword

Nepal is a landlocked sovereign state bordered by China and India. It is located in the Himalayan range with 8 of the world's tallest mountains including Mt. Everest. With a population of around 29 million, Nepal is the world's 93rd largest country by land mass with an area of 147,181 square kilometers.

Nepal is currently going through a historic transformation to become a Federal system. By the end of 2017, elections were successfully held at the federal, state, and local tiers. It is witnessing greater political stability, greater inclusion, good governance and sustainable growth. The new federal system is divided into seven new states and 753 local governments.

The new federal structure presents unprecedented opportunities for Nepal to embark on a development led growth.

Nepal also unfortunately experienced devastating earthquakes in 2015 and the heavy monsoon rains sweeping across South Asia in 2017. This has led to a high focus on construction activity to rebuild various parts of the country which were affected.

India and Nepal share a historical & unique relationship of friendship as close neighbours. The cooperation is characterized by open borders and people-to-people contacts of kinship and culture. There has been a long tradition of free movement of people across the borders. The India-Nepal Treaty of Peace and Friendship of 1950 forms the bedrock of the special relations that exist between India and Nepal.

There is also a strong focus on various infrastructure programs which has reflected in higher private investment in Construction, Hotels, Hydropower and Aviation. Large projects like Upper Tamakoshi Hydropower Project of 456 megawatt will help the country to reduce its reliance on power imports by FY 2019.

ConMac Nepal, organized by CII along with ICEMA, is an Exhibition of Construction Machinery and Construction Technology aimed at providing the required impetus to accelerate the Infrastructure development undertaken by the Government of Nepal. The current report "Infrastructure opportunities in Nepal" primarily aims to highlight the key infrastructure plans, bottlenecks in execution, government plans and likely opportunities available. We hope that this report will provide perspective to the industry participants and with the support of favourable government policies and speedy project implementation, we are confident the industry can contribute significantly to Nepal's growth while benefiting from the available opportunities.

This report would not have been possible without the wisdom, guidance and support of many individuals and institutions. These include ICEMA steering committee, various ministries in the Government of Nepal, Equipment manufacturers, Channel Partners, Contractors operating in Nepal and other stakeholders. Our knowledge partner Feedback Business Consulting has helped developing this report. We would like to acknowledge their contributions and extend our appreciation and sincere thanks to all of them.

With best wishes,

Mr. Arvind K Garg
Chairman, ConMac
President, ICEMA

Nepal is a strategic partner for India right from trade to its security architecture. Nepal, as we know, enjoys an open border with India. Both the countries have collaborated on various infrastructure projects being executed, with many Indian and Nepalese contractors and Equipment OEM's thereby participating in building the infrastructure for the country. In Nepal's current transformation to a Federal system, building infrastructure is going to be a key ask, to support the newly formed provinces.

ConMac is organized by CII along with ICEMA and is currently in its 3rd edition. The first edition was held during 27th February to 1st March 2015 in Guwahati in North East India and was attended by senior representatives of Government of India, State Governments, Industry and other stakeholders.

The exhibition also aims to help develop the contractor base in the country along with providing them with an understanding of the latest technologies available. It provides a platform for the contractors to interact with various stakeholders in the Construction Equipment industry.

The 3rd edition of ConMac will also see the launch of the report "Infrastructure opportunities in Nepal" which has been jointly developed by CII, ICEMA and our knowledge partner Feedback Business Consulting. This report aims to provide the industry stakeholders with a view of the available opportunities in Nepal.

With best wishes,

Mr. Vipin Sondhi
Chairman, CII Trade Fairs Council

EXECUTIVE SUMMARY

Nepal is a landlocked sovereign state bordered by China and India

Located in the Himalayan range, Nepal has 8 of the world's tallest mountains including Mt. Everest. With about 29 million population, Nepal is the world's 93rd largest country by land mass with area of 147,181 square kilometers.

Geographically, the country is divided into three East-West ecological belts

1. The Northern Range – Mountain
2. The Mid-Range – Hill
3. The Southern Range – Terai (Flat land)

Geography Statistics of Nepal

Figure 1

Parameter	Details
Land Area (Sq.km)	143,351
Water Area (Sq.km)	3,830
Total Area (Sq.km)	147,181
Population (Mn)	29.034
Population Density (Per Sq.km)	202.54

Source: Economic Survey 2017-18, Ministry of Finance, Government of Nepal

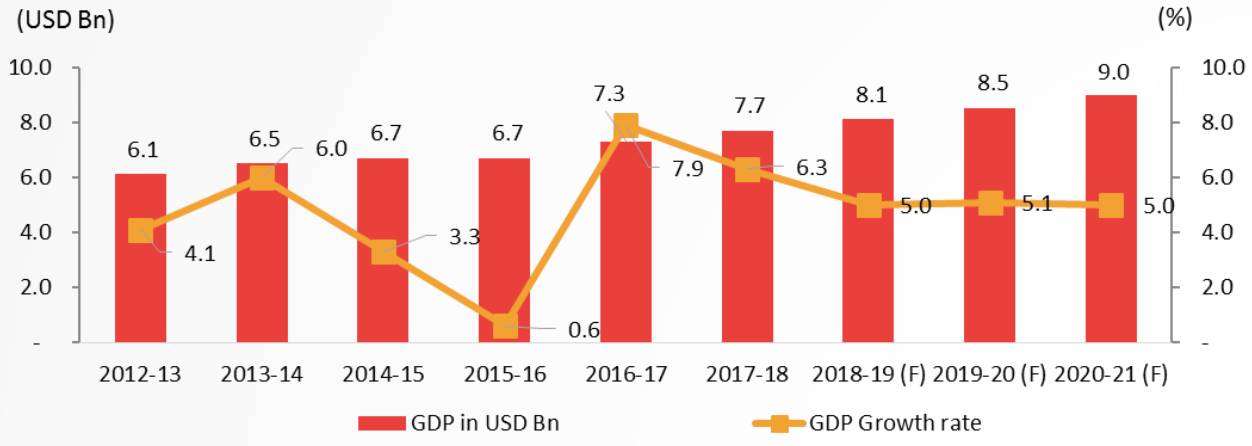
Nepal is going through a historical transformation following an abolition of the monarchy in 2008 and the passing of a constitution in 2015 to become a federal government.

Nepal adopted a new constitution in Sept. 2015, the culmination of the Comprehensive Peace Agreement signed in 2007 to end the country's 10-year instability. Consequently, one significant component of the new constitution was to transform Nepal from a unitary to a federal country and to devolve key functions, including agriculture, to the seven newly formed provinces.

Nepal's economy is anticipated to grow at slower pace of 5% in FY 2019 from 6.3% in FY 2018. The transformation to the Federal system has put pressure on government spending where the expenditure has increased significantly this fiscal year partly for local, provincial and parliamentary elections. In addition, the government has apportioned fiscal transfer of USD 2 Bn (about 22% of GDP) to local and provincial governments.

The growth potential considering the transformation to Federal system is abundant.

Total GDP (FY 2017-18) : USD 9 Billion (Real GDP at Market Prices) Figure 2



Source: Economic Survey 2017-18, Ministry of Finance, Government of Nepal

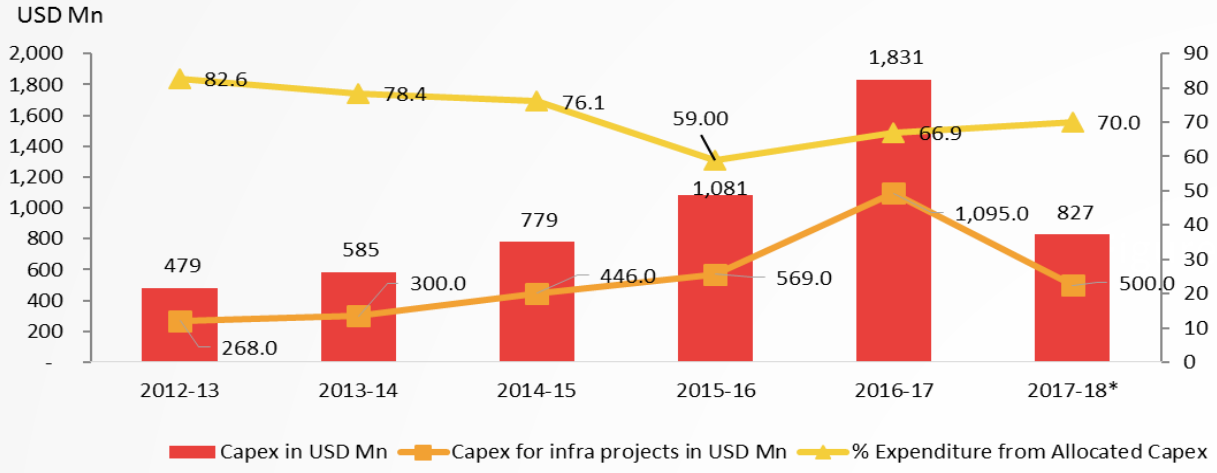
Capital expenditure, over the last 3 years, has grown at a CAGR of 46 %, but this has been only 70% of the allocated budget.

Capital expenditure as of mid-February 2018 surged by 26.9% year-on-year. Sectors like Roads, Housing and Hydropower account to bulk of the allocation. However, execution at 19.7% remained far short of allocation. There have been many impediments hindering project implementation like

Execution rate over the last 5 years has been 72%, of the overall allocation. This translates to an actual expenditure as 8% of the GDP as against a target of 11.5% GDP for the year 2018.

1. **Lack of project readiness and coordination among implementing agencies**
2. **Frequent transfer of key project staff**
3. **Weak contract management and procedural hurdles related to land acquisition and forest clearance**
4. **In addition, the payment of this capital expenditure is release towards the end of each fiscal year. In fact, close to 40% of the payment is paid out in the last month of the fiscal. This has resulted in most projects getting delayed due to lack of on time payment**

Total Capex (FY 2017-18) Figure 3



*2017-18 data is available for the first 8 months

Source: Economic Survey 2017-18, Ministry of Finance, Government of Nepal

More than 55% of the Capital expenditure is on Transportation (Roads, Railways), Hydropower and Irrigation, Housing, Mining

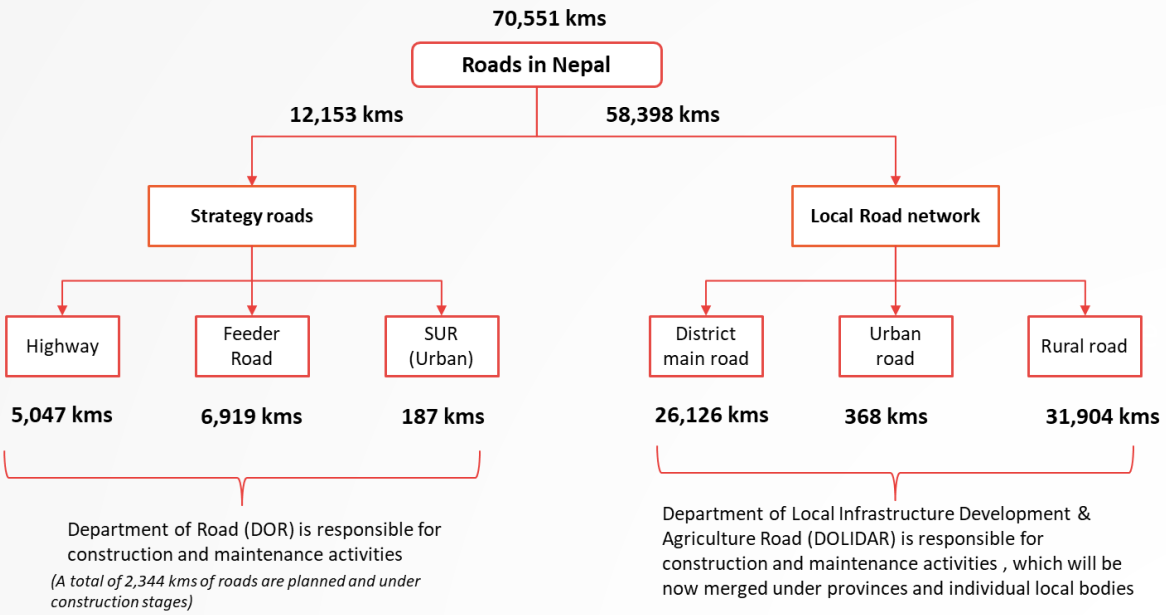
Roads and Highways:

Before the formation of the federal system, DOLIDAR (Dept of Local infrastructure Development and Agricultural roads) oversaw execution and maintenance of local roads in the country. With the federal structure, Roads under DOLIDAR will now be merged under the Provinces. These will be the responsibility of the local bodies, to be formed under these provinces.
Department of Roads (DoR) is responsible for executing and maintaining only Strategy roads.

The key segments currently driving the projects in the infrastructure segment are

1. **Roads**
2. **Hydro Power**
3. **Railways**
4. **Irrigation and small urban & rural development works**

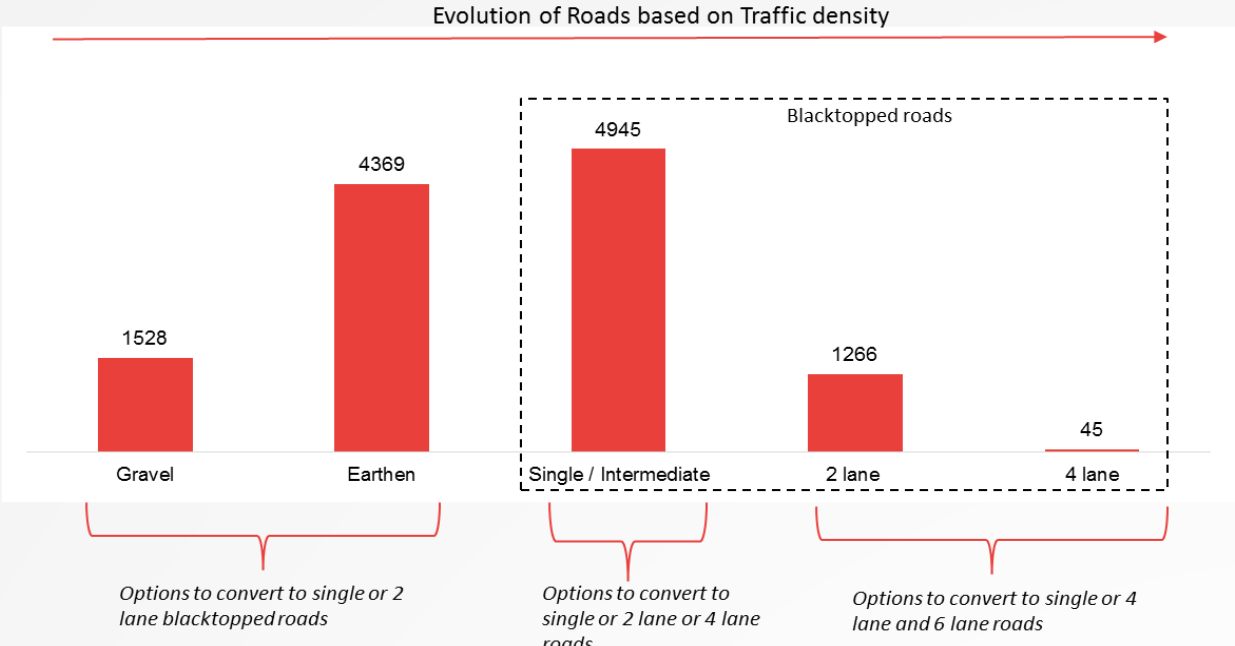
Road network of Nepal Figure 4



Source: Feedback Analysis

Of the total strategy roads in operation, only 51% are asphalt roads, rest are Gravel and Earthen roads, which leaves a lot of scope to develop Asphalt roads in future.

Strategy road network : 12,153 Kms Figure 5



Source: Feedback Analysis

Based on government data, the focus is largely on expansion of roads from 2 lanes to 4 & 6 lanes. There are no new green field projects on the anvil. Focus of DOR is on Construction, Maintenance, and Rehabilitation and converting feeder roads to Highways, Earthen and Gravel to Black top roads.

Current practices of project allocation by these departments are archaic and needs a complete overhaul of procedures. At present, DPRs are not prepared before announcement of projects, which typically results in a lot of cost overruns and project delays.

Key Projects	Total Length (Kms)
Postal Highway Project	1,797
Midhill Highway Project	1,700
East West (Mahendra) Highway	1,026
North South Road Project	692
Butwal Pokhara Road Project	157
Mugling Nagdhunga Road Project	110
Mugling Pokhara Road Project	92
Kohalpur-Surkhet Road Project	85

Source: Department of Roads

Figure 6

Current large projects which are at various stages of completion

Hydro Power

Nepal is dominated by hydropower contributing to 95% of the generation. Even though there is considerable import of electricity (close to 46% during 2016-17), Nepal's domestic generation is expected to increase with the addition of various small and medium sized hydropower plants to the national grid by the end of FY 2018.

The focus of Hydro Power generation has increased over the last 1-2 years. Both Private and Government projects are driving the hydropower sector. This sector has seen an increase in private investments over the last 3 years.

Upper Tamakoshi Hydropower Project of 456 megawatt, will add to the national grid by FY2019, ending the country's reliance on power import at least during the rainy season.

Electricity demand and supply Figure 7

Item	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
Installed Capacity (MW)	787	787	856	972.4	1152.9
Peak demand (MW)	1,201	1,292	1,385	1,444	1,508
Deficit (MW)	414	505	529	471.7	355.1

Source: Annual report 2016, Annual report 2017, Nepal Electricity Authority

A total of 200+ Power projects of various capacities are currently ongoing across Nepal.

Current large projects which are at various stages of completion Figure 8

Key Projects	Production Capacity (MW)	Completion period
Budhigandaki Hydro Power Project	1,200	NA
Upper Tamakoshi Hydropower Project	456	2018-19
Tanahun	140	2022-23
Upper Trishuli 3A	60	2019-20
Rahughat	40	2020-21
Kulekhani Third	14	2018-19

Source: Ministry of Energy, Water resources and Irrigation

Railways

Current Railway network of Nepal is 35 kms from India to Nepal. While the total Railways length planned is 300-400 kms connecting China port to Kathmandu, around 100 Kms is under various stages of construction. The entire Rail network planned in Nepal is Broad-gauge and High speed rail network with an average speed of 120-150 km/hr. Nepal and India have plans for four cross-border railway links, including one to link Raxaul to Kathmandu.

Nepal is also in talks with Konkan Railways for developing high speed Rail Network in the country.

Irrigation

Capex planned for irrigation during 2018 was USD 0.17 Billion, at similar level of the 2017 capex expenditure. The capex expenditure in irrigation segment is estimated to grow at 5-10% CAGR over the next 3 years.

The government needs to focus on enabling infrastructure projects to power its development story. Project planning and execution needs to be revamped to enable timely execution of projects with cost overruns and bring in the latest technology solutions for the region.

Some of the key reforms that need to be addressed in the short term are

Directly impacting the project

1. Well planned project DPRs
2. Land acquisition policy
3. Key standards to be used for project construction
   Project management

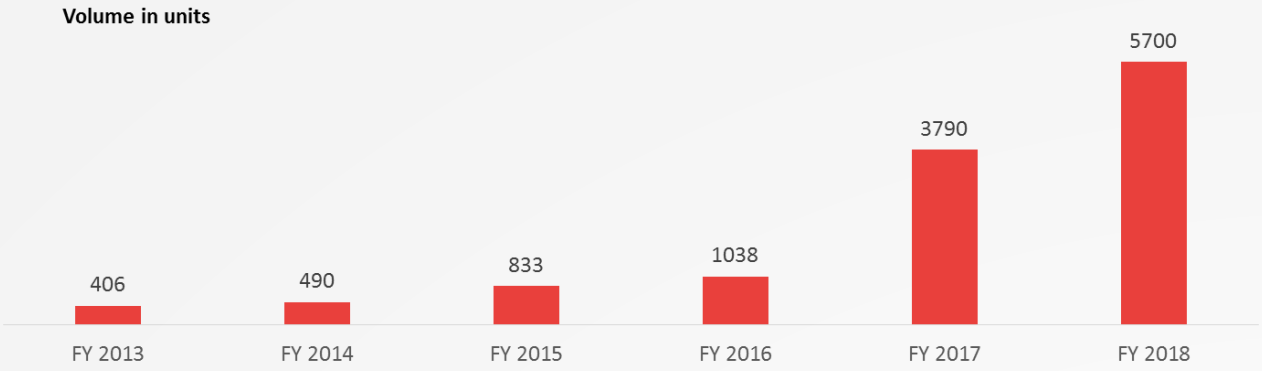
Other factors

1. Revising Import duties on equipment and raw material used for infrastructure projects – Any truck mounted equipment are classified as motor vehicles and attract close to 25% import duties.
2. Allocation of existing projects between provinces and a revenue sharing model.
3. Involvement of international agencies, Equipment OEM's while preparing project DPR's.

There are plans to announce projects but due to lack of proper reforms and policies, the announcements are kept on hold. Even though some of the Provinces have announced projects, there were limited bidders for the same. Lack of payment from earlier projects has resulted in contractors staying away from bidding for new projects. Old projects, which are yet to be completed, need to be expedited and closed. This will allow contractors to take up new projects.

The construction equipment market in the country has been growing at over 70% over the last 5 years and is currently at 5,700 numbers. Equipment into Nepal is primarily imported. India accounts for more than 90% of the imports into the country.

Construction equipment market in Nepal Figure 9



Source: Feedback Analysis

The current sale of Equipment for the year FY 2019 is expected to be along similar lines of FY 2018. It has been projected that the equipment market might touch close to 5,000-5,500 units.

The construction equipment market has witnessed a tremendous growth in the last 3 years. None of the equipment are manufactured locally and all are imported. India accounts for more than 90% of the imports into the country.

Even though this growth is largely attributed to the construction activity, there are many other factors which have influenced this market

1. Natural calamities like Earthquake in 2015, floods in 2017, has resulted in large rebuilding activities across the country which required some of these equipment (few equipment, but largely attachments like Breakers)

2. Preparedness for any further such natural calamity has prompted the government to stock equipment at a province and local government level. Over the last 2 years, Government purchase accounted for close to 15% of the sales. When the 753 local bodies were formed, it was made compulsory for each local body to own minimum of 1 BHL, 1 HEX, 1 Compactor, 1 Tipper among the major equipment. Only 20-25% of the purchase has been made by the local units till date

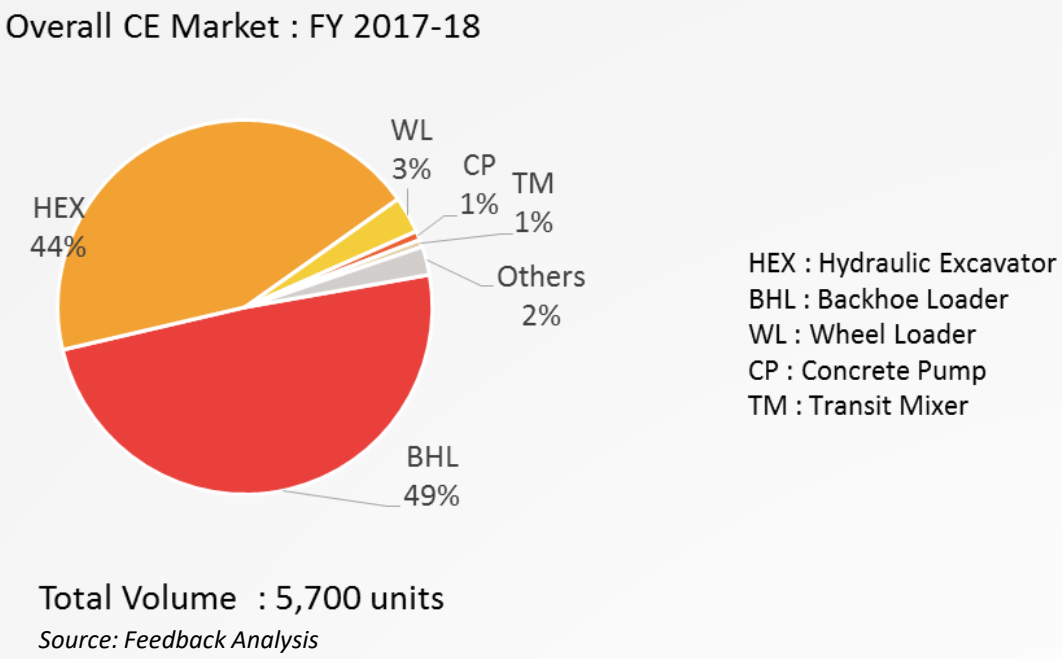
(i) There is a reluctance among contractors to take up rehabilitation projects, fearing non – payment

3. Groups, formed by same community individuals, saw opportunity in retailing these equipment to contractors. They imported equipment in bulk and supplied them locally. The sale was also facilitated by giving long credit periods

4. Local contractors do not invest on high Technology equipment, hence it has to be bought by the Government or International contractors who execute the projects

The CE market in Nepal is dominated by Backhoe Loader and Excavators which account for 93% of the total sales

Construction equipment market in Nepal Figure 10



Source: Feedback Analysis

Equipment usage varies by the type of project and also by the geography in which the project has to be executed. Due to the hilly and mountainous terrain, 20-22 ton excavator and 4 wheel drive 90 HP &above BHL are most sought after machines.

One of the key issues faced with heavy equipment is shifting it to the project site. Considering the terrain, transportation by road, at times is not possible. Hence, the equipment needs to be air lifted to these locations. Among excavators, 14 ton capacity is typically air lifted. However, the contractors are not able to match the productivity of these machines to a regular 20 ton machine.

Current equipment used across projects

Equipment usage across key projects Figure 11

Project Type	Key Equipment used[1]	Capacity Preferred
Strategy Roads / Highways	Hydraulic Excavator	14T, 20T, 22 T
	BHL	90 HP , 4WD
	Motor Grader	> 150 kw Engine
	Hot mix plant	120 TPH
	Asphalt Paver	5mtr & 7mtr paving width
	Vibratory Compactor	8 T & 11T
Hydro Power Projects	Hydraulic Excavator	22 T
	Dumpers	NA
	Batching plant	90 & 120 cum/hr
	Transit Mixers	6 cum
	Concrete Pumps	NA
	Crushers & Screens	150-200 TPH (Each plant)
Irrigation Projects	Hydraulic Excavator	20T, 22 T
	BHL	90 HP, 4 WD
	Batching plants & Transit Mixers (Used only in large projects, small irrigation projects less than USD 4 Mn do not use these equipment and largely used manual site mixers and Pumps	

[1]Not an exhaustive list of equipment used across projects, only key equipment listed

Source: Feedback Analysis

Limited exposure to international practices/standards has led to the adhoc usage of machines and other construction practices

There are very limited projects across Nepal which are undertaken by contractors of international repute. In most of these projects, the contractors work with their own team and projects. Currently there are close to 5 such mega projects underway in Nepal.

National Pride Projects Figure 12

National Pride Projects	Budget allocation during FY 2017-18 – USD Mn	Expenses during FY 2017-18 – USD Mn	% Project completed
Budhigandaki Hydropower Project	89.2	0.1	
Kathmandu-Tarai Fast Track	88.9	2.6	
South Asia Tourism Infrastructure	63.3	17.5	
Melamchi Drinking Water Project	57.6	5.1	83.71%
Pokhara Regional International Airport	43.9	NIL	50.0%
Postal Highway	37.5	16.8	13.7%
Mid-Hill Highway	35.3	20.3	
Rail, Metrorail and Monorail Development Project	35.2	12.7	45.0%
North-South Corridors	17.8	8.3	70.0%
President Chure-Tarai Madhesh	16.8	3.0	92.2%
Rani Jamara Kulariya Irrigation Project	17.3	6.7	36.0%
Sikta Irrigation Project	13.9	3.9	57.7%
Second International Airport, Nijgadh	13.2	NIL	15.0%
Bheri-Babai Diversion Multipurpose Project	7.8	4.9	35.0%
Babai Irrigation Project	6.3	0.9	59.5%
Upper Tamakoshi Hydropower Project	4.4	1.5	96.4%

Source: Feedback Analysis *Projects status as on January 2018*

Among local contractors, there are hardly 8-10, who participate in the tenders directly from Government, most others take subcontracts. Most of the contractors are aware of latest technology and trends since they participate across international exhibitions, but lack of funds impacts investment.

There is scope for OEM's to work with contractors to provide them with proper solutions for their equipment needs

Even though contractors are aware of various technologies that are available, they are not able to plan the right equipment, considering the terrain and their lack of experience. Some of the key issues mentioned were

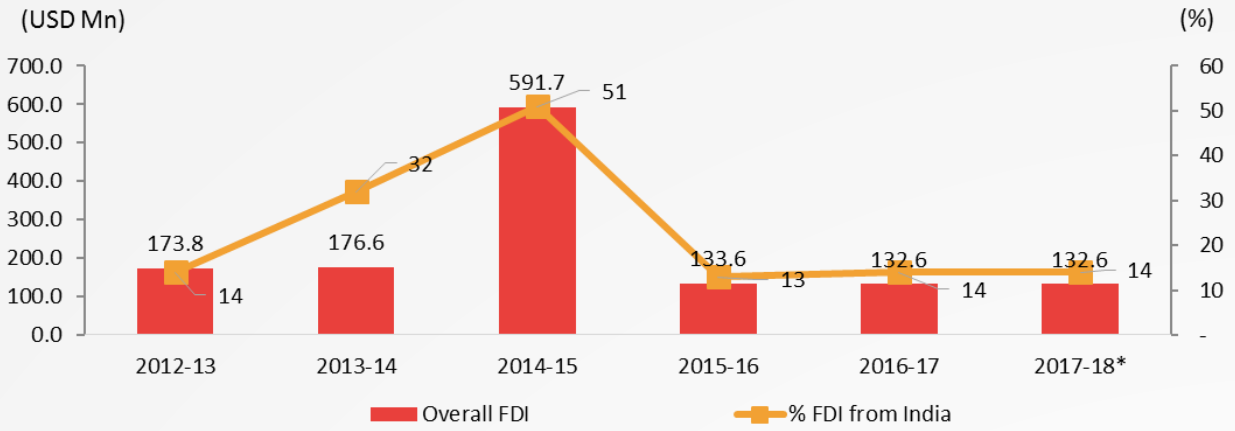
1. Need for latest technology for road maintenance. Equipment like Millers, recyclers etc.
2. Working on roads after landslides requires a mix of recycling, overlaying, debris removal. This currently is not being done efficiently
3. Most roads are narrow and require compact equipment, with high capacity - Crushers etc
4. Portable or site assembly equipment. They need better solution in concreting technology since Batching plants, Transit Mixers are difficult to carry in these terrain
5. Accessibility to technology is limited due to requirement of large capital. Innovative methods of funding, leasing or renting could enable better usage
6. Lack of skilled operators is a major issue.
7. Higher downtime of machines due to improper maintenance methods
8. Lack of availability of spares and service at site. Most channel partners of OEM's are located in main cities, while projects are in hinterlands

Most customers have access to finance with interest rates ranging from 13-16%. Channel partners also double up as financiers for these equipment and account for close to 35% of the total equipment financed

Most authorized channel partners have their in-house finance teams who work with customers to address their financial needs. Nepal also has a network of multiple small banks who finance these equipment. There are also unauthorized / adhoc channel networks, typically group of individuals from a community, who buy equipment in bulk and supply to customers. They also provide customers with credit which can extend up to a period of 6 -8 months, after the customer provides a margin money of 10% equipment value. These unauthorized channel network thrives on the profits made by selling equipment at regular rate, which initially was bought by them at 20-25% discount from the manufacturer.

Some of the key trends that will determine the future of Nepal Construction Equipment Industry

FDI in Nepal Figure 13



Source: Department of Industry, FDI Division, GoN, NICCI

1 Funds from international organizations for the infrastructure development

Many International, foreign, and government agencies are involved in Nepal's economic development programs.

During July 2018, the Nepal government requested India's consent to switch part of USD 750 Mn Line of Credit (LoC) granted to reconstruct earthquake-damaged buildings to other infrastructure projects. Reconstruction project is unlikely to use the entire amount of LoC, therefore, the move to switch part of the grant to other projects. Exim Bank also provides finance for construction of roads, hydro power, irrigation and infrastructure projects in Nepal.

Millennium Goal Corporation, a US based JV is involved in funding all the urban development and sanitation programs in the country

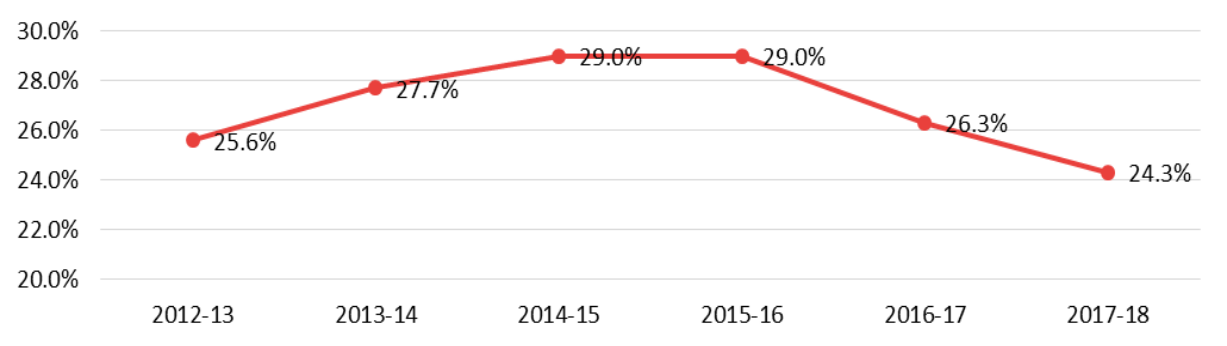
JICA is funding for urban development and water sanitation projects and China for Airports and Cement plant projects

2 National Pride projects of the country

Projects categorised under national pride project include hydropower, irrigation, airport, highways and railways that have significant impact on country's economic development. The government is planning to bring a separate act for execution of national pride projects and establish a high-powered monitoring mechanism under PM's office for effective monitoring of these development projects.

The government has introduced multi-year contracts for priority projects and allocates resources every fiscal year till the projects are completed. However, the expenses have been far lower than the allocated sum.

Trend of Remittance as a % of GDP



Source: Economic Survey 2017-18, Ministry of Finance, Government of Nepal

3 Reforms on policies related to Project planning, allocation and execution

The government has to ensure that all reforms related to the infrastructure sector are taken up on priority. The reforms would enable the government to fast track the infrastructure projects and helping the economy. This would also help the country reduce its reliance on the remittances which currently accounts to close to 24% of the GDP as on 2017-18.

4 Working with companies with international experience on laying down best practices for construction across sectors

Government can work with contractors, Consultants, OEM's to understand the best practices followed in each type of project and creating DPRs which reflect this technology. This will help the government in managing and executing projects much more efficiently

5 PPP in Infrastructure projects

Government should encourage PPP in projects. This will help the government in bringing in the relevant experience and expertise in executing projects, which currently is lacking. This will also help finance a lot more projects by the government

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