CRISIL RESEARCH

April, 2016

# Assessment of Operate-Maintain-Transfer (OMT) and Toll Collection Market for Road Projects in India

April 2016

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# 1. OVERVIEW - MACRO ECONOMY AND INFRASTRUCTURE IN INDIA

## A) Review of GDP growth in India

### Old series (2004-05 prices)

*Moderate economic growth till 2013-14*

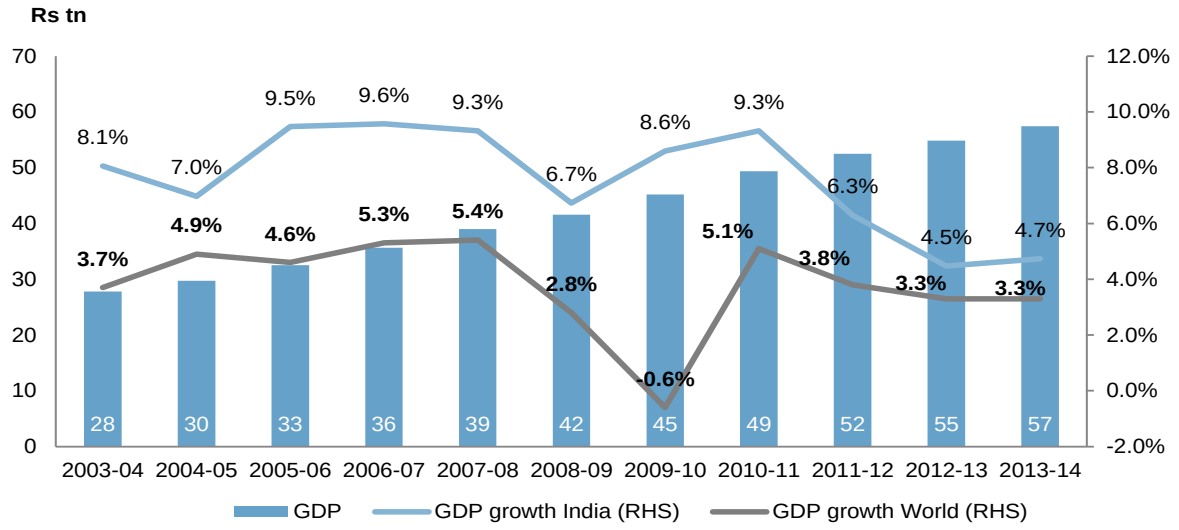
GDP is an important economic variable that is used to gauge the health of a country's economy. From 2003-04 to 2013-14, real GDP of India increased at a CAGR of 7.5% to Rs 57 trillion in 2013-14 from Rs 28 trillion in 2003-04. The services sector continued to be the largest contributor to the country's GDP at 60% in 2013-14, while the share of agriculture & allied services and industry was 14% and 26%, respectively.

The economy exhibited a muted GDP growth in 2008-09 primarily because of the global economic slowdown. However, the economic growth revived in 2010-11 backed by strong growth in primary as well as secondary sectors.

India's GDP growth hit a decadal low in 2012-13, at 4.5% on account of poor performance of manufacturing, agriculture and services sectors. The performance stabilized at those levels in 2013-14 with a miniscule uptick to clock 4.7%.

- The agriculture sector grew at a faster rate of about 4.0% in 2013-14 compared to 1.4% in the previous year due to better monsoons.
- Services sector continued its stable performance with 6.5% growth in 2013-14 as against 6.2% in the previous fiscal.

**Real GDP growth in India**




Note: World GDP growth calculation is based on calendar year while that of India is on the basis of financial year

**Source: Central Statistical Organisation, CRISIL Research**

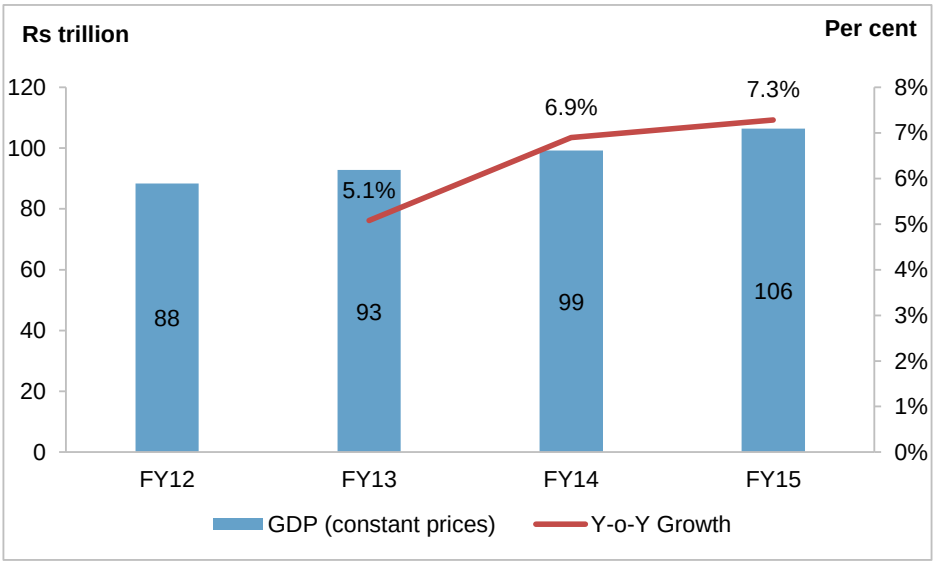
World GDP growth averaged 3.5% for the past five years and increased by about 3.3% in 2013-14. The growth was largely led by emerging markets and developing economies, which grew at 4.7% in 2013. India's GDP growth has outpaced the growth of world GDP primarily driven by strong domestic demand and better investment climate.

## New series (2011-12 prices)

### *Upward trend observed in 2014-15*

The Indian government adopted a new base price (2011-12 prices) for calculating GDP. Based on the new base price, India's total GDP shot up from Rs 88 trillion in 2011-12 to Rs 106 trillion in 2014-15 showing a CAGR of 6.4%. In 2014-15, India's GDP grew by 7.3% which was significantly higher than the world average of 3.3%.

**India's GDP (based on 2011-12 prices)**

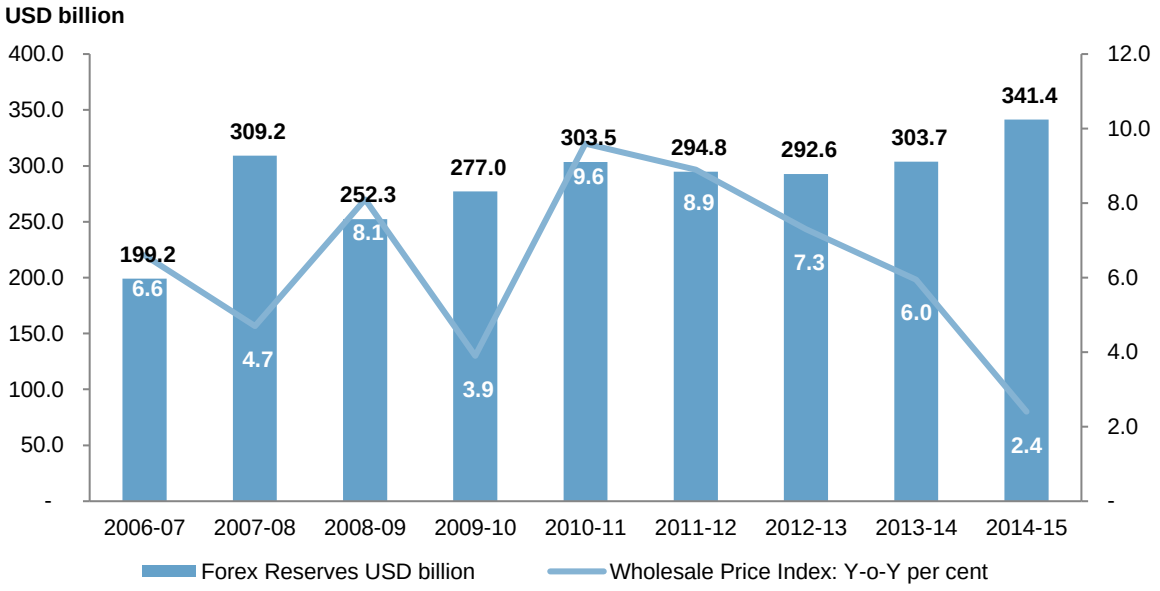



**Source: Central Statistics Office (CSO), CRISIL Research**

Growth has picked up pace in the first half of FY16, on the back of green shoots in manufacturing, modest recovery in consumption and support from government spending. GDP growth at 7.4% year-on-year in Q2 FY16 was higher than 7.0% in Q1 FY16. Investment growth picked up by 200 basis points while private consumption growth moderated to 6.8% as rural demand remained muted. Net-exports (exports minus imports) continued to be a drag on growth in the second quarter, albeit both exports and imports declined at a slower pace. On the supply side, as expected, agriculture growth was below trend at 2.2% while the non-agriculture sector's growth rose by 8.1%.

The Indian economy is expected to grow at 8.1% in fiscal 2017, if supported by a normal monsoon. CRISIL Research expects agriculture to grow at an above-trend 4% and non-agriculture growth to pick up by 40 basis points (bps) over the previous fiscal. Among emerging markets, India will remain in a sweet spot as the number of factors favourable for growth mount.

## Forex Reserves and WPI in India




**Source: RBI, Ministry of Commerce and Industry, CRISIL Research**

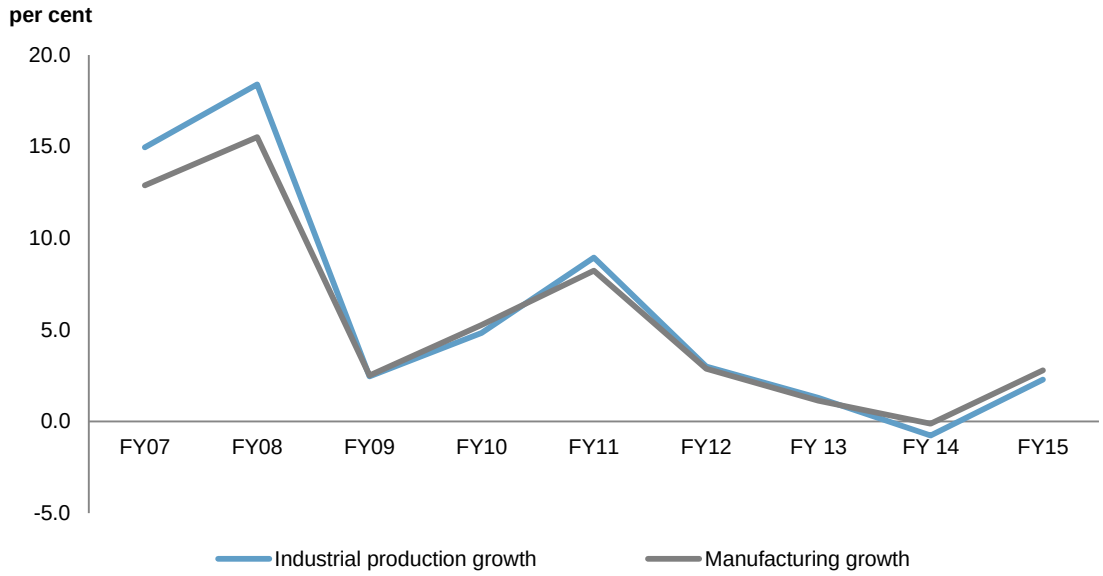
India's forex reserves expanded to USD 341.4 billion in 2014-15 from USD 199.2 billion in 2006-07, registering a CAGR of about 7.0%. WPI inflation, after remaining persistently high during 2010-11 and 2011-12, has shown signs of moderation since December 2011 and stands at 2.4% for 2014-15. Inflation cooled down significantly in 2014-15 aided by depressed commodity prices and low crude prices.

## B) Review of industrial production/ manufacturing growth

### Industrial production growth remained tepid in the past five years

Industrial production and manufacturing growth have fluctuated over the past five years. Industrial production and manufacturing growth increased in FY11 but subsequently declined; in FY14, it actually contracted over the previous year. Growth in industrial production in 2006-07 was backed by healthy growth in the capital goods (around 18%), consumer goods (around 18%) and manufacturing sectors (around 15%) in the same year. However, growth declined significantly in 2008-09 to just about 2.5% primarily due to slower growth in the mining and manufacturing sectors and in non-durable consumer goods, which showed a decline of about 5%. Industrial production turned negative in 2013-14 majorly due to de-growth in mining and quarrying. Also, manufacturing growth slowed down drastically on account of unfavourable economic conditions and weak external demand. Industrial production and manufacturing growth registered in 2013-14 was negative 0.11%. Industrial growth recovered in FY15 to reach 2.8%.

**Industrial production and manufacturing growth (2006-07 to 2014-15)**



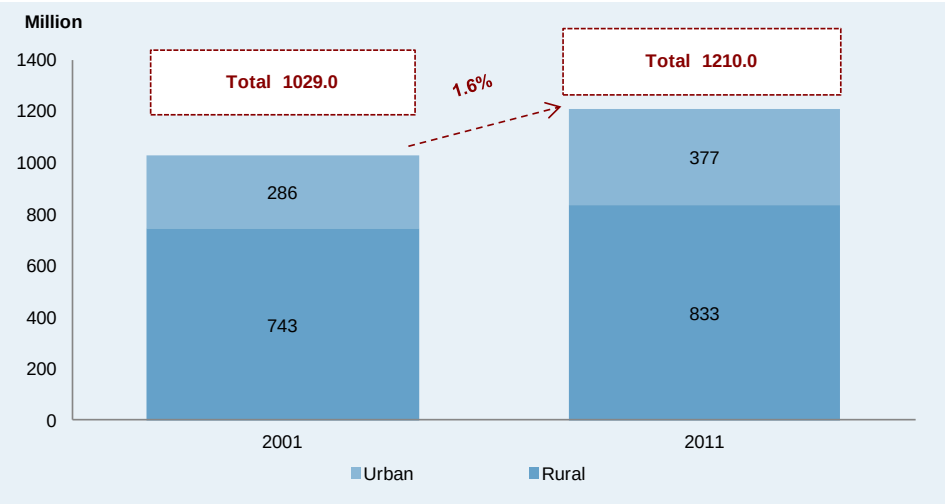

**Source: MoSPI, CRISIL Research**

## C) Review of population and consumption growth in last decade

### Population on the rise; urbanisation has increased to 31%

The population of India as of 2011 is 1.2 billion. The population registered an annual growth of 1.6% from 2001 to 2011 and decadal growth of about 18%. Urban population as of 2011 was 377 million marking an annual growth of 2.8%; rural population stood at 833 million, growing annually at 1.1% rate. Urbanisation levels have risen from 28% in 2001 to about 31% in 2011.

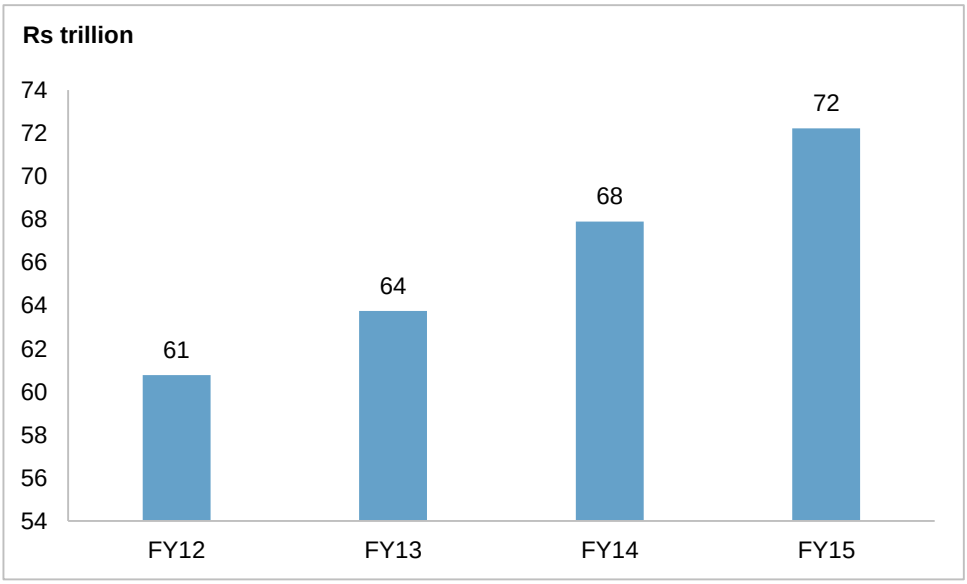
**Decadal population growth**




**Source: Census, CRISIL Research**

Consumption expenditure in India (based on 2011-12 prices) grew to Rs 72 trillion in 2014-15 from Rs 64 trillion in 2012-13, registering a compounded annual growth rate of about 4.0%.

**Consumption expenditure growth (new series)**

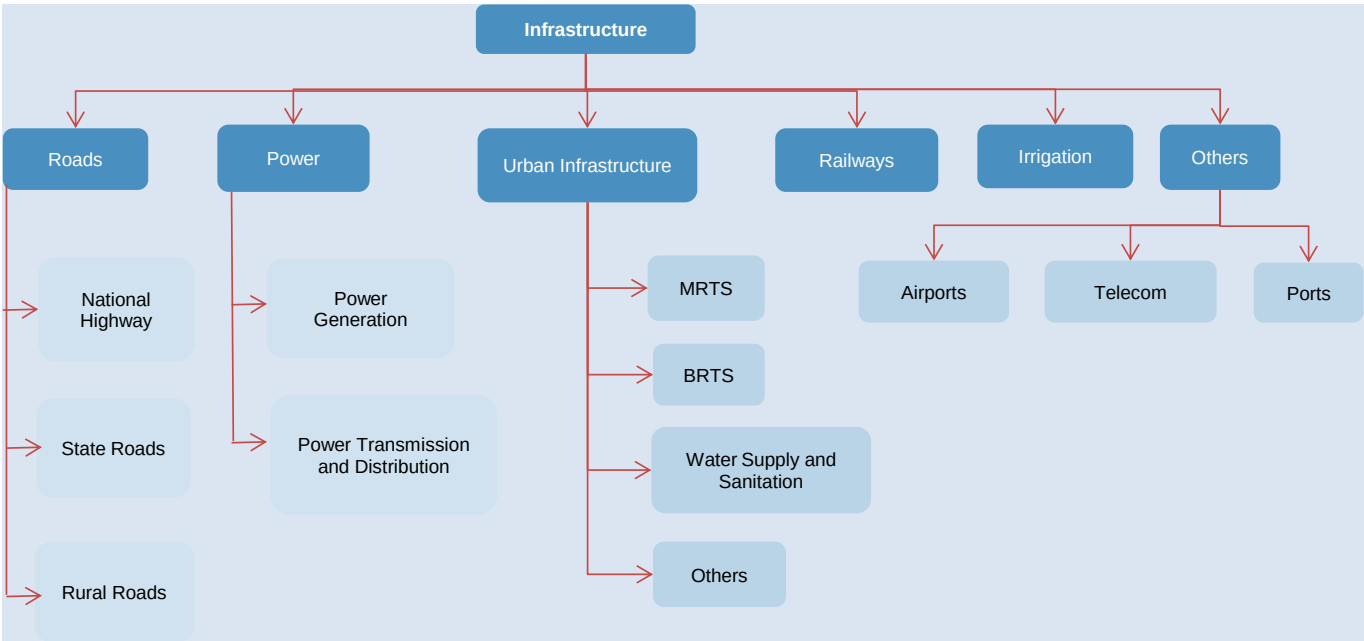



**Source: CSO, CRISIL Research**

## D) Overview of infrastructure sector in India

### Infrastructure investments in 12th five year plan (2012-17) increased to Rs ~31 trillion

Major infrastructure development requires substantial capital investment. The policies of the Indian government seek to encourage investments in domestic infrastructure from both local and foreign private players. FDI inflows in construction (infrastructure) activities from April 2000 to September 2015 stood at USD 4,423.46 million according to the Department of Industrial Policy and Promotion (DIPP). The Indian Government has introduced significant policy reforms to augment FDI inflows, to further boost investments and enhance infrastructure. The infrastructure industry includes roads, power, railways, urban infrastructure, irrigation and others. Power and road sectors are the key contributors to overall investments in the infrastructure industry.

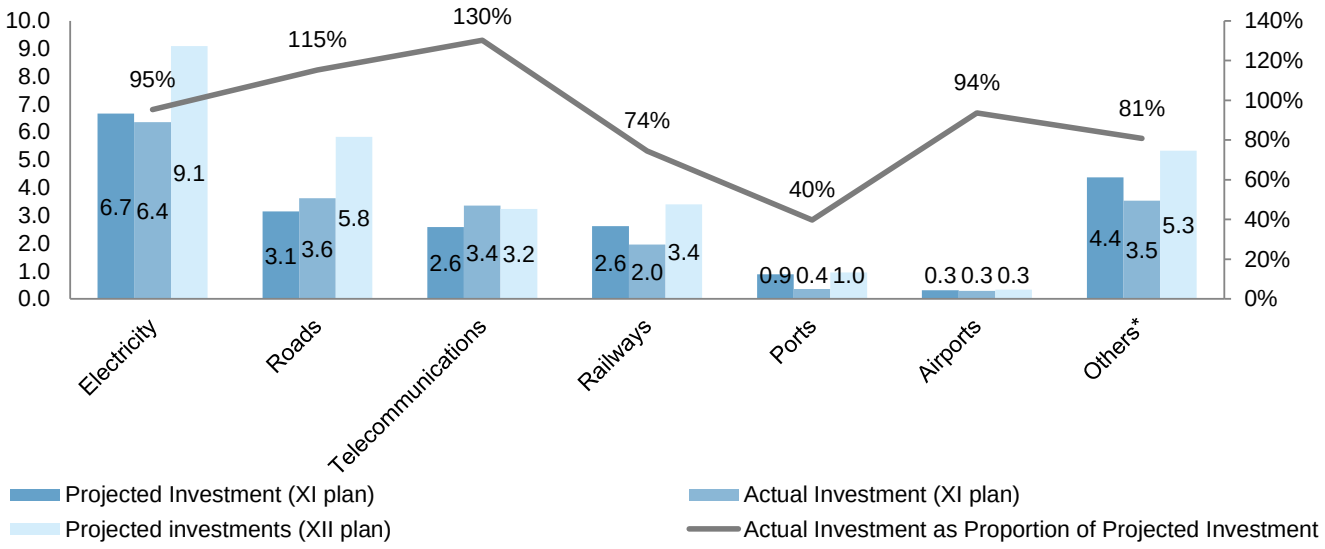



**Source: CRISIL Research**

In the Eleventh Five-Year Plan (i.e.,2007-08 to 2011-12), actual investments in the infrastructure sector reached Rs 19.5 trillion as against budgeted investment of Rs 20.6 trillion (95% achievement level). The key drivers were increased focus of central government on improving infrastructure; several programmes were undertaken by the government with this view.

According to the second report of the High Level Committee on Financing Infrastructure, the construction spend on infrastructure projects is expected to amount to Rs 30.93 trillion over 2012-17 from Rs 10.3 trillion (likely investments till 2013-14), with 39% contribution by the private sector and 61% by the central and state governments. Within infrastructure, power and roads are estimated to be the largest contributors, followed by railways, telecommunication and irrigation.

**Construction spends (Rs trillion) in infrastructure segment (Eleventh and Twelfth Five-Year Plans)**




*Others include irrigation, water supply and sanitation, storage, oil and gas pipelines

**Source: High-level Committee on Financing Infrastructure (Second Report, June 2014), CRISIL Research**

Electricity: Electricity investments in the Eleventh Five-Year Plan were Rs 6.4 trillion (95% of the budget estimates), lower than the budgeted estimate of Rs 6.7 trillion. The growth in investments was led by huge latent demand for power in the country and significant capacity additions by both private and public sector entities. Electricity investments are the highest among overall investments and stood at about 32% of the total investments. In the Twelfth Five-Year Plan, investments are expected to increase to Rs 9.1 trillion as against Rs 6.4 trillion (43% increase).

Roads: Investments in roads in the Eleventh Five-Year Plan were Rs 3.6 trillion (115% of the budget estimates) as against the envisaged investment of Rs 3.1 trillion. Roads investment accounted for about 19% of overall infrastructure investments in the same period. It was largely driven by the government's thrust on the sector – encouragement of PPP, speedy implementation of NHDP and recent changes in the policy environment. The continued thrust on improving rural and state road network by the various state governments has supported this growth. Investments in roads is expected to increase to Rs 5.8 trillion in the Twelfthe Five-Year Plan as against Rs 3.1 trillion (actual) in the Eleventh Five-Year Plan (61% increase).

Railways: Investments in railways in the Eleventh Five-Year Plan amounted to Rs 2.0 trillion (74% of the budget estimates), well below the budgeted estimate of Rs 2.6 trillion, accounting for about 10% of overall investments. The investments were led by the government's effort to implement its rail connectivity expansion plans and also due to increased momentum in Mass Rapid Transit System(MRTS) projects. Railway investments were about 12% of overall investments. In the Twelfth Five-Year Plan, the investments are expected to increase to Rs 3.4 trillion as against Rs 2.0 trillion in the Eleventh Plan (~75% increase).

Telecommunications: Investments in telecommunications in the past five years were Rs 3.4 trillion (130% of the budget estimates) as against the envisaged investment of about Rs 2.6 trillion and accounted for about 17% of the overall infrastructure investments. Significant investments have been undertaken in passive infrastructure. Going forward, the investments are expected to decline to Rs 3.2 trillion in the next five years as against Rs 3.4 trillion in the Eleventh Five-Year Plan (4% decrease).

Ports: The ports sector has achieved an investment of Rs 0.4 trillion (40% of the budget estimate) while the budgeted investment was Rs 0.9 trillion and accounted for about 9% of the overall investment in the past five years. The sector has witnessed a multi-fold increase in investment led by significant private sector investment in non-major port expansion. The investment in the sector is expected to increase over the next five years to Rs 1.0 trillion in comparison to Rs 0.4 trillion in the past five years (173% increase, however, on a small base).

Others: Other sectors include irrigation, water supply and sanitation, oil and gas pipelines, which achieved an investment of about Rs 3.5 trillion (81% of the budget estimates). The irrigation sector is largely dependent on government initiatives and being a social sector has limited private sector participation. However, the need to improve water supply and sanitation facilities in urban and rural areas will drive investments in this space led by various government initiatives. Investments in oil and gas were largely led by the sustained efforts of the government to encourage upstream investments through its New Exploration Licensing Policy (NELP). Moreover, the increasing need for natural gas infrastructure, including the development of gas grid and expansion of the coverage of city gas distribution has resulted in significant investments. In the next five years, investments are expected to increase to Rs 5.3 trillion from the current level of Rs 3.5 trillion in these sectors (51% increase).

The infrastructure sector is driven primarily by the government's initiatives for creation of essential facilities. In lieu of this, the government has undertaken some programmes for integrated development, improvement, maintenance and growth of infrastructure in urban and rural areas. These include the following.

**Government programmes that drive infrastructure investments**

| Sector | Programmes |
|---|---|
| Roads and Highways | National Highway Development Programme (NHDP) |
| Roads and Highways | Pradhan Mantri Gram Sadak Yojana (PMGSY) |
| Power | Accelerated Power Development and Reform Program (APDRP) |
| Power | Ultra Mega Power Plants (UMPP) |
| Power | Ultra Mega Power Transmission Project (UMTP) |
| Oil and Gas | New Exploration and licensing policy (NELP) |
| Urban Infrastructure | Jawaharlal Nehru National Urban Renewal Mission (JNNURM) |
| Ports | National Maritime Development Programme (NMDP) |
| Water supply and sanitation | Command Area Development and Water Management Programme (CADWM) |
| Irrigation | Accelerated Irrigation Benefit Programme (AIBP) |

**Source: CRISIL Research**

## E) Key snippets

- India's GDP (based on 2004-05 prices) witnessed a healthy growth of about 7.6% in the last decade and increased to Rs 57 trillion in 2013-14. The growth was primarily driven by the services sector, which grew at 9.1% in this period.
- Overall GDP growth (based on 2004-05 prices) fell to a decadal low of 4.5% in 2012-13, mainly attributable to weakening industrial growth, tight monetary policy through most of 2011-12, and continued uncertainty in the global economy.
- India's total GDP (based on 2011-12 prices) shot up from Rs 88 trillion in 2011-12 to Rs 106 trillion in 2014-15 showing a CAGR of 6.4%. In 2014-15, India's GDP grew by 7.3% which was significantly higher than the world average of 3.3%.
- Growth has picked up pace in the first half of FY16, on the back of green shoots in manufacturing, modest recovery in consumption and support from government spending. GDP growth at 7.4% year-on-year in Q2 FY16 was higher than 7.0% in Q1 FY16.
- Investment growth also picked up by 200 basis points while private consumption growth moderated to 6.8% as rural demand remained muted.
- The Indian economy is expected to grow at 8.1% in fiscal 2017, if supported by a normal monsoon. CRISIL Research expects agriculture to grow at an above-trend 4% and non-agriculture growth to pick up by 40 basis points (bps) over the previous fiscal.
- Envisaged infrastructure investments in the Twelfth Five-Year Plan have increased by ~50% over the past five-year plan with investments chiefly in electricity, roads, and railways, the key growth sectors. Also in the Eleventh Five-Year Plan, an achievement level of 95% was attained (with roads and telecommunication investments exceeding the target).

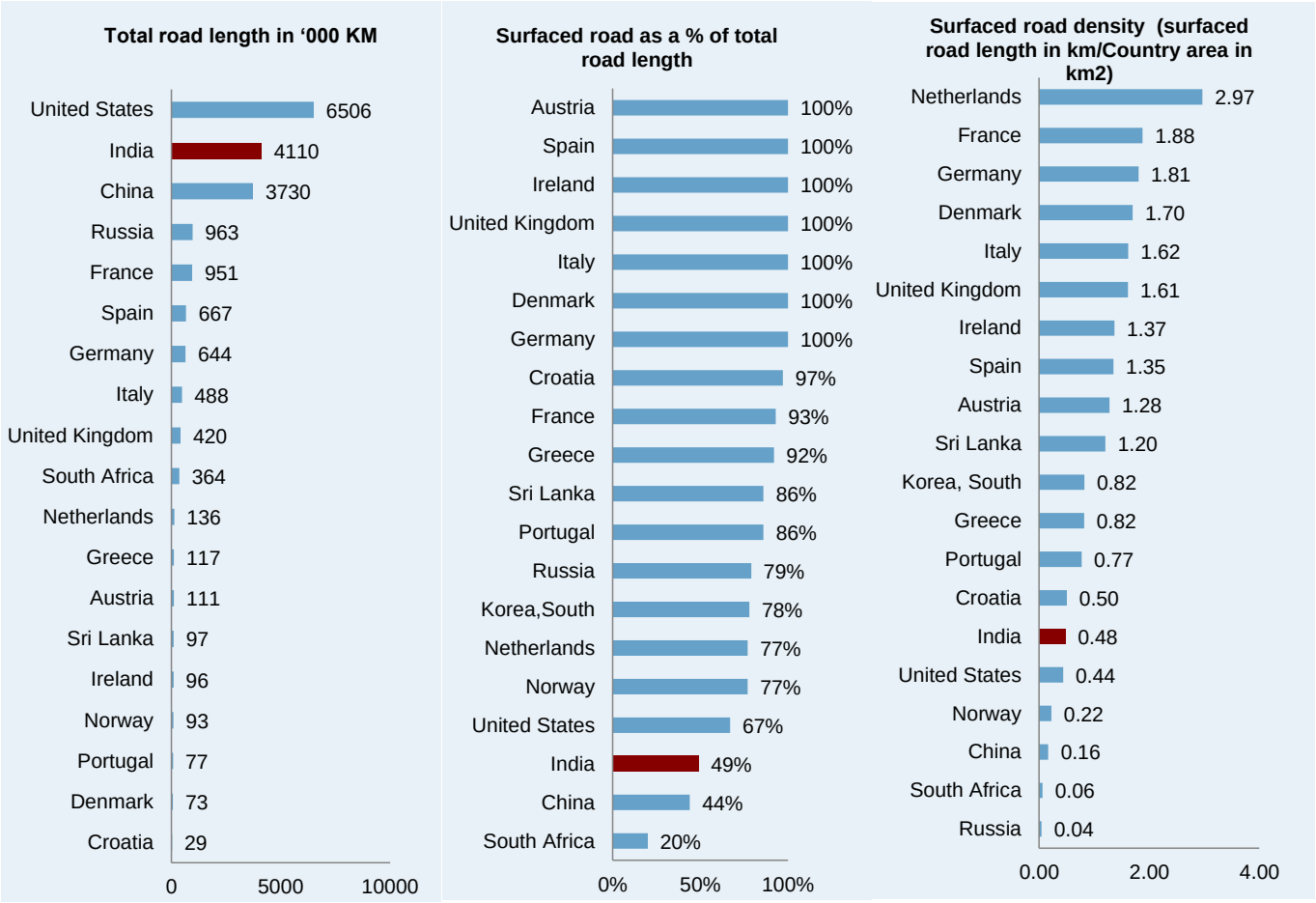
# 2. REVIEW OF ROAD INFRASTRUCTURE IN INDIA

## A) Overview of India's road sector

### Second-largest road network in the world

India has the second-largest road network in the world, aggregating 5.2 million km as of November 2015; however, the quality of roads is subpar with only half of India's road network being surfaced.

**Global comparison of road infrastructure**




**Source: World Road Statistics (2008), CRISIL Research**

Roads constitute the most common mode of transportation and account for about 85% of passenger traffic and around 60% of freight traffic in the country.

In India, the national highways, with a length of around 1,00,000 km, constitute a mere 2% of the road network but carry about 40% of total road traffic. State roads and major district roads, which form the secondary road system, carry 60% of traffic and account for 98% of road length.

In decreasing order of volume of traffic movement, the road network in India can be divided into three: National highways, state highways, and other roads.

**Road network in India as of November 2015**

| Road network | Length (km) | Percentage of total | | Coordinating agency | Connectivity to |
|---|---|---|---|---|---|
| | | Length | Traffic | | |
| National highway | 100,475 | 2 | 40.0 | MoRTH, BRO | Union capital, state capitals, major ports, foreign highways |
| State highway | 148,256 | 3 | | State PWDs | Major centres within the states, national highways |
| Other roads | 4,983,579 | 95 | 60.0 | State PWDs & MoRD | Major and other district roads, Rural Roads - Production Centres, Markets, Highways, Railway stations |
| **Total** | **5,232,310** | **100.0** | **100.0** | | |

**Source: CRISIL Research**

## B) Review of National Highways in India

### Investments in National Highways increased at 4.6% CAGR over the past four years

**Summary: Review of national highways**

| | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 |
|---|---|---|---|---|---|
| Year-wise estimated investment (Rs billion) | 160 | 211 | 294 | 209 | 191 |
| Year-wise break-up of total length awarded (KM) by NHAI and MoRTH | 5,032 | 2,662 | 2,198 | 2,164 | 7,038 |
| Total length constructed/ upgraded (KM) by NHAI | 1,784 | 2,207 | 2,481 | 1,628 | 1,576 |

*Note: numbers do not include terminated projects

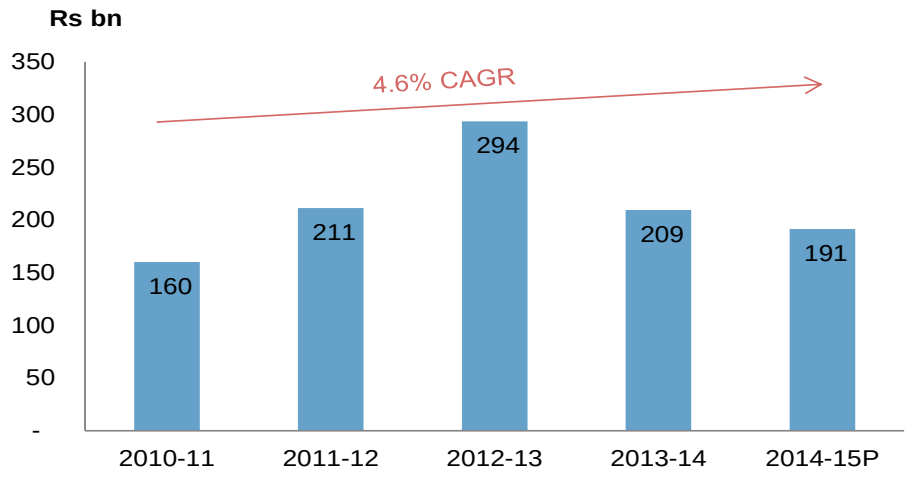
**Source: CRISIL Research**

The overall length of highways completed under the National Highway Development Programme (NHDP) has increased from around 500 km in 2001-02 to 23,327 km (as of January 31, 2016). However, overall implementation levels have fallen from 1,784 km in 2010-11 to 1,576 km in 2014-15.

### Investment review: National Highways

Investments in national highways have registered a CAGR of about 4.6% and increased to Rs 191 billion in 2014-15 from Rs 160 billion in 2010-11. Investment peaked in 2012-13 to Rs 294 billion and then declined in the next two fiscals.

**Year-wise investments in national highways**

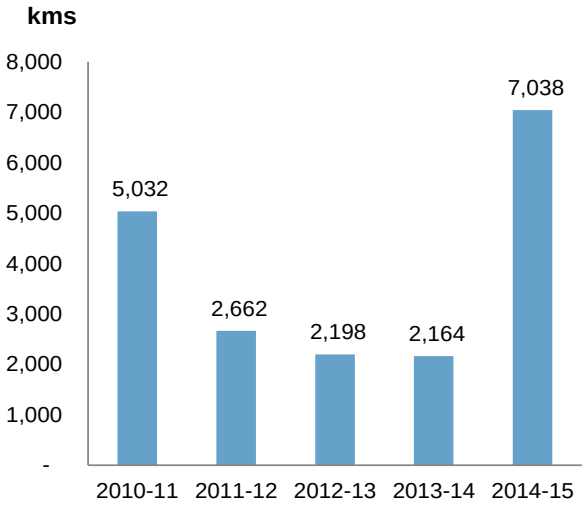



**Source: CRISIL Research**

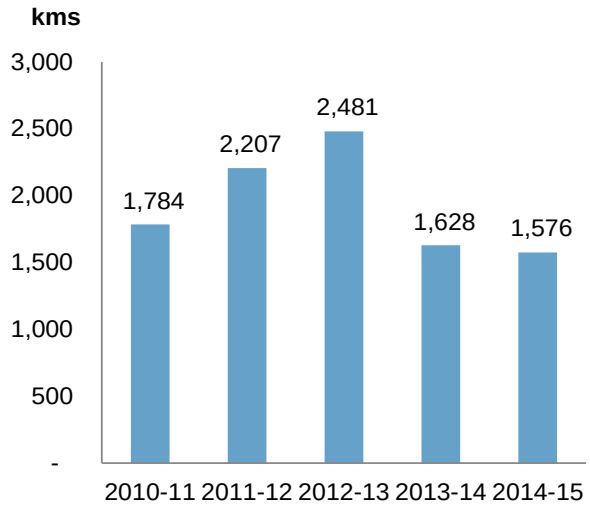
## Review of length awarded and upgraded/ constructed: National Highways

Awarding of national highway projects slowed significantly from 5,032 km in 2010-11 to about 1,115 km in 2012-13, impacted by the weak financial position of players, delays in project clearances and low estimated traffic density for many stretches on offer. The pace of projects picked up in 2012-13, as the total length awarded grew from 1,115 km in that fiscal to 3,091 km in 2014-15, recording a CAGR of 66%. The length constructed/ upgraded decreased to 1,576 km in 2014-15 from 1,784 km in 2010-11, a CAGR of 3%.

**Year-wise break-up of total length awarded**




**Length upgraded/ constructed**




**Source: CRISIL Research**

## Investment growth driven by multitude of factors

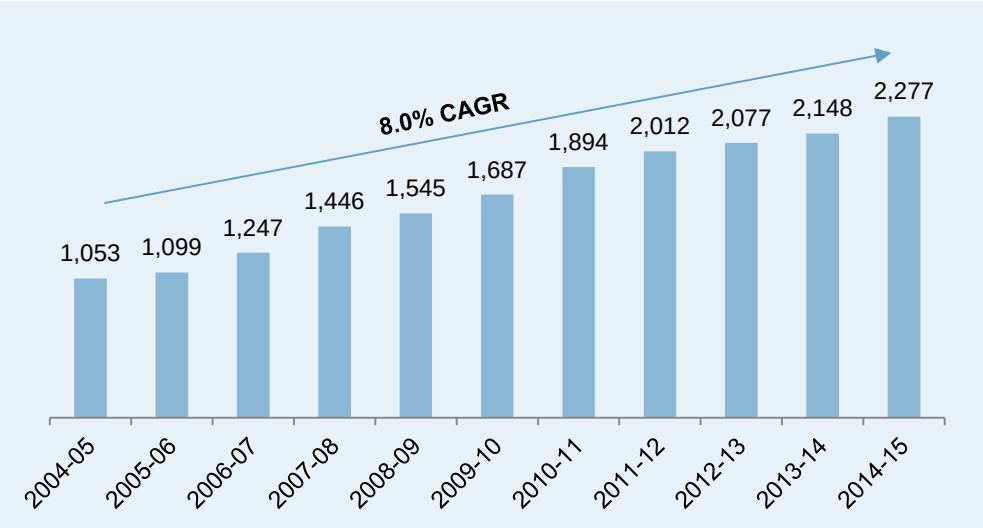
Economic growth, increasing government thrust, preference of road in freight traffic, spurt in private participation and surge in passenger traffic and vehicle density are key growth drivers in road sector investments.

### *Economic growth*

Freight traffic growth is a function of economic activity which further necessitates road development. Freight traffic has grown at 9.0% CAGR from 2008-09 to 2013-14 – faster than economic growth at 7.5% CAGR during the same period. Freight traffic (in BTKM) is set to surge at 7-8% in 2015-16, up from the 6% increase seen in 2014-15, due to higher growth in industrial and agricultural GDP. Industrial GDP is expected to rise at 6.2% in 2015-16, as against an estimated growth of 5.9% in 2014-15, aided by the resumption of stalled infrastructure projects, recovery in mining activities and improvement in export demand.

Roads continue to dominate freight traffic with their share in overall freight movement rising steadily to 63.2% in 2014-15 from 58.2% in 2009-10 due to healthy growth in non-bulk traffic and capacity constraints in railways.

**Moderate growth in freight demand (in BTKM)**




**Source: CRISIL Research**

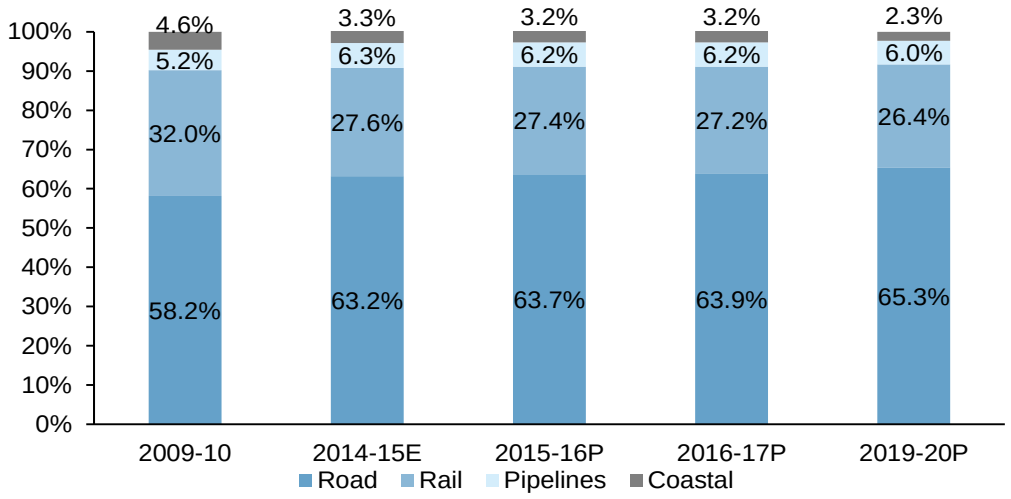
Note: Estimates (no updated data released on this)

### *Road freight traffic gaining preference*

Capacity constraints of the railways has led to the share of roads in the primary freight pie increasing from an estimated 58.2% (in BTKM) in 2009-10 to around 63.2% in 2014-15. Road freight transport grew at 11% CAGR during 2008-09 to 2013-14 as against a 9.0% CAGR in overall primary freight traffic. During 2014-15 to 2019-20, road freight traffic is expected to post a CAGR of 8-9%, which is faster than the growth in overall primary freight

demand. Growth in road freight traffic will be largely driven by increased non-bulk traffic and development of road infrastructure. Roads remain the preferred mode of transport for non-bulk traffic. We expect the share of non-bulk commodity in total road primary BTKM to step up to 80.6% by 2018-19. Currently, non-bulk commodities account for 78.7% of total road freight traffic.

**Share of roads in total freight movement (BTKM terms)**




E:Estimates P:Projected

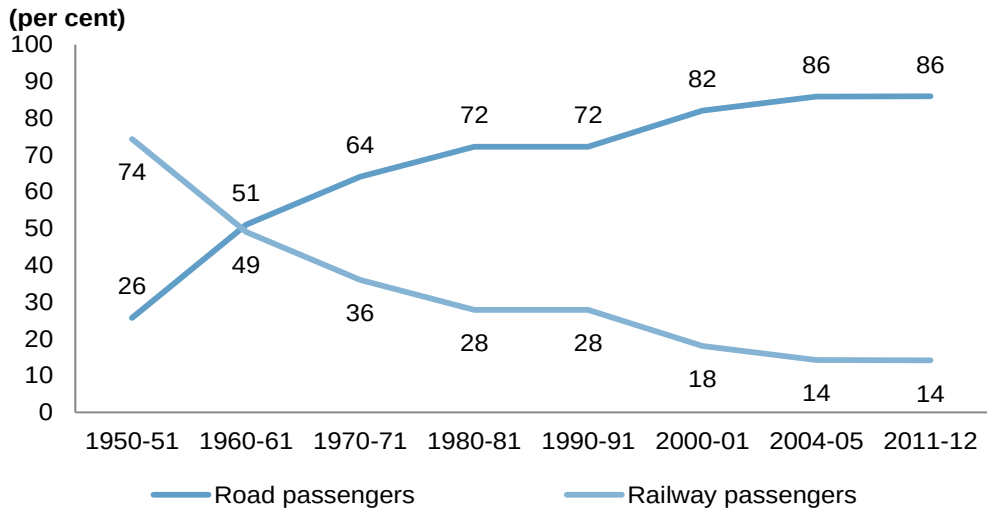
**Source: CRISIL Research**

### *Increasing vehicular and passenger traffic*

In the past, growth in vehicular and passenger traffic has outpaced the increase in the total road network. While the number of vehicles rose at around 10.3% between 2001 and 2008, the number of passengers travelling by road increased at 6.4% CAGR. On the other hand, the total road network expanded at just 2.6% in the same period. This increase in vehicular and passenger traffic is expected to put pressure on the existing road network and necessitate road development.

Passenger traffic share for railways has come down from 74% in 1950-51 to 14% in 2011-12 while passenger traffic share for roads has consistently grown from 26% to 86% in the same period.

**Passenger traffic: Roads vs railways**



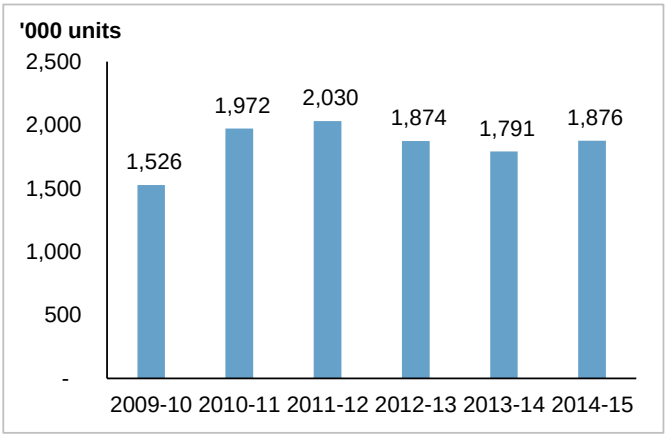

**Source: MoSPI, CRISIL Research**

## *Vehicular growth robust till 2011-12 but tapers in past three years*

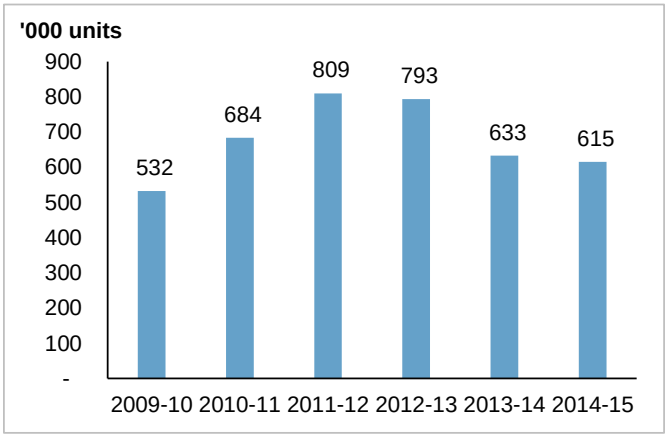
Domestic passenger car sales increased from 1.53 million units in 2009-10 to 1.88 million units in 2014-15 at a CAGR of 4.2%. From 1.53 million units in 2009-10, domestic passenger car sales shot up at a CAGR of 15.3% to 2 million in 2011-12. However, from 2011-12 to 2013-14, domestic passenger car sales shrank at 2.6% CAGR, primarily due to heightened macroeconomic uncertainty, weak consumer sentiments, lower disposable incomes owing to high inflation, rigidity in auto lending rates and high petrol prices. However, domestic passenger car sales grew by 4.8% in 2014-15 due to improvement in macroeconomic conditions.

Commercial vehicles showed robust growth at a CAGR of 23.4%, from 532,000 units in 2009-10 to 809,000 units in 2011-12. However,commercial vehicle sales shrank from 2011-12 to 2014-15.

**Passenger cars sales**




**Commercial vehicle sales**




**Source: SIAM, CRISIL Research**

Note: Commercial vehicles include goods vehicle and passenger but excludes three wheeler

*Increased private participation*

Amendments to the MCA governing private participation in road sector in August 2009 made investment in roads favourable for the private sector; consequenlty, the private sector's share increased to about 26% of the overall funding pie.

## Several new trends seen in roads sector

- Slowing progress in road construction: The length of road constructed has decreased at a CAGR of 3%, from 1,784 km in 2010-11 to 1,576 km in 2014-15 (from around 500 km under NHDP in 2001).
- Increasing participation of private equity funds: Private equity has contributed to road projects in the past. Going ahead, private equity investment can further pick up, following the recent announcements of exit policy for debt-stressed operators for toll roads.
- Re-emergence of EPC contracts: Given the current financial crunch being faced by BOT players, over the next five years, CRISIL Research expects the share of engineering, procurement, construction (EPC)/ cash contract projects to widen, especially in low-traffic-volume projects under NHDP-Phase IV.
- Other sector-favourable policies: 100% exit policy for stressed BOT players, providing for 'secured' status for PPP projects while lending, proposal to scrap slow moving highway projects (under consideration) etc.

## A number of policy / initiatives have been undertaken by the government

The government has in the past undertaken several initiatives for developing the national highways. Conception of the NHDP programme, provision for viability gap funding, introduction of PPP model, etc. are a few of the major initiatives.

- NHDP: NHDP was launched by the central government to develop national highways in the country during 2005-2015 with an investment of Rs 2,356.9 billion. NHDP encompasses building, upgradation, rehabilitation and broadening of the existing national highways. The programme is executed by the National Highways Authority of India (NHAI) in coordination with the Public Works Department (PWD) of the various states. NHAI also collaborates with the Border Roads Organisation (BRO) for development of certain stretches.

- PPP: PPP is expected to be the preferred mode for execution of future phases of NHDP. The government has devised appropriate policy mechanisms to encourage private sector participation in roads.

- Viability gap funding (VGF): The government will provide grants or viability gap funding in the case of BOT-toll projects that are not financially viable. Viability gap funding of up to 40% is available on a case-to-case basis. Also, tax benefits are offered to contractors by providing 100% tax exemption for five years and 30% relief for the next five years, which may be availed of in 20 years besides proving concession period up to 30 years.

- Diversification of funding by introduction of Central Road Fund (CRF): The Central Road Fund is a dedicated fund created by the central government from collection of cess on petrol and diesel. A sum of Rs 196 billion has been earmarked under CRF for 2013-14.
- PMGSY, a 100% centrally-sponsored scheme was floated to provide all-weather access to unconnected habitations. It is aimed at providing connectivity to 172,000 habitations with 365,279 km of new roads and developing 368,000 km of existing roads, ensuring full farm-to-market connectivity.
- The Finance Ministry has suggested to banks to consider granting disbursements for even projects where at least 80% of the land has been acquired, instead of the current 100% land acquisiton requirement.
- Secured status of PPP loans - As per an RBI directive in May 2013, loans for PPP projects can be considered as 'secured' subject to fulfilment of certain conditions like escrow for toll, right of substitution for lenders, compulsory buyout by project authority in case of termination of loans by lenders, etc.
- As per the Environment Ministry's notification issued in August 2013, highway development projects involving widening of roads of up to 100 km, do not require environment clearance.
- New exit policy - As per the new exit policy passed in May 2015, concessionaires for projects awarded before as well as after 2009 can exit a project completely, following two years of project completion. The new policy allows developers of existing and future projects to sell or transfer their complete (100%) stake in the special purpose vehicle (SPV) formed for the project, without having to create a new SPV.
- The Ministry of Roads and Highways (MoRTH) has given a huge thrust to the national highways sector through amendments to the Model Concession Agreement (MCA) for awarding national highway projects on build-transfer-operate (BOT) basis. This move will help reduce delays in the sector. Moreover, as the revised MCA will fix responsibility, ensure proper maintenance, bring in transparency and provide more comfort to lenders, it is expected to speed up execution of projects in future.

## C) Current status and overview of NHDP

NHDP encompasses building, upgradation, rehabilitation and broadening of existing national highways. The programme is executed by NHAI in coordination with PWDs of various states. NHAI also collaborates with BRO for development of certain stretches.

NHDP is being implemented in seven phases:

### NHDP phases

| Phases | Description | Implementing Agency |
|---|---|---|
| I | Golden Quadrilateral (Connecting Delhi-Kolkata Chennai-Mumbai) | NHAI |
| | Port connectivity (Connectivity for 10 major ports) | NHAI |
| II | North-South & East-West (NSEW) corridor (Srinagar to Kanyakumari- (North South) and Silchar to Porbander-(East-West)) | NHAI |
| III | Connecting state capitals and places of economic and tourist importance | NHAI |
| IV | Improve 2-lane standards with paved shoulders | MORTH |
| V | 6-laning of existing national highways (Phase involves 5,600 km stretch under GQ) | NHAI |
| VI | Expressways | NHAI |
| VII | Ring Roads,bypass and flyovers | NHAI |

**Source: CRISIL Research**

As of January 31, 2016, around 51% of 46,200 km roads under NHDP has been completed. The total cost incurred amounted to Rs 2,245 billion (as on October 31, 2014). About 20% of the total length is under construction/upgradation and the rest is yet to be awarded.

### NHDP status (as on January 31, 2016)

| | Unit | GQ | NS&EW Phase I &II | Phase III | Phase IV | Phase V | Phase VI | Phase VII | Total |
|---|---|---|---|---|---|---|---|---|---|
| Total length | km | 5,846 | 7,142 | 11,809 | 13,203 | 6,500 | 1,000 | 700 | 46,200 |
| Completed till date | km | 5,846 | 6,424 | 6,791 | 1,905 | 2,339 | - | 22 | 23,327 |
| *Completion rate as % of total* | *%* | *100.0* | *89.9* | *57.5* | *14.4* | *36.0* | - | *3.1* | *50.5* |
| Completion from April 1, 2015-January 31, 2016 | km | 0 | 49 | 309 | 789 | 243 | - | 0 | 1,390 |
| Under implementation (UI) | km | 0 | 461 | 3,129 | 4,685 | 781 | 30 | 19 | 9,105 |
| *UI as a % of total* | *%* | *0.0* | *6.5* | *26.5* | *35.5* | *12.0* | *0.0* | *2.7* | *19.7* |
| Balance length for award (BFA) | km | 0 | 257 | 1,889 | 6,613 | 3,380 | 970 | 659 | 13,768 |
| *BFA as a % of total* | *%* | *0.0* | *3.6* | *16.0* | *50.1* | *52.0* | *97.0* | *94.1* | *29.8* |
| Cost incurred so far * | Rs billion | 321 | 652 | 850 | 97 | 307 | 1 | 17 | 2,245 |

* Cost as on Oct 31, 2014

**Source: NHAI, CRISIL Research**

Note: 1) Data is available till January 31, 2016 on the NHAI website.
2) For our analysis, the entire length of the North-South & East-West (NSEW) corridor has been considered under Phase II, while the entire length for port connectivity and other national highways along with the Golden Quadrilateral have been considered under Phase I.

### *Phase I: Awarding completed, Execution almost complete*

Phase I was approved by the Cabinet Committee on Economic Affairs (CCEA) in December 2000. This comprises of the Golden Quadrilateral (GQ) project that connects the four metros- Delhi, Mumbai, Chennai and Kolkata, the port connectivity projects-Haldia, Paradip, Visakhapatnam, Chennai and Ennore, Tuticorin, Kochi, New Mangalore, Marmugao, Jawaharlal Nehru Port Trust and Kandla - from the east coast to the west coast & to the GQ and other stretches. Most projects in Phase I have been awarded on a cash-contract basis. The execution of NHDP phase I is almost complete.

### *Phase II: Awarding of road projects almost complete*

Phase II comprises the North-South and East-West corridors (NSEW) covering 6,647 km. In Phase II as well, most of the projects have been executed on a cash-contract basis. CRISIL Research expects the balance length of projects, out of the total length of 6,647 km in Phase II, to entail an investment of around Rs 80 billion over the next 5 years (2015-16 to 2019-20).

### *Phase III: Awarding and implementation in full swing*

This phase involves four-laning of two-laned roads connecting state capitals and important places to Phase I and II of NHDP. The criteria for identification of the stretches under this phase are:

- High-density traffic corridors not included in phases I and II,
- Connectivity of state capitals with NHDP (phases I and II), and
- Connecting centres of tourism and places of economic importance

The government plans to implement most projects under this phase through the BOT-toll model. Less viable projects will be awarded under the BOT-annuity model, while the least viable stretches will be awarded as cash contracts. However almost all projects since 2014-15 under this phase have been awarded as cash contracts.Currently, a few projects are also being tendered out in HAM mode. CRISIL Research estimates that implementing this phase is expected to require an investment of Rs 660 billion over the next 5 years (2015-16 to 2019-20).

### *Phase IV - Awarding of road projects gains traction*

This phase would entail the construction of paved shoulders on two-lane national highways and four-laning of some stretches. The total length of this phase is 20,000 km. However under NHAI total length is 13,203 km. Under this phase, most projects are expected to be awarded on an EPC and HAM basis, as traffic volumes are lower, and thus, are less attractive than Phase III and V projects. Therefore, if these projects are bid out on the BOT model, developer interest would be lower. However, BOT participation has been higher in the first quarter of this fiscal (2015-16) as NHAI is awarding these projects on grants. Currently, many projects in this phase are being tendered

in the Hybrid Annuity Mode. Implementation of this phase is expected to require an investment of around Rs 730 billion as per CRISIL Research's estimates for the next 5 years (2015-16 to 2019-20).

### *Phase V - Attractive stretches with high traffic density*

This phase involves conversion of existing four-lane national highways, comprising the GQ and other high-density stretches, into six lanes. The total length of this phase is 6,500 km. The government aims to implement all projects under this phase via the BOT-toll model, as traffic volumes on these stretches are attractive for private players. Moreover, the concessionaire will be allowed to collect toll on the existing four-lane highways from the date of financial closure, which will result in cash inflows even before construction of the additional two lanes commences. Implementation of this phase is estimated to require a total investment of Rs 530 billion over the next 5 years (2015-16 to 2019-20).

### *Phase VI - Awarding finally underway*

About 1,000 km of expressway projects have been planned for development via the BOT and HAM mode on a greenfield basis. NHAI has awarded about 30 kms of this phase through the hybrid annuity mode in December 2015. The Delhi Meerut is the first expressway under this project while the Mumbai Vadodara is expected to be the second. We expect that the implementation of this phase would require an investment of around Rs 280 billion over the next 5 years (2015-16 to 2019-20).

### *Phase VII: Delay expected to continue*

This phase includes the construction of ring roads, flyovers and bypasses on selected stretches of national highways. Of the total 700 km under this phase, only 41 km has been awarded so far.

## NHDP: Key challenges and mitigants

Player interest in bidding for BOT road projects dwindled in 2012-13, with some stretches having no bidders. Even during 2013-14, player interest in BOT projects remained tepid. Execution of NHAI projects declined for the second consecutive year in 2014-15 by 11 per cent to 1,691 km. This was because the project pipeline fell to a 5-year low of about 10,181 km (as of October 2014), as the NHAI terminated at least 32 projects of 4,190 km. Limited financial flexibility of players, difficulty in achieving financial closure and delay in clearances have been the key reasons for waning developer interest. These factors are elaborated below.

- Limited financial flexibility: Players have limited financial flexibility to bag more BOT projects. The gearing level of many players is high due to a sizeable portfolio of BOT projects and some company-specific investments in real estate, etc. For major players, the average gearing in roads-BOT is 2.5 times as of 2014-15.

- Problems with bank funding: Banks are being more cautious while lending to road projects as they are approaching the sectoral exposure limit for the roads sector. Moreover, they are trying to ensure land

acquisition does not hinder a project's progress and are, hence, demanding that 80-100% of the land is available with the developer at the time of awarding itself.

- Delay in clearances: Many projects faced delays in getting environmental and forest clearances, which discouraged players from bidding for new projects. GMR and GVK filed for termination of two large BOT projects (awarded in 2011-12) as they faced delays in allotment of land from NHAI. Many projects are currently stalled due to forest and environmental clearance issues. We have observed an average delay of around nine months in the case of BOT projects currently under implementation.

- Low traffic density: Relatively less attractive road projects were offered by NHAI in 2012-13, with low traffic density and thus low potential to reap good returns. This factor also contributed to the poor turnout of players for bidding. As a majority of the projects to be offered in 2014-15 are expected to be from NHDP Phase-IV, private developers' interest in BOT projects is expected to continue to remain subdued.

- Land acquisition: Inordinate delay in the acquisition of land in some states, mainly due to procedural formalities, court cases and lack of adequate co-operation from state governments poses a major risk to any road project. The majority of road projects in states such as Jharkhand, Assam, Bihar, Odisha and Uttar Pradesh have been delayed due to these reasons. However, as per the new MCA, 80% of the land required for a project should be acquired before awarding the letter of award. This will potentially reduce delays on account of land acquisition.

## D) Outlook on investments in national highways

## National highway investments to increase at 30% CAGR over next five years

**Summary: Outlook on national highways**

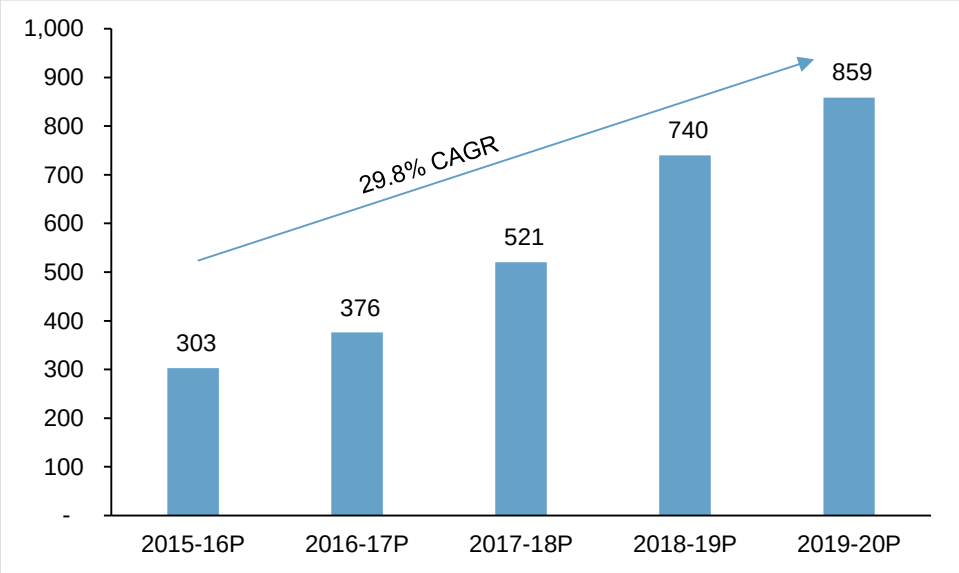
| | 2015-16P | 2016-17P | 2017-18P | 2018-19P | 2019-20P |
|---|---|---|---|---|---|
| Year-wise estimated investment (Rs billion) | 303 | 376 | 521 | 740 | 859 |
| Year-wise break-up of total length awarded (KM) by NHAI | 6,908 | 6,664 | 6,723 | 7,118 | 7,597 |
| Total length constructed/ upgraded (KM) by NHAI | 2,346 | 3,031 | 4,222 | 5,429 | 5,576 |

P: Projected

**Source: CRISIL Research**

Between 2015-16 and 2019-20, CRISIL Research expects an average of 11.3 km per day of roads to be constructed/upgraded at an estimated cost of Rs 2,798 billion. Further, national highway investments are expected to almost triple over the next five years, from Rs 303 billion in 2015-16 to Rs 859 billion in 2019-20.

**National highways: Year-wise investments (Rs bllion)**



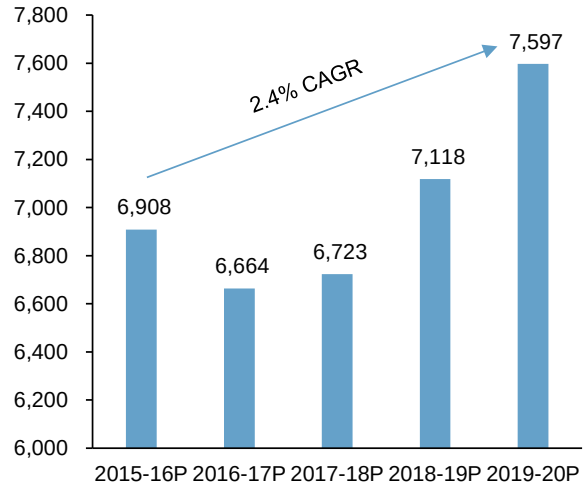

P: Projected

**Source: CRISIL Research**

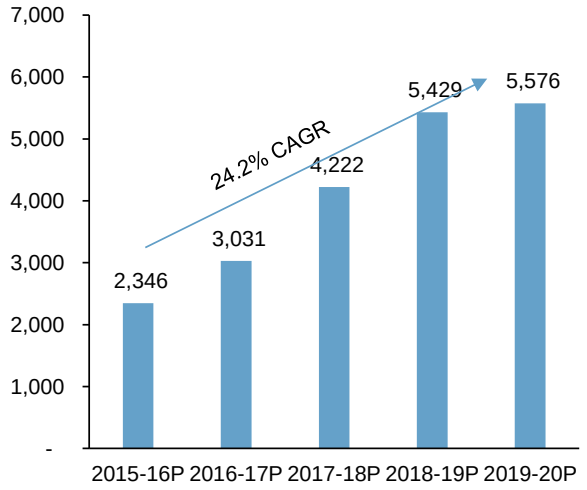
Execution of national highway projects is expected to pick up in 2015-16, aided by policy reforms, after having slowed down in the previous two fiscals. Higher budgetary support to fund engineering, procurement & construction (EPC) projects, will also drive investments in national highways, which has recently seen a significant drop in private interest. CRISIL Research expects the length of roads upgraded/ constructed to rise at 24.2% CAGR between 2015-16 and 2019-20.

Awarding of national highway projects has been severely hampered over the past few years by several issues: delays in land acquisition and environmental clearances, offer of more stretches with low traffic density, and players' weak financials. To clear the logjam, NHAI terminated 32 stalled projects (awarded in 2010-11 and 2011-12) covering 4,190 km. Another project covering 1,900 km was terminated in the first quarter of this year. To put execution back on track, the agency has also re-awarded about 1,000 km of the terminated projects. Moreover, in the past year and a half, the government announced a host of policy changes to reduce delays in project execution. Consequently, CRISIL Research expects the total length awarded to rise at a CAGR of ~4% over the next five years.

**Year-wise break-up of total length awarded (KM)**




**Length upgraded/ constructed (KM)**




**Source: CRISIL Research**

## E) Overview of national highways funding

Road projects in India have largely been financed through public funds. State and rural roads are mainly funded by the government, while there is significant private sector participation in National Highways projects.

NHDP is funded by the National Highway Authority of India (NHAI) through:

- Government budgetary support
- Dedicated accruals under the Central Road Fund
- Multilateral agency borrowings or lending by international institutions: World Bank, Asian Development Bank (ADB), Japanese Bank of International Cooperation (JBIC)
- Private financing under PPP
- Market borrowings in the form of NHAI bonds
- National Investment and Infrastructure Fund (NIIF)
- Others: Toll revenue and premium

### *Government budgetary support*

Government support to NHAI primarily takes the form of yearly budgetary allocations by GoI. The government has created a non-lapsable dedicated fund for NHDP, by levying a cess on high-speed diesel and petrol at the rate of Rs 2.00 per litre, under the Central Road Funds Act, 2000. In Union Budget 2015-16, the cess on every litre of petrol and high-speed diesel sold was hiked to Rs 6. The allocation framework of the new road cess has not been released by the government. The previous guidelines for allocation of road cess are as follows:

Out of the Rs 2 per litre collected on petrol and diesel each, Rs 1.50 is allocated in the following manner:

- 50% of the cess on high-speed diesel (HSD) oil - Re1 per litre - for development of rural roads
- 50% of cess on HSD and the entire cess collected on petrol - Rs 2.5 per litre - are thereafter allocated as follows:
    - 57.5% towards the development and maintenance of the National Highways;
    - 12.5% for construction of road under or over bridges and safety works at unmanned railway crossings;and
    - 30% on development and maintenance of state roads. Of this amount, 10% is kept as reserve by the central government for allocation to states, for implementation of state road schemes of inter-state connectivity (ISC) and economic importance (EI).
- Remaining cess of Rs. 0.50 per litre (levied from 2005-06 onwards) is entirely allocated for the development and maintenance of national highways.

### *Dedicated accruals under CRF*

Over the last 10 years, cess funds have been the major sources of finance for NHAI, meeting around 50% of its requirement. In Union Budget 2015-16, the road cess on petrol and diesel was tripled to Rs 6 per litre each. Hence, based on the new allocation, we expect the cess to contribute more (57% to NHAI's needs) in the next five years, aiding the execution of recently-awarded EPC projects. NHAI receives its portion of cess funds from the Ministry of Road Transport & Highways (MoRTH). Cess funds are mainly used to fund NHAI's programmes and repay debt borrowed by NHAI.

### *Multilateral agency borrowings*

Funds from multilateral agencies have been a key constituent of the funding structure of various road projects. Various agencies such as the World Bank, ADB and JBIC have sanctioned nearly Rs 150 billion worth of grants and loans, over the last 10 years, for NHDP.

### *Private financing through PPP*

PPP is going to be the preferred mode of delivery for future phases of NHDP. The common forms of PPP in India that have been used for development of the national highways are:

- Build, operate and transfer (toll) model,
- Build, operate and transfer (annuity) model, and
- Operate, maintain and transfer (OMT) model.

The government has put in place appropriate policy, institutional and regulatory mechanisms including a set of fiscal and financial incentives to encourage increased private sector participation in roads. To further augment flow of funds to the sector and encourage private sector participation in the road sector, several initiatives have been taken by the government, including:

- Declaration of the road sector as an industry
- Provision of capital grants subsidy up to 40% of project cost to enhance viability of the projects on case-to-case basis
- Allowing duty-free import of certain identified high-quality construction plants and equipment
- Providing 100% tax exemption in any consecutive 10 years within a period of 15 years after completion of construction, provided the project involves addition of new lanes
- Provision of encumbrance-free site for work, i.e., the government shall meet all expenses relating to land and other pre-construction activities
- Foreign direct investment up to 100% cent in the road sector
- Amendments to MCA

### *Market borrowings: Generated primarily through NHAI bonds*

In the past, market borrowings for national highway projects mainly took the form of capital gain bonds raised by NHAI. In Union Budget 2011-12, however, NHAI was also allowed to issue Rs 100 billion of tax-free bonds, which were introduced in the market in December 2011, and were fully subscribed. For 2013-14, NHAI obtained the finance ministry's approval to raise Rs 50 billion tax-free bonds. In the Union Budget 2015-16, NHAI has been allowed to issue another set of tax-free bonds amounting to Rs 240 billion and capital gains bonds of Rs 40 billion, respectively.

### *Toll revenues: Vital source of funding*

The central and state governments levy fees/tolls on bridges and bypasses, national highways and state roads. Increasingly, toll revenue is becoming a vital source for funding road projects. Toll revenues for NHAI have risen by a significant 25% over the last five years with the completion of several annuity and cash projects.

### *Premium: Inflows take a hit due to large number of terminated projects*

A premium is a fixed amount paid by a developer annually to NHAI as revenue share in a BOT-toll project. It increases by 5% per annum till the end of the concession period. The share of projects awarded on premium basis had increased to 68% in 2011-12 from 22% in 2008-09. However, such projects also formed nearly 60% of stalled

projects as well as projects terminated by NHAI. Moreover, the government has approved 'premium rescheduling' for projects where toll collections are insufficient to meet cash outflows. Hence, we expect the aggregate premium collected by NHAI to remain subdued over the next five years.

## F) Review and outlook of state roads in India

### Summary of Key State Level Parameters

**Summary: Macro economic parameters**

| States | Real GDP (2011-12) | GDP growth (2004-05 to 2011-12) | Population (million) | | Annual population growth (2001-11) | Per capita income (2011-12) |
|---|---|---|---|---|---|---|
| | (Rs trillion) | (per cent) | 2001 | 2011 | (per cent) | Rs |
| **India** | **52.4** | **8.5** | **1,028.7** | **1,210.2** | **1.6** | **42,630** |
| Andhra Pradesh | 4.1 | 8.9 | 75.7 | 84.7 | 1.1 | 47,640 |
| Bihar | 1.5 | 10.0 | 82.9 | 103.8 | 2.3 | 14,306 |
| Chattisgarh | 1.5 | 8.6 | 20.8 | 25.5 | 2.1 | 56,900 |
| Goa | 0.2 | 8.9 | 1.4 | 1.5 | 0.7 | 157,571 |
| Gujarat | 3.7 | 10.3 | 50.7 | 60.4 | 1.8 | 60,496 |
| Haryana | 1.8 | 9.4 | 21.1 | 25.4 | 1.8 | 69,520 |
| Himachal Pradesh | 0.4 | 8.3 | 6.1 | 6.9 | 1.2 | 60,568 |
| Jammu & Kashmir | 0.4 | 6.0 | 10.2 | 12.6 | 2.1 | 31,961 |
| Jharkhand | 0.9 | 6.3 | 26.9 | 33.0 | 2.0 | 27,178 |
| Karnataka | 2.9 | 8.3 | 52.9 | 61.2 | 1.5 | 47,022 |
| Kerala | 2.1 | 8.3 | 31.9 | 33.4 | 0.5 | 62,143 |
| Madhya Pradesh | 2.0 | 8.7 | 60.3 | 72.6 | 1.9 | 32,377 |
| Maharashtra | 8.1 | 9.9 | 96.9 | 112.4 | 1.5 | 70,584 |
| Orissa | 1.4 | 8.5 | 36.8 | 41.9 | 1.3 | 32,377 |
| Punjab | 1.6 | 7.1 | 24.2 | 27.6 | 1.3 | 55,761 |
| Rajasthan | 2.2 | 7.8 | 56.5 | 68.6 | 2.0 | 30,794 |
| Tamil Nadu | 4.2 | 9.6 | 62.4 | 72.2 | 1.5 | 56,912 |
| Uttar Pradesh | 4.2 | 7.0 | 166.2 | 199.6 | 1.8 | 20,663 |
| Uttarakhand | 0.6 | 13.7 | 8.5 | 10.2 | 1.8 | 59,149 |
| West Bengal | 3.3 | 6.9 | 80.2 | 91.3 | 1.3 | 36,045 |

**Source: MoSPI, CRISIL Research**

Of the aforementioned states, Gujarat, Bihar and Maharashtra have exhibited higher economic growth of 10.3%, 10.0% and 9.9%, respectively (against the country's growth of 8.5%).

**State roads : Government capital expenditure (Rs billion)**

| (Rs billion) | 2008-09 (Accounts) | 2009-10 Accounts | 2010-11 Accounts | 2011-12 Accounts | 2012-13 (Budget estimates) | 2012-13 (Revised estimates) | 2013-14 (Budget estimates) | 2014-15 (Budget estimates) | 2015-16 (Budget estimates) |
|---|---|---|---|---|---|---|---|---|---|
| Andhra Pradesh | 8 | 12 | 10 | 12 | 28 | 27 | 34 | 13.16* | 17.4* |
| Arunachal Pradesh | 6 | 3 | 6 | 7 | 2 | 7 | 2 | n.a | n.a |
| Assam | 5 | 6 | 4 | 6 | 12 | 12 | 12 | n.a | n.a |
| Bihar | 25 | 31 | 41 | 41 | 38 | 41 | 42 | n.a | n.a |
| Chhattisgarh | 10 | 6 | 8 | 7 | 27 | 19 | 25 | 36 | 52 |
| Goa | 2 | 2 | 3 | 3 | 3 | 3 | 3 | n.a | n.a |
| Gujarat | 9 | 13 | 14 | 18 | 21 | 25 | 21 | 21 | 24 |
| Haryana | 7 | 12 | 9 | 9 | 12 | 14 | 15 | n.a | n.a |
| Himachal Pradesh | 5 | 5 | 4 | 7 | 7 | 7 | 8 | n.a | n.a |
| J & K | - | - | 10 | 11 | 2 | 2 | 1 | n.a | n.a |
| Jharkhand | - | - | 8 | 8 | 16 | 16 | 18 | n.a | n.a |
| Karnataka | 20 | 24 | 29 | 39 | 30 | 36 | 36 | 41 | 39 |
| Kerala | 6 | 8 | 14 | 17 | 27 | 34 | 11 | n.a | n.a |
| Madhya Pradesh | 16 | 20 | 20 | 17 | 23 | 19 | 25 | n.a | n.a |
| Maharashtra | 20 | 31 | 24 | 28 | 31 | 29 | 28 | 24 | |
| Manipur | 2 | 3 | 3 | 3 | 2 | 2 | 2 | n.a | n.a |
| Meghalaya | 2 | 2 | 2 | 3 | 3 | 3 | 6 | n.a | n.a |
| Mizoram | 0 | 1 | 1 | 1 | 3 | 4 | 1 | n.a | n.a |
| Nagaland | 1 | 2 | 3 | 3 | 3 | 6 | 2 | n.a | n.a |
| Orissa | 10 | 9 | 13 | 12 | 17 | 14 | 19 | n.a | n.a |
| Punjab | 3 | 5 | 6 | 4 | 4 | 3 | 5 | n.a | n.a |
| Rajasthan | 3 | 4 | 6 | 11 | 14 | 14 | 19 | n.a | n.a |
| Sikkim | 1 | 1 | 1 | 1 | 3 | 4 | 4 | n.a | n.a |
| Tamil Nadu | 27 | 27 | 30 | 34 | 40 | 40 | 45 | 59 | n.a |
| Tripura | 3 | 3 | 2 | 2 | 2 | 3 | 3 | n.a | n.a |
| Uttarakhand | 7 | 8 | 9 | 8 | 8 | 9 | 9 | n.a | n.a |
| Uttar Pradesh | 49 | 41 | 46 | 46 | 50 | 56 | 62 | n.a | n.a |
| West Bengal | 3 | 6 | 6 | 7 | 13 | 16 | 14 | n.a | n.a |
| NCR | 11 | 19 | 14 | 9 | 15 | 15 | 17 | n.a | n.a |
| Puducherry | 0 | 1 | 1 | 1 | 1 | 1 | 1 | n.a | n.a |
| **Total** | **263** | **307** | **346** | **374** | **456** | **480** | **487** | | |

Note: 2014-15 and 2015-16 state budget estimates not available for all states.

* Indicates data does not include newly formed Telangana state

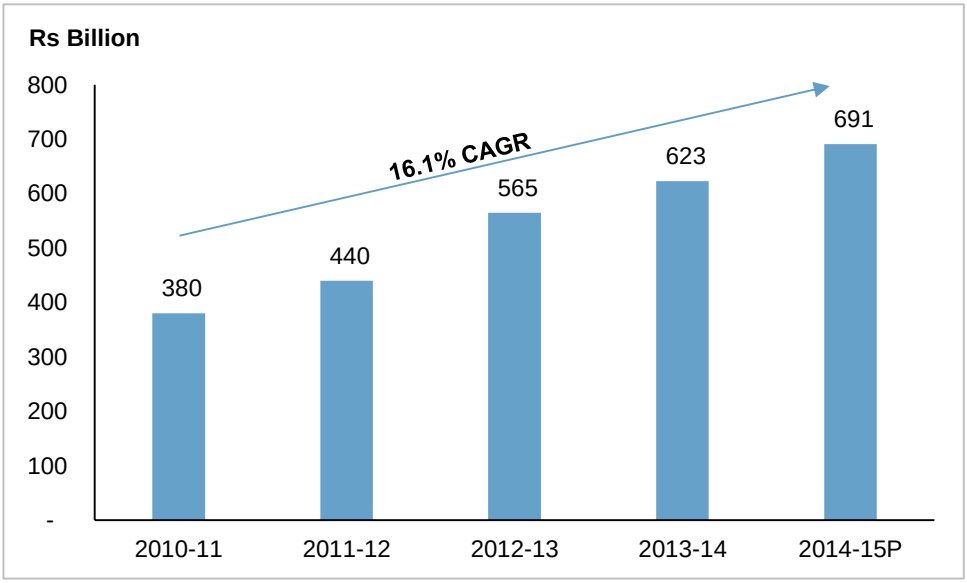
**Source: RBI, CRISIL Research**

## Review of investments: State highways

State roads include highways, major district roads and rural roads (that do not come under the purview of the Pradhan Mantri Gram Sadak Yojana). These constitute more than 20% of the total road network and handle about 40% of road traffic. State roads play a significantly important role in economic development of mid-sized towns and rural areas and aid industrial development by enabling movement of raw materials and products to and from the hinterlands.

During 2010-11 to 2014-15, overall investments increased at a CAGR of 16.1% to Rs 691 billion in 2014-15 from Rs 380 billion in 2010-11.

**State roads : Overall investments**



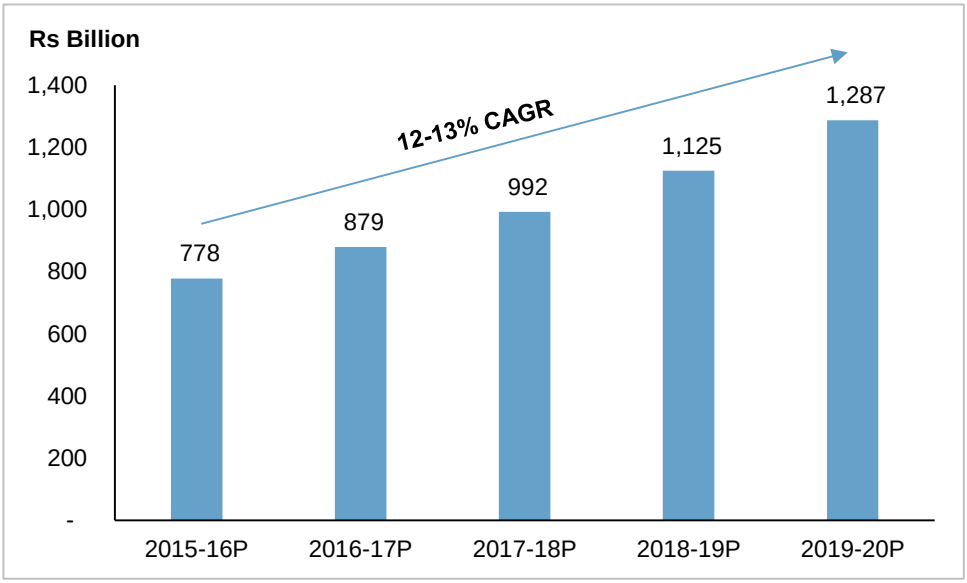

Note: State road includes state highways and other district roads.

**Source: CRISIL Research**

## Outlook on investments on state highways

In recent years, state governments have allocated a significant portion of the budgets for developing roads. Between 2015-16 and 2019-20, the length of state roads upgraded/ constructed is expected to record a 7-8% CAGR. Total investments in state roads, during this period, are expected to grow at an average of 12-13%.

**State roads: Year wise investments**




P: Projected

**Source: CRISIL Research**

## G) Review and outlook of rural roads in India

**Summary :Review of rural roads**

| | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15P |
|---|---|---|---|---|---|
| Rural roads: Year-wise investments (Rs billion) | 149 | 109 | 84 | 131 | 121 |
| Rural roads - Year-wise length constructed upgraded (KM) | 45,100 | 30,995 | 24,161 | 25,316 | 30,647 |

P: Projected

**Source: National Rural Roads Development Agency, CRISIL Research**

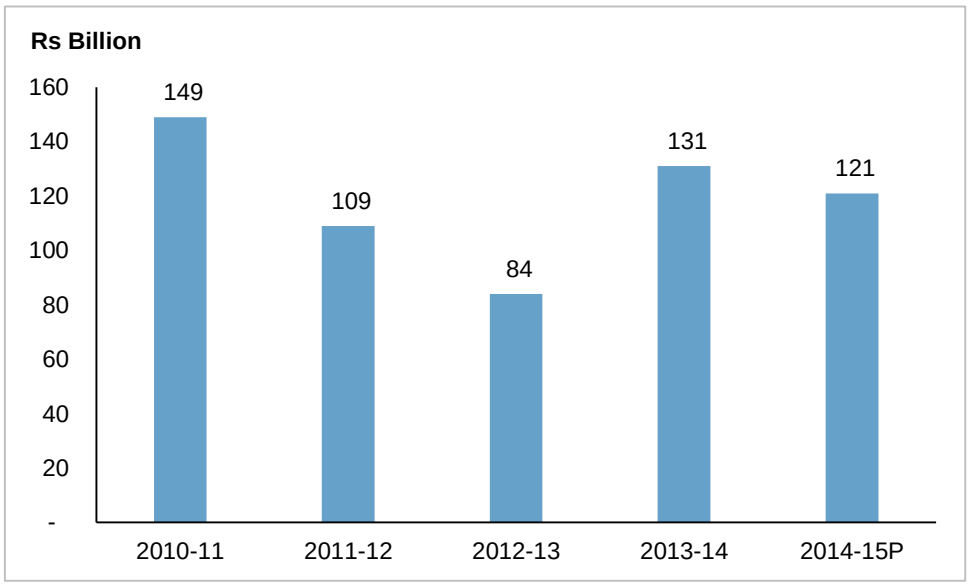
### Review of investments in rural roads

Implementation of projects under the Pradhan Mantri Gramin Sadak Yojana (PMGSY) was growing at a steady pace from 2005-06 to 2009-10. However, constraints in funding (because of the repayment of the National Bank for Agriculture and Rural Development (NABARD) loans) slowed down the pace of execution of projects in 2010-11 and 2012-13. Due to paucity of funds, the following measures were taken to prioritise development work and, thus, manage funds for PMGSY:

- There was more focus on new connectivity projects rather than upgradation works.
- Projects in left-wing extremism (LWE)-affected areas and those funded by ADB, the World Bank, and Bharat Nirman were implemented.

Budgetary allocations for rural roads have also been slashed for the past three years (meaning 2013-14 to 2014-15), falling by 34% in 2014-15. The latest budget further reduced allocations by 1%.

**Rural roads: Year-wise investments**




P: Projected

**Source: National Rural Roads Development Agency,CRISIL Research**

## Review of length constructed/upgraded in rural roads

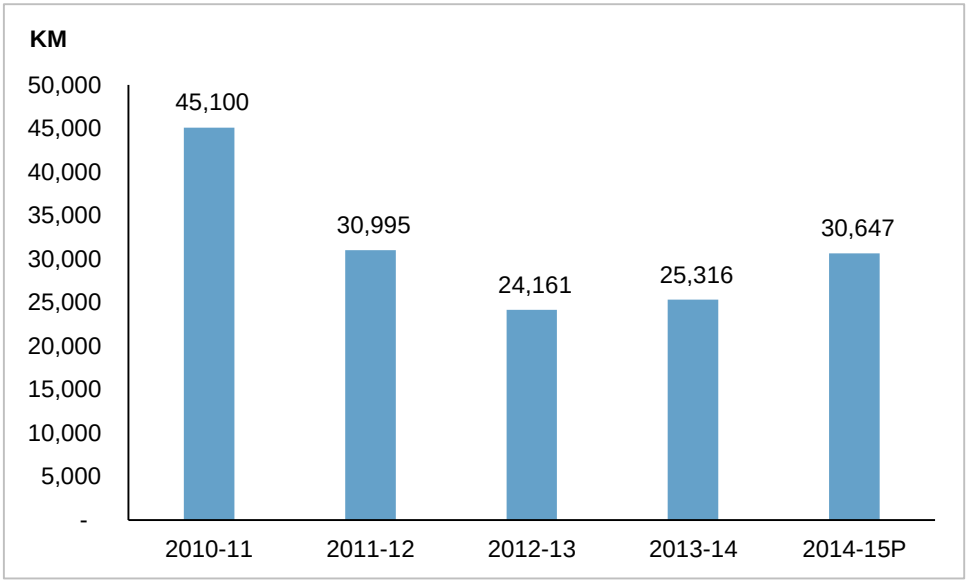
Connectivity of rural roads is a key driver of rural development as it promotes access to economic and social services, thereby increasing income levels and employment opportunities in India. Consequently, it is also a key ingredient in ensuring sustainable poverty reduction. However, despite efforts at the central and state levels through various programmes, about 40% of the country's population are still not connected by all-weather roads. Even in places that are connected, the quality of roads remains inferior due to poor construction and lack of maintenance.

To address this lack of connectivity, the government launched the Pradhan Mantri Gram Sadak Yojana (PMGSY) in December 2000 to build all-weather roads in remote areas. PMGSY is a centrally-sponsored scheme, to be implemented by the respective state governments. The programme was re-phased to achieve targets of rural connectivity under the Bharat Nirman scheme, initiated in 2005-06.

Execution of rural road projects picked up pace between 2013-14 and 2014-15, as more projects were sanctioned. It takes three-four months for construction to commence once a sanction is granted, which has led to an increase in the number of projects under implementation in the past two years. New projects that were sanctioned in 2013-14 saw some implementation but were not completed by the year-end. Hence, project execution was spread out between 2013-14 and 2014-15.

Thus, execution improved to 30,647 km in 2014-15 after increasing to 25,316 km in the preceding year, led by Madhya Pradesh, Odisha, West Bengal and Uttar Pradesh, with Maharashtra, Andhra Pradesh, and Haryana having executed at least 80% of stretches under PMGSY-1.

**Rural roads: Year-wise length constructed/up-graded**




P:Projections

**Source: National Rural Roads Development Agency,CRISIL Research**

## Outlook on investments on rural roads

**Summary :Outlook on rural roads**

| | 2015-16P | 2016-17P | 2017-18P | 2018-19P | 2019-20P |
|---|---|---|---|---|---|
| Rural roads: Year-wise investments (Rs billion) | 131 | 147 | 159 | 171 | 185 |
| Rural roads - Year-wise length constructed upgraded (KM) | 31,566 | 33,776 | 34,789 | 35,833 | 36,908 |

P:Projections

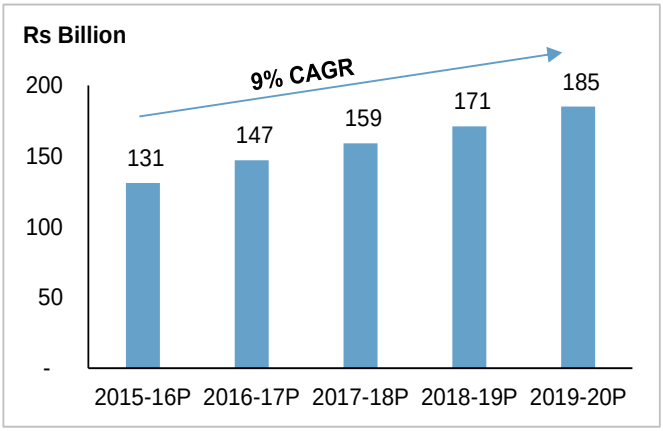
**Source: CRISIL Research**

As all projects sanctioned in 2013-14 were not completed in that year, the committed investments (which shot up by 56%) were also not fully utilised in the year; it is estimated that a portion of these was utilised in 2014-15. As a result, we peg investments at Rs 121 billion in 2014-15 compared to 131 billion in 2013-14, or at a 30% CAGR.

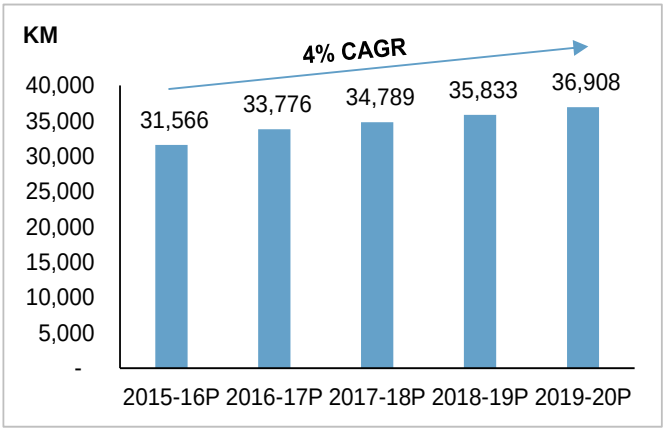
In 2015-16, we believe that funding constraints will continue to drag implementation. However, with the NABARD loans getting fully repaid, execution will pick up slightly in 2016-17. We expect about 31,000-35,000 km to be constructed/upgraded annually between 2015-16 and 2019-20. This is slightly higher than the execution achieved in the last two-three years, but roughly only half of that achieved in 2009-10. Overall investments will add up to Rs

793 billion over the next five years, slightly higher compared to the past five years. Investments will be led by Bihar, Madhya Pradesh, Uttar Pradesh, Uttarkhand, West Bengal and Arunachal Pradesh.

**Rural roads: Year-wise investment**




**Rural roads: Year-wise length implemented**




**Source: CRISIL Research**

## H) Key snippets

- With 5.2 million km of total road network, India has the second-largest road network in the world. However, only half of this road network is surfaced and the road quality has not been at par with global benchmarks.
- Road investments have grown at a CAGR of about 6.5% in the past five years, driven primarily by economic growth, increasing government thrust, preference of road in freight traffic, increased private participation and surge in passenger traffic and vehicle density.
- Government initiatives like NHDP, PMGSY, Central Road Fund Act (2000), viability gap funding and tax benefits have driven road investments in the past.
- **I**nvestments in national highways have registered a CAGR of about 4.6% and increased to Rs 191 billion in 2014-15 from Rs 160 billion in 2010-11. Investment peaked in 2012-13 to Rs 294 billion and then declined for the next two fiscals. Awarding of national highway projects slowed significantly from about 5,032 km in 2010-11 to about 1,115 km in 2012-13, impacted by the weak financial position of players, delays in project clearances and low estimated traffic density for many stretches on offer. The pace picked up again as the total length awarded grew from 1,115 km in 2012-13 to 3,091 km in 2014-15, marking a CAGR of 66%. The length constructed/upgraded has plunged to 1,576 km in 2014-15 from 1,784 km in 2010-11, decreasing at a CAGR of 3%.
- CRISIL Research expects an average of 11.3 km per day of roads, to be constructed/ upgraded at an estimated cost of Rs 2,798 billion, from 2015-16 to 2019-20.

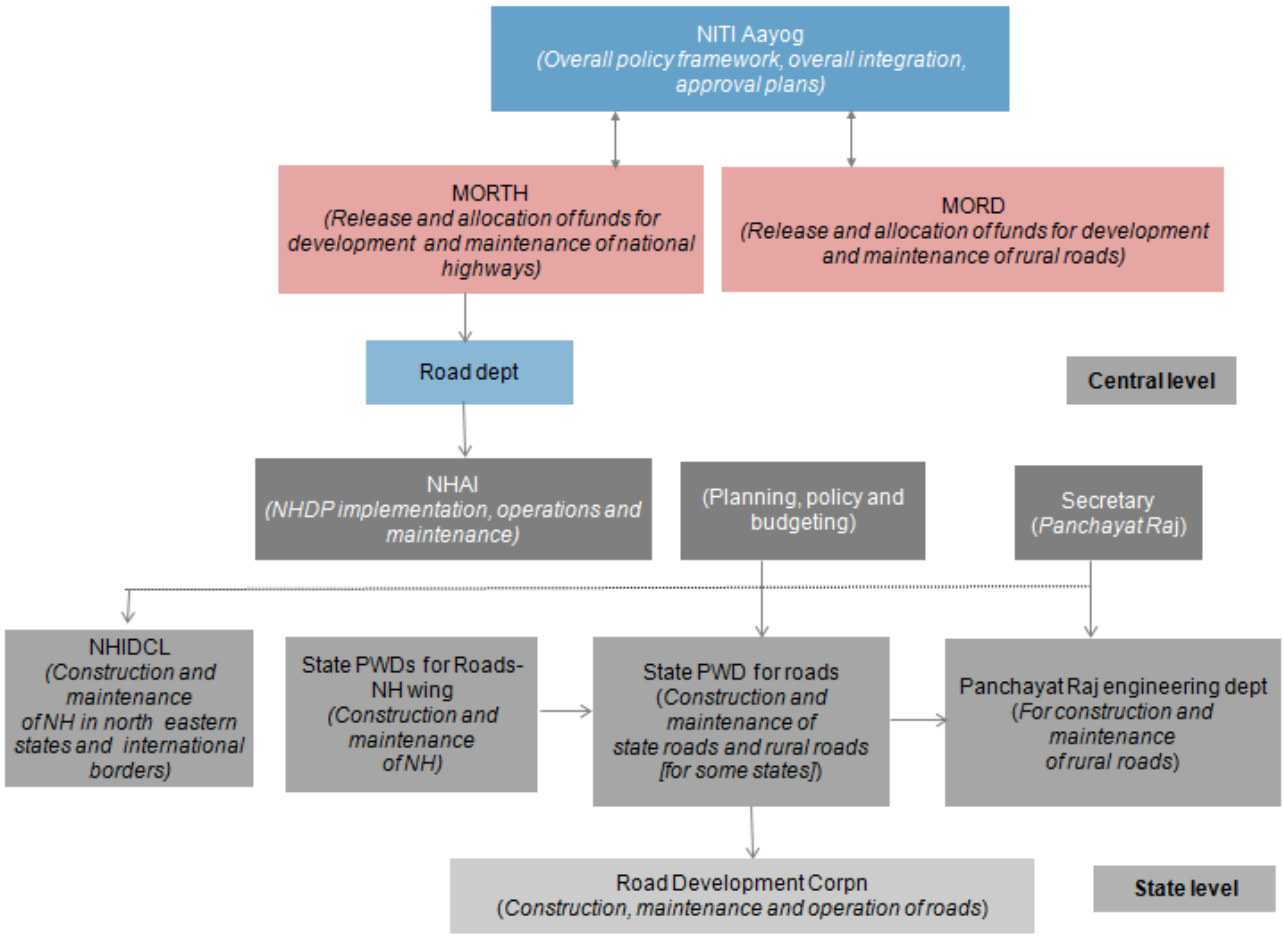
# 3. INSTITUTIONAL AND POLICY FRAMEWORK FOR ROADS AND HIGHWAYS IN INDIA

## A) Institutional framework for roads at central and state levels

### Niti Aayog – Apex body for formulating policies

In January 2015, the government replaced the Planning Commission with the National Institution for Transforming India (NITI) Aayog. NITI Aayog, a multi-tiered structure, will provide strategic and technical advice to the central and state governments. At the central government level, several line ministries will handle transport planning, coordination and policy-setting along with overall coordination by NITI Aayog.

**Road sector: Institutional arrangement at the central and state level**




**Source: CRISIL Research**

At the **central level**, NITI Aayog in consultation with the Ministry of Road Transport and Highways (MoRTH) and the Ministry of Rural Development (MoRD), will be in charge of overall policy-framing, programme development and resource planning. MoRTH's duties relate to policies on road transport and development and maintenance of national highways.

NHAI is the implementing agency for implementation, operation and maintenance of the national highways. NHAI was constituted and operationalised in February 1995; it was given the status of an autonomous corporate body under the control of MoRTH. However, the central government can divest NHAI of its responsibilities in the national interest.

At the **state level**, the overall policy, programme development and resource planning is the responsibility of the state planning cell; the cell has to discharge this responibility in consultation with the central-level planning commission and the state ministry of roads.

National Highways and Infrastructure Development Corporation (NHIDCL) was incorporated in July 2014. NHIDCL is a fully-owned company of MoRTH. Its mandate is to design, build, operate and maintain the national highways and roads in the north-eastern region and other parts of the country that share international boundaries with neighbouring countries.

State PWDs and road development corporations are in charge of implementing, operating and maintaining the state highways, major district roads and rural roads in a few states.

MoRD is responsible for policy development as well as for monitoring and coordination of rural roads. Apart from state PWDs, the panchayati raj also implements the construction and maintenance of rural roads.

The ministries allocate and release funds for the development of roads, to the respective implementing agencies.

## B) Policy framework – Central level

The B.K. Chaturvedi Committee's recommendations regarding various clauses of the MCA and bidding process have been accepted. It involves changes in grant disbursement, concession fee, termination clause, financial closure, conflict of interest, exit policy, technical capacity, etc. A few changes are proposed in the request for qualification (RFQ) pertaining to financial capacity and shortlisting of bidders.

### Key policy measures for private participation

To encourage and facilitate private sector investment and participation in the roads sector, the central government has undertaken certain policy measures and provided certain incentives within the sector. These are listed below:

- 100% FDI has been allowed in road sector projects.
- Dispute resolution will be in line with the Arbitration and Conciliation Act 1996, based on the United Nations Commission on International Trade Law (UNCITRAL) provisions.
- Higher concession period (up to 30 years) has been granted.
- There is provision for capital subsidy of up to 40% of the project cost to make projects commercially viable.
- Provision has been made for encumbrance-free site for work, i.e., the government shall meet all expenses relating to land and other pre-construction activities.

- As per a recent RBI directive, loans for PPP projects can be considered as 'secured' subject to certain conditions.
- CCEA approved the proposal to facilitate harmonious substitution of the concessionaire in ongoing and completed National Highway projects. This will expedite implementation of road infrastructure in the country and insulate NHAI from heavy financial claims and unnecessary disputes.

## C) Overview of private-public partnership framework and models in operation

A public-private partnership (PPP) is an arrangement between a government / statutory entity / government-owned entity and a private sector entity for the provision of public assets and/or public services, through investments being made and/or management being undertaken by the private sector entity, for a specified period of time. There is a well-defined allocation of risk between the private sector and the public entity in this arrangement; the private entity receives performance-linked payments that conform (or are benchmarked) to specified and pre-determined performance standards, measurable by the public entity or its representative.

For broad-based and sustainable growth, the government recognises the need to engage with the private sector through a PPP framework, to achieve the following objectives:

- Harness private sector efficiencies in asset creation, maintenance and service delivery.
- Focus on life-cycle approach for development of a project, involving asset creation and maintenance over its life-cycle.
- Create opportunities to bring in innovation and technological improvements.
- Enable affordable and improved services to users in a responsible and sustainable manner.

While the preferred form of PPP model is the one in which the ownership of the underlying asset remains with the private entity during the contract period and the project gets transferred back to the public entity on contract termination, the final decision on the form of PPP is taken using the value-for-money analysis.

A few operational models:

i. Build-operate-transfer (BOT)
ii. Engineering, procurement and construction (EPC)
iii. Toll collection
iv. Operate, maintain and transfer (OMT)
v. Toll, operate and transfer (TOT)

**Please note that toll collection and OMT are indirect forms of the PPP model as these involve partnerships between a public and private entity. The TOT model is still under consideration by NHAI.*

Electronic toll collection is a strategic focus area for regulatory and administrative bodies involved in the process of toll collection. Electronic toll collection presents several advantages such as limiting toll leakages, reducing waiting time for vehicles and improving overall traffic flow at toll plazas. In future, this may result in significant changes in toll collection operating procedures, followed in each of the above PPP models.

### Types of PPP projects

| Type of Project | Description | Development Risk | Financing Risk | Traffic risk and accrual of toll fee collection | Net cash outflow for the government | Revenue for private party | Concession Period | Award criteria |
|---|---|---|---|---|---|---|---|---|
| BOT (Toll) | Private Party builds road, undertakes O&M and collects toll | Concessionaire | Concessionaire | Concessionaire | No | Toll | Around 20-25 years for NHAI | Highest revenue sharing bid |
| BOT (Annuity) | Private Party builds road, undertakes O&M and collects annuity from the granting authority | Concessionaire | Concessionaire | Authority | Yes, net payment to be made is the difference between the toll collection and the annuity payable | Annuity Payments | Around 20-25 years for NHAI | Lowest Annuity |
| BOT (Hybrid Annuity) | Private Party builds road, undertakes O&M and collects annuity from the granting authority | Concessionaire | Concessionaire (60%) Authority (40%) | Authority | Yes, net payment to be made is the difference between the toll collection and the annuity payable | Annuity Payments (for O&M also) | Around 15 years for NHAI | Lowest project cost and O&M payments annually |
| EPC | Private Party builds road, money is spent by the government | Concessionaire | Authority | Authority | Yes | Contract Amount | Not required | Lowest Tariff requested |
| OMT | Private Party collects toll and undertakes O&M | No development except in case of paved shoulders | Concessionaire | Concessionaire | No | Toll | Around 9 years for NHAI projects | Highest % of toll revenues or highest premium per year |
| Tolling | Private party pays the estimated toll upfront to the authority and collects the toll during concession period | No development | Concessionaire | Concessionaire | No | Toll | Around 1 year for NHAI projects | Highest revenue sharing bid |
| TOT (Proposed) | Private party pays the estimated toll upfront to the authority, undertakes O&M and collects the toll during concession period | No development | Concessionaire | The model is still under consideration by NHAI | | Toll | Long term (typically more than 25 years as observed globally) | The model is still under consideration by NHAI |

Note: Development risk refers to construction risk in developing a road project; the final terms and key parameters of TOT model such as scope of work, duration of the project, upfront payment conditions, etc. are yet to finalised

**Source: CRISIL Research, NHAI**

## i. Build-operate-transfer (BOT)

These contracts are typically public-private partnership (PPP) agreements, whereby a government agency provides a private player the rights to build, operate and maintain a facility on public land for a fixed period, after which assets are transferred back to the public authority. Funding for the project is arranged by the concessionaire, through a mix of equity and debt from banks and other financial institutions. The concessionaire charges a user fee from the users of the project/ facility. The concessionaire may either transfer the entire user fee collected to the authority or may retain the entire amount as revenue. BOT contracts are therefore classified into the following types:

**BOT annuity-based contract:** Under this contract, the concessionaire is responsible for construction and maintenance of the project during the concession period. The concessionaire collects the user fee and transfers it to the public authority. Variability in the user fee gives rise to revenue risk, which is borne by the concessioning authority. However, the concessionaire generates revenue through fixed annuity payments received from the

authority, over the concession period. Since this annuity payment is a cost to the authority, the contract is awarded to the lowest bidder. Toll charged under these contracts are generally regulated by a policy or a public agency. For example, the NHAI toll policy regulates toll charged in road projects, while Tariff Authority for Major Ports (TAMP) regulates port charges.

**BOT toll-based:** Under this model too, the concessionaire is responsible for construction and maintenance of the project, after which the ownership of the project is transferred to the public authority. However, the toll collected is retained by the concessionaire and not transferred to the authority. Therefore, the concessionaire bears the revenue risk during the concession period. Like in BOT annuity-based projects, toll charged under these contracts is generally regulated by a policy or a public agency. For example, the NHAI toll policy regulates toll charged in road projects while TAMP regulates port charges.

**BOT Hybrid Annuity Model:** The Hybrid Annuity Model (HAM) is a mix of engineering, procurement and construction (EPC) and BOT (annuity) model. In this model, the total project cost is shared between the concessioning authority and the concessionaire in the ratio of 40:60. This model aims to lessen the financial burden on the concessionaire during project implementation phase. Compared to EPC projects, the shift to HAM would also ease cash flow pressure on the NHAI. It will lower the project risk for developers because NHAI will bear the risk of traffic volumes. It will also help developers participate in more projects given that equity contribution per project will be lower now. This will also encourage banks to lend to road projects because of NHAI's involvement. HAM was approved by the Cabinet Committee on Economic Affairs on January 27, 2016.

### *Variations of BOT contracts*

**Build-own-operate-transfer (BOOT):** Under a simple BOT contract, revision of the user fee is decided by the government agency (client). Therefore, the operator does not have incentive to further invest in the project post construction. However, under the BOOT model, ownership of the project is transferred to the developer for the concession period. The transfer of ownership provides the developer flexibility to revise user fees when required and therefore maintain th project's viability. This encourages the developer to invest more capital in the project, if required, to enhance revenues.

This type of model is used in power projects where the developer is allowed to retain the ownership and operations of the project for the concession period, after which the project is transferred to the government. The BOOT model can also be implemented in port projects as the operator may need to expand the capacity of the port, based on traffic requirements, which in turn would improve its revenue from port fees.

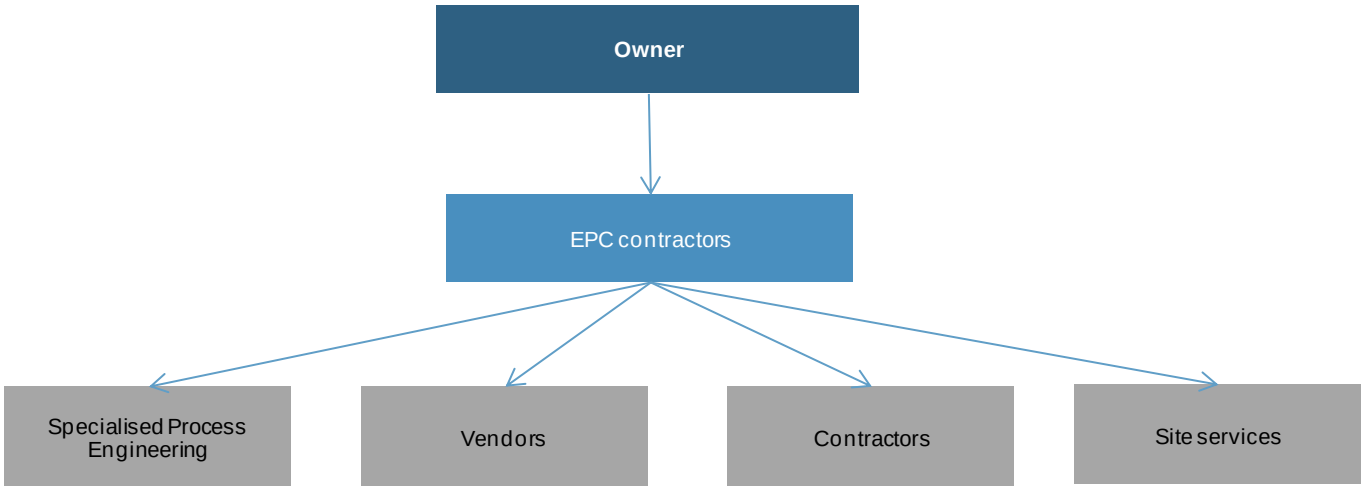
**Build-transfer-lease-operate (BTLO):** Under this model, once the project construction is over, the developer is granted the lease to operate the project, for a fixed lease payment to the authority. Lease payment terms are specified in the BTLO contract at initiation and generally take the form of annual payments. The developer operates and manages the project during the lease period and earns returns via user fees, which may be shared with the public authority, based on the terms of the contract. This approach is common in highway and airport projects, where the structure is leased back to the developer, for a stipulated time period.

**Build-operate-own (BOO):** BOO contracts are being increasingly adopted, to attract private sector investments in projects in sectors such as water and waste water, transportation, engineering and power transmission. BOO contracts are similar to BOT/BOOT contracts, except that the asset remains with the bidder for an indefinite period, rather than being transferred back to the client at a pre-defined date.

### ii. Engineering, procurement and construction (EPC)

EPC contracts are fixed price contracts whereby the client provides conceptual information about the project. Technical parameters, based on the desired output, are specified in the contract. The contractor undertakes the responsibility of designing the project, either through an in-house design team or by appointing consultants. Unlike item rate and Lump Sum Turnkey (LSTK) contracts, the contractor is allowed to innovate on the design of the project. Based on these designs, the contractor draws up cost estimates and accordingly bids for the project.

**EPC contracts**




**Source: CRISIL Research**

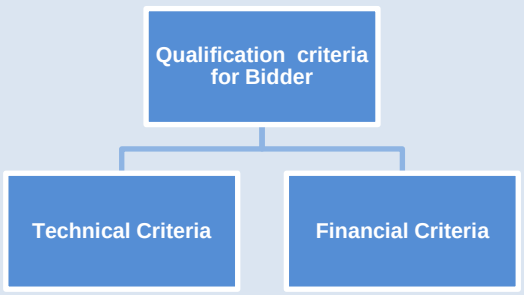
### iii. Toll collection

Toll collection as a separate business model evolved in 2009. Under this model, the authority invites bids from private players for collection of toll on roads constructed under EPC and BOT (annuity). It is used in the case of short-duration projects, typically those lasting 12 months. The private player with the highest bid is awarded the project. The user fee is pre-determined by the contracting authority. The right to collect user fees during the concession period lies with the private player; a contract of this category involves negligible to minimal road construction and maintenance.

Along with NHAI, state authorities and municipal bodies, developers are also outsourcing toll collection to private players, to recognise revenues upfront. Toll management companies recover their investments and make profits from toll receipts. A typical bidding process adopted by NHAI and state authorities has been highlighted below.

## Bidding process of NHAI

1) A two-stage process has been adopted by NHAI for selection of a bidder for the award of work. The **technical bid** consists of the bid documents along with the company profile indicating its capability and experience, while the **financial bid** specifies the amount quoted by the bidder.
2) The bidder may be a:
   - Company registered under the Indian Companies Act, 1956
   - Partnership firm registered under the Indian Partnership Act, 1932
   - Partnership firm registered under the Limited Liability Partnership Act, 2008
   - Cooperative society/ex-servicemen society registered under any Cooperative Societies Act
   - Proprietary firm
   - Individual




3) **Technical criteria:** NHAI does not specify requirement of minimum experience in the tolling business.

4) **Financial criteria:** A bidder must have:
   - Minimum net worth of 20% (10% in case of e-quotation) of annual potential collection (APC) at the close of the preceding financial year
   - Positive net cash accruals during any two financial years out of the last three financial years

Note: Net worth = (subscribed and paid-up equity + reserves) – (revaluation reserves + miscellaneous expenditure not written off + accrued liabilities not accounted for)

Net cash accruals shall mean profit after tax + depreciation.

5) Apart from the bidding documents and tender processing fees (both non-refundable), a bidder is required to deposit a demand draft (refundable) of a certain sum (generally 1 or 2 percentage of project cost) towards bid security. The tender processing fee typically ranges from Rs 10,000 to Rs 15,000 along with the bid document fee, which is typically Rs 5,00,000 (for bidders interested in more than 2 toll plazas).

6) Performance security: The successful bidder has to furnish a demand draft of an amount that is equal to one month's agreed remittance, within seven or fifteen days from the date of issuance of a letter of acceptance (LOA). A bank guarantee of an amount equal to one month's agreed remittance is also needed at this time.

**Bidding process of state authorities**

Like NHAI, state authorities follow a two-stage bidding process for inviting and evaluating bids. However, at the state level, the requirement of minimum net worth and annual turnover differ.

Based on a sample of tenders floated by Maharashtra State Roads Development Corporation (MSRDC), for a tender value of Rs 2000-2500 million, a net worth requirement of Rs 400-600 million in any one of the previous three years and annual turnover requirement was Rs 1000-1500 million in any one of the previous three years (unlike prescribed 25% of annual potential collection by NHAI).

Also, state authorities specify a minimum tolling experience for the bidder; this is generally one year in MSRDC's case.

### iv. Operate, maintain and transfer (OMT)

The operate, maintain and transfer concept was introduced to assure road users of adequate quality and safety. An OMT project entails a contract for the right to collect toll besides a contract for operation and maintenance of the stretch.

*Scope of work for OMT contracts under MCA includes the following:*

- Operation and maintenance of the stretch/ section of highway
- Tolling of the section
- Construction of project facilities such as toll plazas, street lighting, medical aid posts, traffic aid posts and bus shelters
- Any major maintenance work (necessary in long term contracts, not mandatory in short term contracts)

This model provides consistent revenues (in terms of concession fee by private parties) to NHAI on the one hand and just-in-time (JIT) maintenance of the project on the other hand. It includes performance-based maintenance, periodic maintenance, routine maintenance (minor repairs, cleaning of carriageways, shoulders, cross drainage structures etc.), road property management and incident management. In this type of arrangement, toll collection rights are given to the private operator.

Road development agencies are looking forward to generating revenues by awarding OMT contracts. Such revenue is planned to be used to upgrade other roads, and/or for maintenance of roads with low-volume traffic. OMT projects provide opportunity for firms from the private sector who are not willing to take up construction risk and cannot bring in large investments, but can take traffic risk.

From a developer's perspective, OMT projects offer an opportunity to synergise existing projects by taking up OMT contracts on the same corridor. From an investor's perspective, such projects are equivalent to design, build, finance, operate and transfer (DBFOT) toll-based concessions in terms of traffic risk but without construction risk. Investments in such projects would carry benefits similar to investments in DBFOT (toll) projects during the operations period. However, OMT projects have financial liabilities, principally towards road development agencies, unlike capital-intensive DBFOT (toll) projects, where financial liabilities of the project are borne by the road

development agencies as well as by lenders. On the other hand, the ticket size of OMT projects is smaller, so a pool of such projects is required to attract larger investors. The creation of such a pool of projects has other advantages such as the hedging of traffic risk. The medium concession period in OMT projects (5 to 10 years) is another factor that might attract private equity funds to such schemes.

The typical bidding process for an OMT project has been highlighted below:

**Bidding process of NHAI**

NHAI introduced the OMT model for roads in India and since then has awarded the maximum number of OMT projects. We have provided below the bidding process specified by NHAI for awarding OMT projects.

NHAI awards OMT projects under a two-stage process - **qualification stage** and **bid stage**.

1) **Qualification stage :**

- NHAI solicits applicants' qualifications through the request for qualification (RFQ) document, for a prefixed number of OMT projects and road length, to ease the process at the bid stage.
- The aim of the qualification stage is to evaluate the technical and financial capability of the applicants and decide their eligibility for various categories of OMT projects based on estimated project cost. Estimated project cost is specified by NHAI for all OMT projects and includes all costs expected to be incurred during the project such as cost of major / minor maintenance works, construction of toll plazas, manpower cost, and incident management costs.
- At the time of applying for qualification, the applicant is expected to indicate the estimated project cost for which he wishes to be qualified, which should be more than Rs 200 million.
- At the end of the qualification stage, NHAI gives out a list of qualified applicants along with specific estimated project costs which qualifies them for participation in the bidding stage. The qualification is typically valid for 12 months.
- To be eligible for qualification and short listing, an applicant is expected to fulfil certain minimum technical and financial criteria:
  - **Technical capacity –** The applicant should have experience of five financial years, prior to the date of application, of paying or receiving payments for construction or paying for development or collection and appropriation of revenues of PPP projects in the highways* or core sectors* (with capital cost of more than Rs 50 million).
  - **Financial capacity –** In the financial year preceding immediately, the applicant is required to have minimum net worth of the following amounts:
    - For an estimated project cost of less than Rs 20 billion – 25% of the estimated project cost
    - For an estimated project cost between Rs 20 and 30 billion – Rs 5 billion plus 50% of the amount by which the estimated project cost value exceeds Rs 20 billion

- For an estimated project cost value of more than Rs 30 billion – Rs 10 billion plus 100% of the amount by which the estimated project cost value exceeds Rs 30 billion

In the case of a consortium, the combined technical and financial capacity of the members is evaluated.

- The concessionaire is required to engage an experienced O&M contractor or hire qualified and trained personnel to undertake operation and maintenance activities.
- No separate applications are needed for qualification for OMT projects, which are part of RFQ.
- A pre-application conference is also convened by NHAI, wherein applicants can seek clarifications as well as make suggestions for consideration by the authority.

** - As per the RFQ recently published by NHAI authorities, the highways sector includes highways, expressways, bridges, tunnels and airfields; the core sector includes power, telecom, ports, airports, railways, metro rail, industrial parks/estates, logistic parks, pipelines, irrigation, water supply, sewerage and real estate development.*

**2) Bidding stage:**

- Unlike the qualification stage, where qualification is evaluated for multiple OMT projects at one go through RFQ, bidding is carried out separately for each OMT project.
- A request for proposal (RFP) is floated for every OMT project, post which the bidders (applicants qualified at the qualification stage) will be asked to submit their financial bids for the projects after detailed analysis of the project's value.
- Site detail report as well as concession agreements are also given out in this stage for perusal by the qualified bidders.
- The project is awarded to the bidder which quotes the maximum first year concession fee to be paid to NHAI or lowest O&M support required (in case toll revenues from the project are lower than operation expenditures). Till date, all awarded projects have resulted in significant concession fees being paid by concessionaires to NHAI.

### *Bidding process of state authorities:*

Like NHAI, the Bihar State Road Development Corporation (BSRDC) and the Madhya Pradesh Road Development Corporation (MPRDC) follow a two-stage bidding process (qualification stage followed by bidding stage). In the first stage, the authorities qualify applicants through a request for qualification (RFQ) process, based on their technical and financial strength. However, unlike NHAI, which undertakes qualification of a number of OMT projects in one single process (through an RFQ stage), qualification for every single OMT project of MPRDC and BSRDC is typically carried out separately. In the second stage (the bidding stage), which mirrors the NHAI process, bids are invited from qualified applicants and the project is awarded to the bidder which quotes the maximum concession fee or minimum O&M support from the authority.

The Karnataka Road Development Corporation (KRDC), on the other hand, follows a single-stage bidding process wherein qualification and evaluation of financial bids are undertaken.

### v. Toll, operate and transfer (TOT)*

The TOT model is a new PPP model under consideration by NHAI to spur private participation in the roads sector. In this model, globally, the concessionaire pays a one-time concession fee upfront (lump sum) in the operations and tolling phase. The TOT concessionaire will then be allowed to operate and toll the project stretch for the concession period. Any capital improvement required may be taken up by the concessionaire as a part of the agreement in the TOT model. However, in the Indian context, these elements may be modified by NHAI.

The key differences between the tolling and TOT models can be summarised as below:

- In the tolling model, the concession period is typically of a shorter duration (around one year for NHAI projects) whereas in the TOT model, concession periods are of longer duration (in excess of 25 years as observed globally).
- In the TOT model, the concessionaire has the responsibility to operate the project stretch which is not the case in the tolling model.

As of September 2015, NHAI is still considering the merits and demerits of the model before implementation.

*Note: The TOT model is still under consideration by NHAI and all information mentioned here is based on the information present on NHAI website.

## D) Key parameters of new MCA and bidding process

### Concession structure- NHAI projects

The new MCA for BOT-toll based projects, which identifies risks and specifies terms and conditions for risk-sharing between the private players and the government, has been prepared.

### Awarding of contracts

As per the recommendations of the B K Chaturvedi Committee Report, future road projects would be awarded on BOT-toll, BOT-annuity and cash contracts concurrently, and not subsequently.

### Bidding variable to be the grant expected from NHAI

The selection of the concessionaire, under the new MCA, is based on open competitive bidding. All project parameters such as the concession period, toll rates, price indexation and technical parameters are clearly stated upfront. Pre-qualified bidders are required to specify only the amount of grant sought by them. The bidder who seeks the lowest grant wins the contract. In some cases, instead of seeking a positive grant, a bidder may offer a negative grant or offer to share project revenues with NHAI. In that case, the bidder offering the “highest negative grant”/ revenue share wins the contract. *(Note: a grant is paid by the authority to the concessionaire; by extension, a negative grant is paid by concessionaire to the authority).*

### *Grant*

The maximum grant provided will be equal to 20% of the project cost. In case the grant is inadequate for making a project commercially viable, an additional grant up to a maximum of 20% of the project cost may be provided to the concessionaire. As per the recommendations of the B.K Chaturvedi Committee Report, the entire grant would be disbursed to the concessionaire during the construction period.

### *Concession fee (premium)*

As per the recommendations of the B K Chaturvedi Committee Report, the concession fee is the amount the concessionaire agrees to share with NHAI out of the revenues of the road project on the date of commercial operations (COD). The premium would increase by 5% in each year of the concession period.

### *Concession period*

The concession period is generally expected to be 20 years, but may vary depending on the volume of existing and projected traffic for specific projects.

- Partial traffic risk mitigation provisions

The provisions provide for an increase in the concession period by 1.5% (subject to a maximum of 20%) for every 1% of shortfall in traffic. The provision that provides for reduction in the concession period with increase in traffic has been removed in the interest of road players and bankers.

- Modification in the termination clause

As per the recommendations of the B K Chaturvedi Committee Report, if the average daily traffic in any accounting year exceeds the designed capacity of the project highway, a detailed project report (DPR) would be prepared to augment the capacity of the stretch, yielding an assured post-tax return on equity (equity IRR) of 16% to the concessionaire. Also, a maximum extension in the concession period to the extent of five years would be allowed to the concessionaire. The authority may then issue a notice to the concessionaire to undertake capacity augmentation within six months of the notice. If the concessionaire refuses to augment capacity, the authority may thereafter issue a termination notice.

### *Construction period*

The time required for construction (typically 24-30 months) is included in the concession period. A concessionaire starts earning revenues from COD, and this gives the concessionaire an incentive for early completion of construction.

### *Financial closure*

A time limit of 180 days is set for achieving financial closure by the concessionaire. In the event of failure, the bid security is forfeited.

NHAI has introduced an additional condition for bidding road projects. For a project with cost less than Rs 30 billion, developers would be barred from bidding if financial closure on their other projects is pending in three or more NHAI BOT projects as on bidding date. For a project cost equal to or more than Rs 30 billion, a bidder will not be eligible if financial closure is pending in two projects. However, if a bidder convinces NHAI about the surety of arrangement of funds for the project, it can bid for more projects.

### *Conflict of interest*

As per the recommendations of the B K Chaturvedi Committee Report, common shareholding or other ownership interest in companies has been increased from 5 to 25% of paid-up and subscribed share capital.

### *Obligations of NHAI*

As per the recommendations of the B K Chaturvedi Committee Report, the obligations of NHAI are as follows: (i) acquire and hand over possession of 80% of the land required for the project, till the issuance of the letter of award; the balance 20% is to be handed over within 90 days of the award of the project, (ii) obtain all environmental clearances for the project before financial closure is achieved, and (iii) ensure that no competing road is constructed where NHDP is being implemented. NHAI will have to compensate the concessionaire if this is breached.

### *Exit policy*

As per the new policy passed in May 2015, concessionaires for projects awarded pre as well as post 2009 can exit a project completely post two years of project completion. The new policy allows developers of existing and future projects to sell or transfer their complete 100% stake in the special purpose vehicle (SPV) formed for the project, without having to create a new SPV. The exit by the developer, however, can be effected only in consent with the lenders and NHAI.

This is in contrast to the earlier policy whereby developers were required to hold at least 51% equity during construction and 26% equity stake up to two years after the commercial operations date. Additionally, pre-2009 concessionaires could exit only 74% of their stake in any project after two years of the commercial operations date.

### *Substitution*

In June 2013, CCEA approved the proposal to facilitate substitution of concessioners in ongoing and completed National Highways projects. As per the proposal, the existing concessioners are permitted to divest their equity in totality in ongoing or completed projects. However, subsequent to the substitution, the leading substituting entity will be required to maintain at least 51% equity holding in the project SPV. The decision to permit substitution will be taken by lenders in consent with NHAI.

### *Technical capacity*

As per the recommendations of the B K Chaturvedi Committee Report, the technical capacity of a developer should be equivalent to the project cost of a particular road project.

### *Financial capacity*

Currently, the bidder/consortium is required to have net worth equivalent to at least 25% of the project cost. As per the latest amendment, for projects up to Rs 20 billion, the consortium will need to have net worth of 25% of the capital cost of the project; for projects worth between Rs 20 billion and Rs 30 billion, net worth requirement will be 50% of the capital cost of the project plus Rs 5 billion. The company implementing projects beyond Rs 30 billion will need to have net worth equivalent to the project cost plus Rs 10 billion.

## Amendments to MCA as on September 8, 2015

The amendments released on September 8, 2015, address the issues of delays in execution by bringing in clarity by fixing a clear timeline for project execution. For instance, if a project does not take off within a year, then it will be deemed to have terminated and if the concessionaire is at fault, then 1% of the total project cost (tpc) will be encashed from his security deposit. This is a step in the positive direction in terms of preventing past experience of huge stalled projects. However, the MCA remains silent on any penalty to be levied on an authority for causing such default.

Secondly, lenders will now have more comfort in lending for national highway projects. The MCA will now allow for back-ending of premium payments, so premium payments will start from the fourth year post completion date (COD). This brings significant relief to both developers and lenders as most projects have debt-service coverage ratios of less than one for the initial three to four years of a project. The debt service coverage ratio (DSCR) can jump significantly for projects with high premium payments. In addition, the authority will provide revenue shortfall loans in cases where the project revenue is impacted by specific events triggered off by judicial pronouncements. All this is set to change the script for projects that would be awarded post the MCA amendments.

Users' interests have also been protected by ensuring that the developer does not increase toll rates prior to the official notification, and by a sum more than what is specified in the notification. Further, in case of higher traffic, the developers will have to spend on maintenance to augment the vehicle-carrying capacity of the road, failing which the developer will have to pay a penalty.

**Important changes to the MCA (September 2015) and their impact**

| Ammendment | Previous clause | Current clause | Impact |
|---|---|---|---|
| Premium payments | To begin from Year One of the completion date (COD) | To begin from Year four of COD and increase by 3% till the 10th year, and 8% per year until the end of the concession period | Will help developers and lenders reduce cash flow mismatches |
| Equity contribution by authority | Equity support should not be more than the equity of the developer nor can it exceed 20% of the project cost | Equity support (including O&M) by authority shall not be more than two times the promoter's equity, and cannot exceed 40% of the project cost | Facilitates higher equity support by authority, especially since most BOT projects awarded in Q1 of current fiscal are on grant |
| Revenue shortfall loan | Revenue shortfall loan available for political events, default impacting cash flows | Revenue shortfall loan available additionally for judicial pronouncements impacting cash flows | Will improve the scope to avail of revenue shortfall loan |
| Termination of projects | No provision for deemed termination | There will be deemed termination if the appointed date is not within one year of the agreement date | Will reduce the number of projects stuck due to of lack of progress in work |
| Maintenance obligations | No provision for higher traffic beyond the capability designed. If maintenance obligations are not met, a penalty of 0.5% of the average daily toll, and 0.1% of the cost of repair for the balance concession period (whichever is higher), will be levied. | Added obligations if traffic is higher than designed capacity. If the concessionaire fails to repair or rectify defects then the authority will levy penalty for each day of delay at 5% of the average daily toll and 1% of the cost of repair, whichever is higher, for the balance concession period. | Will fix responsibilities for maintenance on developer |
| Toll fee notifications | If the toll collected or displayed is in excess of notified fees, the surplus needs to be deposited along with penalty equal to 25% of the excess amount | If the toll collected or displayed is in excess of notified fees, the excess amount, along with penalty equal to 200% of such excess amount, will have to be deposited | Will prevent misuse of toll collection rights |
| Data on toll and traffic collection | Not present | Install appropriate mechanism to ensure real -time traffic data count and corresponding revenue collection | Will enhance transparency and lender comfort because of better traffic estimation |
| Refinancing obligations | Not present | NHAI shall permit and enable concessionaire to secure refinancing in whole or in part | Will enhance lender comfort |

**Source: MoRTH, CRISIL Research**

## E) Overview of new Tolling Policy (2011)

### *Toll Act*

The central government is authorised to levy a fee (toll) under Section 7 of the National Highways Act, 1956 for public-funded projects and under Section 8-A of the said Act, for private investment projects. The government can levy fees on all sections of National Highways (irrespective of four or two lanes), tunnels, bypasses and bridges with specific cost criteria.

### *Fee structure*

Toll charges are based on rates notified by the government. The fee for use of a section of the national highways of four or more lanes for the base year 2007-2008 shall be the product of the length of such a section multiplied by the rates specified hereunder.

**Toll rates for 4-lane national highways**

| Vehicle category | Rs/km |
|---|---|
| Cars, Jeep, Van, Light Motor vehicle | 0.65 |
| Light Commercial Vehicle | 1.05 |
| Bus or Truck | 2.20 |
| 3-axle commercial vehicle | 2.40 |
| Heavy construction machinery, multi axle vehicles (MAV) 4 to 6 axles | 3.45 |
| Oversized vehicles 7 or more | 4.20 |

**Source: PIB, CRISIL Research**

The rates will be revised every year, effective from 1st April as per the following rules:

- Increase of 3% without compounding (on base rates of 2007-08)
- 40% of the increase in wholesale price index (WPI) over the previous year

Other features of the new tolling policy include the following:

- Uniform rates for public and private-funded projects
- Fee for a permanent bridge, bypass or tunnel costing Rs 0.1[1] billion or more will be determined separately and that of NH length will be calculated separately.

In 2013, 2014 and 2015, some amendments were made to the National Highway Fee (determination of rates and collection) Rules 2008. These are:

[1] Separate toll rates may be prescribed for standalone bridges, ROBs, RUBs, bypasses, tunnels not forming part of corridor as also ring roads, expressways and port connectivity or such special projects. The threshold level for levy of user fee of standalone structures shall be Rs 0.1 billion.

For structures like bridges, ROBs, RUBs, bypasses, tunnels etc, forming part of corridor, the threshold level for levy of user fee shall be Rs 0.5 billion. The fee rates of such sections shall be determined by deducting the length of such structures and adding the fee rates of the structures

- In the case of a section of a four-lane highway which has been taken up for upgradation to six-laning, the increase in rate of fee shall be limited to 75% of the fee specified as revised as per applicable rules calculated on and from the date of commencement of the work relating to upgradation, till the date of completion of the project according to the agreement entered into with the concessionaire without any annual revision. No user fee shall be levied for the delayed period between the date of completion as per the agreement entered into with the concessionaire and the date of actual completion of the project. For the purposes of this rule, any provisional completion of the project shall not be treated as completion of the project.
- The rate of fee for use of an expressway shall be 1.25 times the rate specified in the applicable rule.
- In the case of private investment projects, the rate of fee shall be as specified under the applicable rule or such lower rates as the concessionaire may determine by giving public notice to the users, specifying in all or any category of vehicles.
- The rate of fee for use of a standalone structure as well as a structure forming part of a linear highway/expressway shall be calculated by converting the length of structure into an equivalent length of highway/expressway, by multiplying by a factor of ten, provided that structure of 60 meters of length or less, on a linear highway/expressway will be considered as a part of normal length of highway/expressway for calculation of fee.
- In the amendments of December 2013, NHAI empowered the concessionaire to collect 10 times the applicable fee from overloaded vehicles. The December 2015 amendments further allowed concessionaire to stop the vehicles plying on the section of National Highway without payment of fee due. Any vehicle loaded in excess of its maximum permissible gross vehicle weight (GVW) is not permitted to use the national highway or cross the toll plaza till the excess load is removed or a fee of 10 times the applicable amount is paid. Moreover, the concessionaire can detain the vehicle till all dues are cleared.

## F) Financial incentives for road developers

- Under section 80 IA of the Income Tax Act, profits and gains derived by an undertaking are subject to 100% deduction for 10 consecutive assessment years out of 20 years beginning from the year in which the undertaking begins to operate the business provided such profits and gains are derived from the business of: 1) developing, 2) operating and maintaining or 3) developing, operating and maintaining a road including, toll road, a bridge; a highway project including housing or other activities being an integral part of the highway project
- Deduction up to 40% of the income from financing of the infrastructure projects is available provided the amount is kept in a special reserve.
- On certain identified high-quality construction plants and equipment, the import duty has been completely exempted for public-funded needs.
- Import of bitumen is now permitted under the Open General License.
- External commercial borrowings are permitted up to 35% of the project cost.

## G) Key snippets

In terms of institutional framework, the NITI Aayog (which replaced the Planning Commision) is the apex body for formulating policies, programmes, and development and resource planning for the roads sector.

- Duties related to the development and maintenance of National Highways and rural roads are the responsibility of the MoRTH and MoRD, respectively.
- Implementing agencies for national highways, state roads and rural roads are NHAI, state PWDs and road development corporations and panchayats, respectively.

To encourage and facilitate private sector investment and participation in the roads sector, the central government has undertaken certain policy measures and provided certain fiscal incentives within the sector such as:

- 100% FDI in road sector projects
- Higher concession period (up to 30 years)
- Provision for capital subsidy of up to 40% of the project cost to make projects commercially viable
- Permission to divest stake in ongoing and completed national highway projects awarded under the PPP model at any time after securing the bid
- Permitting loans for PPP projects to be considered as ‘secured’ subject to certain conditions
- Amendments to the Model Concession Agreement released in September 2015 to address issues of delays in project execution as well as to spur private participation through simplification of the exit policy and back-ending of premium payments. Allowing greater contribution by the authority is also another positive step. Further, stringent penalties on non-compliance of maintenance contracts and collection of real-time traffic data would lend clarity and fix responsibility appropriately. These changes will improve the confidence of both developers and lenders in investing in the sector.

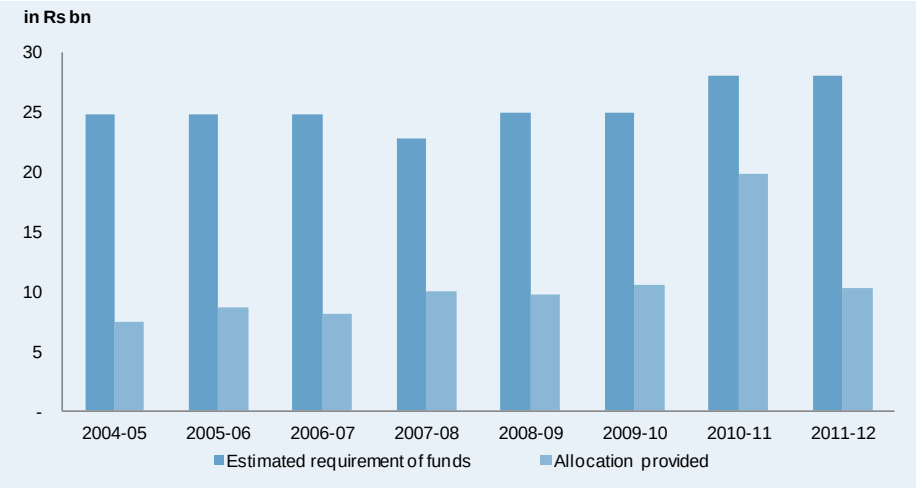
# 4. KEY TRENDS IN OMT BUSINESS MODEL

## A) Overview of OMT business model

In the past, both state and National Highways have attracted significant investments for their development. Stretches that were developed under public private (PPP) model are currently being maintained to the desired performance standards by the concessionaire. However, stretches that were developed by the utilisation of public funds need to be maintained at adequate service levels by the respective national or state authority.

Repair and maintenance work on these public funded stretches is being carried out annually as per availability of funds, extent of damage etc., to keep these highways suitable for public use. However, in the past, repair and maintenance of roads has not received the attention it requires, primarily due to the lack of funds, which has been made available for Operation & Maintenance (O&M) activities. For National Highways, over 2004-05 to 2011-12, the actual allocation of funds for repair and maintenance was less than 50% of the estimated requirement. This has resulted in available funds being allocated over a large number of National Highway projects as well as insufficient allocation of funds to the state for repair and maintenance of state highways.

**Details of estimated fund requirements for maintenance & repair of National Highways & actual allocation**




Note: Information available only up to 2011-12

**Source: Press Information Bureau- GoI, MoRTH**

Taking cognizance of the dearth of budgetary outlays for maintenance of roads (highways) as well as the growing traffic in the country, a new concept was introduced to tap the private sector's efficiencies in operation, tolling and maintenance as the service life of road infrastructure depends primarily on timely maintenance. The new concept - OMT (Operate, Maintain and Transfer) model was introduced by NHAI in 2009 for select existing and near completion four-lane National Highways. Earlier, the tasks of user fee (toll) collection and maintenance of highways were entrusted with tolling agents / operators and sub-contractors, respectively. These tasks were integrated under the OMT concessions; ***an OMT contract hence is a fusion of two contracts – a tolling contract and a contract for O&M.***

## Key features of the OMT Model

### Scope of an OMT contract

Under the OMT on PPP basis, the primary objective is to outsource the operation and maintenance of the road to a private entity for a definite concession period. The basic principles of OMT are similar to Build, Operate and Transfer Toll model (BOT-Toll) with construction, operation & maintenance and tolling of highway reduced to merely operation & maintenance and tolling of highway.

A concession agreement is signed between the OMT concessionaire and the government authority (NHAI / state road development corporations etc.) which includes, just like BOT (Toll) contracts, periodic and performance based maintenance, toll collection, construction of additional project facilities (such as toll plazas, bus shelters etc.), road property management and incident management for the project section handed over to the concessionaire under OMT contract.

Therefore, scope of work for an OMT project includes the following:

- Operation and maintenance of the project section.
- Toll collection.
- Construction of project facilities such as toll plaza, street lighting etc.
- Any major maintenance works (as may be necessary in some cases).

### Concession period

The concession period is identified on project specific basis but typically, for NHAI projects, it is 9 years (although a few 6-year contracts have also been awarded), after which the concessionaire has to transfer the project stretch back to the government authority. The concession period is linked to periodic maintenance cycle of the project highway and is almost equal to the life of renewal work i.e. concession period is chosen such that an OMT contract ends before the necessity to upgrade the project stretch from 2 lane to 4 lane or 4 lane to 6 lane etc. arises.

## Revenue model of an OMT project

### *Revenue stream for OMT concessionaire*

The concessionaire is authorised through Government Gazette notification to levy, collect and retain user fee from road users, which forms the revenue stream for the concessionaire. User fee to be collected on the given stretch is fixed by the authority and is increased in the successive year as per the changes in Wholesale Price Index (WPI).

As per the New Tolling Policy in 2011, the methodology for revision of toll rates is as below:

*Fixed 3 per cent + 40 per cent of change in WPI*

### *Revenue stream for government authority*

The selection of the concessionaire is based on competitive bidding where selected bidders specify the concession fee offered by them to the authority or in some cases O&M support required - in case their operational expenditures

exceed the toll revenues expected. Typically, we have seen that all OMT projects that have been awarded till date have resulted in the government authority receiving concession fee.

### Risk sharing under OMT contract

The commercial and technical risks associated with operation and maintenance such as traffic risk, toll collection risk and financing risk are typically allocated to the concessionaire whereas political risk is allocated to the government authority, as it can handle it better. Construction risk is relatively lower for OMT projects when compared to BOT / EPC projects.

**Risk sharing mechanism under OMT contracts**

| Type of Risk | Allocation | Details |
|---|---|---|
| Traffic Risk | Concessionaire | Entire traffic risk is to be bore by the private concessionaire |
| Toll Collection Risk | Concessionaire | Entire toll collection risk is to be bore by the private concessionaire |
| Financing Risk | Concessionaire | - |
| Political Risk | Government Authority | All direct and indirect risk are allocated to the government authority |

**Source: CRISIL Research**

OMT projects have financial liabilities, principally towards road development agencies, unlike capital-intensive DBFOT (toll) projects, where financial liabilities of the project are towards both road development agencies and lenders.

### Prerequisite to an OMT contract

Under the Model Concession Agreement (MCA) for OMT, it is envisaged that before the start of the concession period of an OMT contract, the project stretch being awarded should be amenable to tolling and all major construction works should have been completed. However, the project stretch may require construction of facilities such as toll plazas, truck by-lanes, truck shelters, weigh scales etc., which typically should not hold up tolling.

### Supervision by authority

The government authority undertakes the supervision and monitoring of the O&M work by appointing an independent engineer (a qualified firm), which is selected through a separate bidding process.

## Key drivers of the OMT Model

The OMT Model, apart from bridging the significant gap of lack of funds available for operation and maintenance of roads (highways) in India, also provides certain other advantages, which have been listed below:

1) Under OMT contracts, the efficiency of the private sector in toll collection and O&M is leveraged. This typically leads to a decrease in costs as well as increase in revenues - owing to a reduction in leakage of toll.

2) Under an OMT contract, a concessionaire is awarded O&M and tolling of a project stretch, for a typical duration of 9 years. This significantly reduces the administrative efforts of the awarding agency, as earlier the authorities (NHAI, state agencies etc.) used to hire two separate agencies every year, one for tolling and the

other for O&M of a project stretch. (standalone tolling or O&M contracts are typically for a smaller contract period of around 1 year).

3) All OMT projects that have been awarded till date have resulted in the premium (concession fee) being shared by the concessionaire with the awarding authority (NHAI / state authority). Revenue generated through premium sharing can be used for development of other road corridors.

## B) Key trends in OMT business model and list of key projects bid for

**Prior to 2009**, NHAI used to invite bids for tolling and O&M of National Highways separately. Contracts were awarded, typically for a year, to two separate agencies, one for undertaking O&M activities and the other for undertaking tolling, and hence required significant administrative efforts.

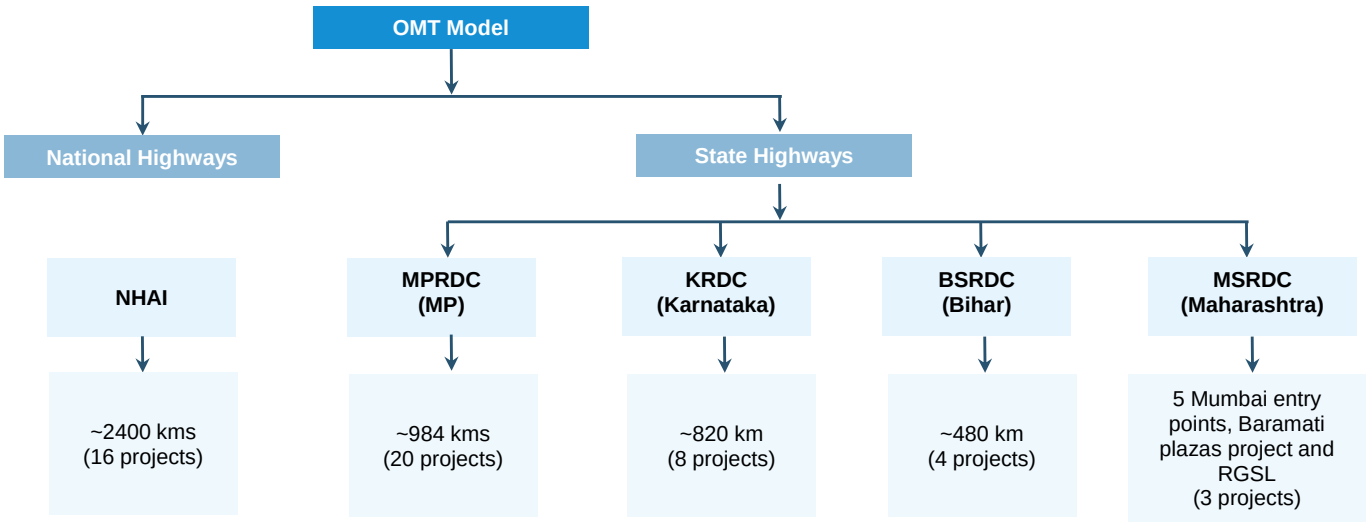
**In 2009**, primarily owing to a dearth of funds available for maintenance of highways and tapping the gains of PPP model, NHAI introduced OMT concept for National Highways, which were constructed through public funding - predominantly stretches developed in the Golden Quadrilateral (GQ) and North-South–East-West (NSEW) corridor (under NHDP Phase I & II).

Between 2009-10 and 2014-15, NHAI has awarded a total of around 2,400 km of National Highways (around 12 projects) to be maintained on OMT basis.

Apart from NHAI, OMT models have also been adopted by a few large Indian states, where state road development authorities have invited bids / awarded state highway stretches to be operated and maintained on OMT basis. Key state authorities that have adopted OMT concept in India are Maharashtra State Road Development Corporation (MSRDC), Madhya Pradesh State Road Development Corporation (MPRDC), Karnataka Road Development Corporation (KRDC) and Bihar State Road Development Corporation (BSRDC).

- In 2009-10, MSRDC invited bids for (and awarded) securitization of 5 entry points for Mumbai toll plazas (Airoli, Mulund, Vashi, LBS Marg and Dahisar) and maintenance of 27 major flyovers on OMT basis. Further, in 2010-11, MSRDC invited bids for (and awarded) OMT of 5 toll plazas in Baramati. In 2013-14, MSRDC invited bids for (and awarded) O&M of Rajiv Gandhi Sea link (RGSL) on OMT basis. There are no publicly announced projects of MSRDC in 2014-15 and 2015-16 (till 30$^{th}$ November 2015).
- In 2012-13, MPRDC invited bids for around 940 km of state highways (under 11 projects) to be maintained on OMT basis while in 2013-14 bids for around 550 km of state highways (under 11 projects) were invited of which 238 km were repeats from the previously invited bids. In 2014-15, MPRDC has invited bids for 434 km (9 projects). Moreover, in 2015-16 (till 30$^{th}$ November 2015), MPRDC has invited bids for 865 km (16 projects).
- In 2013-14, KRDC and BSRDC have invited bids for around 820 km (fewer than 8 projects) and around 480 km (under 4 projects) of state highways stretches, respectively. There are no publicly announced projects of KRDC and BSRDC for 2014-15 and 2015-16 (till 30$^{th}$ November 2015).

### Adoption of OMT model at national and state level




NHAI: National Highways Authority of India

MPRDC: Madhya Pradesh State Road Development Corporation

KRDC: Karnataka Road Development Corporation Limited

BSRDC: Bihar State Road & Bridges Development Corporation

MSRDC : Maharashtra State Road Development Corporation

RGSL : Rajiv Gandhi sea link

Note : Length of projects of NHAI and state authority lengths are based on projects for which bids have been invited

**Source: NHAI, respective state RDC website, CRISIL Research**

## Adoption of OMT Model by NHAI: Around 2,400 km of National Highway length is currently tolled, operated and maintained (as of 2014-15)

### Summary of OMT projects bid out by NHAI till 2014-15

| Authority Name | Length of projects (in km) | | | No of projects | | | Estimated project cost (in Rs. Billion) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2009-10 & 2010-11 | 2011-12 to 2014-15 | Total | 2009-10 & 2010-11 | 2011-12 to 2014-15 | Total | 2009-10 & 2010-11 | 2011-12 to 2014-15 | Total |
| National Highways Authority of India (NHAI) | 960 | 1,440 | 2,400 | 6 | 10 | 16 | 3.7 | 8.3 | 12.0 |

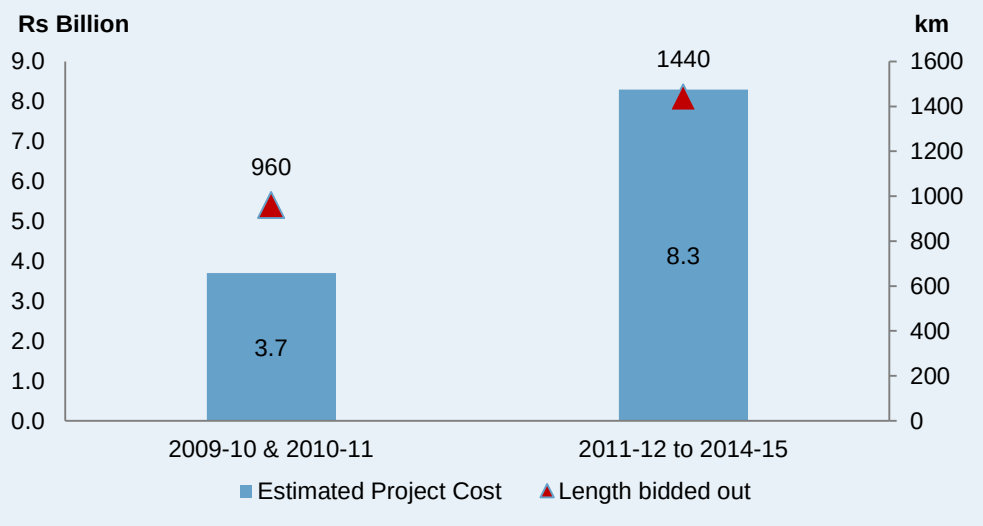
Note: All details are on awarded basis.

**Source: CRISIL Research**

In the first phase, year 2009-10 and 2010-11, NHAI bid out a total length of around 960 km (under 6 projects) of National Highways to be maintained on OMT basis. Approximately 50% of the length was bid out for a concession period of 6 years, whereas the other 50% was bid out for a concession period of 9 years. Under phase 1, the total

concession fee that was received by NHAI was around Rs 2.6 billion whereas the estimated project cost of the OMT projects was around Rs 3.7 billion.

**Details of OMT projects bid out by NHAI**




**Source: CRISIL Research**

**List of OMT projects awarded by NHAI during Phase 1 (2009-10 and 2010-11)**

| Name of OMT Package | State | Concession Period | Length (Km) | Estimated Project Cost (Rs. Million) |
|---|---|---|---|---|
| O&M of Palanpur-Radhanpur Section of NH-14 and Radhanpur-Samakhiyali Section of NH-15 under OMT basis under OMT basis | Gujarat | 9 years | 260 | 1,840 |
| O&M of Porbandar-Bhiladi-Jetpur Section of NH-8B under OMT basis | Gujarat | 9 years | 116 | 770 |
| O&M of Chittorgarh-Kota section of NH-76 under OMT basis | Rajasthan | 6 years | 161 | 230 |
| O&M of Swaroop-Pindwada Section of NH-14 and Pindwada-Udaipur Section of NH-76 under OMT basis | Rajasthan | 6 years | 120 | 160 |
| O&M of Kota to Baran Section of NH-76 under OMT basis | Rajasthan | 9 years | 104 | 540 |
| O&M of Baran-Shivpuri section of NH-76 and Shivpuri-Jhansi section of NH-25 under OMT basis | Rajasthan, Madhya Pradesh and Uttar Pradesh | 6 years | 196 | 190 |
| **Total** | | | **960** | **3,700** |

**Source: NHAI, CRISIL Research**

In phase 2, during the last three years i.e., 2011-12 to 2014-15, total length bid under OMT model by NHAI, jumped from 960 km (under phase 1) to around 1,440 km. A total of 10 projects were awarded on OMT basis during phase 2, compared to 6 projects awarded under Phase 1.

Further, under this phase, the estimated project cost increased from around Rs 3.7 billion (under phase 1) to around Rs 8.3 billion. Concession period of all OMT contracts bid out during the last two years is 9 years. A sharper rise in concession fee and project cost between the two phases when compared to the increase in length on OMT can be attributed to factors like inflation, increase in average years on which the stretches were given out on OMT (from 6-9 years in Phase 1 to 9 years in Phase 2), better traffic on phase 2 stretches etc.

### List of OMT projects awarded by NHAI during Phase 2 (2011-12 to 2014-15)

| Name of OMT Package | State | Concession Period | Length (Km) |
|---|---|---|---|
| O&M of Madurai-Tirunelveli- Panagudi –Kanniyakumari Section of NH-7 on OMT basis | Tamil Nadu | 9 years | 243 |
| O&M of Chennai by- pass on OMT basis | Tamil Nadu | 9 years | 33 |
| O&M of Trichy Bypass to Tovaramkurchi- Madurai section of NH-45B on OMT Basis | Tamil Nadu | 9 years | 125 |
| O&M of Kanpur-Lucknow section of NH-25 and Lucknow Bypass stretch of NH-56A & 56B and Lucknow-Ayodhya Section stretch of NH-28 on OMT Basis | Uttar Pradesh | 9 years | 217 |
| O&M of Ayodhya – Gorakhpur Section of NH-28 on OMT Basis. | Uttar Pradesh | 9 years | 118 |
| O&M of Kolaghat- Haldiya section of NH-41 on OMT basis | West Bengal | 9 years | 52 |
| O&M of Hyderabad-Bangalore section of NH-7 on OMT basis | AP & Karnataka | 9 years | 251 |
| O&M of Lalitpur-Sagar-Lakhnadone section of NH-26 on OMT basis | Uttar Pradesh and Madhya Pradesh | 9 years | 325 |
| O&M of Guwahati Daboka section on OMT Basis | Assam | 9 years | 205 |
| O&M Borkhedi-Jam-Wadenar of NH7 on OMT basis | Maharashtra | 9 years | 57 |
| O&M of Agra-Gwalior section on OMT basis | UP, Rajasthan and Madhya Pradesh | 9 years | 95 |
| O&M of Allahabad Bypass of NH-2 on OMT basis | Uttar Pradesh | 9 years | 85 |
| O&M of Four Lane of Section of NH-1A starting from km 4.230 (Jalandhar) to km 117.750/ 4.000, km 4.000 to km 97.200/ 0.000 and km 0.000 to km 15.000 i.e. end of Jammu Bypass on OMT Basis | Punjab, Himachal Pradesh and Jammu & Kashmir | 9 years | 222 |
| **Total** | | | **2,028** |

Note: The above list also includes the projects that have been awarded but cancelled

**Source: NHAI, CRISIL Research**

## Adoption of OMT Model by state highways: Around 2300 km of state highway length is currently tolled, operated and maintained (as of 2014-15)

As of 2013-14, four states in India, viz, Maharashtra, Madhya Pradesh, Bihar and Karnataka, have adopted the OMT model.

### Summary of OMT projects for MSRDC for which bids were invited

| Authority Name | Project Name | Project Description |
|---|---|---|
| MSRDC | 5 Mumbai entry points | - Securitization of 5 entry points for Mumbai toll plazas and maintenance of around 27 major flyovers on OMT basis, for a concession period of 16 years.<br>- Payment to MSRDC for this project was valued at Rs 21 billion |
| MSRDC | Rajiv Gandhi Sealink (RGSL) | - Operation & Maintenance of Rajiv Gandhi Sea Link (~ 5 km) and toll plaza & collection of toll for a contract period of 3 years (156 weeks).<br>- Payment to MSRDC for this project was valued at Rs 2.65 billion |
| MSRDC | 5 toll points at Baramati | - Operation & Maintenance of 5 toll points at Baramati for a concession period of 19 years |

MSRDC : Maharashtra State Road Development Corporation

**Source: MSRDC, CRISIL Research**

**Summary of OMT projects (except MSRDC) for key State authorities for which bids were invited**

| Authority Name | Length of projects (in km) | | | No of projects | | | Estimated project cost (in Rs billion) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2013-14 | 2014-15 | Total | 2013-14 | 2014-15 | Total | 2013-14 | 2014-15 | Total |
| MPRDC | 550 | 434 | 984 | 11 | 9 | 20 | n.a | n.a | n.a |
| KRDC | 820 | 0 | 820 | 8 | 0 | 8 | 5 | - | 5 |
| BSRDC | 480 | 0 | 480 | 4 | 0 | 4 | 4 | - | 4 |
| **Total** | **1850** | **434** | **2284** | **23** | **9** | **32** | **9** | **0** | **9** |

*Estimated costs for projects invited for bids in February 2014 is not available.

MPRDC: Madhya Pradesh State Road Development Corporation

KRDC: Karnataka Road Development Corporation Limited

BSRDC: Bihar State Road & Bridges Development Corporation

Note: No bids were invited by KRDC and BSRDC in 2014-15

**Source: State Authorities, CRISIL Research**

Based on information available to CRISIL Research from the secondary public domain, below is the state-wise activity in relation to OMT projects

- In 2009-10, Maharashtra was the first state to invite bids for securitization of 5 entry points for Mumbai toll plazas (Airoli, Mulund, Vashi, LBS Marg and Dahisar) and maintenance of 27 major flyovers on OMT basis. The project was awarded in November 2010 for a concession period of 16 years. The payment to MSRDC for this project was valued at Rs 21 billion. Further, in 2010-11, MSRDC awarded OMT of 5 toll plazas in Baramati (around 22 km) for a concession period of 19 years. Also, in 2013-14, MSRDC had invited bids (and awarded) for OMT of Rajiv Gandhi Sea link (RGSL) for a concession period of 156 weeks i.e. around 3 years. The estimated cost of this project is around Rs 2.65 billion.

- In 2012-13, MPRDC invited bids for around 940 km (fewer than 11 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. The estimated cost of these projects, as mentioned in the Request for Proposal (RFP) documents was around Rs 3.8 billion. In 2013-14, the state had successfully awarded around 200 km (of the total 940 km) of state highways on OMT basis. In 2013-14, MPRDC invited prequalification bids for around 550 km (fewer than 11 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. Of the 550 km invited for bidding in 2013-14, 238 km were repeats from the previously invited bids.

- In 2014-15, MPRDC invited prequalification bids for around 434 km (9 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. Of the 9 projects invited for bidding in 2014-15, all projects, except Budhni-Rehti-Nasrullaganj-Khategaon, were repeats from the previously invited bids. In 2015-16, till 30$^{th}$ November 2015, MPRDC invited prequalification bids for around 865 km (16 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. Of the 865 km invited for bidding so far, 486 km were repeats from the previously invited bids.

**List of OMT projects invited for bidding by MPRDC in 2013-14**

| Name of Project | State Authority | State | Length (Km) |
|---|---|---|---|
| OMT of Bhopal-Vidisha Road of SH-18 | MPRDC | Madhya Pradesh | 36 |
| OMT of Vidisha-Kurwai Road of SH-19 | MPRDC | Madhya Pradesh | 75 |
| OMT of Pachor-Shujalpur-Ashta-Kannod Road of SH-41 & 51 | MPRDC | Madhya Pradesh | 127 |
| OMT of Nasrullagunj-Kosmi Road of SH-53 | MPRDC | Madhya Pradesh | 20 |
| OMT of Gansore-Mandla Road of SH-49 | MPRDC | Madhya Pradesh | 51 |
| OMT of Khalghat-Manawar Road of SH-38 | MPRDC | Madhya Pradesh | 43 |
| OMT of Susner-Khilchipur Road of SH-14 | MPRDC | Madhya Pradesh | 51 |
| OMT of Agar-Sarangpur Road of SH-41 | MPRDC | Madhya Pradesh | 51 |
| OMT of Udaypura-Gadarwara Road of SH-44 | MPRDC | Madhya Pradesh | 33 |
| OMT of Bareli-Piparia Road of SH-19 | MPRDC | Madhya Pradesh | 39 |
| OMT of Bargawan-Bedhan (MDR) | MPRDC | Madhya Pradesh | 28 |
| **Total for MPRDC** | | | **550** |

MPRDC: Madhya Pradesh State Road Development Corporation

**Source: State Authority, CRISIL Research**

**List of OMT projects invited for bidding by MPRDC in 2014-15**

| Name of Project | State Authority | State | Length (Km) |
|---|---|---|---|
| OMT of Pachor-Shujalpur Road of SH-41 | MPRDC | Madhya Pradesh | 82 |
| OMT of Nasrullagunj-Kosmi Road of SH-53 | MPRDC | Madhya Pradesh | 20 |
| OMT of Khalghat-Manawar Road of SH-38 | MPRDC | Madhya Pradesh | 43 |
| OMT of Susner-Khilchipur Road of SH-14 | MPRDC | Madhya Pradesh | 51 |
| OMT of Agar-Sarangpur Road of SH-41 | MPRDC | Madhya Pradesh | 51 |
| OMT of Udaypura-Gadarwara Road of SH-44 | MPRDC | Madhya Pradesh | 33 |
| OMT of Bareli-Piparia Road of SH-19 | MPRDC | Madhya Pradesh | 39 |
| OMT of Bargawan-Bedhan (MDR) | MPRDC | Madhya Pradesh | 27 |
| OMT of Budhni-Rehti-Nasrullaganj-Khategaon | MPRDC | Madhya Pradesh | 88 |
| **Total for MPRDC** | | | **434** |

MPRDC: Madhya Pradesh State Road Development Corporation

**Source: State Authority, CRISIL Research**

**List of OMT projects invited for bidding by MPRDC in 2015-16 (Till 30 November 2015)**

| Name of Project | State Authority | State | Length (Km) |
|---|---|---|---|
| OMT of Bargawan-Bedhan Road (MDR) | MPRDC | Madhya Pradesh | 27 |
| OMT of Porsa-Mehgaon-Seondha Road (SH-19) | MPRDC | Madhya Pradesh | 77 |
| OMT of Pachore-Shujalpur-Ashta Road (SH-51 & SH-41) | MPRDC | Madhya Pradesh | 80 |
| OMT of Agar-Sarangpur Road (SH-41) | MPRDC | Madhya Pradesh | 51 |
| OMT of Susner-Khilchipur Road (SH-41) | MPRDC | Madhya Pradesh | 51 |
| OMT of Datiya-Dinara Road (SH-9) | MPRDC | Madhya Pradesh | 27 |
| OMT of Deshgaon-Khargone Road (SH-26) | MPRDC | Madhya Pradesh | 64 |
| OMT of Khargone-Barwani Road (SH-26) | MPRDC | Madhya Pradesh | 85 |
| OMT of Mandleshwar-Kasrawad-Khargon Road (SH-1) | MPRDC | Madhya Pradesh | 45 |
| OMT of Khalghat-Manwar Road (SH-38) | MPRDC | Madhya Pradesh | 43 |
| OMT of Udayapura-Silwani Road (SH-44) | MPRDC | Madhya Pradesh | 29 |
| OMT of Badi-Baktara-Shahganj-Budhni Road (SH-15) | MPRDC | Madhya Pradesh | 59 |
| OMT of Betul-Paratwada Road (SH-14) | MPRDC | Madhya Pradesh | 69 |
| OMT of Biaora-Maksudangarh-Sironj Road (SH-14) | MPRDC | Madhya Pradesh | 88 |
| OMT of Bareli-Piparia Road (SH-19) | MPRDC | Madhya Pradesh | 39 |
| OMT of Udaypura-Gadarwara Road (SH-44) | MPRDC | Madhya Pradesh | 33 |
| **Total for MPRDC** | | | **865** |

MPRDC: Madhya Pradesh State Road Development Corporation

**Source: State Authority, CRISIL Research**

- Also, in 2013-14, KRDC and BSRDC invited bids for around 820 km (under 8 projects) and around 480 km (under 4 projects) respectively of state highways stretches, respectively, to be awarded on OMT basis. The total estimated project cost for bids invited by KRDC is around Rs 4.9 billion, whereas the same for BSRDC OMT projects is around Rs 4.1 billion. The concession period for KRDC projects is 9.5 years, whereas the same for BSRDC projects is 9 years.

- However, in 2014-15 and 2015-16 (till 30th November 2015 there are no publicly announced projects of MSRDC, KRDC and BSRDC for this period.

**List of OMT projects of KRDC, BSRDC and MSRDC for which bids have been invited till 2014-15**

| Name of Project | State Authority | State | Length (Km) | Estimated project cost (Rs million) |
|---|---|---|---|---|
| OMT of road from Hungund to Belgaum via Bagalkot-Lokapur of SH-20 | KRDC | Karnataka | 175 | 1170 |
| OMT of road from Hiriyur to Bellary of SH-19 | KRDC | Karnataka | 142 | 1160 |
| OMT of road from Kalmala to Sindhanur of SH-23 | KRDC | Karnataka | 77 | 640 |
| OMT of road from Krishna Bridge Lokapur of SH- 34 | KRDC | Karnataka | 55 | 490 |
| OMT of road from Bilikere to Belur via Hassan of SH-57 | KRDC | Karnataka | 127 | 450 |
| OMT of road from Hattigudur to Khadapur Jn and from Humanabad to Bidar of SH-19 &105 | KRDC | Karnataka | 76 | 430 |
| OMT of road from Sankeshwar to Yeragatti via Gokak of SH-44 & 45 | KRDC | Karnataka | 75 | 380 |
| OMT of road from AP Border (Medak) to Shahapur via Yadgir of SH-16 | KRDC | Karnataka | 93 | 190 |
| **Total for KRDC** | | | **820** | **4910** |
| OMT of Gaya-Fatehpur-Rajauli section of SH-70 & Jehanabad-Rajgir-Parwatipur section of SH-71 | BSRDC | Bihar | 143 | 860 |
| OMT of Sitalpur-Amnour-Siwan section of SH-73 & Vaishali-Sahebganj-Areraj section of SH-74 | BSRDC | Bihar | 187 | 1920 |
| OMT of Darbhanga-Kamtaul-BaisathaMadhopur section of SH-75 | BSRDC | Bihar | 48 | 310 |
| OMT of Kursela-Raniganj-Forbesganj section of SH-77 | BSRDC | Bihar | 103 | 1040 |
| **Total for BSRDC** | | | **480** | **4130** |
| Securitization of 5 entry points for Mumbai toll plazas & maintenance of around 27 major flyovers on OMT basis | MSRDC | Maharashtra | ~25 | - * |
| Operation & Maintenance of Rajiv Gandhi Sea Link and toll plaza & collection of toll | MSRDC | Maharashtra | ~5 | - ** |
| OMT of 5 toll plazas at Baramati city | MSRDC | Maharashtra | - | - |
| **Total for MSRDC** | | | **~30** | **-** |

* - The lumpsum payment to MSRDC for the project was valued at Rs 21 billion (concession period of 16 years)
** - The payment to MSRDC for the project was valued at Rs 2.6 billion (concession period of 3 years)
MSRDC: Maharashtra State Road Development Corporation
MPRDC: Madhya Pradesh State Road Development Corporation
KRDC: Karnataka Road Development Corporation Limited
BSRDC: Bihar State Road & Bridges Development Corporation

**Source: State Authority, CRISIL Research**

## C) Outlook for OMT Model for NHAI and key states

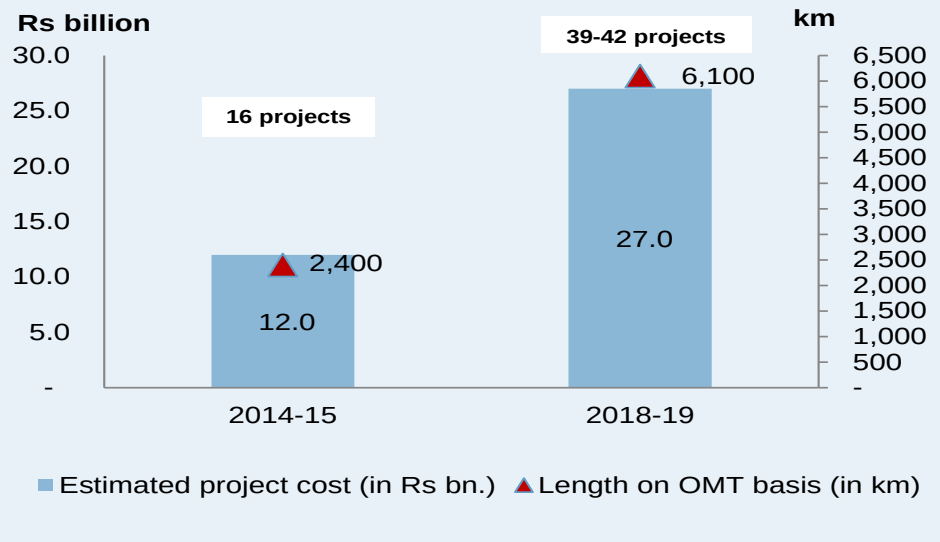
### Outlook from NHAI Projects: NHAI OMT stretch to more than double over next four years

NHAI initiated the process of awarding projects under OMT basis towards the end of 2009-10 and has awarded around 2,400 km on OMT till 2014-15. Based past trends as well as inputs from NHAI, we expect 3,700-3,750 km to be further added on OMT basis over the next four years (i.e. during 2015-16 to 2018-19). This would result in the total stretch under OMT model to more than double (~2.5 times) from the current 2,400 km to around 6,100 km by 2018-19. The total projects on OMT are expected to increase from the current 16 projects to 39-42 projects (assuming an average length of 145-155 km for an NHAI OMT project).

In terms of the market opportunity in value terms, we expect the OMT market to increase 2.3 times from the current Rs 12 billion to Rs 27 billion by 2018-19. Market in value terms indicates the estimated project cost.

***For a detailed outlook on OMT market from NHAI please refer Chapter 8.***

**OMT Market Opportunity from NHAI**




Note: All figures of 2014-15 are based on CRISIL Research estimates

Market in value terms has been presented in terms of estimated project cost of the projects. We have assumed a 5% increase in project cost per year. Once the final terms and key parameters of TOT model such as scope of work, duration of the project, upfront payment conditions, etc. get finalised, the emerging market of TOT model is expected to gain some share from the forecasted market for OMT and/ Tolling.

**Source: CRISIL Research Estimates**

### Outlook on state highway projects: State highway OMT stretch to increase by 1.7 times over next four years

In 2012-13, only Madhya Pradesh had invited bids for a total length of around 1,175 km (under 14 projects) of state highways to be operated and maintained on OMT basis. Of these around 240 km were recalled. In 2013-14 Madhya Pradesh, Karnataka and Bihar together had invited bids for a total length of around 1,850 km (under ~23

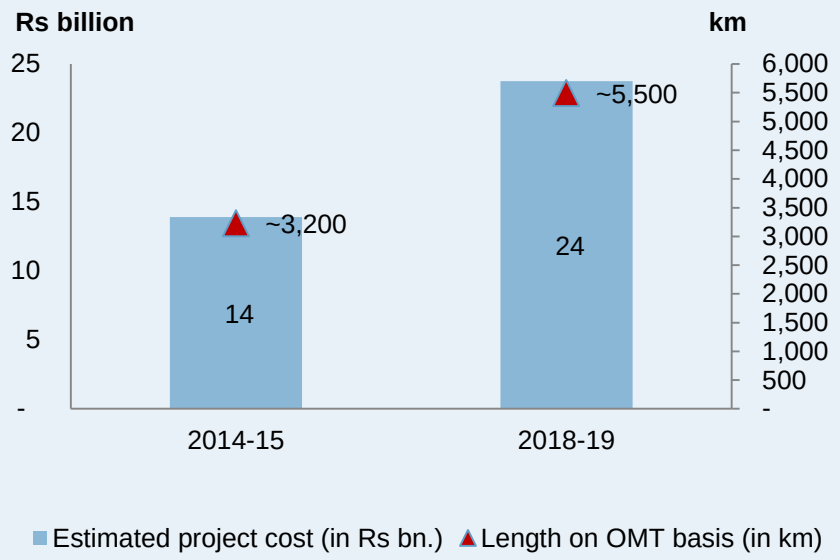
projects). In 2014-15, only MPRDC has invited bids for 434 km (9 projects). MSRDC, KRDC and BSRDC did not invite any bids during this period. Thus by end of 2014-15, bids for around 3,200 km of state highways to be operated and maintained on OMT basis had been invited. The estimated project cost for these OMT projects is around Rs 14 billion.

We expect the total stretch under OMT model (for which bids will be invited) to increase 1.7 times from around 3,200 km in 2014-15 to around 5,500 km by 2018-19. The total number of OMT projects (on bids invited basis) are expected to increase from around 30-35 projects in 2014-15 to 55-60 projects in 2018-19 (assuming an average length of 90-100 km for state authority OMT project).

In terms of the market opportunity in value terms, we expect the estimated project cost covered by OMT market to increase around 1.7 times from around Rs 14 billion in 2014-15 to around Rs 24 billion by 2018-19. Market opportunity in value terms indicates the estimated project cost.

***For a detailed outlook on OMT market from state authorities please refer Chapter 9.***

**OMT Market Opportunity from key states**



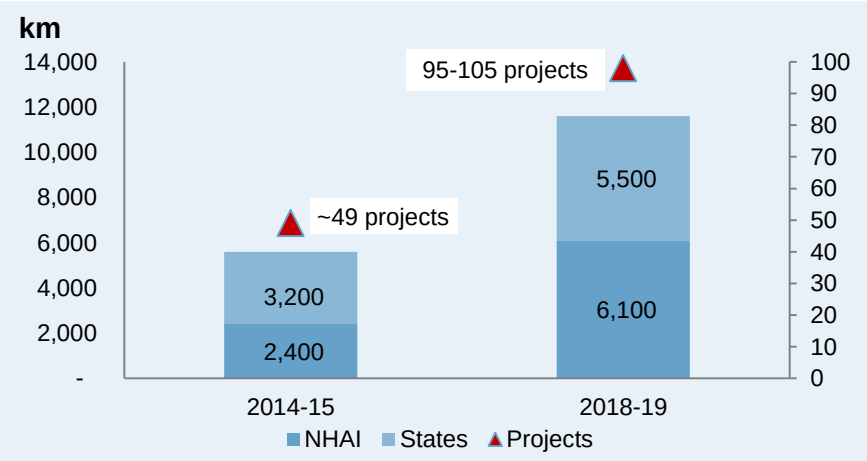

1. Length & market potential of OMT for 2014-15 and 2018-19 is based on the projects for which bids were/ are expected to be invited by the key state authorities.
2. For calculating the estimated project cost (EPC) for a state authority project, past average EPC per km for that authority has been used.
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year.
4. OMT opportunity for 2018-19 includes opportunity from states of Karnataka, Madhya Pradesh and Bihar.

**Source: CRISIL Research Estimates**

## Overall outlook: Overall OMT stretch to double over next four years

CRISIL Research expects the total stretch under OMT model for NHAI and key states (combined) to double from around 5,600 km in 2014-15 to around 11,600 km by 2018-19. The total number of OMT projects is expected to increase from around 35 in 2014-15 to 95-105 in 2018-19.

**OMT Market Opportunity from NHAI and key states (combined)**

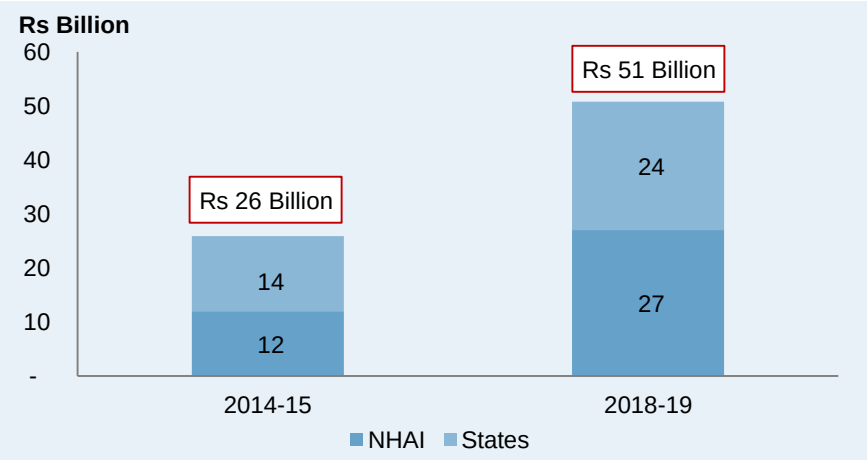



1. Length of OMT for key states for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. NHAI details are based on awarded data
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year.

**Source: CRISIL Research Estimates**

In terms of market opportunity in value terms, we expect the OMT market from NHAI and state highways (combined) to almost double from the current Rs 26 billion to Rs 51 billion by 2018-19. Market opportunity in value terms indicates the estimated project cost.

**OMT Market Opportunity from NHAI and key states (combined)**




1. Market potential of OMT for key states for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. NHAI details are based on awarded data
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year.

**Source: CRISIL Research Estimates**

# 5. KEY TRENDS IN TOLL BUSINESS MODEL

## A) Overview of Tolling Business Model

The construction/up gradation of national and state highways in India happens through two modes- Build Operate Transfer (BOT) and Engineering Procurement and Construction (EPC).

Build Operate Transfer – Toll (BOT Toll) and BOT (Annuity) are the two variants of the BOT model through which capital from private sector is invested in road development projects. In BOT (Toll) model, the concessionaire is required to meet the construction and operational costs along with periodic maintenance cost. The concessionaire recovers the investment along with interest and return on investment out of future toll collection. In BOT (Annuity) model, the concessionaire is required to meet the upfront cost of construction and expenditure on annual maintenance. Under this model, the concessionaire recovers the entire investment out of the annuities payable by the granting authority every year while right to toll lies with the contracting authority.

In the Engineering Procurement and Construction (EPC) model, the entire money required to build a road is spent by the government. Under this model, National Highways Authority of India (NHAI) holds the right to collect toll for National Highways and likewise state authorities for state highways and municipal corporation for city roads.

Leakage of traffic and toll collection reduces the collection volumes, which in turn affects the amount of capital that is invested in other road projects and thus the execution of these projects going ahead. To avoid leakage through toll evasion, fraud or technical faults NHAI, State Authorities and Municipal Corporations are increasingly awarding these contracts to private players. Three modes have been identified by NHAI for user fee collection.

### User fee collection for projects built under EPC/ BOT (Annuity)

The modes recognised by NHAI for user fee collection on Public Funded Projects and BOT Annuity Projects are:-

- By Private Contractor calling competitive bids
- By engaging a DGR Sponsored Agency
- On OMT Concept basis

NHAI primarily adopts the user fee collection through private contractor by calling competitive bids. Under this mode, the authority invites bids for the toll plaza and the winner is selected on the basis of best revenue sharing deal. However, failure because of any reason in the above may result in engaging a Directorate General of Resettlement (DGR) Sponsored Agency. DGR is the nodal agency for finding employment for ex-servicemen. Under this contract, ex-servicemen get a fixed percentage of the toll collected as their commission. The second option of collection through DGR is utilised only till the road section is transferred to OMT concessionaire.

## Key features of User Fee (Toll) Collection Model

### Scope of toll collection contract

The primary purpose of a toll collection contract is to provide private players with the opportunity to toll highways, construction work of which has already been completed. As part of this agreement, maintenance of the highway does not come under the purview of the concessionaire unlike the arrangement for BOT and OMT, where road operation and maintenance are an integral part of the contract. Scope of toll collection contract includes:

- Right to collect toll on the respective stretch of road.
- To upgrade/provide necessary facilities required to facilitate toll collection (such as making necessary arrangements for power to ensure the proper functioning of the toll plaza including office equipment installation, maintenance and running all electric equipment, generator and bearing all the expenses during the entire period of the contract).

### *Concession period*

Toll collection contract is typically of a short duration, which in case of NHAI, ranges from 3-12 months for roads constructed under EPC model and 24 months for roads constructed under BOT Annuity model.
In case of state authorities, concession period typically extends from 12-36 months.

Example-

- Maharashtra State Road Development Corporation (MSRDC) typically awards tolling projects for a period of 36 months.
- Rajasthan State Road Development and Construction Corporation (RSRDC) generally invites bids for a period of 12-24 months.
- Haryana State Road & Bridges Development Corporation (HSRDC) and Odisha Bridge & Construction Corporation Limited (OBCC) have awarded tolling projects for a period of 12 months.
- Road Infrastructure Development Company of Rajasthan (RIDCOR) typically awards tolling projects for a period of 12-36 months. RIDCOR also awards tolling projects for a period of up to 60 months.
- Karnataka Road Development Corporation Limited (KRDC) adopted the model recently and the duration of the contract was 12 months.

The concession period is even higher at the municipal level and ranges from 3-5 years.

Example-

- Municipal Corporation of Delhi (MCD) awarded toll collection rights for a period of 3 years in 2011-12.
- Hooghly River Bridge Commissioners has awarded toll collection rights of Vidyasagar Setu for a period of 5 years.
- South Delhi Municipal Corporation (SDMC) also awarded toll collection rights for a period of 3 years in May 2015.

### *Key contracting authorities*

The following contracting authorities award tolling projects to private toll collection agencies.

### *National Highways: NHAI*

NHAI invites bids for tolling of National Highways built under BOT (Annuity) and EPC. It initiated the process of inviting bids in the latter half of 2009-10. Initially in 2009-10, NHAI invited bids for 24 toll plazas, which increased to 90-92* in 2010-11. The number of bids invited in 2011-12 were 75-80*, which further increased to 84-88* in 2012-13. In 2013-14, the number of bids invited surged to 98-102*. The number of bids invited in 2014-15 remained flat with 102-104 projects.

Note: It includes the projects for which either NIT or RFP is issued by NHAI. It includes both new and rebid projects.

### *State highways: State authorities*

For state highways, bids are invited by the state authority. Maharashtra, Haryana, Rajasthan and Odisha are spearheading the model at the state level with the Maharashtra State Road Development Corporation Limited (MSRDC), Haryana State Road & Bridges Development Corporation (HSRDC), Rajasthan State Road Development and Construction Corporation (RSRDC), Road Infrastructure Development Company of Rajasthan (RIDCOR), Odisha Bridge & Construction Corporation (OBCC) being the respective key contracting authorities. The Karnataka Road Development Corporation (KRDC) has also initiated the implementation of the model by inviting bids for one project in 2013-14.

### *Municipal/local roads: Municipal corporations*

Municipal corporations award tolling projects for city roads. Municipal corporations like Municipal Corporation of Delhi (Delhi), Hyderabad Metropolitan Development Authority, Kolkata Metropolitan Development Authority etc., have invited bids at the municipal level.

### Toll revenue model

Typically, the contracting authority provides the potential collection (PC) from the toll plaza, assessment of which has to be done by the private player on its own and at its own responsibility and expense. Bids are awarded for fee collection on the basis of the highest quote given by the bidder. In general, the bid by the private player has to be higher than the Annual Potential Collection (APC) mentioned in the NIT (notice inviting tender) and RFP by the contracting authority, however, in a few cases, NHAI and the concerned authority can do away with the clause to attract more bidders on low traffic areas.

### *Revenue stream for toll collection agency*

The private player is authorised through Government Gazette notification to collect and retain toll from road users, which forms the revenue stream for the toll collection player. User fee to be collected on a given stretch is fixed by the authority and is increased in the successive year as per the change in WPI.

As per the New Tolling Policy in 2011, the methodology for revision of toll rates is as below:

*Fixed 3 per cent + 40 per cent of change in WPI*

### *Increasing focus of NHAI on overloaded vehicles on national highways*

In the amendments of December 2013, NHAI empowered the concessionaire to collect 10 times the applicable fee from overloaded vehicles. The December 2015 amendments further allowed concessionaire to stop the vehicles plying on the section of National Highway without payment of fee due. Any vehicle loaded in excess of its maximum permissible gross vehicle weight (GVW) is not permitted to use the national highway or cross the toll plaza till the excess load is removed or a fee of 10 times the applicable amount is paid. Moreover, the concessionaire can detain the vehicle till all dues are cleared.

### *Revenue stream for government authority*

The toll collection agency with the highest bid is awarded the toll collection project, provided the highest bid is not less than the estimated annual potential collection (APC) of the toll plaza. However, in certain cases this particular clause is eliminated in order to attract more participants on low traffic areas. The winning bid amount is to be paid to the authority by the private player either upfront or on weekly/monthly or yearly basis.

### *Remittance to the authority*

The accepted bid is remitted to NHAI on a weekly basis. The entire amount is broken into 52 payments (if contract period is one year) and remitted to the authority latest by Tuesday of every week. In the amendments of December 2013, the penalty for delayed payment has been kept at 0.2% per day for 30 days from the due date with penalty increasing to 0.5% per day thereafter. This is a change from the flat structure of 0.5% per day from the due date adopted earlier.

State authorities typically adopt a different model of remittance against weekly model of NHAI. Rajasthan State Road Development & Construction Corporation Ltd/ (RSRDC) goes for monthly remittance while MSRDC specifies whole or yearly upfront payment.

## Drivers of toll collection business model

- Revenues collected upfront by the authorities are employed for better execution of other ongoing projects. Also, possibility of pilferage is decreased as compared to the earlier model thereby increasing the revenues for the authorities.
- Specialist toll management companies can leverage on their expertise and systems to maximise the revenues by ensuring better traffic management and reducing waiting time.
- Not a highly capital intensive business model as it involves minimal to low quantum of work for the stretch (in comparison to OMT, BOT).

## B) Key trends in toll business model

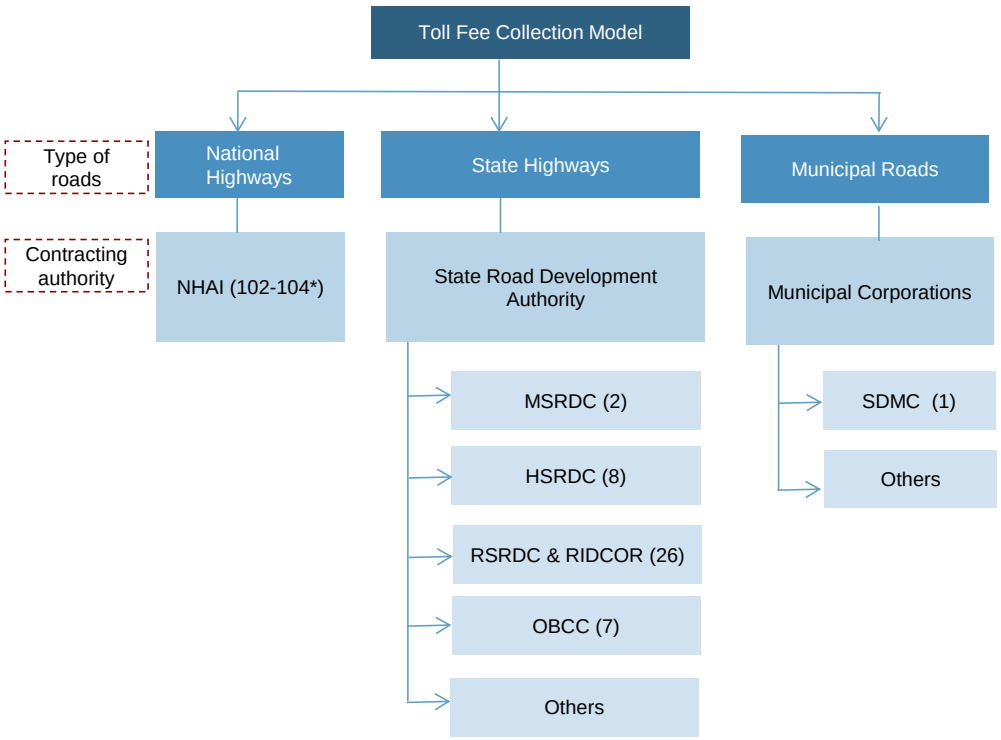
**Prior to 2009**, according to the policy of NHAI, user fee collection on all the sections of National Highways except BOT projects, were undertaken through Ex- servicemen based on the recommendations of the Directorate General of Resettlement (DGR) in the Ministry of Defence. Under the contract, ex-servicemen used to get a fixed percentage of the user fee collected as their commission. However, various issues related to pilferage, violation of rules and irregularities in standards followed by the DGR agencies were reported. This resulted in NHAI contracting private toll collection agencies for user fee collection.

**In 2009,** NHAI handed over the toll collection process to private companies. Under this model, bids were invited for select toll plazas and the private toll collection agency was selected on the best revenue share deal offered to the concerned authority. (These private players are specialist toll management companies).

The number of bids invited by NHAI was 84-88 in 2012-13 that jumped to 98-102 in 2013-14 and then grew marginally to 102-104 in 2014-15. State authorities invited bids for 35-40 projects in 2011-12, which further increased to 50-55 in 2012-13. As of 2014-15, around **6,990 km*** of National Highways constructed on EPC and BOT Annuity basis are tolled under the **toll collection model.**

**Note: Includes tolling projects of both NHAI and MoRTH*

**Adoption of tolling model at national and state levels (bids invited during 2014-15)**




Note: Short forms explained on next page
MSRDC: Maharashtra State Road Development Corporation
RSRDC: Rajasthan State Road Development and Construction Corporation
HSRDC: Haryana State Road & Bridges Development Corporation
OBCC: Odisha Bridge & Construction Corporation limited
RIDCOR: Road Infrastructure Development Company of Rajasthan
KRDC: Karnataka Road Development Corporation

SDMC: South Delhi Municipal Corporation
Figures in bracket indicate the number of bids invited till 2014-15 for States and Municipal bodies.
*Figure in bracket for NHAI indicates the number of projects bidded out in 2014-15.

**Source: Based on information available to CRISIL Research from the secondary public domain**

## Adoption of toll model by NHAI and MoRTH: Nearly 6,990 km of National Highway length is currently tolled under this model

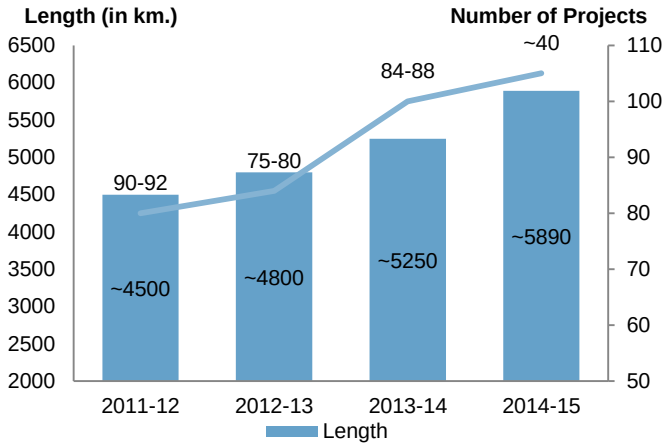
### Summary of toll collection projects bid out by NHAI from 2011-12 till 2014-15

| Authority Name | Length of Projects (in kms) | | | | Number of Projects | | | | Annual Potential Collection (in Rs. Billion) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2011-12 | 2012-13 | 2013-14 | 2014-15 |
| National Highways Authority Of India (NHAI) | ~4500 | ~4800 | ~5250 | ~5890 | ~75-80 | ~84-88 | ~98-102 | ~102-104 | ~21 | ~27 | ~27 | ~33 |

**Source: CRISIL Research**

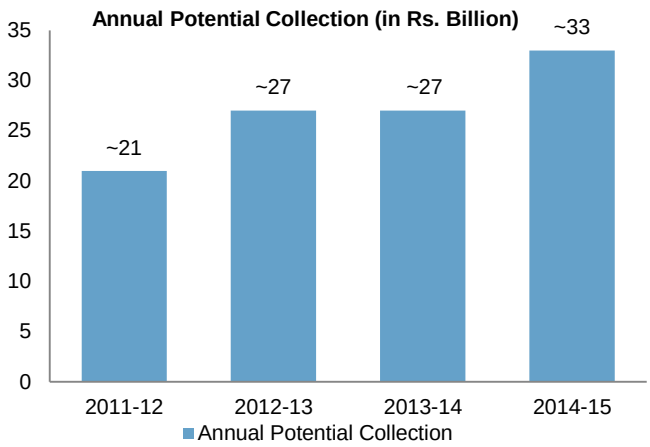
In 2009-10, NHAI invited bids for 24 toll plazas, which increased to 90-92 bids in 2010-11. However, the same (bids invited) moderated to 75-80 bids in 2011-12 and 84-88 bids in 2012-13. The number of bids invited increased to 98-102 in 2013-14. Bids were invited for around 4,800 km in 2012-13, which increased to around 5,250 km in 2013-14. The number of bids invited in 2014-15 remained flat with around 102-104 projects up for bidding. As of 2014-15, National Highways of length 6,990 km (both NHAI and MoRTH projects) are under "tolling" model.

### Review: Toll Collection (Length)




**Source: CRISIL Research, NHAI website**

### Review: Toll Collection (Annual Potential Collection)




**Source: CRISIL Research, NHAI website**

Annual potential collection for the bids invited by NHAI amounted to Rs 18.5 billion in 2010-11, Rs 21 billion in 2011-12 and further increased to Rs 27 billion in 2012-13. Annual potential collection remained at around Rs 27 billion in 2013-14. This figure has improved to Rs 33 billion in 2014-15.

## Adoption of toll model by state authorities: Nearly 6,500 km of state highway length has been invited for tolling under this model between 2012-13 and 2014-15

States like Maharashtra, Haryana, Rajasthan, Odisha, Gujarat, Tamil Nadu and Karnataka have adopted the tolling model.

**Summary of toll collection projects for which bids were invited by key state authorities from 2012-13 till 2014-15**

| Authority Name | Length of Projects (in kms) | | | Number of Projects | | | Annual Potential Collection (in Rs. Billion) | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2012-13 | 2013-14 | 2014-15 | 2012-13 | 2013-14 | 2014-15 | 2012-13 | 2013-14 | 2014-15 |
| MSRDC | 650 | 300 | 100 | 12 | 5 | 2 | ~0.6 | ~3.2 | ~4.3 |
| HSRDC | 750 | - | 375 | 15-17 | - | 8 | ~0.55 | - | ~1 |
| RSRDC | 560 | 500 | 1495 | 10 | 11 | 21 | ~0.69 | ~1.09 | ~4.5 |
| RIDCOR | 850 | - | 235 | 6 | - | 6 | ~1.7 | - | ~2.3 |
| OBCC | 300 | - | 301 | 10 | - | 7 | ~0.25 | - | ~0.9 |
| KRDC | - | 50 | - | - | 1 | 0 | - | ~0.1 | 0 |
| TNRDC | - | n.a | - | - | 2 | 0 | - | n.a | 0 |
| GSRICL | - | n.a | - | - | 2 | 0 | - | n.a | 0 |
| **Total** | **3110** | **850** | **2506** | **53-55** | **21** | **44** | **~3.8** | **~4.4** | **~13.1** |

Note: States authorities like MSRDC and RSRDC typically provide potential collection for a period of 2-3 years; the same has been estimated at annual level and represented in aforementioned table. Length of a toll project is estimated to be 50 km for which information is not available in public domain (in order to arrive at overall state level information). Projects mentioned in the aforementioned table are on standalone bids basis. Also, the list of projects includes projects reinvited for bidding.

**Source: Industry, CRISIL Research**

Based on information available to CRISIL Research from the secondary public domain, below is the state-wise activity in relation to toll collection projects

- MSRDC (Maharashtra) has bid out 17 projects on tolling in the last 2 years. In 2014-15, 2 projects were invited for bids.
- HSRDC invited bids for 10 tolling projects in 2011-12, which increased to 15-17 in 2012-13. In 2014-15, 8 projects were invited for bids.
- Rajasthan (RSRDC & RIDCOR) bid invitation number also increased from 5 in 2011-12 to 16 in 2012-13. In 2013-14 RSRDC invited bids for three toll collection projects. In 2014-15, RSDRC invited 21 projects for bids while RIDCOR invited a total of 6 projects.
- OBCC invited bids for 11 toll collection projects in 2011-12 and for 10 in 2012-13. 7 projects were invited for bids in 2014-15.
- In 2013-14, Gujarat (GSRICL) and Tamil Nadu (TNRDC) invited bids for two toll collection projects each. While Karnataka (KRDC) invited its first toll collection project in 2013-14. However, there are no publicly announced projects in 2014-15 for either GSRICL, TNRDC or KRDC.

## Adoption of toll model by municipal corporations (city roads)

At the municipal level, acceptance of this model is relatively lower; bids for only a handful of projects have been invited by MCD (Delhi), HMDA (Hyderabad), Hooghly River Bridges Commissioners (Kolkata), KMDA (Kolkata) etc. At the city level, MCD in Delhi has awarded a contract for toll collection at 121 entry points to Delhi in 2011, for a period of 3 years.

## C) List of key toll projects by NHAI, state highways/ road development corporations

### NHAI projects (2010-11)

| Project | State | Contract Period (months) | Length (km) | Annual Potential Collection (in millions) |
|---|---|---|---|---|
| Kadtal-Armur (Gamjal toll plaza) | Andhra Pradesh | 12 | 30 | 160 |
| Ankapalli-Visakhapatnam (Agnampudi toll plaza) | Andhra Pradesh | 12 | 41 | 100 |
| Rajamundry-Tuni (Krishnavaram toll plaza) | Andhra Pradesh | 12 | 84 | 360 |
| Icchapuram-Srikakulam (Laxmipuram toll plaza) | Andhra Pradesh | 12 | 66 | 170 |
| Bomuru-Gundugolanu (Tanuku toll plaza) | Andhra Pradesh | 12 | 108 | 380 |
| Tuni-Ankapalli (Vempadu toll plaza) | Andhra Pradesh | 12 | 89 | 420 |
| Kavalli-Nellore (Sunnambatti toll plaza) | Andhra Pradesh | 12 | 61 | 260 |
| Visakhapatnamn (Pc) (Viz port) | Andhra Pradesh | 12 | 10 | 50 |
| Ongole - Kavali (Tangutur toll plaza) | Andhra Pradesh | 12 | 72 | 390 |
| Vijayaw ada–Gundugolanu (Kalaparru toll plaza) | Andhra Pradesh | 12 | 39 | 160 |
| Kothakota Bypass–Kurnool (Pullur toll plaza) | Andhra Pradesh | 12 | 76 | 480 |
| Visakhapatnam-Champavathi (Nathavalasa toll plaza) | Andhra Pradesh | 12 | 46 | 140 |
| Nandigam–Srikakulam (Madapam toll plaza) | Andhra Pradesh | 12 | 63 | 210 |
| Vijayaw ada–Gundugolanu (Pattipadu toll plaza) | Andhra Pradesh | 12 | 39 | 160 |
| Srikakulam–Chilakapalem (Chilkapalem toll plaza) | Andhra Pradesh | 12 | 48 | 190 |
| Chilakaluripet–Ongole (Bolapalli toll plaza) | Andhra Pradesh | 12 | 67 | 240 |
| Adloor Yellareddy-Gundlapochampally ( Manoharbad toll plaza) | Andhra Pradesh | 12 | 103 | 320 |
| **Total** | **Andhra Pradesh** | | **1042** | **4190** |
| Gausaghat Bridge | Bihar | 12 | NA | 3.2 |
| **Total** | **Bihar** | | **NA** | **3** |
| Himmatnagr – Chilloda (Kathpur toll plaza) | Gujarat | 12 | 52 | 150 |
| Ratanpur-Himatnagar (Vantada toll plaza) | Gujarat | 12 | 55 | 90 |
| Palanpur/Khemana-Aburoad (Khemana toll plaza) | Gujarat | 12 | 45 | 180 |
| Bamanbore-Garamore (Vaghasia toll plaza) | Gujarat | 12 | 71 | 60 |
| Ahmadabad- Vadodara (Vasad toll plaza) | Gujarat | 12 | 98 | 420 |
| Av Expressw ay I &Ii (AVEW) | Gujarat | 12 | 93 | 690 |
| **Total** | **Gujarat** | | **413** | **1590** |
| Hattargi- Hirebagew adi ( Hattargi toll plaza) | Karnataka | 12 | 53 | 210 |
| Hirebagew adi - Dharw ad (Hirebagew adi toll plaza) | Karnataka | 12 | 51 | 160 |
| Ap/Kamataka Border-Devanhalli (Bagepalli toll plaza) | Karnataka | 12 | 71 | 70 |
| Gabbur-Devigiri (Bankapur toll plaza) | Karnataka | 12 | 64 | 210 |
| Maharashtra Border–Belgaum (Kognolli toll plaza) | Karnataka | 12 | 55 | 180 |
| Tavarekara-Daddasidanahally (Guilalu toll plaza) | Karnataka | 12 | 57 | 430 |
| Anthrasanahally-Tavarakere (Karjeevanhally toll plaza) | Karnataka | 12 | 60 | 470 |
| **Total** | **Karnataka** | | **412** | **1730** |
| Raj/Mp Border - Amola Village (Raksha toll plaza) | Madhya Pradesh | 12 | 53 | 10 |
| Amolavillage- Jhansi Village | Madhya Pradesh | 12 | 60 | 50 |
| Morana- Gw alior (Choundha toll plaza) | Madhya Pradesh | 12 | 42 | 90 |
| Agra-Dholpur (Baretha toll plaza) | Madhya Pradesh | 12 | 43 | 70 |
| **Total** | **Madhya Pradesh** | | **198** | **220** |

| | | | | |
|---|---|---|---|---|
| Amravati Bypass | Maharashtra | 12 | 17 | 40 |
| Khuni River Bridge | Maharashtra | 12 | NA | 0 |
| Wagadhi Nallah Bridge | Maharashtra | 12 | NA | 10 |
| JNPT (Chirle & Karanjade toll plaza) | Maharashtra | 12 | 30 | 470 |
| **Total** | **Maharashtra** | | **47** | **520** |
| Paradeep Port Connectivity (Srirampur toll plaza) | Odisha | 12 | 77 | 180 |
| Chhatia-Bhadrak (Panikoili toll plaza) | Odisha | 12 | 70 | 290 |
| Sunkhala- Bhubaneshw ar (Gangapada toll plaza) | Odisha | 12 | 65 | 200 |
| Dantan-Balasore (Laxmannatha toll plaza) | Odisha | 12 | 69 | 120 |
| **Total** | **Odisha** | | **281** | **790** |
| Amritsar–Wagah Border (Chiddna toll plaza) | Punjab | 12 | 36 | 50 |
| **Total** | **Punjab** | | **36** | **50** |
| Bichoor - Bijoliya (Aroli Toll Plaza) | Rajasthan | 12 | 54 | 60 |
| Chittorgarh - Bichoor (Bassi toll plaza) | Rajasthan | 12 | 53 | 60 |
| Bijoliya - Kharipur (Dhanesw ar toll plaza) | Rajasthan | 12 | 54 | 60 |
| Jasw antgarh-Debari (Jasw antagarh toll plaza) | Rajasthan | 12 | 48 | 30 |
| Derumata Temple-Gadaw ali River (Fatehpur toll plaza) | Rajasthan | 12 | 61 | 40 |
| Gadaw ali River – Raj/Mp Border (Mundiyar toll plaza) | Rajasthan | 12 | 67 | 10 |
| Kota Bypass- Dermata Temple (Similiya toll plaza) | Rajasthan | 12 | 43 | 60 |
| Pindw ara- Jasw antgarh (Malera toll plaza) | Rajasthan | 12 | 57 | 10 |
| Bhilw ara-Chittorgarh (Jojra ka kheda toll plaza) | Rajasthan | 12 | 83 | 450 |
| Kishangarh- Village Kaw aliyas (Kaw aliyas toll plaza) | Rajasthan | 12 | 101 | 540 |
| Kherw ara- Ratanpur (Khandi Obri toll plaza) | Rajasthan | 12 | 40 | 180 |
| Village Rithola-Udaipur (Narayanpura toll plaza) | Rajasthan | 12 | 99 | 180 |
| Udaipur-Kherw ara (Paduna toll plaza) | Rajasthan | 12 | 70 | 320 |
| Chittorgarh Bypass (Rithola toll plaza) | Rajasthan | 12 | 54 | 90 |
| Rob Kishangarh | Rajasthan | 12 | 1 | 50 |
| Abu Road-Pindw ara (Undavariya toll plaza) | Rajasthan | 12 | 46 | 200 |
| **Total** | **Rajasthan** | | **931** | **2340** |
| Hosur- Krishnagiri (Krishnagiri toll plaza) | Tamil Nadu | 12 | 55 | 420 |
| Kanchipuram- Chennai (Sripeumbudur toll plaza) | Tamil Nadu | 12 | 46 | 320 |
| Tambavaram-Tindivaram (Paranur toll plaza) | Tamil Nadu | 12 | 47 | 250 |
| Tambavaram-Tindivaram (Athur toll plaza) | Tamil Nadu | 12 | 47 | 270 |
| Trichi-Tovarankurichi (Boothakudi toll plaza) | Tamil Nadu | 12 | 61 | 140 |
| Tovarankurichi Bypass End–Madurai (Chittumpati toll plaza) | Tamil Nadu | 12 | 64 | 200 |
| Chennai Bypass | Tamil Nadu | 12 | 19 | 190 |
| Kanchipuram-Waljahpet (Chennasamudrum toll plaza) | Tamil Nadu | 12 | 47 | 290 |
| **Total** | **Tamil Nadu** | | **385** | **2080** |
| Garhmukteshw ar- Moradabad (Joya Toll Plaza) | Uttar Pradesh | 12 | 56 | 220 |
| Moradabad Bypass Toll Plaza | Uttar Pradesh | 12 | 18 | 100 |
| Varanasi-Up/ Bihar Border (VRM Bypass) | Uttar Pradesh | 12 | 57 | 320 |
| Tundla-Makhanpur ( Tundla toll plaza) | Uttar Pradesh | 12 | 32 | 130 |
| Badarpur- Kosi (Srinagar toll plaza) | Uttar Pradesh | 12 | 89 | 230 |
| Sikandara- Bhaunti (Sikandra toll plaza) | Uttar Pradesh | 12 | 77 | 110 |

| | | | | |
|---|---|---|---|---|
| Shikohabad- Etaw ah & Etaw ah Bypass (Semra Atikabad toll plaza) | Uttar Pradesh | 12 | 71 | 220 |
| Bhaunti – Fatehpur (Purw ameer toll plaza) | Uttar Pradesh | 12 | 52 | 210 |
| Sanjay Setu Bridge | Uttar Pradesh | 12 | 1 | 10 |
| Lucknow – Kanpur Road (Naw abganj toll plaza) | Uttar Pradesh | 12 | 48 | 210 |
| Kosi – Agra (Mahuvan toll plaza) | Uttar Pradesh | 12 | 92 | 230 |
| Allahabad- Handia- Varanasi | Uttar Pradesh | 12 | 72 | 210 |
| Rampura Tharivan-Kokhraj | Uttar Pradesh | 12 | 58 | 160 |
| Ghaziabad Hapur&Hapur Bypass (Dasna toll plaza) | Uttar Pradesh | 12 | 32 | 100 |
| Etaw ah- Sikandara (Anantram toll plaza) | Uttar Pradesh | 12 | 72 | 240 |
| Kali Nadi Bridge Toll Plaza | Uttar Pradesh | 12 | NA | 20 |
| Naini Bridge | Uttar Pradesh | 12 | 5 | 80 |
| **Total** | **Uttar Pradesh** | | **832** | **2800** |
| Purnrea- Kishanganj (Surjapur toll plaza) | West Bengal | 12 | 62 | 260 |
| Budbud-Palsit (Palsit toll plaza) | West Bengal | 12 | 62 | 400 |
| Barw adda- Panagarh (Garui toll plaza) | West Bengal | 12 | 116 | 230 |
| Palsit- Dankuni (Dankuni toll plaza) | West Bengal | 12 | 64 | 360 |
| Kolaghat-Kharagpur (Debra toll plaza) | West Bengal | 12 | 56 | 280 |
| Dankuni-Kolaghat (Jaladugori toll plaza) | West Bengal | 12 | 54 | 410 |
| Dantun-Kharagpur (Rampura toll plaza) | West Bengal | 12 | 50 | 90 |
| **Total** | **West Bengal** | | **463** | **2030** |

**Source: CRISIL Research, NHAI website**

### NHAI projects (2011-12)

| Project | State | Concession Period (months) | Length (km) | Annual Potential Collection (in millions) |
|---|---|---|---|---|
| Manoharabad Toll Plaza | Andhra Pradesh | 12 | 103 | 280 |
| Kurnool-Karidikonda Section (Amatakadu toll plaza) | Andhra Pradesh | 12 | 84 | 330 |
| Vijayaw ada-Gundugolanu (Pattipadu toll plaza) | Andhra Pradesh | 12 | 39 | 170 |
| Karidikonda-Marur (Kasepalli toll plaza) | Andhra Pradesh | 12 | 79 | 350 |
| Marur Toll Plaza | Andhra Pradesh | 12 | 88 | 220 |
| Islam Nagar - Katdal Section (Rolmamda toll plaza) | Andhra Pradesh | 12 | 48 | 270 |
| Aganampudi Toll Plaza | Andhra Pradesh | 12 | 41 | 130 |
| Bellupada Toll Plaza | Andhra Pradesh | 12 | 45 | 150 |
| Chilakapalem Toll Plaza | Andhra Pradesh | 12 | 48 | 240 |
| Gamjal Toll Plaza | Andhra Pradesh | 12 | 30 | 110 |
| Nthavalasa Toll Plaza | Andhra Pradesh | 12 | 46 | 210 |
| Pullur Toll Plaza | Andhra Pradesh | 12 | 76 | 470 |
| Tanuku Toll Plaza | Andhra Pradesh | 12 | 108 | 620 |
| Pippalw ada Toll Plaza | Andhra Pradesh | 12 | 55 | 170 |
| Kadthal - Armur (Gamjal toll plaza) | Andhra Pradesh | 12 | 30 | 110 |
| Laxmipuram Toll Plaza | Andhra Pradesh | 12 | 66 | 210 |
| Main Toll Plaza Near Panchavati Colony Secondary Toll Plaza Near Gosthani Gate Of Navy | Andhra Pradesh | 12 | 10 | 60 |
| **Total** | **Andhra Pradesh** | | **996** | **4100** |

| | | | | |
|---|---|---|---|---|
| Roha – Nagoan & Nagoan Bypass (Roha toll plaza) | Assam | 12 | 8 | 70 |
| **Total** | **Assam** | | **8** | **70** |
| Muzaffarpur – Kotw a - Mehsi (Parsoni toll plaza) | Bihar | 12 | 80 | 140 |
| Muzaffarpur- Darbhanga (Maithi toll plaza) | Bihar | 12 | 69 | 60 |
| Saw Kala Toll | Bihar | 12 | 100 | NA |
| **Total** | **Bihar** | | **249** | **200** |
| Ahmedabad Vadodara Section (Vasad toll plaza) | Gujarat | 12 | 98 | NA |
| Himmatnagar - Chiloda (Kathpur toll plaza) | Gujarat | 12 | 52 | 200 |
| Khemana Toll Plaza | Gujarat | 12 | 45 | 190 |
| Undvariya Toll Plaza | Gujarat | 12 | 31 | 130 |
| Vaghasia Toll Plaza | Gujarat | 12 | 71 | 120 |
| Ratnapur – Himmatnagar (Vantada toll plaza) | Gujarat | 12 | 105 | 120 |
| Rajkot - Bamanbore (Veti toll plaza) | Gujarat | 12 | 31 | 310 |
| Surajbari Toll Plaza | Gujarat | 12 | 53 | 450 |
| **Total** | **Gujarat** | | **486** | **1520** |
| Barw a-Adda-Panagarh (Beliyad toll plaza) | Jharkhand And West Bengal | 12 | 117 | 220 |
| **Total** | **Jharkhand And West Bengal** | | **117** | **220** |
| Hadadi – Devgiri Section (Chelageri toll plaza) | Karnataka | 12 | 80 | 750 |
| Bagepalli Toll Plaza | Karnataka | 12 | 71 | 250 |
| Doddasiddanahally - Hadadi (Hebbalu toll plaza) | Karnataka | 12 | 71 | 530 |
| **Total** | **Karnataka** | | **222** | **1530** |
| Kumbalam Toll Plaza | Kerala | 12 | 17 | 190 |
| **Total** | **Kerala** | | **17** | **190** |
| Lakhnadon - Mahagaon (Allonia toll plaza) | Madhya Pradesh | 12 | 57 | 200 |
| Agra –Dholpur (Baretha toll plaza) | Madhya Pradesh | 12 | 43 | 140 |
| Chounhda Toll Plaza | Madhya Pradesh | 12 | 42 | 150 |
| **Total** | **Madhya Pradesh** | | **142** | **490** |
| Toll Plaza At Amraw ati & Badnera (Amaravati toll plaza) | Maharashtra | 12 | 16 | 50 |
| JNPT (Chirle Toll Plaza & Karanjade Toll Plaza) | Maharashtra | 12 | 30 | NA |
| Kelapur Toll Plaza | Maharashtra | 12 | 30 | 80 |
| **Total** | **Maharashtra** | | **76** | **130** |
| Bhadrak – Balasore | Odisha | 12 | 63 | 200 |
| Srirampur Toll Plaza | Odisha | 9+3(If Required) | 77 | 200 |
| Sunakhala- Bhuw neshw ar (Gangapada toll plaza) | Odisha | 12 | 65 | 170 |
| **Total** | **Odisha** | | **204** | **570** |
| Bellupada Toll Plaza | Odisha & Andhra Pradesh | 12 | 45 | 150 |
| **Total** | **Odisha & Andhra Pradesh** | | **45** | **150** |
| Jalandhar - Pathankot (Harsa Mansar toll plaza) | Punjab | 12 | 39 | 310 |
| **Total** | **Punjab** | | **39** | **310** |
| Bhilw ara – Chittorgarh (Jojro ka Kheda toll plaza) | Rajasthan | 12 | 83 | 730 |
| Kanvaliyas Toll Plaza | Rajasthan | 12 | 101 | 1050 |
| Rithola Toll | Rajasthan | 12 | 54 | 270 |
| Kishangarh -Beaw ar (ROB Kishangarh) | Rajasthan | 12 | 1 | 50 |

| | | | | |
|---|---|---|---|---|
| Kanw aliyas Toll Plaza | Rajasthan | 12 | 101 | 1050 |
| Khandi Obri Toll Plaza | Rajasthan | 12 | 40 | 280 |
| Rithola Village - Udaipur | Rajasthan | 12 | 100 | 450 |
| Paduna Toll Plaza | Rajasthan | 12 | 70 | 500 |
| **Total** | **Rajasthan** | | **550** | **4380** |
| Tirunelvelli – Panangudi (Nanguneri toll plaza) | Tamil Nadu | 12 | 61 | 220 |
| Etturvattam Toll Plaza Virudhunagar - Kovilpatti | Tamil Nadu | 12 | 47 | 140 |
| **Total** | **Tamil Nadu** | | **109** | **360** |
| Katoghan Toll Plaza | Uttar Pradesh | 12 | 58 | 180 |
| Sanjay Setu Bridge Toll Plaza | Uttar Pradesh | 12 | 1 | 20 |
| Tundla Toll Plaza | Uttar Pradesh | 12 | 32 | 170 |
| Etaw ah-Sikandera (Anantram toll plaza) | Uttar Pradesh | 12 | 72 | 350 |
| Dasna Toll, Hapur Bypass | Uttar Pradesh | 12 | 33 | 160 |
| Purw ameer Toll Plaza | Uttar Pradesh | 12 | 51 | 200 |
| Semra Atikabad Toll Plaza | Uttar Pradesh | 12 | 71 | 380 |
| Lucknow - Ranimau (Ahmadpur toll plaza) | Uttar Pradesh | 12 | 62 | 330 |
| Ayodhya - Basti (Chaukadi toll plaza) | Uttar Pradesh | 12 | 55 | 470 |
| Basti - Gorakhpur (Mandw anagar toll plaza) | Uttar Pradesh | 12 | 63 | 260 |
| Ranimau - Faizabad (Ronahi toll plaza) | Uttar Pradesh | 12 | 65 | 350 |
| Naw abganj] Toll Plaza | Uttar Pradesh | 12 | 48 | 360 |
| Naini Bridge Toll Plaza | Uttar Pradesh | 12 | 5 | 80 |
| Sihori Uparhar Toll Plaza, Adampur Toll Plaza, Rajapur Maksudan Toll Plaza, SujaulaToll Plaza | Uttar Pradesh | 12 | 84 | 1000 |
| Joya Toll Plaza | Uttar Pradesh | 12 | 56 | 360 |
| Sikandra Toll Plaza | Uttar Pradesh | 12 | 77 | NA |
| Mohammadur Naw ada Toll Plaza | Uttar Pradesh | 12 | 56 | 450 |
| Lalanagar Toll Plaza | Uttar Pradesh | 12 | 72 | 240 |
| **Total** | **Uttar Pradesh** | | **960** | **5360** |
| Sonapur - Ghoshpukur (Paschim Madati toll plaza) | West Bengal | 12 | 29 | 140 |
| Kolaghat-Kharagpur (Debra toll plaza) | West Bengal | 12 | 55 | 280 |
| Dankuni-Kolaghat (Jalahulagori toll plaza) | West Bengal | 12 | 54 | 410 |
| Sonapatya Toll Plaza | West Bengal | 12 | 52 | 440 |
| Palsit-Dankuni (Dankuni toll plaza) | West Bengal | 12 | 64 | 440 |
| **Total** | **West Bengal** | | **254** | **1710** |

**Source: CRISIL Research, NHAI website**

### NHAI projects (2012-13)

| Project | State | Contract Period (months) | Length (km) | Annual Potential Collection (in millions) |
|---|---|---|---|---|
| Rajamundry – Tuni (Krishnavaram toll plaza) | Andhra Pradesh | 12 | 84 | 500 |
| Bommuru – Gundugolanu (Tanuku toll plaza) | Andhra Pradesh | 12 | 108 | 690 |
| Nandigama – Srikakulam (Madapam toll plaza) | Andhra Pradesh | 12 | 63 | 200 |
| Vijayaw ada-Gundugolanu (Pattipadu toll plaza) | Andhra Pradesh | 12 | 39 | 210 |
| Vijayaw ada-Gundugolanu (Kalaparru toll plaza) | Andhra Pradesh | 12 | 38 | 200 |

| | | | | |
|---|---|---|---|---|
| Adloor Yellareddy – Gundla Pochampally, Annuity (Manoharabad toll plaza) | Andhra Pradesh | 24 | 103 | 330 |
| Karidikonda – Marur (Kasepalli toll plaza) | Andhra Pradesh | 12 | 79 | 390 |
| Rolmamda Toll Plaza ,Islam Nagar To Katdal Annuity | Andhra Pradesh | 24 | 48 | 170 |
| Vemapadu Toll Plaza, Ankapalli To Tuni Annuity | Andhra Pradesh | 24 | 116 | 610 |
| Aganampudi Toll Plaza, Vishakhapatnam To Ankapalli | Andhra Pradesh | 12 | 41 | 130 |
| Laxmipuram Toll Plaza, Nandigam To Ichhapuram | Andhra Pradesh | 12 | 66 | 200 |
| Marur – Ap/ Karnataka Border (Marur toll plaza) | Andhra Pradesh | 12 | 88 | 270 |
| Kurnool-Karidikonda (Amatakadu toll plaza) | Andhra Pradesh | 12 | 84 | 380 |
| **Total** | **Andhra Pradesh** | | **957** | **4280** |
| Jalukbari-Khanapara (Guwahati Bypass) | Assam | 12 | 18 | 260 |
| Roha – Nagaon (Nagaon Bypass) (Roha toll plaza) | Assam | 12 | 9 | 70 |
| **Total** | **Assam** | | **27** | **320** |
| Kotwa – Mehsi – Muzaffarpur (Parsoni toll plaza) | Bihar | 12 | 80 | 240 |
| Purnea – Dhalkhola (Barsoni toll plaza) | Bihar | 12 | 37 | 240 |
| Muzffarpur – Darbhanga (Maithi toll plaza) | Bihar | 12 | 70 | 150 |
| **Total** | **Bihar** | | **187** | **630** |
| Barachatti-Gorhar (Rosoiya Dhama toll plaza) | Bihar & Jharkhand | 12 | 80 | 440 |
| Sau Kala, Aurangabad – Barachatti | Bihar & Jharkhand | 12 | 60 | 350 |
| **Total** | **Bihar & Jharkhand** | | **140** | **790** |
| Ahmedabad Toll Plaza, Auda Ring Road Toll Plaza, Nadiad Toll Plaza, Anand Toll Plaza and Vadodara Toll Plaza (AVEW) | Gujarat | 3 months may be increased or decreased | 93 | 1150 |
| Vasad Toll Plaza | Gujarat | 3 months may be increased or decreased | 98 | 460 |
| Vantada, Ratanpur – Himatnagar (Vantada toll plaza) | Gujarat | 12 | 55 | 220 |
| Vaghasia, Bamanbore – Garamore (Vaghasia toll plaza) | Gujarat | 12 | 72 | 130 |
| Khemana (Palanpur) – Aburaod (Kemana toll plaza) | Gujarat | 12 | 45 | 180 |
| **Total** | **Gujarat** | | **363** | **2140** |
| Pathankot-Jammu Section (Rajbagh toll plaza) | Jammu & Kashmir | 12 | 81 | 430 |
| **Total** | **Jammu & Kashmir** | | **81** | **430** |
| Ghangari Toll Plaza, Gorhar To Barwa Adda | Jharkhand | 12 | 78 | 550 |
| **Total** | **Jharkhand** | | **78** | **550** |
| Hattargi – Hirebagewadi (Hattargi toll plaza) | Karnataka | 12 | 22 | 150 |
| Bagepalli Toll Plaza, Ap/ Karnataka Border To Devenhalli, Annuity | Karnataka | 24 | 71 | 250 |
| Doddasiddanahally- Hadadi (Hebbalu toll plaza) | Karnataka | 12 | 71 | 460 |
| Hadadi- Devgiri (Chalegeri toll plaza) | Karnataka | 12 | 80 | 570 |
| **Total** | **Karnataka** | | **244** | **1430** |
| Lalitpur – Malthone (Malthone toll plaza) | Madhya Pradesh | 12 | 61 | 70 |
| Malthone – Sagar (Mehar toll plaza) | Madhya Pradesh | 12 | 59 | 70 |
| **Total** | **Madhya Pradesh** | | **120** | **140** |
| Dastan Village (Dastan toll plaza) | Maharashtra | 12 | 8 | 190 |
| Borkhedi – Wadner (Daroda toll plaza) | Maharashtra | 12 | 57 | 170 |

| | | | | |
|---|---|---|---|---|
| Amraw ati Bypass | Maharashtra | 12 | 17 | 70 |
| Devdhari-Kelapur (Kelapur toll plaza) | Maharashtra | 12 | 30 | 90 |
| JNPT (Chirle Toll Plaza, Karanjade Toll Plaza) | Maharashtra | 12 | 29 | 500 |
| **Total** | **Maharashtra** | | **142** | **1020** |
| Gurapalli Toll Plaza, Sunakhala – Puintola | Odisha | 12 | 57 | 340 |
| Chandikhole - Bhadrak (Panikholi toll plaza) | Odisha | 12 | 75 | 380 |
| Bhadrak – Balasore (Sergarh toll plaza) | Odisha | 12 | 63 | 240 |
| Gangapada Toll Plaza, Sunakhala - Bhubaneshw ar | Odisha | 12 | 65 | 260 |
| Panikholi Toll Plaza, Chetia – Bhadrak Section | Odisha | 12 | 70 | 330 |
| Main Plaza Near Panchavati Colony & Near Gosthani Gate Of Navy | Odisha | 12 | 10.3 | 90 |
| **Total** | **Odisha** | | **340** | **1640** |
| Chiddan Toll Plaza For The Amritsar – Wagah Border | Punjab | 12 | 36 | 10 |
| Jalandhar – Pathankot (Horsa Mansur toll plaza) | Punjab | 12 | 40 | 270 |
| **Total** | **Punjab** | | **76** | **280** |
| Jojro Ka Kheda Toll Plaza | Rajasthan | 12 | 82 | 730 |
| Chittorgarh Bypass (Rithola toll plaza) | Rajasthan | 12 | 54 | 280 |
| Udaipur-Kherw ada (Paduna toll plaza) | Rajasthan | 12 | 70 | 490 |
| **Total** | **Rajasthan** | | **206** | **1500** |
| Moondradaippu – Anjugramam (Nanguneri toll plaza) | Tamil Nadu | 12 | 54 | 230 |
| Chennai Bypass Ph I & Ph Ii (Vanagram toll plaza) | Tamil Nadu | 12 | 33 | 1320 |
| Tirunelvelli – Panangudi (Nanguneri) | Tamil Nadu | 12 | 62 | 230 |
| Tirunelveli- Tuticorin (Toll plaza at 11.725 km) | Tamil Nadu | 12 | 47 | 190 |
| Athur Toll Plaza, Tambaram- Tindivanam | Tamil Nadu | 12 | 47 | 360 |
| Boothakudi Toll Plaza, Trichy- Tovarankurichi | Tamil Nadu | 12 | 61 | 330 |
| Etturvattum Toll Plaza , Virudhunagar- Kovilpatti | Tamil Nadu | 12 | 47 | 220 |
| **Total** | **Tamil Nadu** | | **351** | **2880** |
| Tendua Toll Plaza For The Gorakhpur By Pass Section | Uttar Pradesh | 12 | 32 | 280 |
| Muzaina Hetim Toll Plaza For The Gorakhpur - Kasiya | Uttar Pradesh | 12 | 41 | 210 |
| Brijghat Toll Plaza For The Hapur – Garhmuketesw ar | Uttar Pradesh | 12 | 35 | 240 |
| Dasna Toll Plaza & Hapur Bypass | Uttar Pradesh | 12 | 11 | 140 |
| Ashapur – Thariw an (Chitaura toll plaza) | Uttar Pradesh | 12 | 61 | 480 |
| Ghaziabad Hapur – Hapur Bypass (Dasna toll plaza) | Uttar Pradesh | 12 | 33 | 200 |
| Tundla -Makhanpur (Dasna toll plaza) | Uttar Pradesh | 12 | 31 | 280 |
| Allahabad - Mangaw an Section (Naini toll plaza) | Uttar Pradesh | 12 | 5 | 90 |
| Sikandra – Bhaunti (Sikandra toll plaza) | Uttar Pradesh | 12 | 77 | 120 |
| Brijgahat – Moradabad (Joya toll plaza) | Uttar Pradesh | 12 | 56 | 340 |
| Bara – Orai, Annuity (Chamari toll plaza) | Uttar Pradesh | 24 | 68 | 470 |
| Kasiya – Up/Bihar Border (Salemgarh toll plaza) | Uttar Pradesh | 12 | 46 | 200 |
| Basti – Gorakhpur (Mandw anagar toll plaza) | Uttar Pradesh | 12 | 62 | 300 |
| Jhansi – Lalitpur (Vighaket toll plaza) | Uttar Pradesh | 12 | 50 | 70 |
| Jhansi – Poonch (Semri toll plaza) | Uttar Pradesh | 12 | 65 | 370 |
| Poonch-Orai (AIT toll plaza) | Uttar Pradesh | 12 | 65 | 400 |
| Shahjahanpur Toll Plaza In The Section At Garrah River Bridge | Uttar Pradesh | 12 | NA | 20 |
| Naw abganj Toll Plaza (Lucknow - Kanpur) | Uttar Pradesh | 12 | 48 | 410 |
| Allahabad toll plaza (Sihori Uparhar Toll Plaza, Adampur Toll Plaza, Rajapur Maksudan Toll Plaza, Bhopatpur Toll Plaza, Sujaula Toll Plaza) | Uttar Pradesh | 12 | 84 | 800 |

| | | | | |
|---|---|---|---|---|
| Anantram Toll Plaza (Etaw ah - Sikandra Section) | Uttar Pradesh | 12 | 75 | 420 |
| Chitaura Toll Plaza (Ashapur – Thariw an Section) | Uttar Pradesh | 12 | 62 | 410 |
| Katoghan Toll Plaza (Rampur – Khakraj - Thariw an Section) | Uttar Pradesh | 12 | 58 | 270 |
| Lalanagar Toll Plaza (Allahabad) – Rajatalab (Varanasi) Section) | Uttar Pradesh | 12 | 72 | 290 |
| Purw ameer Toll Plaza (Bhaunti - Fatrhpur) | Uttar Pradesh | 12 | 51 | 290 |
| **Total** | **Uttar Pradesh** | | **1189** | **7100** |
| Sonapetya Toll Plaza (Near Mecheda) | West Bengal | 12 | 52 | 220 |
| Budbud - Palsit (Palsit toll plaza) | West Bengal | 12 | 62 | 620 |
| Palsit - Dankuni (Dankuni toll plaza) | West Bengal | 12 | 64 | 590 |
| Dantan – Balasore (Laxmannatha toll plaza) | West Bengal | 12 | 69 | 130 |
| **Total** | **West Bengal** | | **247** | **1560** |

**Source: CRISIL Research, NHAI website**

### NHAI projects (2013-14)

| Project | State | Contract Period (months) | Length (km) | Annual Potential Collection (in millions) |
|---|---|---|---|---|
| Srikakulam – Champavati (Chilakapalem toll plaza) | Andhra Pradesh | 12 | 50 | 280 |
| Champavati/Kopperi (Nathavalsa tll plaza) | Andhra Pradesh | 12 | 44 | 240 |
| Maharashtra/AP border – Islamnagar section (Pippalw ada toll plaza) | Andhra Pradesh | 12 | 55 | 210 |
| Ankapalli– Tuni (Vempadu toll plaza) | Andhra Pradesh | 12 | 116 | 620 |
| Bommuru - Gundugolanu (Tanuku toll plaza) | Andhra Pradesh | 12 | 108 | 630 |
| Tuni – Rajamundary (Krishnavaram toll plaza) | Andhra Pradesh | 12 | 84 | 570 |
| Nandigram - Ichhapuram (Laxmipuram toll plaza) | Andhra Pradesh | 12 | 36 | 220 |
| Icchapuram – Puintola (Bellupuda toll plaza) | Andhra Pradesh | 12 | 45 | 200 |
| Visakhapatnam Port Connectivity Project (Viz port) | Andhra Pradesh | 12 | 0 | 90 |
| Vishakhapatnam - Ankapalli(Aganampudi Toll Plaza) | Andhra Pradesh | 12 | 41 | 179 |
| Kadhal-Armur(Gamjal Toll Plaza) | Andhra Pradesh | 12 | 31 | 127 |
| Gundugolanu-Vijayaw ada(Kalaparru Toll Plaza) | Andhra Pradesh | 12 | 39 | 207 |
| Nandigama - Srikakulam(Madapam Toll Plaza) | Andhra Pradesh | 12 | 63 | 298 |
| Adloor Yellareddy-Gundla Pochampally(Manoharabad Toll Plaza) | Andhra Pradesh | 12 | 103 | 443 |
| Gundugolanu-Vijayaw ada(Pottipadu Toll Plaza) | Andhra Pradesh | 12 | 39 | 214 |
| Kothakota bypass–Kurnool(Pullur Toll Plaza) | Andhra Pradesh | 12 | 75 | 542 |
| **Total** | **Andhra Pradesh** | | **929** | **5069** |
| Aurangabad – Barachatti (Sau Kala toll plaza) | Bihar | 12 | 60 | 320 |
| Purnea-Dalkhola (Barsoni toll plaza) | Bihar | 12 | 37 | 180 |
| Darbhanga - Kosi Bund Section (Naruar toll plaza) | Bihar | 12 | 79 | 205 |
| Mokama-Munger Section (Bulgudar toll plaza) | Bihar | 24 | 69 | 110 |
| Pulparas - Saraigarh(Asanpur Toll Plaza) | Bihar | 24 | 10 | 156 |
| Forbesganj-Purnea(Haribara Toll Plaza) | Bihar | 12 | 79 | 152 |

| | | | | |
|---|---|---|---|---|
| Khagaria - Purnea(Kharik Toll Plaza) | Bihar | 3 | 140 | 0 |
| Muzaffarpur-Darbhanga(Maithi Toll Plaza) | Bihar | 12 | 70 | 228 |
| Khagaria - Purnea(Maranga Toll Plaza) | Bihar | 12 | 140 | 115 |
| Kotwa-Mehsi-Muzaffarpur(Parsoni Toll Plaza) | Bihar | 12 | 80 | 276 |
| **Total** | **Bihar** | | **763** | **1741** |
| Barachatti-Gorhar (Rasoiya Dhamana toll plaza) | Jharkhand | 12 | 80 | 400 |
| Hazaribagh-Ranchi (Pundag toll plaza) | Jharkhand | 24 | 74 | 370 |
| Barwa Adda - Panagarh(Beliyad Toll Plaza) | Jharkhand | 12 | 117 | 415 |
| Gorhar - Barwa Adda(Ghangari Toll Plaza) | Jharkhand | 12 | 79 | 629 |
| **Total** | **Jharkhand** | | **349** | **1814** |
| Gabbur- Devgiri (Bankapur toll plaza) | Karnataka | 12 | 64 | 370 |
| Hadadi- Devgiri ( Chalaagiri toll plaza) | Karnataka | 12 | 80 | 420 |
| Doddasiddanahally- Hadadi (Hebbalu toll plaza) | Karnataka | 12 | 71 | 370 |
| Hattargi - Hirebagewadi(Hattargi Toll Plaza) | Karnataka | 12 | 22 | 130 |
| Maharashtra Border -Belgaum(Kognoli Toll Plaza) | Karnataka | 12 | 55 | 295 |
| ROB Padannakkad Toll Plaza | Karnataka | 12 | 1 | 59 |
| **Total** | **Karnataka** | | **293** | **1644** |
| Edapally to Aroor Section (Kumbalam toll plaza) | Kerala | 12 | 16 | 80 |
| ROB Padannakkad | Kerala | 12 | 1 | 60 |
| **Total** | **Kerala** | | **17** | **140** |
| Allonia toll plaza (Lakhnadon to Mahagaon) | Madhya Pradesh | 24 | 57 | 200 |
| Agra - Dholpur(Baretha Toll Plaza) | Madhya Pradesh | 12 | 43 | 157 |
| Morana - Gwalior(Choundha Toll Plaza) | Madhya Pradesh | 12 | 42 | 162 |
| Mehra Toll Plaza Gwalior Bypass | Madhya Pradesh | 12 | | 129 |
| **Total** | **Madhya Pradesh** | | **142** | **648** |
| JNPT (Toll Plaza Near Chirle village &Toll Plaza near Karanjade village) | Maharashtra | 12 | 29 | 590 |
| Borkhedi-Wadner(Daroda Toll Plaza) | Maharashtra | 12 | 58 | 156 |
| **Total** | **Maharashtra** | | **87** | **746** |
| Srirampur Toll Plaza | Odisha | 12 | 77 | 220 |
| Sunakhala-Bhubaneshwar(Gangapada Toll Plaza) | Odisha | 12 | 65 | 360 |
| Bhadrak-Chetia (Panikoili Toll Plaza) | Odisha | 12 | 73 | 368 |
| Bhadrak-Balasore(Sergarh Toll Plaza) | Odisha | 12 | 63 | 349 |
| **Total** | **Odisha** | | **278** | **1297** |
| Rithola- Udaipur (Narayanpura toll plaza) | Rajasthan | 12 | 100 | 500 |
| Chittorgarh Bypass section (Rithola toll plaza) | Rajasthan | 12 | NA | 440 |
| Bhilwara-Chittorgarh(Jojro-Ka-Kheda Toll Plaza) | Rajasthan | 12 | 83 | 846 |
| Nasirabad - Chittorgarh(Kanwaliyas Toll Plaza) | Rajasthan | 12 | 101 | 1061 |
| Kherwara-Ratanpur(Khandi Obari Toll Plaza) | Rajasthan | 12 | 40 | 236 |
| **Total** | **Rajasthan** | | **324** | **3083** |
| Kovilpatti-Moondraaippu (Salaipudur toll plaza) | Tamil Nadu | 12 | 64 | 220 |
| Tambaram- Tindivanam (Paranur toll plaza) | Tamil Nadu | 12 | 47 | 506 |
| Tovarankurichi to Madurai (Chittampatti toll plaza) | Tamil Nadu | 12 | 64 | 400 |
| Tirunelveli- Tuticorin (Toll plaza at 11.725 km) | Tamil Nadu | 12 | 47 | 186 |
| Madurai-Virudhnagar Section (Kappalur toll plaza) | Tamil Nadu | 12 | 51 | 320 |
| Tambaram-Tindivanam(Athur Toll Plaza) | Tamil Nadu | 12 | 47 | 473 |
| Walajahpet - Kancheepuram(Chennasamudram Toll Plaza) | Tamil Nadu | 3 | 47 | 0 |
| Trichy - Karaikudi(Lechchumanapatti Toll Plaza) | Tamil Nadu | 12 | NA | 68 |

| | | | | |
|---|---|---|---|---|
| Trichy - Karaikudi(Lembalakudi Toll Plaza) | Tamil Nadu | 12 | NA | 60 |
| Tirunelveli - Tuticorin(Pudukottai Toll Plaza) | Tamil Nadu | 12 | 47 | 186 |
| Sriperumpudur Toll Plaza | Tamil Nadu | 3 | 46 | 0 |
| **Total** | **Tamil Nadu** | | **459** | **2417** |
| Shikohabad - Etawah & Etawah Bypass Section (Semra Atikabad ) | Uttar Pradesh | 12 | 71 | 400 |
| Kasiya- UP Bihar Border (Salemgarh toll plaza) | Uttar Pradesh | 12 | 47 | 170 |
| Allahabad Bypass (Sihori Uparhar ,Adampur , Rajapur Maksudan, Bhopatpur, Sujaula) | Uttar Pradesh | 12 | 85 | 960 |
| Allahabad-Mangawan Section (Naini bridge) | Uttar Pradesh | 12 | 5 | 110 |
| Hapur-Garhmuketeswar (Brijghat toll plaza) | Uttar Pradesh | 12 | 35 | 301 |
| Poonch-Orai(Ait Toll Plaza) | Uttar Pradesh | 3 | 65 | NA |
| Orai- Bara(Chamari/Usaka Toll Plaza) | Uttar Pradesh | 12 | 68 | 471 |
| Ghaziabad-Hapur & Hapur Bypass(Dasna Toll Plaza) | Uttar Pradesh | 12 | 32 | 182 |
| Hapur -Moradabad(Joya Toll Plaza) | Uttar Pradesh | 12 | 56 | 337 |
| Fatehpur - Khokharaj(Katoghan Toll Plaza) | Uttar Pradesh | 12 | 58 | 276 |
| Allahabad-Handia-Varanasi(Lalanagar Toll Plaza) | Uttar Pradesh | 12 | 72 | 332 |
| Gorakhpur-Kasiya(Muzaina Hetim Toll Plaza) | Uttar Pradesh | 3 | 46 | 198 |
| jhansi - Pooch(Semri Toll Plaza) | Uttar Pradesh | 3 | 64 | 294 |
| Gorakhpur Bypass(Tendua Toll Plaza) | Uttar Pradesh | 3 | NA | 3 |
| Tundla-Makhanpur(Tundla Toll Plaza) | Uttar Pradesh | 12 | 32 | 478 |
| Jhansi - Lalitpur(Vighaket Toll Plaza) | Uttar Pradesh | 12 | 49 | 81 |
| **Total** | **Uttar Pradesh** | | **785** | **4592** |
| Kolghat - Haldia (Sonapetya toll plaza) | West Bengal | 12 | 53 | 310 |
| Islampur-Sonapur-Ghoshpukur Section (Paschim Madati) | West Bengal | 12 | 44 | 260 |
| Palsit - Dhankuni(Dankuni Toll Plaza) | West Bengal | 12 | 64 | 627 |
| Budbud-Palsit(Palsit Toll Plaza) | West Bengal | 12 | 62 | 635 |
| Dalkhola - Islampur(Surjapur Toll Plaza) | West Bengal | 12 | 62 | 260 |
| **Total** | **West Bengal** | | **285** | **2092** |
| Purnea - Kishanganj (Surjapur toll plaza) | West Bengal & Bihar | 12 | 51 | 260 |
| **Total** | **West Bengal & Bihar** | | **51** | **260** |
| Bhiladi - Jetpur(Dhumiyani Toll Plaza) | Gujarat | 12 | 65 | 96 |
| Himatnagar - Chiloda(Kathpur Toll Plaza) | Gujarat | 12 | 52 | 315 |
| Palanpur/ Khemana - Aburoad(Khemana Toll Plaza) | Gujarat | 12 | 45 | 219 |
| Garamore - Samakhiyali(Surajbari Toll Plaza) | Gujarat | 12 | 48 | 433 |
| Garamore - Bamanbore(Vagashia Toll Plaza) | Gujarat | 12 | 72 | 250 |
| Porbander - Bhiladi(Vanana Toll Plaza) | Gujarat | 12 | 51 | 41 |
| Ratanpur - Himatnagar(Vantada Toll Plaza) | Gujarat | 3 | 55 | 0 |
| **Total** | **Gujarat** | | **387** | **1353** |
| Shillong Bypass-Diengpasoh Toll Plaza | Meghalaya | 3 | NA | NA |
| **Total** | **Meghalaya** | | **0** | **0** |
| Jammu - Udhampur(Bann Toll Plaza ) | Jammu & Kashmir | 3 | NA | NA |
| Samba-Kunjwani(Thandikhui Toll Plaza ) | Jammu & Kashmir | 3 | NA | NA |
| **Total** | **Jammu & Kashmir** | | **0** | **0** |
| Amritsar - Wagah Border(Chiddan Toll Plaza ) | Punjab | 12 | 36 | 30 |
| Jalandhar-Pathankot(Harsa Mansar Toll Plaza) | Punjab | 12 | 40 | 266 |
| **Total** | **Punjab** | | **76** | **296** |

**Source: CRISIL Research, NHAI website**

## NHAI projects (2014-15)

| Project name | State | Length KM |
|---|---|---|
| Aganampodi Toll Plaza | Andhra Pradesh | 41 |
| Bellupada Toll Plaza | Andhra Pradesh | 45 |
| Bommuru-Gundugolanu Section of NH-5 (Tanuku Toll Plaza) | Andhra Pradesh | 108 |
| Champavati/Kopperla-Visakhapatnam Section of NH-5 (Nathavalasa Toll Plaza) | Andhra Pradesh | 44 |
| Chilakapalem Toll Plaza | Andhra Pradesh | 50 |
| Kondayapalem Toll Plaza | Andhra Pradesh | NA |
| Krishnavaram toll plaza | Andhra Pradesh | 84 |
| Visakhapatnam Port Connectivity Project in Andhra Pradesh | Andhra Pradesh | 10 |
| Nandigam-Srikakulam (Madapam Toll Plaza) | Andhra Pradesh | 63 |
| **Total** | **Andhra Pradesh** | **445** |
| Dahalapara Toll Plaza | Assam | 62 |
| Kaliabhomora Bridge No.10/1 Over Brahmaputra River | Assam | 3 |
| **Total** | **Assam** | **65** |
| Balgudar Toll Plaza | Bihar | 69 |
| Khagaria-Purnia section Maranga Toll Plaza | Bihar | 70 |
| Kharik Toll Plaza of Khagaria-Purnea section | Bihar | 140 |
| Maithi Toll Plaza | Bihar | 70 |
| Parsoni Khem Toll Plaza | Bihar | 80 |
| Runni Toll Plaza | Bihar | 86 |
| Barsoni Toll Plaza | Bihar | 37 |
| **Total** | **Bihar** | **552** |
| Shivnath Bridge (Nandghat) | Chhattisgarh | NA |
| **Total** | **Chhattisgarh** | **NA** |
| Bhiladi - Jetpur(Dhumiyani Toll Plaza) | Gujarat | 65 |
| Himatnagar - Chiloda(Kathpur Toll Plaza) | Gujarat | 52 |
| Palanpur/ Khemana - Aburoad(Khemana Toll Plaza) | Gujarat | 45 |
| Porbandar-Bhiladi Section (Vanana Toll Plaza) | Gujarat | 51 |
| Rajkot-Bamanbore Section (Veti Toll Plaza) | Gujarat | 31 |
| Garamore - Bamanbore(Vagashia Toll Plaza) | Gujarat | 72 |
| **Total** | **Gujarat** | **316** |
| Delhi / Haryana (Kundli) Border to Panipat Section (Murthal Toll Plaza) | Delhi & Haryana | 70 |
| **Total** | **Delhi & Haryana** | **70** |
| Jammu - Udhampur (Bann Toll Plaza) | Jammu & Kashmir | 65 |
| **Total** | **Jammu & Kashmir** | **65** |
| Aurangabad-Barachatti | Jharkhand | 60 |
| Barachatti-Gorhar Section (Rasoiyadhamna Toll Plaza) | Jharkhand | 80 |

| | | |
|---|---|---|
| Gorhar to Barw a Adda (Ghangari Toll Plaza) | Jharkhand | 79 |
| Hazaribagh-Ranchi section (Pundag Toll Plaza) | Jharkhand | 74 |
| **Total** | **Jharkhand** | **292** |
| AP/ Karnataka Border - Devanhalli (Bagepalli Toll Plaza) | Karnataka | 71 |
| B.C.Road - Padil (Brahmarkotlu Toll Plaza) | Karnataka | 17 |
| Gabbur-Devgiri Section (Bankapur Toll Plaza) | Karnataka | 64 |
| Hadadi-Devgiri Section (Chalageri Toll Plaza) | Karnataka | 80 |
| Hattargi - Hirebagew adi(Hattargi Toll Plaza) | Karnataka | 22 |
| Doddasiddanahally- Hadadi (Hebbalu toll plaza) | Karnataka | 71 |
| Maharashtra Border -Belgaum (Kognoli Toll Plaza) | Karnataka | 55 |
| Rajapur village and near Susheel Nagar on Sandur-Hospet Road | Karnataka | NA |
| Surathkal NITK | Karnataka | NA |
| **Total** | **Karnataka** | **381** |
| Edapally-Vytilla-Aroor Section (Kumbalam Toll Plaza) | Kerala | 17 |
| ROB Padannakkad Toll Plaza | Kerala | 1 |
| **Total** | **Kerala** | **18** |
| Agra-Dholpur Section (Baretha Toll Plaza) | Madhya Pradesh | 43 |
| Lakhnadon - Mahagaon (Allonia Toll Plaza) | Madhya Pradesh | 57 |
| Morana - Gw alior(Choundha Toll Plaza) | Madhya Pradesh | 42 |
| Gw alior Bypass (Mehra) Toll Plaza | Madhya Pradesh | NA |
| Kelw ad Toll Plaza | Madhya Pradesh | 75 |
| Chikhalikala, Fulara, Jungaw ani toll plazas | Madhya Pradesh | 213 |
| **Total** | **Madhya Pradesh** | **430** |
| JNPT (Toll Plaza Near Chirle village & Toll Plaza near Karanjade village) | Maharashtra | 29 |
| Borkhedi - Wadner (Daroda Toll Plaza) | Maharashtra | 58 |
| Kini & Tasa Wada (Satara - Kagal) | Maharashtra | 60 |
| Deodhari - Kelapur (Kelapur Toll Plaza) | Maharashtra | 30 |
| Panvel-Mahad-Panji Road | Maharashtra | NA |
| **Total** | **Maharashtra** | **177** |
| Shillong Bypass (Diengpasoh Toll Plaza) | Meghalaya | NA |
| **Total** | **Meghalaya** | **NA** |
| Nagpur-Saoner-Betul (Milanpur Toll Plaza) | Maharashtra & Madhya Pradesh | 59 |
| Nagpur-Saoner-Betul (Patansaw angi toll plaza) | Maharashtra & Madhya Pradesh | 59 |
| Nagpur-Saoner-Betul Section (Khambara Toll Plaza) | Maharashtra & Madhya Pradesh | 59 |
| **Total** | | **177** |
| Sunakhala - Puintola (Gurapalli Toll Plaza) | Odisha | NA |
| Bhadrak-Chetia (Panikoili Toll Plaza) | Odisha | 73 |

| | | |
|---|---|---|
| Bhadrak-Balasore(Sergarh Toll Plaza) | Odisha | 63 |
| Chandikhol - Paradip (Srirampur Toll Plaza) | Odisha | 77 |
| Sunakhala-Bhubanesw ar (Gudipada Toll Plaza) | Odisha | 65 |
| **Total** | **Odisha** | **277** |
| Amritsar-Wagah Border Section (Chiddan Toll Plaza) | Punjab | 36 |
| Jalandhar- Pathankot Section (Chollang Toll Plaza) | Punjab | 66 |
| Jalandhar-Pathankot & Pathankot-Lakhanpur (Harsa Mansar Toll Plaza) | Punjab | 40 |
| **Total** | **Punjab** | **142** |
| Jhalaw ar-Rajasthan/MP Border section (Methoon Toll Plaza) | Rajasthan | NA |
| Bhilw ara-Chittorgarh(Jojro-Ka-Kheda Toll Plaza) | Rajasthan | 83 |
| Nasirabad - Chittorgarh(Kanw aliyas Toll Plaza) | Rajasthan | 101 |
| Kherw ara-Ratanpur(Khandi Obari Toll Plaza) | Rajasthan | 40 |
| Rithola- Udaipur (Narayanpura toll plaza) | Rajasthan | 100 |
| Udaipur - Kherw ara (Paduna Toll Plaza) | Rajasthan | 70 |
| Abu Road - Palanpur/Khemana (Undavariya Toll Plaza) | Rajasthan | NA |
| **Total** | **Rajasthan** | **394** |
| Tambaram-Tindivanam(Athur Toll Plaza) | Tamil Nadu | 47 |
| Karur-Kangeyam Section (Thennilai Toll Plaza) | Tamil Nadu | NA |
| Trichy - Karaikudi (Lechchumanapatti Toll Plaza) | Tamil Nadu | NA |
| Trichy - Karaikudi (Lembalakudi Toll Plaza) | Tamil Nadu | NA |
| Pongalur Toll Plaza | Tamil Nadu | NA |
| Tambaram to Tindivanam Section (Paranur Toll Plaza) | Tamil Nadu | 47 |
| Vagaikulam Toll Plaza | Tamil Nadu | NA |
| **Total** | **Tamil Nadu** | **93** |
| Kadhal - Armur (Gamjal Toll Plaza) | Telangana | NA |
| Adloor Yellareddy – Gundla Pochampally, Annuity (Manoharabad toll plaza) | Telangana | 103 |
| Pedda-Amberpet-Shamirpet Stretch | Telangana | NA |
| Islam Nagar - Katdal (Pippalw ada Toll Plaza) | Telangana | NA |
| Kothakota bypass–Kurnool (Pullur Toll Plaza) | Telangana | 76 |
| Islam Nagar - Katdal (Rolmamda Toll Plaza) | Telangana | NA |
| **Total** | **Telangana** | **179** |
| Babina Toll Plaza | Uttar Pradesh | 50 |
| Chakeri - Usrania (Badauri Toll Plaza) | Uttar Pradesh | NA |
| Hapur - Garhmuketeshw ar (Brijghat Toll Plaza) | Uttar Pradesh | 35 |
| Dasna Toll Plaza & Hapur Bypass | Uttar Pradesh | 11 |
| Shikohabad - Etaw ah & Etaw ah Bypass (Gurau Toll Plaza) | Uttar Pradesh | 71 |
| Gorakhpur Bypass section(Tendua Toll Plaza) | Uttar Pradesh | NA |

| | | |
|---|---|---|
| Jhansi-Poonch Section (Semri Toll Plaza) | Uttar Pradesh | 64 |
| Hapur -Moradabad(Joya Toll Plaza) | Uttar Pradesh | 56 |
| Fatehpur - Khokharaj(Katoghan Toll Plaza) | Uttar Pradesh | 58 |
| Allahabad-Handia-Varanasi(Lalanagar Toll Plaza) | Uttar Pradesh | 72 |
| Lucknow -Raebareilly Section (Dakhina Shekpur Toll Plaza) | Uttar Pradesh | 70 |
| Gorakhpur-Kasiya (Muzaina Hetim Toll Plaza) | Uttar Pradesh | 46 |
| Poonch-Orai Section (AIT Toll Plaza) | Uttar Pradesh | 65 |
| Kasiya- UP Bihar Border (Salemgarh toll plaza) | Uttar Pradesh | 47 |
| Shahjahanpur Toll Plaza In The Section At Garrah River Bridge | Uttar Pradesh | NA |
| Tundla-Makhanpur(Tundla Toll Plaza) | Uttar Pradesh | 32 |
| MP/UP Border Shivpuri - Bhognipur - Bara (Usaka Toll Plaza) | Uttar Pradesh | 69 |
| **Total** | **Uttar Pradesh** | **745** |
| Palsit - Dhankuni (Dhankuni Toll Plaza) | West Bengal | 64 |
| Salsalabari - Assam Bengal Border (Guabari Toll Plaza) | West Bengal | NA |
| Budbud-Palsit (Palsit Toll Plaza) | West Bengal | 62 |
| Islampur - Sonapur - Ghoshpukur (Paschim Madati Toll Plaza) | West Bengal | 44 |
| Sonapetya Toll Plaza | West Bengal | 52 |
| Dalkhola - Islampur(Surjapur Toll Plaza) | West Bengal | 62 |
| **Total** | **West Bengal** | **284** |

**Source: NHAI, CRISIL Research**

## State highways/ Road development corporation projects

### Maharashtra State Road Development Corporation (2011-12)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Melagaon-Nandgaon SH 16 | 24 | 22 |
| IRDP Nandurbar (8 toll stations) | 12 | 37 |
| Melagaon- Mehekar | 36 | 178 |
| Deole on Sinner - Ghoti Road, Nashik | 36 | 95 |
| Murtizapur on Daryapur road | 36 | 29 |

**Source: State Authority, CRISIL Research**

### Maharashtra State Road Development Corporation (2012-13)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| 4 toll stations for Solapur IRDP. | 36 | 226 |
| 8 toll stations for Nandurbar IRDP | 36 | 92 |
| Toll at three toll : Daund, Jejuri ROB, Kedgaon ROB | 36 | 284 |
| Jam – Warora – Chandrapur Road | 36 | 253 |
| Wagholi-Sopara-Tulinj-Pelhar Road | 36 | 35 |
| Wardha-Pulgoan Road | 36 | 122 |
| Nagzari – Kherda – Karanja Road, Amravati District | 36 | 106 |
| Aurangabad – Paithan Road | 36 | 103 |
| Aurangabad – Lasur Road | 36 | 31 |
| Railway Over Bridge at Parbhani | 36 | 36 |
| Karanja – Malegaon Road in Washim District | 36 | 122 |
| Sindhakhed – Jalna Road near Nandapur Pir Kalyan Chowk | 36 | 107 |
| Nagpur–Bori–Tuljapur Road | 36 | 317 |

**Source: State Authority, CRISIL Research**

### Maharashtra State Road Development Corporation (2013-14)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Five toll stations for Nagpur IRDP | 156 | 392 |
| Murtizapur on Daryapur road | 36 | 33 |
| Melagaon-Nandgaon SH 16 | 36 | 39 |
| Aurangabad- Jalgaon Road | 36 | 256 |
| Kini & Tasa Wada | 104 | 2480 |

**Source: State Authority, CRISIL Research**

### Maharashtra State Road Development Corporation (2014-15)*

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Murtizapur on Daryapur road | 36 | 48 |
| Aurangabad- Jalgaon Road | 36 | 87 |

**Source: State Authority, CRISIL Research**

*Net Estimated realisation is considered wherever applicable

### Maharashtra State Road Development Corporation (2015-16 till December 15, 2015)*

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Four toll stations for Solapur IRDP | 36 | 170 |
| Three toll stations for Aurangabad IRDP | 36 | 178 |
| Five toll stations for Nagpur IRDP | 4 | 70 |

**Source: State Authority, CRISIL Research**

*Net Estimated realisation is considered wherever applicable

### Rajasthan State Road Development and Construction Corporation (2011-12)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Toll tax collection on Chala-Neem Ka Thana-Kotputli Road | 12 | 55 |
| Bikaner bypass | 12 | 60 |
| Hanumangarh- sriganganagar | 12 | 34 |
| Toll collection on Dabok-Mavli-Kapasan-Chittorgarh Road SH-9 Km | 12 | 280 |
| Toll Tax collection on Hanumangarh-Pilibanga-Suratgarh Road | 24 | 235 |

**Source: State Authority, CRISIL Research**

### Rajasthan State Road Development and Construction Corporation (2012-13)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Gotan to Sojat | 24 | 240 |
| Mangalw ar- Nimbahera Road | 21 | 72 |
| Fatehnagar-Dariba Road | 21 | 36 |
| Mahw a-Hindaun-Karauli Road | 21 | 147 |
| Chomu-Ajitgarh-Shahpura Road | 12 | 31 |
| Salumber-Keer ki Chow ki Road | 12 | 39 |
| Pali-Nadol Road | 12 | 20 |
| Sri Ganganagar-Hanumangarh | 529 days | 53 |
| Bikaner Byepass | 12 | 62 |

**Source: State Authority, CRISIL Research**

### Rajasthan State Road Development and Construction Corporation (2013-14)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Chomu-Ajitgarh-Shahpura Road | 12 | 39 |
| Alw ar- Behror- Narnaul Road | 12 | 91 |
| Merta- Ras Road | 12 | 67 |
| Mangalw ar- Nimbahera Road, Fatehnagar Dariba Road, Salumber-Keer ki Chow ki | 12 | 138 |
| Dabok-Mavli-Kapasan-Chittorgarh Road | 12 | 178 |
| Bikaner Bypass | 12 | 69 |
| Salumber-Keer ki Chow ki Road | 12 | 39 |
| Triveni- Jahajpur-Deoli Road | 12 | 45 |
| Pali-Nadol- Gomti- ka Chouraha Road | 12 | 23 |
| Kotputali-Neemkathana-Sikar-Kuchamana Road | 12 | 232 |
| Jaipur-Jobner-Kuchamana-Nagaur | 12 | 169 |

**Source: State Authority, CRISIL Research**

## Rajasthan State Road Development and Construction Corporation (2014-15)

| Project | Concession Period (Months) |
|---|---|
| Lalsot - Kota | 12 |
| Jhalw ar- Jhalaw ar Road | 12 |
| Jhalaw ar-Ujjain | 12 |
| Three toll points on Kota-Dharnaw ada Road (SH-51) | 12 |
| Debari-Kuraw ar-Bambora road | 12 |
| Salumber-Keer Ki Chow ki road | 12 |
| Pali-Nodal-Gomati ka Chauraha road | 12 |
| Mahuw a-Hindaun-Karauli Road | 12 |
| Bharatpur-Deeg-Alw ar Road SH-14 | 12 |
| Kishangah Bass-Khairthal-Bansur-Kotputali Road | 24 |
| Chechat to Undw a Road upto MP Border (SH-9A) | 24 |
| Mahuw a-Hindaun-Karauli Road (SH-22) | 12 |
| Alw ar-Behror-Namaul road | 24 |
| Merta-Lambia-Ras Road | 24 |
| Nasirabad-Kekri-Deoli | 24 |
| Bari-Baseri-Bayana-Weir-Bhusaw ar-Chhonkarw ara-Kherli road | 24 |
| Triveni-Jahajpur-Deoli road (MDR-07) | 12 |
| Jaipur-Jobner-Kuchaman-Nagaur road | 12 |
| Hanumangarh-Suratgarh road | 24 |
| Chomu-Ajeetgarh-Shahpura road | 12 |
| Bansw ara-Ratlam Road | 12 |

**Source: State Authority, CRISIL Research**

## Road Infrastructure Development Company of Rajasthan (2012-13)

| Project | Concession Period | Potential Collection (in Rs. Million) |
|---|---|---|
| Lalsot - Kota | 12 | 238 |
| Alw ar - Sikandra | 12 | 153 |
| Alw ar - Bhiw adi | 12 | 310 |
| Hanumangarh-Ratangarh-Kishangarh Road under Mega Highw ays Project (407km) | 12 | 1022 |
| Hanumangarh- Sangaria (22 km) | 12 | 84 |
| Jhalw ar- Jhalaw ar Road | 9 months, extendable to 12 months | 43 |
| Arjunsar - Pallu (38 km) | 12 | 40 |
| Baran to Jhalaw ar | 12 | 19 |

**Source: State Authority, CRISIL Research**

### Road Infrastructure Development Company of Rajasthan (2014-15)

| Project | Concession Period |
|---|---|
| Alw ar - Sikandra | 12 |
| Alw ar - Bhiw adi | 12 |
| Hanumangarh-Ratangarh-Kishangarh Road under Mega Highw ays Project (407km) | 12 |
| Hanumangarh- Sangaria (22 km) | 8 |
| Arjunsar - Pallu (38 km) | 8 |
| Khushkhera-Kasola Chow k (8.5 Km) | 12 |

**Source: State Authority, CRISIL Research**

### Road Infrastructure Development Company of Rajasthan (2015-16) (Till 31st October 2015)

| Project | Concession Period |
|---|---|
| Hanumangarh-Ratangarh-Kishangarh Road under Mega Highw ays Project (407km) | 16 |

**Source: State Authority, CRISIL Research**

### Haryana State Road & Bridges Development Corporation (2011-12)

| Project | Concession Period (months) |
|---|---|
| Gurgaon -Sohna Road | 12 |
| Gurgaon Pataudi Rew ari | 12 |
| Sardurgarh Sirsa Road | 12 |
| Y Nagar Radaur- Ladw a-Thaneshw ar | 4 |
| UP Border-Sonepat-Gohana road | 12 |
| Kaithal- Khanauri road | 12 |
| Kaithal Patiala | 12 |
| Neval Gheer Garhi Birbal Road | 12 |
| Pehow a- Ladw a- Saharanpur-Haridw ar Road | 12 |
| Punhana- Jurhera road | 12 |

**Source: State Authority, CRISIL Research**

### Haryana State Road & Bridges Development Corporation (2012-13)

| Project | Concession Period (months) |
|---|---|
| Kaithal- Patiala | 12 |
| Y Nagar Radaur- Ladw a-Thaneshw ar | 12 |
| Budhlada- Ratia- Fatehabad | 12 |
| Bhattu Ludesar Jamal road | 12 |
| Deodhar- Nainaw ali Road | 12 |
| Rai Nahra Bahadurgarh Road | 12 |
| Chandimandir- Jallah Road | 12 |
| Bahadurgarh Jhajjar Dadri Loharu Pilani | 12 |
| Saha Shahbad Road | 12 |
| Narnaul- Singhana road & Kotputli -Budhw al- Nangal Chuadhary Road | 12 |
| Pehow a - Patiala Road | 12 |
| Kala Amb-Sadhaura- Shahbad Road near HP | 12 |
| Pehow a Ladw a Saharanpur Haridw ar Road | 12 |
| Neval Gheer Garhi Birbal | 12 |
| Rohtak-Kharkhauda Delhi road | 12 |

**Source: State Authority, CRISIL Research**

### Haryana State Road & Bridges Development Corporation (2014-15)

| Project | Concession Period (months) |
|---|---|
| Rohtak-Kharkhauda-Delhi Border Road | 18 |
| Khaithal-Khanauri Road | 18 |
| Gurgaon-Pataudi Road | 18 |
| Neval Gheer Garhi Birbal | 18 |
| Uklana-Tohana-Munak Road | 18 |
| Sohana-Nuh-Ferozpur-Zhirkha-Alw ar road | 12 |
| Narnaul-Nizampur Road | 18 |
| Gurgaon-Sohna road | 18 |

**Source: State Authority, CRISIL Research**

### Haryana State Road & Bridges Development Corporation (2015-16) (Till 30th September 2015)

| Project | Concession Period (months) |
|---|---|
| Rohtak-Kharkhauda-Delhi Border Road | 18 |
| Narnaul-Nizampur Road | 18 |

**Source: State Authority, CRISIL Research**

### Odisha Bridge & Construction Corporation Limited (2011-12)

| Project | Concession Period (months) | Potential Collection (in Rs. Million) |
|---|---|---|
| Rampella on Sambalpur - Rourkela Road | 12 | 69 |
| Sambalpur- Rourkella ADB Road | 12 | 74 |
| Daitari- Duburi Express Highw ay road | 12 | 12 |
| Sambalpur-Rourkela Road | 12 | 106 |
| Berhampur-Govindapur Road | 12 | 3 |
| Sambalpur-SonepurRoad | 12 | 3 |
| Gunupur-Bisamkatak Road | 12 | 3 |
| Bangamunda-Chandatora Road | 12 | 2 |
| Binika-Rampur Road, Bolangir | 12 | 2 |
| Dhenkanal-Kamakhyanagar Road | 12 | 4 |
| Boudh-Kiakata Road | 12 | 4 |

**Source: State Authority, CRISIL Research**

### Odisha Bridge & Construction Corporation Limited (2012-13)

| Project | Concession Period | Potential Collection (in Rs. Million) |
|---|---|---|
| Rampella on Sambalpur - Rourkela Road | 12 | 89 |
| Sambalpur- Rourkella ADB Road | 12 | 75 |
| Krushnadaspur-Udayagiri- Jajpar-ratnagiri Road | 12 | 2 |
| Buddhambo-Buguda Road | 12 | 2 |
| Mahanadi bridge tollgate | 12 | 4 |
| Balaspur- Mitrapur- Baincha Road | 12 | 9 |
| Daitri-Daburi Express Highw ay Road | 12 | 12 |
| Chorda- Daburi Road | 12 | 23 |
| H.L. Bridge over Nandini Nallah Road | 12 | 2 |
| Ratnachira on Jagannath Sadak | 12 | 1 |

**Source: State Authority, CRISIL Research**

### Odisha Bridge & Construction Corporation Limited (2014-15)

| Project | Concession Period (Months) |
|---|---|
| Cuttack-Paradeep Road toll gate near Kandarpur | 12 |
| High Level Bridge at Mundali on Naraj-Athgarh-Mundali Road | 12 |
| Balasore-Mitrapur-Bainchha road | 12 |
| Under bridge toll gate on Bangamunda-Chand Tora road | 12 |
| Dhauli hill top road at Nakhaura on NH 203 | 12 |
| Pipili-Nimapada-Gop-Konark-Puri Road | 12 |
| Podadhia-Udala-Jaypur-Mantri Road | 12 |

**Source: State Authority, CRISIL Research**

### Karnataka Road Development Corporation Limited (2013-14)

| Project | Concession Period (months) |
|---|---|
| Rajapur Village & susheel nagar in Bellary district | 12 |

**Source: State Authority, CRISIL Research**

### Karnataka Road Development Corporation Limited (2015-16) (Till 30th September 2015)

| Project | Concession Period (months) |
|---|---|
| Rajapur Village & susheel nagar in Bellary district | 12 |

**Source: State Authority, CRISIL Research**

### Gujarat Road and Infrastructure Company Limited (2013-14)

| Project | Concession Period | Potential Collection (in Rs. Million) |
|---|---|---|
| Seven toll plazas on Ahmedabad-Mehsana Road | 12 | 770 |
| Four toll plazas on Vadodara-Halol Road | 12 | 420 |

**Source: State Authority, CRISIL Research**

### Tamil Nadu Road Development Company Limited (2013-14)

| Project | Concession Period | Potential Collection (in Rs. Million) |
|---|---|---|
| East Coast Road | 36 | 6.3 |
| Rajiv Gandhi Salai | 36 | 17 |

**Source: State Authority, CRISIL Research**

## Municipal projects

### Toll collection model is also implemented by a few municipal corporations.

**Municipal Corporation projects**

| Project | Authority |
|---|---|
| Toll collection at border points of Delhi | Municipal Corporation of Delhi |
| Nehru Outer ring road, Heyderabad | Hyderabad grow th Corridor* |
| Kalyani Dum Dum Expressw ay | Kolkata Metropolitin Development Authority |
| Entry Fee At Aarey, Marol And Pow ai Toll Naka | Dairy Development Department |
| Hooghly Bridge | Hooghly River Bridge Commissioners |

**Source: Respective Authority, CRISIL Research**

## D) Outlook for toll collection model for NHAI and key states

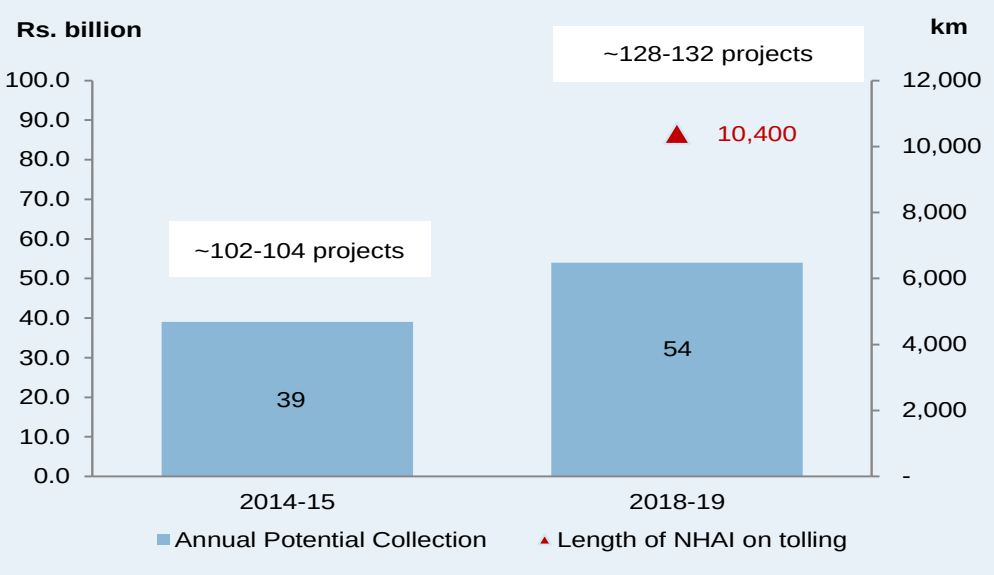
### Outlook on NHAI projects: NHAI toll collection stretch to increase 1.4 times over next four years

NHAI initiated the process of awarding projects on tolling towards the end of 2009-10 and as of 2014-15 around 6,990 km of National Highways constructed under EPC and BOT Annuity are under tolling. We expect it to increase 1.4 times over the next four years and touch 10,300-10,500 km by 2018-19, primarily driven by a number of to be awarded projects to be implemented on EPC/Cash contract basis. The total number of toll collection projects are expected to increase from around 102-104 projects currently to 128-132 by 2018-19 (assuming an average length of 80 km for NHAI toll collection project).

In value terms, the Annual Potential Collection covered by the NHAI tolling market is expected to increase by 1.4 times from Rs 39 billion in 2014-15 to Rs 54 billion by 2018-19.

*For detailed outlook on Toll Collection market from NHAI please refer Chapter 8.

**Toll Collection Market Opportunity from NHAI**




Note: Market in value terms has been presented in terms of project cost paid by the contractor to NHAI. We have assumed a 5% increase in project cost per year

**Source: CRISIL Research Estimates**

### Outlook on state highway projects: State highway toll collection stretch to increase 1.5 times over next four years

As of March 2013, states of Maharashtra, Haryana, Rajasthan and Odisha had around 4500 km (84-86 projects) of state highway stretches for which bids have been invited for tolling. The estimated annual potential collection for these tolling projects was Rs 5.4 billion. More projects were invited for bidding in 2013-14. The total number of projects increased from around 85 to 102 by end of 2013-14, while the total length invited for bidding till March 2014 increased to 5,350 km. The total estimated annual potential collection from all projects invited till March 2014

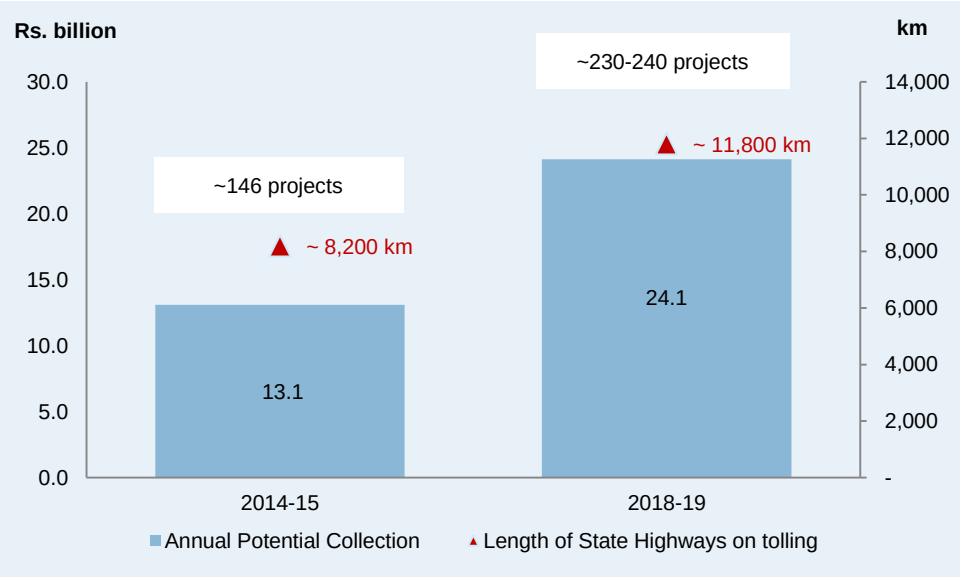
was around Rs 9.4 billion. In 2014-15, these states invited a total of 44 projects for bidding with a total estimated annual potential collection of around Rs 13.1 billion.

CRISIL Research expects the total stretch under toll collection model (for which bids will be invited) to increase 1.4 times from around 8,200 km in 2014-15 to around 11,800 km by 2018-19. The total number of toll collection projects (on bids invited basis) are expected to increase from around 146 in 2014-15 to 230-240 projects in 2018-19 (assuming an average length of 50 km for state authority toll collection project for which project length is not available in the public domain).

In value terms, the Annual Potential Collection covered by the tolling market is expected to grow from Rs 13.1 billion in 2014-15 to Rs 24.1 billion by 2018-19.

***For detailed outlook on Toll Collection market from state authorities please refer Chapter 9.***

**Toll Collection Market Opportunity from key states**



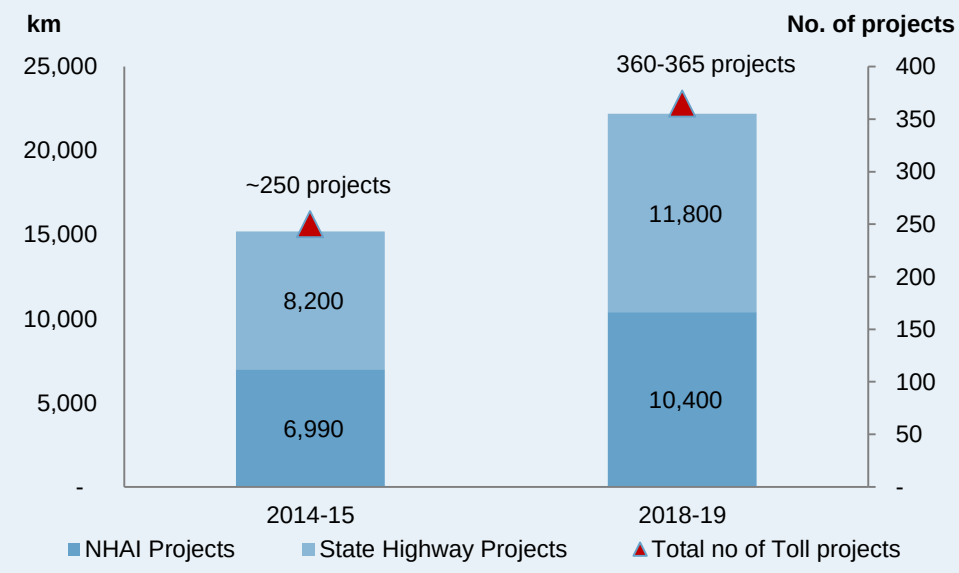

1. Length & market potential of toll collection for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. We have assumed a 5% increase in estimated project cost per year.
3. Toll collection opportunity for 2018-19 includes opportunity from states of Maharashtra, Haryana, Rajasthan, Karnataka , Gujarat, Tamil nadu and Odisha

**Source: CRISIL Research Estimates**

## Overall outlook: Overall toll collection stretch to increase 1.5 times over next four years

We expect the total stretch of highways under toll collection model for NHAI and key states to increase 1.5 times from around 15,190 km in 2014-15 to around 22,200 km by 2018-19. CRISIL Research expects the total number of toll collection projects to increase from around 250 (in 2014-15) to 360-365 in 2018-19.

**Toll collection Market Opportunity from NHAI and key states**

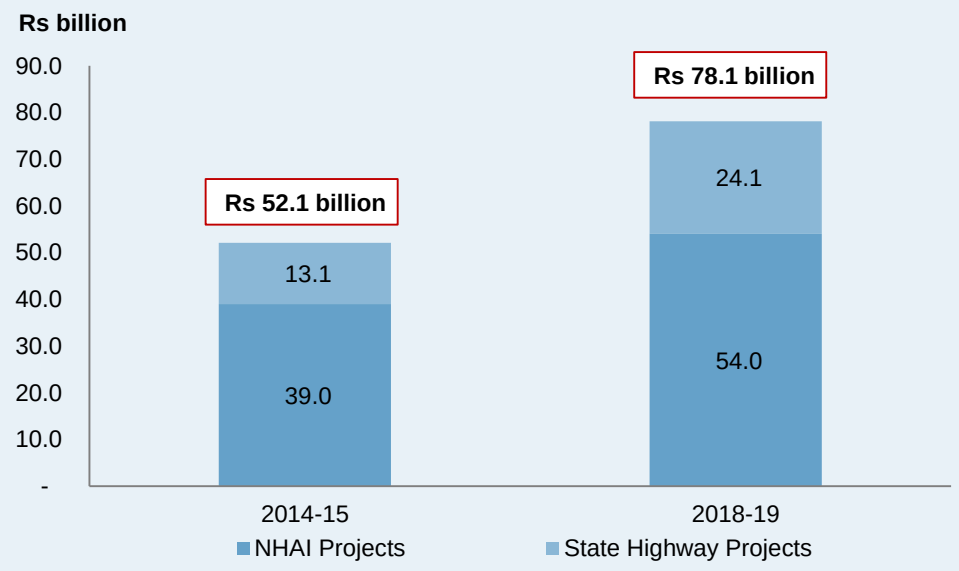



1. Length of toll collection projects for key states for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. We have assumed a 5% increase in estimated project cost per year.

**Source: CRISIL Research Estimates**

In terms of the market opportunity in value terms, we expect the Annual Potential Collection covered by the toll collection market from NHAI and state highways (combined) to increase around 1.5 times from Rs 52.1 billion in 2014-15 to Rs 78.1 billion by 2018-19.

**Toll Collection Market Opportunity from NHAI and key states**




1. Length of toll collection projects for key states for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. We have assumed a 5% increase in estimated project cost per year.

**Source: CRISIL Research Estimates**

# 6. COMPETITIVE ASSESSMENT

*Note: All data/information provided in this section is entirely based on NHAI, company websites, company filings and any other news releases of company / authority as on December 2015.*

## A) Key players in the OMT market

### MEP Infrastructure Developers Limited – MEPIDL (OMT and Toll)

#### Background

MEP Infrastructure Developers Limited (MEPIDL), incorporated in August 2002, is promoted by Mr D. P. Mhaiskar, Mr. J. D. Mhaiskar and Ideal Toll & Infrastructure Private Limited, who are amongst the original promoters of Ideal Road Builders Private Limited (IRB). MEPIDL solely focuses on undertaking contracts for toll collection and OMT projects.

#### OMT Projects

NHAI has awarded three OMT projects to MEPIDL amounting to about 527 km of National Highways. The estimated project cost for these projects was around Rs 3,403 million.

**OMT Projects awarded to MEPIDL by NHAI till December 2015**

| Name of OMT package | State | Length (Km) | Lane (Km) | Estimated project cost (Rs. Million) | Total concession period (years) |
|---|---|---|---|---|---|
| O&M of Madurai-kanyakumari section of NH-7 | Tamil Nadu | 243 | 973 | 1395 | 9 |
| O&M of Chennai Bypass | Tamil Nadu | 33 | 196 | 478 | 9 |
| O&M of Hyderabad-Bangalore section of NH-7 | AndhraPradesh | 251 | 1005 | 1530 | 9 |
| **Total** | | **527** | **2174** | **3403** | |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section
** - Of all the OMT projects awarded by NHAI, Chennai bypass is the only 6 laned stretch. All other NHAI OMT projects are for 4 laned stretches

**Source: Company website, Company reports, Industry, CRISIL Research**

Apart from NHAI projects, the company is also executing BOT/OMT projects from MSRDC. In 2010, the company was awarded a project entailing securitisation of 5 entry points for Mumbai toll plazas, and operation and maintenance (includes periodic and special maintenance) of 27 major flyovers on OMT basis (around 25.30 km). This is for a concession period of 16 years. For securing the grant for the project, the lump sum upfront payment made by the company to MSRDC was Rs 21 billion. The company collects toll at 5 Mumbai entry points, that is, Vashi, Mulund, Lal Bahadur Shastri Marg, Dahisar and Airoli toll plazas. Before the award of concession in November 2010, the company was the toll collector at the entry points since 2002. Further, in 2010-11, the company started construction of the four lane Sakhali bridge on Karha River in Baramati and Operation, maintenance and collection of toll for the Ring Road and the bridges in Baramati at 5 toll points for a concession period of 19 years.

**MSRDC's OMT Projects with MEPIDL as on December 31, 2015**

| Authority Name | Project Name | Project Description |
|---|---|---|
| MSRDC | 5 Mumbai entry points | - Securitization of 5 entry points for Mumbai toll plazas and maintenance of 27 major flyovers on OMT basis, for a concession period of 16 years<br>- Lumpsum upfront payment to MSRDC for this project was Rs. 21 billion |
| MSRDC | Rajiv Gandhi Sealink (RGSL) | - Operation & Maintenance of Rajiv Gandhi Sea Link (~ 5 km) and toll plaza & collection of toll for a contract period of 3 years (156 weeks)<br>-Estimated project cost of this project was Rs. 2.65 billion |

**Source: Company website, Company reports, Industry, CRISIL Research**

**MSRDC's BOT cum OMT Projects with MEPIDL as on December 31, 2015**

| Authority Name | Project Name | Project Description |
|---|---|---|
| MSRDC | 5 toll points at Baramati | - Operation & Maintenance of 5 toll points at Baramati for a concession period of 19 years |

**Source: Company website, Company reports, Industry, CRISIL Research**

## Toll Projects

The company has undertaken tolling projects in various parts of the country. It has undertaken / is currently executing the following key projects (long tenure & short to normal tenure projects) in the toll collection space.

**Long Tenure (concession period > 1 year) toll collection projects of MEPIDL as on December 31, 2015**

| Authority | Project | State | Concession Period |
|---|---|---|---|
| HRBC | Toll collection at Vidyasagar Setu | West Bengal | 5 years |
| RIDCOR | 4 toll plazas in the section Phalodi to Ramji Ki Gol | Rajasthan | 5 years |
| MSRDC | Tadali Toll Plaza | Maharashtra | 3 years |
| MSRDC | Toll collection at Nagzari-Kherda-Karanja Road | Maharashtra | 3 years |
| MSRDC | Collection of Toll at 4 toll stations for Solapur IRDP | Maharashtra | 3 years |
| MSRDC | Katai & Gove Toll Plazas | Maharashtra | 2 years |
| MSRDC | Toll collection at Rajiv Gandhi Sea Link in Mumbai | Maharashtra | 3 years |
| MSRDC | Toll collection at Kini and Tasawade on NH-4 | Maharashtra | 2 years |
| RSRDC | 2 Toll plazas in the Mahwa-Hindaun-Karauli Road | Rajasthan | 21 months |
| TNRDC | Rajiv Gandhi Salai (IT Expressway) | Tamil Nadu | 3 years |
| Delhi SDMC | Toll collection at border points from specified commercial vehicles entering Delhi | Delhi | 3 years |

RSRDC: Rajasthan State Road Development and Construction Corporation
RIDCOR: Road Infrastructure Development Company of Rajasthan
MSRDC: Maharashtra State Road Development Corporation
HRBC: Hooghly River Bridge Commissioners
SDMC: South Delhi Municipal Corporation
TNRDC: Tamil Nadu Road Development Corporation

**Source: Company website, Company reports, Industry, CRISIL Research**

**Short Tenure (concession period <= 1 year) ongoing/completed toll collection projects of MEPIDL as on December 31, 2015**

| Authority | Project | State |
|---|---|---|
| NHAI | Agnampudi Toll Plaza | Andhra Pradesh |
| NHAI | Bollapali Toll Plaza | Andhra Pradesh |
| NHAI | Chilkapalem Toll Plaza | Andhra Pradesh |
| NHAI | Nathavalsa Toll Plaza | Andhra Pradesh |
| NHAI | Pippalw ada Toll Plaza | Andhra Pradesh |
| NHAI | Sheelanagar & Main Port Rd | Andhra Pradesh |
| NHAI | Tangatur Toll Plaza | Andhra Pradesh |
| NHAI | Marur Toll Plaza | Andhra Pradesh |
| NHAI | Amakathadu Toll Plaza | Andhra Pradesh |
| NHAI | Chittampati Toll Plaza | Andhra Pradesh |
| NHAI | Parsoni Toll Plaza | Bihar |
| NHAI | Ahmedabad Toll Plaza | Gujarat |
| NHAI | Anand Toll Plaza | Gujarat |
| NHAI | Auda Ring Road Toll Plaza | Gujarat |
| NHAI | Chalthan Toll Plaza | Gujarat |
| NHAI | Khemana Toll Plaza | Gujarat |
| NHAI | Nadiad Toll Plaza | Gujarat |
| NHAI | Vadodara Toll Plaza | Gujarat |
| NHAI | Bagepalli Toll Plaza | Karnataka |
| NHAI | Bankapur Toll Plaza | Karnataka |
| NHAI | Baretha Toll Plaza | Madhya Pradesh |
| NHAI | Choundha Toll Plaza | Madhya Pradesh |
| NHAI | Chirle Toll Plaza | Maharashtra |
| NHAI | Dastan Toll Plaza | Maharashtra |
| NHAI | Karanjade Toll Plaza | Maharashtra |
| NHAI | Kelapur Toll Plaza | Maharashtra |
| NHAI | Laxmannatha Toll Plaza | Odisha |
| NHAI | Manguli Toll Plaza | Odisha |
| NHAI | Panikoili Toll Plaza | Odisha |
| NHAI | Sergarh Toll Plaza | Odisha |
| NHAI | Srirampur Toll Plaza | Odisha |
| NHAI | Panikoili Toll Plaza | Odisha |
| NHAI | Beliyad Toll Plaza | Jharkhand |
| NHAI | Athur Toll Plaza | Tamil Nadu |
| NHAI | Boothakudi Toll Plaza | Tamil Nadu |

| Authority | Project | State |
|---|---|---|
| NHAI | Chennasamudram Toll Plaza | Tamil Nadu |
| NHAI | Chittampati Toll Plaza | Tamil Nadu |
| NHAI | Paranur Toll Plaza | Tamil Nadu |
| NHAI | Sriperumbudur Toll Plaza | Tamil Nadu |
| NHAI | Vanagaram Toll Plaza | Tamil Nadu |
| NHAI | Pudukottai Toll Plaza | Tamil Nadu |
| NHAI | Dasna Toll Plaza | Uttar Pradesh |
| NHAI | Gaurau Toll Plaza | Uttar Pradesh |
| NHAI | Joya Toll Plaza | Uttar Pradesh |
| NHAI | Mahuvan Toll Plaza | Uttar Pradesh |
| NHAI | Purw ameer Toll Plaza | Uttar Pradesh |
| NHAI | Sikandra Toll Plaza | Uttar Pradesh |
| NHAI | Brijghat Toll Plaza | Uttar Pradesh |
| NHAI | Chamari/Usaka Toll Plaza | Uttar Pradesh |
| NHAI | Tendua Toll Plaza | Uttar Pradesh |
| NHAI | Tundla Toll Plaza | Uttar Pradesh |
| NHAI | Dankuni Toll Plaza | West Bengal |
| NHAI | Palsit Toll Plaza | West Bengal |
| NHAI | Surjapur Toll Plaza | West Bengal |
| NHAI | Paduna Toll Plaza | Rajasthan |
| MSRDC | Kon-Katai Toll Plazas | Maharashtra |
| MSRDC | Kini Tasaw ade Toll Plazas | Maharashtra |
| MSRDC | Collection of toll at 5 toll stations Pune Hadapsar Sasw ad Road | Maharashtra |
| MSRDC | Dhoregaon Toll Plaza | Maharashtra |
| MSRDC | Improvement to Vadgaon Chakan Shikrapur Road (Under BOT scheme w ith Toll Rights) | Maharashtra |
| MSRDC | Waturphata Toll Stations | Maharashtra |
| RIDCOR | 3 toll plazas in the section Alw ar-Bhiw adi | Rajasthan |
| RIDCOR | 4 toll plazas in the section Lalsot-Kota | Rajasthan |
| RIDCOR | Phalodji - Ramji | Rajasthan |
| RSDRC | Mahua - Hindaun – Karauli | Rajasthan |
| RIDCOR | 2 toll plazas in the section Alw ar-Sikandra | Rajasthan |

NHAI :National Highways Authority of India
RSRDC: Rajasthan State Road Development and Construction Corporation
RIDCOR: Road Infrastructure Development Company of Rajasthan
MSRDC: Maharashtra State Road Development Corporation
**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 55-60% of the projects. Of the financial bids made by the company, 40-45% are H1 (highest bidder) bids.

### Regional presence for OMT and Toll

While the company is headquartered in Maharashtra, it has presence across various Indian states. The company has bid/ executed/ is executing projects in the states of

- Andhra Pradesh, Telangana, Karnataka, Tamil Nadu (South)
- Gujarat, Maharashtra, Rajasthan (West)
- Madhya Pradesh, Odisha, Bihar (Central)
- West Bengal, Jharkhand (East)
- Uttar Pradesh, Punjab, Haryana, Jammu and Kashmir (North)

### Financial performance

Total income for the company rose to Rs 9,072 million in 2014-15 from Rs 4,867 million in 2013-14, registering a growth of about 87%. Operating margins remained stable at 4.3% in 2014-15. Net margin, however, improved to 1.8% in 2014-15 from 0.5% in 2013-14.

**Key Financial Indicators: Standalone**

| Parameter | Unit | 2014-15 | 2013-14 | 2012-13 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 9072 | 4867 | 9118 |
| Operating Profit | Rs. Mn | 394 | 209 | 537 |
| Operating Margin | % | 4.3 | 4.3 | 5.9 |
| Net profit | Rs. Mn | 162 | 24 | 41 |
| Net margin | % | 1.8 | 0.5 | 0.4 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Prakash Asphalting & Toll Highways (India) Limited

### *Background*

Prakash Asphaltings & Toll Highways (India) Limited (PATH) was constituted by Indore based Agarwal family in 1996. The company is primarily present in the construction of roads and bridges space. The key services of the company include design, development, construction and OMT of road projects.

### *OMT Projects*

Available information on the company indicates that it operates primarily in the OMT space (within the tolling and OMT domain) and till date has been awarded five OMT projects by NHAI, amounting to about 600 km of National Highway. The estimated project cost for these projects was around Rs 4,150 million.

**OMT Projects awarded to PATH till December 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Swaroop-Pindwada Section of NH-14 and Pindwada-Udaipur Section of NH-76 under OMT basis | Rajasthan | 120 | 480 | 160 | 6 years | ~3 years |
| O&M of Allahabad Bypass of NH-2 on OMT basis | Uttar Pradesh | 85 | 339 | 580 | 9 years | ~8 years |
| O&M of Baran-Shivpuri section of NH-76 and Shivpuri-Jhansi section of NH-25 under OMT basis | Rajasthan, Madhya Pradesh and Uttar Pradesh | 196 | 784 | 190 | 6 years | ~3 years |
| O&M of Borkhedi-Jam-Wadenar of NH7 on OMT basis | Maharashtra | 57 | 228 | 216 | 9 years | ~9 years |
| O&M of Agra-Gwalior section on OMT basis | UP, Rajasthan and Madhya Pradesh | 137 | 548 | 3,000 | 9 years | ~9 years |
| **Total** | | **595** | **2,379** | **4,146** | | |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company filings / report on the company, company website / brochure, Industry, CRISIL Research**

### *Regional presence for OMT*

The company is headquartered in Madhya Pradesh and its OMT operations are primarily in the states of Rajasthan, Uttar Pradesh (North) and Madhya Pradesh (Central).

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

Total income for the company increased to Rs 2,228 million in 2013-14 from Rs 1,946 million in 2012-13. However, Operating margins declined to 15.2% in 2013-14 from 17.5% in 2012-13. But, net profits for the company increased from Rs 126 million in 2012-13 to Rs 134 million in 2013-14.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 2228 | 1946 | 2101 |
| Operating Profit | Rs. Mn | 338 | 340 | 261 |
| Operating Margin | % | 15.2 | 17.5 | 12.4 |
| Net profit | Rs. Mn | 134 | 126 | 87 |
| Net margin | % | 6.0 | 6.5 | 4.2 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Dinesh Chandra Agarwal Infracon Pvt Ltd (DRAIPL)

### *Background of DRAIPL*

Dineshchandra R Agarwal was incorporated as a private limited company under the title Dinesh Chandra R. Agrawal Infracon Pvt. Ltd. (DRAIPL) in 2003. The company's primary focus is on infrastructure construction segments including roads, water supply, buildings, railways, dams, canals, bridges and flyovers.

### *OMT Projects*

Available information on the company indicates that the company operates primarily in the OMT space (within the tolling and OMT domain) and has been awarded 2 OMT projects by NHAI of around 550 km of National Highways. The estimated project cost for these projects was around Rs 2,590 million.

**OMT Projects awarded to DRAIPL till December 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Lalitpur-Sagar-Lakhnadone section of NH-26 on OMT basis | Uttar Pradesh and Madhya Pradesh | 325 | 1,300 | 1390 | 9 years | ~8 years |
| O&M of Four Lane of Section of NH-1A starting from km 4.230 (Jalandhar) to km 117.750/ 4.000, km 4.000 to km 97.200/ 0.000 and km 0.000 to km 15.000 i.e. end of Jammu Bypass on OMT Basis | Punjab, Himachal Pradesh and Jammu & Kashmir | 222 | 887 | 1200 | 9years | ~8 years |

* -Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company website, Company reports, Industry, CRISIL Research**

### *Regional presence for OMT*

DRAIPL is headquartered in the state of Gujarat. The company is currently undertaking O&M of National Highways (under two OMT projects) in the states of Uttar Pradesh, Punjab, Himachal Pradesh, Jammu and Kashmir and Madhya Pradesh.

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income for the company rose from Rs 3,663 million in 2011-12 from Rs 5,705 million in 2012-13. Also, net profits for the company increased from Rs 77 million in 2011-12 to Rs 158 million in 2012-13.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2012-13 | 2011-12 |
|---|---|---|---|
| Revenues | Rs. Mn | 5705 | 3663 |
| Operating Profit | Rs. Mn | 230 | 148 |
| Operating Margin | % | 4.0 | 4.0 |
| Net profit | Rs. Mn | 158 | 77 |
| Net margin | % | 2.8 | 2.1 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## BVSR Constructions (OMT & Toll)

### *Background*

B.V. Subba Reddy Constructions was formed as a partnership firm in the year 2001, primarily for undertaking road construction projects. Later it was converted to BVSR Constructions Private Limited. The company has completed construction work for a few BOT-Annuity projects. Other than BOT projects, BVSR Constructions also undertakes tolling and OMT projects.

### *OMT Projects*

BVSR Constructions has been awarded two OMT projects by NHAI of around 55 km of National. The estimated project cost for these projects was around Rs 430 million.

**OMT Projects awarded to BVSR Construction till December 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Edapally – Vytilla - Aroor section of NH- 66 (formerly NH-47) on OMT basis | Kerela | 17 | 67 | 180 | 9 years | ~8 years |
| Operation and maintenance of Surathkal to Nantoor section of NH-17 (new NH-66), B C Road to Padil section of NH-48 and Nantoor to Padil Bypass of NH-13 ( new NH-169) on OMT Basis | Karnataka | 37 | 150 | 250 | 9years | ~8 years |
| **Total** | | **54** | **217** | **430** | | |

**Source: Company website, Company reports, Industry, CRISIL Research**

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

### *Regional presence for OMT*

BVSR Constructions is headquartered in Hyderabad, Andhra Pradesh and has its OMT operations primarily in the southern part of the country; both OMT projects that the company has been awarded are in the southern states of Karnataka and Kerala.

### *Tolling Projects*

** Note: BVSR has executed a few toll collection projects for NHAI in the past; however, information for the same is not available in the public domain.*

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income for the company declined to Rs 4,137 million in 2013-14 from Rs 4,520 million in 2012-13. Operating margins dropped to 4.0% in 2013-14 from 5.6% in 2012-13. Also, net profits for the company declined from Rs 172 million in 2012-13 to Rs 110 million in 2013-14.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 4137 | 4520 | 3139 |
| Operating Profit | Rs. Mn | 167 | 254 | 248 |
| Operating Margin | % | 4.0 | 5.6 | 7.9 |
| Net profit | Rs. Mn | 110 | 172 | 141 |
| Net margin | % | 2.7 | 3.8 | 4.5 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Patel Infrastructure Private Limited

### *Background*

Patel Infrastructure Private Limited (PIPL) was founded in 1972 by Mr. Vitthalbhai Patel. PIPL is involved in the construction of roads, dams, bridges, pipelines, public utility buildings and also offers services on OMT of highways.

### *OMT Projects*

Available information on the company indicates that it operates primarily in the OMT space (within the OMT and tolling domain). PIPL has been awarded one OMT project by NHAI of around 260 km of National Highways. The estimated cost for this project was around Rs 1,840 million.

**OMT Projects awarded to PIPL till April 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Palanpur-Radhanpur Section of NH-14 and Radhanpur-Samakhiyali Section of NH-15 under OMT basis under OMT basis | Gujarat | 260 | 1,040 | 1,840 | 9 years | ~5 years |

**Source: Company website, Company reports, Industry, CRISIL Research**

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

### *Regional presence for OMT*

The company, headquartered in Rajkot, Gujarat, has its OMT operations primarily in the same state (Gujarat).

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 6,750 million in 2013-14 from Rs 4,680 million in 2012-13, registering a growth of about 44.2%. However, operating margins for the company declined marginally to 7.3% in 2013-14 from 7.6% in 2012-13. Net profits for the company increased from Rs 235 million in 2012-13 to Rs 321 million in 2013-14 registering a growth of 36.8%.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 6751 | 4680 | 2530 |
| Operating Profit | Rs. Mn | 491 | 357 | 181 |
| Operating Margin | % | 7.3 | 7.6 | 7.9 |
| Net profit | Rs. Mn | 321 | 235 | 118 |
| Net margin | % | 4.8 | 5.0 | 4.7 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## PNC Infratech Limited

PNC Infratech Limited (PIL) was incorporated in 1999 and is engaged in the construction of roads, airport runways and power projects. The company is promoted by Mr Pradeep Kumar Jain, Mr Naveen Kumar Jain, Mr Chakresh Kumar Jain and Mr Yogesh Kumar Jain.

PIL is engaged in diversified construction activities such as construction of highways, bridges, flyovers, airport runways and allied activities. It has also forayed into the power transmission sector, undertaking construction for erection of transmission towers. Apart from construction activities, the company also undertakes OMT of roads.

### *OMT Projects*

Available information on the company indicates that the company operates primarily in the OMT space (within the tolling and OMT domain) and has been awarded one OMT project by NHAI of around 217 km of National Highway. The estimated cost for this project was around Rs 920 million.

**OMT Projects awarded to PNC Infratech till December 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Kanpur-Lucknow section of NH-25 and Lucknow Bypass stretch of NH-56A & 56B and Lucknow-Ayodhya Section stretch of NH-28 on OMT Basis | Uttar Pradesh | 217 | 869 | 920 | 9 years | ~8 years |

**Source: Company website, Company reports, Industry, CRISIL Research**

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

### *Regional presence for OMT*

The company, headquartered in Agra, Uttar Pradesh, has its OMT operations primarily in the same state (Uttar Pradesh).

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 15,610 million in 2014-15 from Rs 11,521 million in 2013-14. Operating margins for the company improved to 13.9% in 2014-15 from 12.3% in 2013-14. Net profits for the company also increased from Rs 701 million in 2013-14 to Rs 1,004 million in 2014-15.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT**

| Parameter | Unit | 2014-15 | 2013-14 | 2012-13 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 15610 | 11521 | 13036 |
| Operating Profit | Rs. Mn | 2166 | 1419 | 1607 |
| Operating Margin | % | 13.9 | 12.3 | 12.3 |
| Net profit | Rs. Mn | 1004 | 701 | 791 |
| Net margin | % | 6.4 | 6.1 | 6.1 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

### *Key developments*

PNC Infratech Limited sold its 8.51% stake in Jaora - Nayagaon Toll Road Company Private Limited (“SPV”) in the to Viva Highways Limited for Rs. 340 million in December 2015.

## MBL Infrastructure

### *Background*

The company started as a partnership firm under the name of “Maheshwari Brothers Limited” in 1995, which got re-incorporated in year 2006 as MBL Infrastructures Limited. MBL is engaged in the construction and maintenance of roads, construction of industrial infrastructure projects and OMT of highways.

## *OMT Projects*

Available information on the company indicates that it operates primarily in the OMT space (within the tolling and OMT domain) and has been awarded one OMT project by NHAI of around 52 km of National Highway. The estimated cost for this project was around Rs 220 million.

**OMT Projects awarded to MBL till April 2015**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Kolaghat- Haldiya section of NH-41 on OMT basis | West Bengal | 52 | 209 | 220 | 9 years | ~8 years |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company website, Company reports, Industry, CRISIL Research**

## *Regional presence for OMT*

The company, headquartered in Kolkata, West Bengal, has its OMT operations primarily in the same state (West Bengal).

## *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income of MBL Infrastructure increased from Rs 17,537 million in 2013-14 to Rs 19,485 million in 2014-15. Operating margins also improved to 11.5% in 2014-15 against 10.0% in 2013-14. Moreover, net profits for the company increased from Rs 751 million in 2013-14 to Rs 802 million in 2014-15.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2014-15 | 2013-14 | 2012-13 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 19485 | 17537 | 13429 |
| Operating Profit | Rs. Mn | 2247 | 1762 | 1314 |
| Operating Margin | % | 11.5 | 10.0 | 9.8 |
| Net profit | Rs. Mn | 802 | 751 | 553 |
| Net margin | % | 4.1 | 4.3 | 4.1 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## B) Key players in Tolling market

### Konark Infrastructure Limited

#### *Background*

Konark Infrastructure Limited (KIL) was established in 1997 by Mr Mahesh Khairari, Mr Nandlal Jethani, Mr Suresh Jagiasi and Mr Mukesh Kimtani. The company primarily collects toll and octroi on behalf of various government and municipal bodies and executes EPC projects, primarily for government agencies. The company is headquartered in Maharashtra.

#### *Toll projects*

Some of the key tolling projects that have been undertaken by the company are:

**Toll projects**

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Tanuku,Vempadu and KAlaparru Toll Plaza | NHAI | Andhra Pradesh | 1,460 |
| Surjapur and Dankuni Toll Plaza | NHAI | West Bengal | 860 |
| Naw abganj Toll Plaza | NHAI | Uttar Pradesh | 390 |
| Ghangari Toll Plaza | NHAI | Odisha | 340 |
| Panikoili Toll Plaza | NHAI | Odisha | 330 |
| Baretha and Choundha Toll Plaza | NHAI | Madhya Pradesh | 310 |
| Nanguneri Toll Plaza | NHAI | Tamil Nadu | 230 |
| Hattargi Toll Plaza | NHAI | Karnataka | 100 |
| Paschim Madati Toll Plaza | NHAI | West Bengal | 260.2 |
| Pundag Toll Plaza | NHAI | Jharkhand | 365.3 |
| Paschim Madati Toll Plaza | NHAI | West Bengal | 220.1 |
| Kathpur Toll Plaza | NHAI | Gujarat | 314.7 |

Note: The aforementioned project list includes projects executed by the company in the past and under execution projects

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 15-20% of the projects. Of the financial bids made by the company, 40-45% are H1 bids.

#### *Key clientele*

NHAI is a key client for Konark Infrastructure Limited. KIL also undertakes projects for government/municipal agencies such as MSRDC and KDMC.

### *Regional presence for Toll*

The company has a pan India presence and has submitted bids for tolling projects across India. It has bid for NHAI toll projects in the states of

- Andhra Pradesh, Karnataka, Tamil Nadu (South)
- Gujarat (West)
- West Bengal, Jharkhand (East)
- Odisha, Bihar, Madhya Pradesh (Central)
- Rajasthan, Uttar Pradesh (North)

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income improved to Rs 9,361 million in 2013-14 from Rs 7,412 million in 2012-13. However, Operating margins for the company declined to -0.7% in 2013-14 from 6.9% in 2012-13. Net profits for the company also declined from Rs 261 million in 2012-13 to Rs 8 million in 2013-14.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 9361 | 7412 | 12316 |
| Operating Profit | Rs. Mn | -66 | 515 | 524 |
| Operating Margin | % | -0.7 | 6.9 | 4.3 |
| Net profit | Rs. Mn | 8 | 261 | 219 |
| Net margin | % | 0.1 | 3.5 | 1.8 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Skylark Highway Solution Limited

### *Background*

Skylark Highway Solutions Limited is managing multiple toll plazas and highway stretches. Company's array of services includes toll operations, which consist of toll collection, traffic management, cash and transit, banking and liaison and PR. The company is headquartered in Gurgaon, Haryana.

### *Toll projects*

Some of the key tolling projects undertaken by the company are:

**Toll projects**

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Allonia toll plaza | NHAI | Uttar Pradesh | 200 |
| Vaghasia toll plaza | NHAI | Gujarat | 120-130 |
| Anantram toll plaza | NHAI | Uttar Pradesh | 250 |
| Sonapetya toll plaza | NHAI | West Bengal | 300 |
| Srirampur Toll Plaza | NHAI | Orissa | 220 |
| Balgudar Toll Plaza | NHAI | Bihar | 37 |
| Ait Toll Plaza | NHAI | Uttar Pradesh | _ |
| Maithi Toll Plaza | NHAI | Bihar | 228 |
| Vantada Toll Plaza | NHAI | Gujarat | 10 |

Note: The aforementioned project list includes projects executed by the company in the past and under execution projects)

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 20-25% of the projects. Of the financial bids made by the company, 20-25% are H1 bids.

### *Key clientele*

NHAI is the key client for Skylark Highways Limited.

### *Regional presence for Toll*

While the company is headquartered in Uttar Pradesh, it has primarily bid for / executed / is executing projects in the states of Uttar Pradesh, Bihar, Orissa, Gujarat, Maharashtra, Jharkhand, Rajasthan, West Bengal and Madhya Pradesh.

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 90 million in 2013-14 from Rs 58 million in 2012-13. Operating margins for the company improved to 7.3% in 2013-14 from 3.8% in 2012-13. The company turned net profitable in 2013-14 posting a net profit of Rs 4 million as against a loss of Rs 186,000 in 2012-13.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 90 | 58 | 80 |
| Operating Profit | Rs. Mn | 7 | 2 | 3 |
| Operating Margin | % | 7.3 | 3.8 | 3.7 |
| Net profit | Rs. Mn | 4 | -0.186 | 0.017 |
| Net margin | % | 4.6 | NA | 0.0 |

Note: The aforementioned project list includes projects executed by the company in the past and under execution projects)

**Source: Company filings / report, company website / brochure, CRISIL Research**

### *Key developments*

As on FY16, Skylark is reportedly exploring dilution of some part of its equity to raise capital for future expansion.

## Eagle Infra India Limited (OMT & Toll)

### *Background*

Eagle Infra India Limited (EIIL) was set up in 1981 by the Mumbai (Maharashtra)-based Rupchandani family as a partnership firm named Eagle Construction; it was reconstituted as a limited company with its current name in 2011. The company undertakes civil construction activities such as construction of sewer lines, water treatment plants, public utility buildings, and asphalt/concrete roads in and around Maharashtra. The company is headquartered in Maharashtra.

## *Toll projects*

Some of the key tolling projects that have been undertaken by the company are:

**Toll projects**

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Gamjal Toll Plaza, Andhra Pradesh | NHAI | Andhra Pradesh | 110 |
| Kapplur Toll Plaza (KR) | NHAI | Karnataka | 370 |
| Manoharabad Toll Plaza (AP) | NHAI | Andhra Pradesh | 320 |
| Rolmamda Toll Plaza (AP) | NHAI | Andhra Pradesh | 170 |
| Etturvattum Toll Plaza (TN) | NHAI | Tamil Nadu | 210 |
| Sirrampur Toll Plaza (OR) | NHAI | Odisha | NA |
| Joya Toll Plaza (UP) | NHAI | Uttar Pradesh | 330 |
| Nathavalasa Toll Plaza (AP) | NHAI | Andhra Pradesh | NA |
| Hebbalu Toll Plaza | NHAI | Karnataka | 347 |
| Brijghat Toll Plaza | NHAI | Uttar Pradesh | 301 |
| Chalageri Toll Plaza | NHAI | Karnataka | 421 |
| Badauri Toll Plaza | NHAI | Uttar Pradesh | 522 |
| Bann Toll Plaza | NHAI | J&K | NA |
| Vagashia Toll Plaza | NHAI | Gujarat | 250 |
| Gamjal Toll Plaza | NHAI | Andhra Pradesh | 127 |

NA: Not Available

Note: The aforementioned project list has been executed by the company in the past (not necessarily under execution projects)

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 35-40% of the projects. Of the financial bids made by the company, 30-35% are H1 bids.

## *OMT projects*

**OMT projects**

| Name of the OMT Package | State | Length (Km) | Lane km* | Estimated Project Cost (Rs Million) | Total Concession Period | Balance Concession Period |
|---|---|---|---|---|---|---|
| O&M of Trichy Bypass to Tovaramkurchi-Madurai section of NH-45B on OMT Basis | Tamil Nadu | 125 | 499 | 650 | 9 years | ~9years |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company website, Company reports, Industry, CRISIL Research**

### *Key clientele*

NHAI is the key client for Eagle Infra India Limited in this line of business.

### *Regional presence for Toll and OMT*

The company has bid / executed/ is executing projects primarily in Andhra Pradesh, Tamil Nadu, Karnataka, Rajasthan, Orissa, Gujarat, Jammu and Kashmir and Uttar Pradesh.

## Sangam India Limited

### *Background*

The company was constituted in 1984, and is a flagship company of the Sangam Group. The group is present across various businesses namely textiles, steel, infrastructure, power and energy. The company is headquartered in Bhilwara and has its corporate office in Mumbai. Sangam group has forayed into infrastructure segment through its subsidiary companies:

- Keti Sangam Infrastructure India Limited (KSIIL)
- Kalyan Sangam Infratech Ltd. (KSIL)
- PKSS Infrastructure Pvt Ltd

### *Toll projects*

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Chirle/Karanjade Toll Plaza (MH) | NHAI | Maharashtra | 615 |
| Jojro Ka Kheda Toll Plaza (RJ) | NHAI | Rajasthan | 733 |
| Kanw aliyas Toll Plaza (RJ) | NHAI | Rajasthan | 1045 |
| Muzaina Hetim Toll Plaza (UP) | NHAI | Uttar Pradesh | 210 |
| Khandi Obri Toll Plaza (RJ) | NHAI | Rajasthan | 278 |

*: Please note that project details executed by the companies are not available in the public domain.

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 0-5% of the projects. Of the financial bids made by the company, 40-45% are H1 bids.

### *Clientele*

NHAI is the key client for the company in the toll collection business. It also has executed contracts for municipal bodies.

### *Regional presence for Toll*

The company has bid/ executed/ is executing projects in the states of Rajasthan, Maharashtra, Gujarat and Uttar Pradesh.

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 14,687 million in 2014-15 from Rs 14,326 million in 2013-14. Operating margin for the company increased to 14.2% in 2014-15 from 12.9% in 2013-14. Net profit for the company increased from Rs 405 million in 2013-14 to Rs 516 million in 2014-15.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2014-15 | 2013-14 | 2012-13 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 14687 | 14326 | 14788 |
| Operating Profit | Rs. Mn | 2088 | 1849 | 2079 |
| Operating Margin | % | 14.2 | 12.9 | 14.1 |
| Net profit | Rs. Mn | 516 | 405 | 513 |
| Net margin | % | 3.5 | 2.8 | 3.5 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Sahakar Global Limited

### *Background*

Sahakar Global Limited was incorporated in 1996 as Sahakar Agencies Pvt. Ltd and was promoted by Mr Kishore Agarwal and his family members. Subsequently, the name of the company was changed to Sahakar Global Pvt. Ltd. in June 2009 and later on it was converted into a public limited company in April 2011. SGL is engaged in the business of octroi and toll collection at specific locations on a contractual basis. Due to limited opportunity in the octroi collection business, SGL has shifted its focus from octroi collection to toll collection model. SGL has executed a number of toll collection contracts for NHAI and state road development authorities. The company is headquartered in Maharashtra.

### *Toll projects*

The company was awarded its first toll project by MSRDC Limited, the IRDP Nagpur toll project in Maharashtra. Some of the key projects undertaken by the company are:

### Toll projects

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Vantada toll plaza | NHAI | Gujarat | 120 |
| Vaghasia toll plaza | NHAI | Gujarat | 120-130 |
| Chilakapalem toll plaza | NHAI | Andhra Pradesh | 239 |
| Narayanpura Toll Plaza | NHAI | Rajasthan | 50 |
| Paschim Madati Toll Plaza | NHAI | West Bengal | 22 |
| Mehra Toll Plaza (Gwalior Bypass) | NHAI | Madhya Pradesh | 13 |
| Barsoni Toll Plaza | NHAI | Bihar | NA |
| Muzaina Hetim Toll Plaza | NHAI | Uttar Pradesh | 24 |
| Harsa Mansar Toll Plaza | NHAI | Punjab | NA |
| Barsoni Toll Plaza | NHAI | Bihar | 18 |
| Thandikhui Toll Plaza | NHAI | J&K | NA |
| Chollang Toll Plaza | NHAI | Punjab | NA |
| Kanwaliyas Toll Plaza | NHAI | Rajasthan | 106 |
| Ghangari Toll Plaza | NHAI | Jharkhand | 63 |
| Toll collection at 5 toll stations at Nagpur IRDP | MSRDC | Maharashtra | NA |

Note: The aforementioned project list has been executed by the company in the past (not necessarily under execution projects)

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 25-30% of the projects. Of the financial bids made by the company, 40-45% are H1 bids.

### *Key clientele*

The company has in the past executed projects for NHAI and State Road Development Corporations (MSRDC and RIDCOR).

### *Regional presence for toll*

The company has bid / is executing / executed projects in Odisha, Bihar, UP, Rajasthan, MP, Tamil Nadu, Karnataka, Punjab, Jharkhand, West Bengal and Gujarat.

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 300 million in 2013-14 from Rs 207 million in 2012-13. Operating margins for the company increased to 41.2% in 2013-14 from 27.1% in 2012-13. Net profits for the company increased from Rs 37 million in 2012-13 to Rs 46 million in 2013-14.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 300 | 207 | 349 |
| Operating Profit | Rs. Mn | 123 | 56 | 65 |
| Operating Margin | % | 41.2 | 27.1 | 18.5 |
| Net profit | Rs. Mn | 46 | 37 | 39 |
| Net margin | % | 15.4 | 17.7 | 11.1 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## Shiva Corporation (India) Limited

### *Background*

Shiva Corporation (India) Ltd (SCIL) was promoted by Mr Meghraj Singh Shekhawat and Mr Ashu Singh Bhati in 1998 as a private limited company under the name of Shiva Wines and Tolls Pvt. Ltd. (SWTPL). Previously, the company was engaged in the toll collection and wine contracts in Rajasthan (awarded on wholesale and district-wise basis). Subsequently the company diversified its presence and is currently engaged in toll collection, royalty collection and commercial/sales tax collection (related to mining activities) on contractual basis in the three states of Rajasthan, Gujarat and Madhya Pradesh. The company is headquartered in Rajasthan.

### *Toll projects*

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Ghangeri Toll Plaza (JH) | NHAI | Jharkhand | 435.6 |
| Jojro Ka Kheda Toll Plaza (RJ) | NHAI | Rajasthan | 732.5 |
| Narmada Bridge Toll Plaza (GJ) | NHAI | Gujarat | 454.6 |
| Semra Atikabad Toll Plaza (UP) | NHAI | Uttar Pradesh | 384.9 |

*: Please note that project details executed by the companies are not available in the public domain.

**Source: Company website, Company reports, Industry, CRISIL Research**

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 5-10% of the projects. Of the financial bids made by the company, 20-25% are H1 bids.

### *Regional presence for Toll*

The company has bid primarily for projects in Uttar Pradesh and Bihar. It has also bid for projects in the states of Gujarat and Haryana.

### *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income for the company declined to Rs 2,354 million in 2013-14 from Rs 3,332 million in 2012-13. Operating margins declined significantly to 0.1% in 2013-14 from 10.1% in 2012-13. The company posted a net loss of Rs 15 million in 2013-14 as against a net profit of Rs 189 million in 2012-13.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Revenues | Rs. Mn | 2354 | 3332 | 2599 |
| Operating Profit | Rs. Mn | 3 | 337 | 255 |
| Operating Margin | % | 0.1 | 10.1 | 9.8 |
| Net profit | Rs. Mn | -15 | 189 | 104 |
| Net margin | % | NA | 5.7 | 4.0 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## SMS Infrastructure Limited (Toll collection and OMT)

### *Background*

SMS Infrastructure Limited was incorporated in 1963 by Mr. Shaktikumar M Sancheti. The company added BOT business and toll operations to its portfolio in 1998 and 2002, respectively. The key business areas within road sector are toll collection, O & M and construction of roads. The company is headquartered in Nagpur, Maharashtra.

### *Toll projects*

The following are the key projects, which were undertaken by the company in the toll collection and OMT space:

**Toll projects**

| Name of the project | Client | State | APC (Rs million) |
|---|---|---|---|
| Toll collection at Vidyasagar setu, Kolkata | NHAI | West Bengal | 300 |
| Chittampati toll plaza | NHAI | Tamil Nadu | 302 |
| Surajbari Toll Plaza | NHAI | Gujarat | 433 |

**Source: Company website, Company reports, Industry, CRISIL Research**

Note: The aforementioned project list has been executed by the company in the past (not necessarily under execution projects)

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, the company has submitted financial bids for 0-5% of the projects. Of the financial bids made by the company, 30-35% are H1 bids.

## *OMT projects*

**OMT projects**

| Name of OMT package | State | Length (Km) | Lane (Km) | Estimated project cost(Rs. Million) | total concession period |
|---|---|---|---|---|---|
| O&M of Ayodhya-Gorakhpur section of NH-28 | Uttar Pradesh | 118 | 472 | 710 | 9 |
| O&M of Muzaffarpur-Purnia section of NH-57 | Bihar | 277 | 1,108 | 2,307 | NA |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company website, Company reports, Industry, CRISIL Research**

## *Key clientele*

The company has in the past executed projects for National Highways Authority of India (NHAI), Hooghly River Bridge Commissioners, PWD Rajasthan, PWD Jaipur and Raigad and HSRDC.

## *Regional presence for Toll and OMT*

The company has bid / is executing / executed projects in the states of Uttar Pradesh, West Bengal, Tamil Nadu and Gujarat.

## *Financial performance (covering all business segments of the company, not limited to Toll and OMT)*

The total income increased to Rs 11,541 million in 2013-14 from Rs 11,020 million in 2012-13. Operating margin for the company increased to 16.3% in 2013-14 from 15.4% in 2012-13. Net profits for the company decreased to Rs 400 million in 2013-14 from Rs 442 million in 2012-13.

**Key Financial Indicators: Consolidated (covering all business segments of the company, not limited to Toll and OMT)**

| Parameter | Unit | 2013-14 | 2012-13 | 2011-12 |
|---|---|---|---|---|
| Total Income | Rs. Mn | 11541 | 11020 | 11608 |
| Operating Profit | Rs. Mn | 1880 | 1694 | 768 |
| Operating Margin | % | 16.3 | 15.4 | 6.6 |
| Net profit | Rs. Mn | 400 | 442 | 569 |
| Net margin | % | 3.5 | 4.0 | 4.9 |

**Source: Company filings / report, company website / brochure, CRISIL Research**

## C) Comparative assessment summary

### Toll collection

| Parameters | Eagle Infra | Konark Infrastructure | MEPIDL | Sahakar Global | Sangam India Limited | Shiva corporation | Skylark | SMS Infrastructure |
|---|---|---|---|---|---|---|---|---|
| **Operational parameters** | | | | | | | | |
| Key Business Segments | - Infra (Roads- OMT and Toll collection, Urban Infra- laying of pipelines, roofing and truss w orks) | - Infra (Roads- construction & Toll collection) - Others (Octroi Collection) | - Infra (Roads- toll collection and OMT segment) | - Infra (Roads- toll collection) - Others (octroi collection) | - Infra (Roads- toll collection) - Textiles - Steel - Pow er | - Infra (Roads-toll collection) - Others ( Royalty & commercial / sales tax collection, w ines business etc) | - Infra (Roads-O&M and Toll Collection) - Security & Urban Infra Management Solutions | - Infra (Roads- OMT & tolling. Others- construction of dams, railw ays, electrical, multilevel parking etc.) |
| Corporate office/HQ | Maharashtra | Maharashtra | Maharashtra | Maharashtra | HQ: Bhilw ara Corp Office: Mumbai | Rajasthan | Gurgaon, Haryana | Maharashtra |
| Regional presence (for Toll) | Bid/executed/ executing projects in Andhra Pradesh Uttar Pradesh Gujrat J&K Karnataka Orissa | Diversified pan India presence (bid / executed projects across states for NHAI) | Diversified pan India presence (bid / executed projects across states for NHAI) | Bid/executed/ executing projects in Odisha, Bihar Gujarat Rajasthan Madhya Pradesh Jharkhand Punjab Andhra Pradesh | Bid/executed/ executing projects in Rajasthan Uttar Pradesh Maharashtra | Bid/executed/ executing projects in Uttar Pradesh Bihar | Bid/executed / executing projects in Uttar Pradesh Bihar Madhya Pradesh Gujarat West Bengal Orissa | Bid/executed/ executing projects in Uttar Pradesh Gujarat |
| Clientele (Toll) | NHAI | NHAI | NHAI, State authorities and municipal corporations | NHAI and municipal corporations | NHAI, Municipal corporations | NHAI,State authorities | NHAI, BOT concessionai res | NHAI, state authorities |
| H1 Bids (NHAI Projects) | 45 | 26 | 86 | 43 | 5 | 6 | 17 | 3 |
| H1/Total Bids (%) | 34 | 41 | 45 | 45 | 45 | 25 | 25 | 33 |
| Total Bids (NHAI Projects) | 131 | 64 | 192 | 95 | 11 | 24 | 69 | 9 |

Note: Information/ data on Total bids made and H1 bids of each of the players profiled above is based on NHAI website that covers 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, across 4 financial years from FY12 to FY15

Source: NHAI, Company websites, Company reports, Industry, CRISIL Research

As indicated in the above table, MEPIDL is the leading player in the business of toll collection based on the aggregate number of toll projects bid for as well as the aggregate number of H1 bids by the company between FY12 and FY15. At the next level, Eagle Infra and then Sahakar Global are other major players in the toll collection business.

## OMT

| Parameters | BVSR | DRAIPL | Eagle Infra | MBL Infra | MEPIDL | Patel Infrastructure | PATH | PNC Infratech | SMS Infra |
|---|---|---|---|---|---|---|---|---|---|
| **Operational parameters** | | | | | | | | | |
| Key Business Segments | - Infra (Roads-OMT, toll collection and construction) | - Infra (Roads-OMT and construction. Others-construction of dams, canals, bridges, airports and railways) | - Infra (Roads-OMT and toll collection, Urban Infra-laying pipelines, roofing and truss works) | - Infra (Roads-OMT and BOT and others-construction of dams, canals, airports and railways etc.) | - Infra (Roads-toll collection and OMT segment) | - Infra (Roads-BOT, O&M and OMT, Urban Infra-construction of pipelines, buildings, etc.) | - Infra (Roads-construction and OMT) | - Infra (Roads-construction and OMT) | - Infra(Roads-OMT & tolling. Others-construction of dams, railways, electrical, multilevel parking etc.) |
| Corporate office | Andhra Pradesh | Gujarat & Maharashtra | Maharashtra | West Bengal | Maharashtra | Gujarat | Madhya Pradesh | Uttar Pradesh | Maharashtra |
| Regional presence (for OMT) | Karnataka and Kerela | Uttar Pradesh, Madhya Pradesh, Punjab | Tamil Nadu | West Bengal | Tamil Nadu, Andhra Pradesh and Maharashtra | Gujarat | Rajasthan, Uttar Pradesh and Madhya Pradesh | Uttar Pradesh | Uttar Pradesh and Bihar |
| Key Clientele (OMT) | NHAI and state authorities | NHAI | NHAI and state authorities | NHAI | NHAI and state authorities (eg MSRDC) | NHAI | NHAI | NHAI | NHAI and state authorities |
| No of OMT projects awarded by NHAI and state authorities | 2 | 2 | 1 | 1 | 5 | 1 | 5 | 1 | 2 |
| Length of OMT projects awarded (in km) | ~50 | ~550 | ~125 | ~50 | ~550 | ~250 | ~600 | ~200 | ~400 |
| Lane km of OMT projects* | ~200 | ~2200 | ~500 | ~200 | ~2550 | ~1050 | ~2400 | ~900 | ~1600 |
| Estimated project cost of OMT projects awarded (in Rs million) | ~450 | ~2600 | ~650 | ~200 | ~3400 | ~1850 | ~4150 | ~900 | ~3000 |

* - Lane km refers to the multiplication result of the total main carriage way length (exclusive of service and slip road) with the number of lanes of the highway section

**Source: Company websites, Company reports, Industry, CRISIL Research**

As indicated in the above table, based on the total number of OMT projects awarded by NHAI and state authorites till 2014-15, MEPIDL and PATH are the leading players with 5 projects each. However, when length of OMT projects and estimated project cost are taken into account, DRAIPL, SMS Infrastructure and Patel Infrastructure also emerge as key players in the OMT segment along with MEPIDL and PATH.

## D) Qualitative assessment of competitive landscape in OMT and toll market

### OMT Market

The capital expenditure required for undertaking an OMT project is lower when compared to the highly capital intensive BOT / EPC projects. This provides low barriers for entry in the OMT segment for existing road players, making it a competitive business. The market is fairly fragmented with both large and small players vying for a space in the OMT segment. For instance, NHAI had received 80 applications in response to RFQ for pre-qualification of bidders for 21 OMT projects in 2011-12.

Of the total OMT projects that have been awarded by NHAI over 2009-10 to 2014-15, MEPIDL has bagged 5 projects. Prakash Asphaltings & Toll Highways (India) Limited (PATH) also has bagged 5 projects. Players that have been awarded 2 projects each are DRAIPL, BVSR and SMS infrastructure Ltd.

**Key players in OMT business (based on projects awarded by NHAI)**

| Company | No. of Projects awarded | Length of Projects (KM) | Lane (KM)* | Estimated project cost (Rs Million) |
|---|---|---|---|---|
| MEPIDL | 5 | ~550 | 2,530 | 3,403 |
| PATH | 5 | ~595 | ~2380 | ~4150 |
| DRAIPL | 2 | ~550 | 2,187 | 2,590 |
| BVSR | 2 | ~55 | 217 | 430 |
| SMS | 2 | 395 | 1,580 | 3,017 |
| Others | 10 | ~1,556 | 6,222 | 9,463 |
| **Total** | **26** | **~3700** | **~15120** | **~23050** |

* - Lane km refers to total project length into the number of lanes of the highway section.

**Source: Company websites, Company reports, Industry, CRISIL Research**

Other key players who have bagged 1 project each are Eagle Infra, Patel Infrastructure Private Ltd and PNC Infratech, MBL Infrastructure, Atlanta Ltd. and GMR Highway Ltd.

### Toll Market

The tolling market is highly fragmented in nature given the relatively lower risk levels associated with a tolling project (as against a BOT or an EPC contract).

- Under this contract, financial criteria for the bidder like minimum networth, annual turnover etc., are relatively lower when compared to BOT or OMT contract.
- Also, tolling projects do not entail any technical criteria (for NHAI projects).

Based on NHAI website, of about 324 tenders for NHAI toll projects (including renewals), for which financial bid results have been announced, covering 4 financial years from FY12 to FY15, each of the 3 players have bid for a substantial number of projects.

- MEPIDL bid for 55-60% of the projects
- Eagle Infra bid for 35-40% of the projects
- Sahakar Global bid for 25-30% of the projects

As inferred from the above points , MEPIDL is a leading player in the business of toll collection based on the total number of projects bid for and won by the company in 2011-12, 2012-13, 2013-14 and 2014-15. At the next level, Eagle Infra and Sahakar Global are other major players in the toll collection business.

Konark Infra, Sangam India, SMS Infrastructure, Skylark Securitas, Shiva Corporation etc. are some of the other companies that operate in the market.

# 7. OUTLOOK ON OMT / TOLL MARKET

## A) Overall OMT / Toll Market

As of 2014-15, around 20,800 km of road projects have been provided under the OMT and tolling modes (around 5,600 km under OMT and 15,200 km under tolling) by NHAI and State Authorities. While NHAI accounts for around 45% of the total current market awarded on OMT and tolling basis, state authorities/ road development corporations constitute the rest 55%. There are limited instances of BOT operators reporting award of projects on OMT / tolling basis, for the NHAI projects in their purview.

### OMT / Toll Market from NHAI

NHAI has contracted 2,400 km of its highway projects under OMT mode and 6,990 km under tolling mode as of December 2015. Going ahead, we expect NHAI to increase the OMT and tolling stretch by 1.75 times from the current 9,390 km to around 16,500 km by 2018-19. This will primarily emanate from a number of projects 'under implementation' and 'to be awarded' on cash and annuity basis, hence driving the demand for OMT and tolling. CRISIL Research expects an additional 3,700-3,750 km to be added on OMT basis over the next four years (i.e., during 2015-16 to 2018-19). This will result in the total stretch under OMT model increasing from 2,400 km currently to around 6,100 km by 2018-19. The national highways stretch under tolling to private contractors increased to around 6,990 km in 2014-15 from being negligible in the latter half of 2009-10. It is expected to increase at about 1.5 times over the next four years to touch 10,400 km by 2018-19.

***For details, please refer Chapter 8.***

### OMT / Toll Market from State Highways/ RDCs for Key States

State highways of the key 10-11 states under purview of the study have invited bids for 11,400 km as of 2014-15 for OMT and tolling. While Rajasthan, Haryana, and Maharashtra have been proactive in terms of contracting state highway projects for tolling, states such as Karnataka, Bihar, and Madhya Pradesh have taken the OMT route for bidding out projects. Going ahead, we expect state road authorities to increase the OMT stretch by 1.7 times from the current 3,200 km to around 5,500 km by 2018-19. State highway sections expected to be bid for tolling projects will increase by 1.4 times to around 11,800 km by 2018-19 with Karnataka, Rajasthan and Madhya Pradesh expected to exhibit a higher growth.

***For details, please refer Chapter 9.***

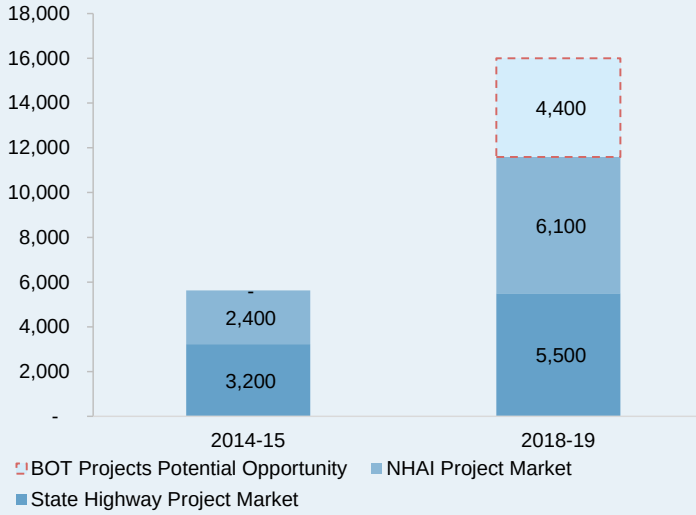
### OMT / Toll Market from BOT operators for national highways (indirect)

As of 2014-15, very few BOT players report contracting projects significantly to private players for toll and OMT. Instead, many of them chose to contract with small private players for conducting only operation and maintenance (O&M). However, going ahead, a number of BOT players are expected to exit from their projects given the difficult financial situation being faced by them. This would represent a high opportunity as the new project owners (typically, financial investors) can potentially opt for significantly contracting the operations to a private player,

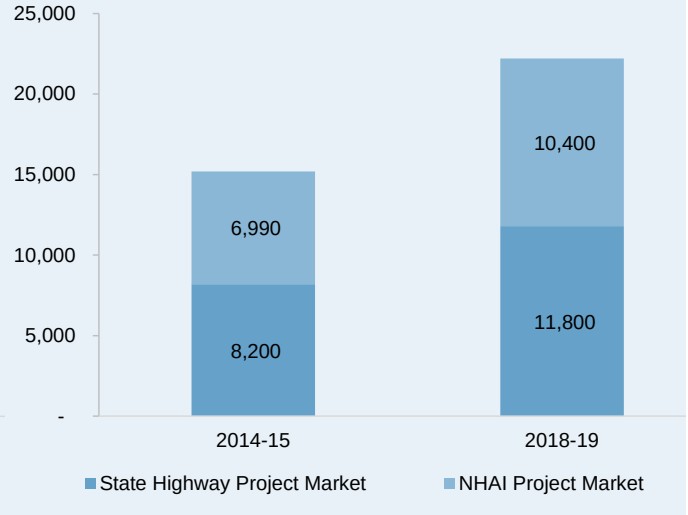
primarily on OMT basis. Thereby we expect around 4,400 km of potential opportunity that can be contracted by BOT players on OMT basis until 2018-19.

***For details, please refer Chapter 10.***

**Outlook of OMT Market Size**




**Outlook of Toll Market Size**




Note: NHAI projects market and State highway projects market indicates the length (in km) which is expected to be bid till 2018-19. BOT projects potential opportunity indicates the market that can be available to OMT players if the announced and expected plans of BOT players to financially exit from their BOT project gets through.

**Source: CRISIL Research Estimates**

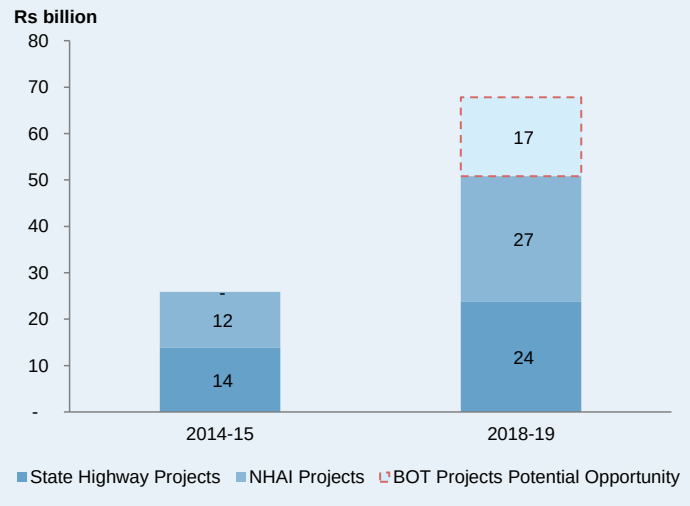
OMT market from NHAI and state highways is expected to double from the current 5,631 km to around 11,600 km by 2018-19. Also, a significant potential opportunity of about 4,400 km can emanate from BOT projects. Hence the OMT market will primarily be driven by:

- A number of BOT players exiting their current projects resulting in the new buyer to contract the projects on OMT basis.
- Rising penetration of OMT stretches in state highways, especially in the states of Karnataka, Bihar, and Madhya Pradesh.

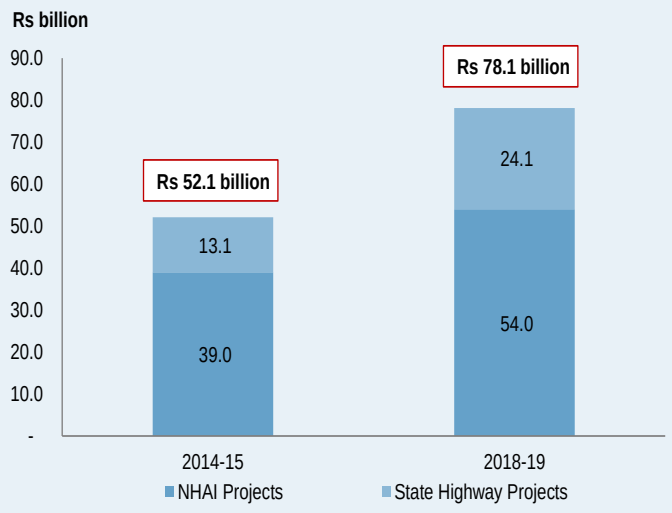
Tolling market is expected to increase by 1.5 times from the current 15,200 km to around 22,200 km by 2018-19. The market will primarily be driven by:

- Rising penetration of tolling stretches in state highways, especially for the states of Karnataka, Rajasthan, Maharshtra and Madhya Pradesh.
- A number of stretches being awarded by NHAI on tolling basis (for new projects under implementation or to be awarded under cash basis).

**OMT Market Size**




**Toll Market Size**




Note: Market in value terms has been presented in terms of estimated project cost. We have assumed the project cost to decline in 2015-16, then almost flattish growth in 2016-17 and thereafter a 5 per cent increase in project cost per year.

**Source: CRISIL Research Estimates**

In value terms, we expect value of project cost for OMT tenders bid out from NHAI and state highways to almost double from the current Rs 26 billion to Rs 51 billion by 2018-19. This is primarily driven by rising penetration of OMT in state highway stretches. Also, an additional potential opportunity of around Rs 11 billion exists for OMT players, with an increasing number of BOT projects expected to be operated and maintained on OMT basis, following the financial exit of existing players. In this scenario, the new buyers are expected to significantly outsource the operation, maintenance, and tolling operations.

Value of projects bid out for tolling is expected to increase by 1.5 times from the current Rs 52.1 billion to Rs 78.1 billion by 2018-19, primarily driven by increasing penetration levels for state highways to be contracted / bid on tolling basis. This is apart from a rising number of under implementation and yet to be awarded stretches being built on cash basis that necessitate tolling.

The aforementioned outlook is based on the following assumptions and risk factors that can impact the volume and value of projects under OMT and tolling:

- NHAI and MORTH are expected to award around 27,000-27,500 km in the forecast period (until 2018-19), with a significant portion of these stretches (50-55%) expected to be awarded on cash basis, given the current financial crunch being faced by BOT players.
- Exit policy for BOT players has been approved by the Ministry and hence, we assume around 30-40% of BOT road length to be exited by their current operators (based on interactions with leading BOT players).
- All NHAI projects to be implemented and awarded on cash / annuity basis represents a market for OMT and tolling.
- A significant revision in the policy environment/ financial situation of road players may significantly impact the mix of projects to be bid out between BOT model and cash contracts, impacting OMT and toll markets.

- A time lag of 3 years is assumed between awarding date for NHAI projects to project completion (accounting for construction time and project delays).
- Any change in future plans of individual states concerning OMT and / or tolling may result in significant shift from past trends observed in the states and may impact the outlook.
- For tolling projects awarded by state highways, we have assumed an average tolling length of 50 km per project based on a sample of road sections covered in past tenders.
- For forecasting OMT and tolling market size in value terms, we have assumed average project cost per km for OMT projects and annual potential collection for tolling projects that have further been increased at 5% annually to account for inflation.
- The outlook does not account for any sudden/ unforeseen economic/ socio-political developments that can significantly impact investment levels for the road sector.

# 8. OUTLOOK ON OMT / TOLL MARKET FROM NHAI

## A) Review and outlook of NHDP phases relevant for toll and OMT projects

### Completed projects

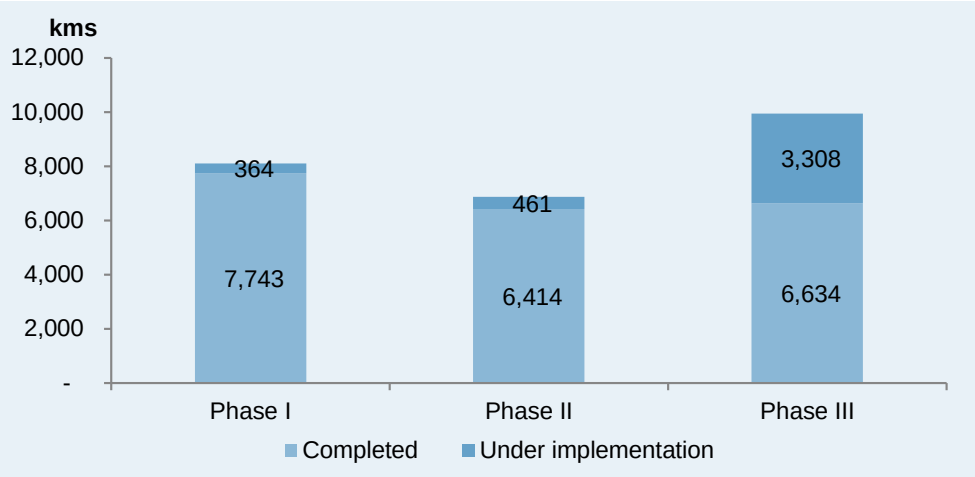
In the past, a large percentage of projects awarded under NHDP Phase I and Phase II have been implemented on cash contract, or EPC, basis.

- Nearly 85% of the total kms completed under Phase I (as on July 31, 2015) were implemented on cash contract basis.
- More than 78% of the total kms completed under Phase II (as on July 31, 2015) were implemented on cash contract basis.

The projects completed under cash contract (EPC) entail operation, maintenance and tolling to be awarded to private agencies either as a singular package of OMT (operation, maintenance, and tolling) or as separate packages (with tolling being awarded separately). Also, the projects built under BOT (annuity) of Phase I and Phase II require National Highways Authority of India (NHAI) to hire a private agency / contractor to handle tolling operations.

However, a significant stretch of kilometres under the Golden Quadrilateral or NHDP I are being upgraded as part of NHDP Phase V. The government aims to implement all projects under Phase V via the BOT-toll model as traffic volumes on these stretches may look attractive for private players. Moreover, the concessionaire will be allowed to collect toll on the existing four-lane highways from the date of financial closure of the project, which will result in cash inflows even before construction of the additional two-lane commences. About 26% of road length under this phase is under implementation and around 32% has been constructed (the balance 42% is yet to be awarded).

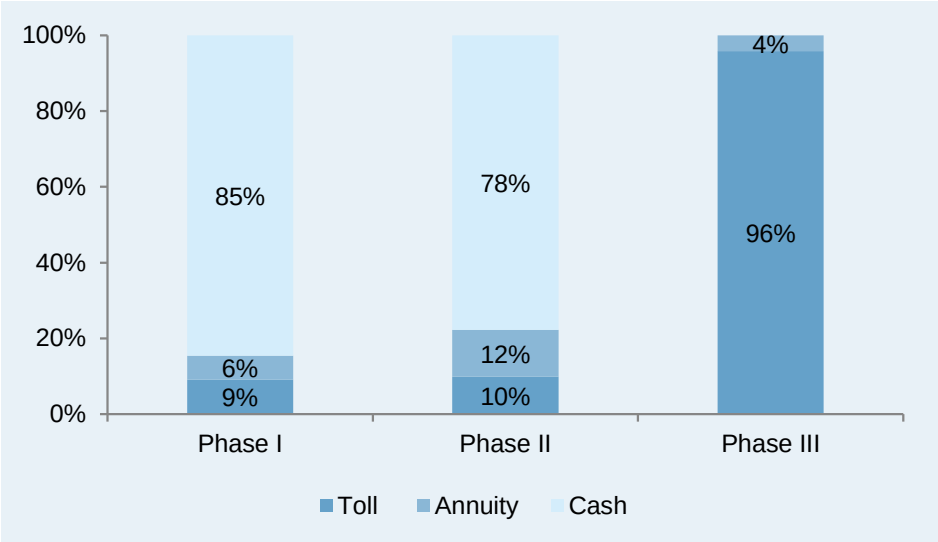
**NHDP phases relevant for current OMT and toll collection market**




Note: (i) Data as on September 30, 2015
(ii) Phase V and Phase VI are not considered as all projects in this phase are on BOT toll basis

**Source: NHAI, CRISIL Research Estimates**

**Segmentation of Completed Road Projects by Type of Funding**




**Source: CRISIL Research Estimates**

Nearly 90% of the length completed under NHDP Phase I and II (for cash and annuity projects) and around 4-5% of length completed under NHDP Phase III (for annuity projects) constitutes the current market potential for OMT and tolling projects estimated at about 12,400-12,500 km. Of this, as of 2014-15, 2,400 km have been awarded on OMT basis and around 6,990 km on toll basis (i.e., 9,390 km for OMT and toll) as per the website of NHAI (December 2015).

## Under implementation projects

In 2014-15 and the first half of fiscal 2015-16, most of the projects have been increasingly awarded on cash contracts. However, of the projects currently under implementation, most of the projects are on BOT-toll, given that prior to last two years, a majority of projects were on BOT-toll basis. Hence, of the roads under implementation, a signifcant portion is estimated to be constructed under BOT-toll basis and remaining on cash contracts and BOT-annuity basis. We expect a part of the under-implementation cash contracts and BOT annuity to be the market potential for OMT and tolling projects.

## Balance projects to be awarded

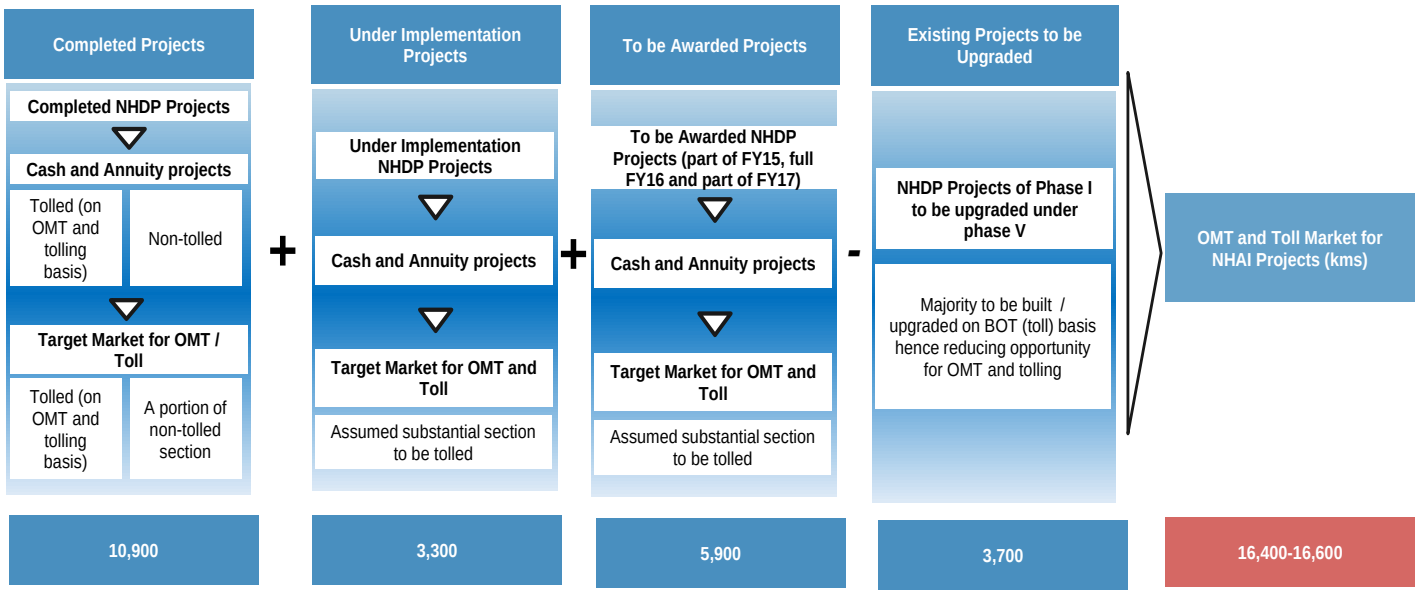
CRISIL Research expects around 27,000-27,500 km of national highway projects* to be awarded during 2015-16 to 2018-19:

- The length to be awarded is expected to be split up equally between the former half and latter half of the forecast period (i.e. post 2015-16 to 2018-19).
- About 55% of projects will continue to be awarded on cash contracts in the near term, given the relatively low interest in BOT projects amongst developers in the current market scenario. Player interest is expected to remain high in EPC projects on account of limited upfront capital requirement and lower risk compared to BOT projects.

**National highway projects are under the purview of both NHAI and MORTH. Of 27,000-27,500 km, we expect around 17,000-17,500 km to be awarded by NHAI.*

## B) Outlook of toll and OMT market

- Of the **completed NHDP projects**, we expect 10,900 km to be on OMT and toll basis. This includes 9,390 km of completed projects that have been awarded on OMT and toll to private contractors and the implementation for tolling from as yet non-tolled roads.
- Of the **projects under implementation,** we expect 3,300 km to be on OMT and toll basis.
- Of the **projects to be awarded,** we expect a portion of cash and annuity basis projects awarded in part of 2014-15, 2015-16 and part of 2016-17 to get implemented during our forecast period (i.e., until 2018-19), given the construction period and potential delays associated with the project. Accordingly, only 5,900 km of this is expected to be implemented over 2015-16 to 2018-19.
- However, stretches forming a significant part of NHDP Phase I is expected to be upgraded in NHDP Phase V with all these projects expected to be completed and / or implemented on BOT-toll basis given that these stretches have high traffic potential. Therefore, we expect around 3,700 km from Phase I to be upgraded under BOT-toll basis as part of Phase V.
- For projects awarded on cash and annuity basis, as additional stretches that are to be awarded or are under implementation and a portion of the non-tolled section of completed projects get tolled out, there is expected to be growth in the market for OMT and tolling players. Accordingly, this will result in a net additional stretch of 7,100 km for OMT and toll market apart from the existing market. Accordingly, the OMT and toll market is expected to increase from the current 9,390 km to around 16,400-16,600 km by 2018-19.




Note:

(i) Hybrid annuity projects have been included under BOT Annuity

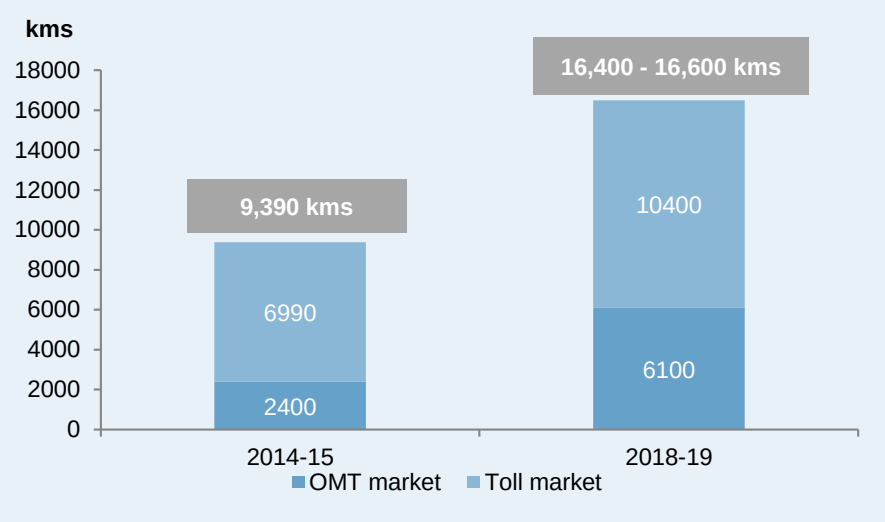
(iii) Once the final terms and key parameters of TOT model such as scope of work, duration of the project, upfront payment conditions, etc. get finalised, the emerging market of TOT model is expected to gain some share from the forecasted market

for OMT and/ Tolling

**Source: CRISIL Research**

The outlook for market growth is subject to the current regulatory and PPP scenario in the background of road development targets and financial situation of private players. Any law and order related / politcal interventions as well as changes to regulatory scenario are key monitorables for the market.

### Cash and Annuity Market



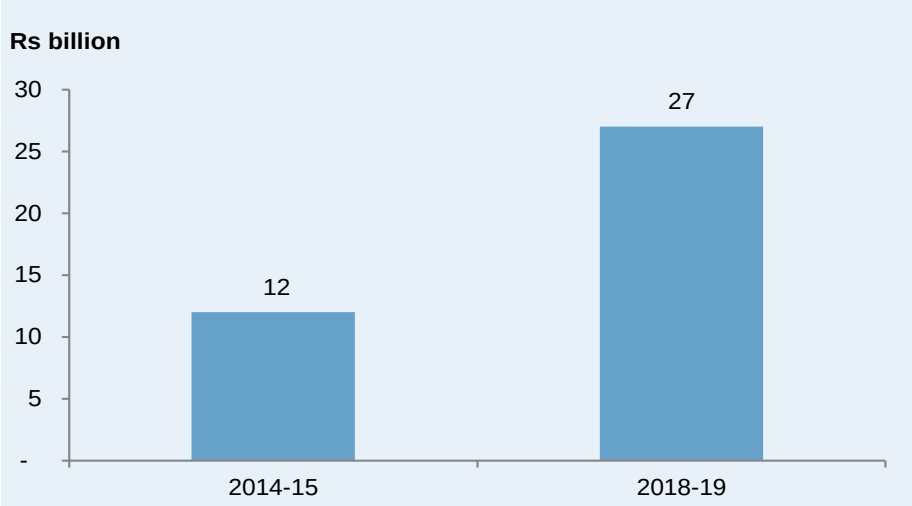

Note:
(i) The market size indicates the highway length to be bid.
(ii) Once the final terms and key parameters of TOT model such as scope of work, duration of the project, upfront payment conditions, etc. get finalised, the emerging market of TOT model is expected to gain share from the forecasted market for OMT and Tolling.
(iii) Tolling market includes roads of NHAI and MORTH

**Source: CRISIL Research Estimates**

NHAI initiated the process of awarding projects under OMT module towards the end of 2009-10 and has awarded around 2,400 km under this module till 2014-15. CRISIL Research expects an additional 3,700-3,750 km to be added on OMT basis over the next four years (i.e., during 2015-16 to 2018-19). This will result in the total stretch under OMT model increasing from 2,400 km currently to around 6,100 km by 2018-19.

In value terms, we expect the OMT market to increase 2.3 times from the current Rs 12 billion to Rs 27 billion by 2018-19. Market in value terms indicates the estimated project cost.

### OMT market



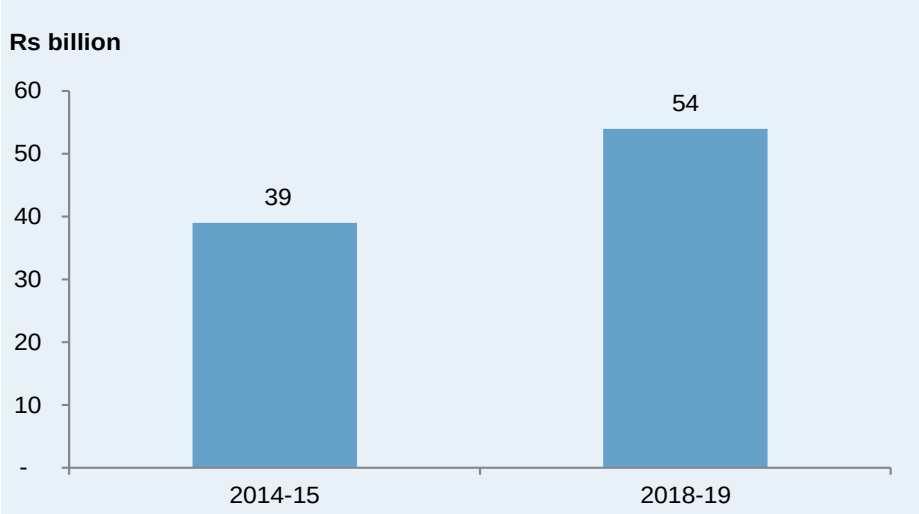

Note: Market in value terms has been presented in terms of estimated project cost. We have assumed the project cost to decline in 2015-16, then almost flattish growth in 2016-17 and thereafter a 5 per cent increase in project cost per year.

**Source: CRISIL Research Estimates**

The national highways stretch under tolling to private contractors increased to around 6,990 km in 2014-15 from being negligible in the latter half of 2009-10. It is expected to increase at about 1.5 times over the next four years to touch 10,400 km by 2018-19.

In value terms, the tolling market is expected to increase by 1.4 times to touch Rs 54 billion by 2018-19.

### Toll market



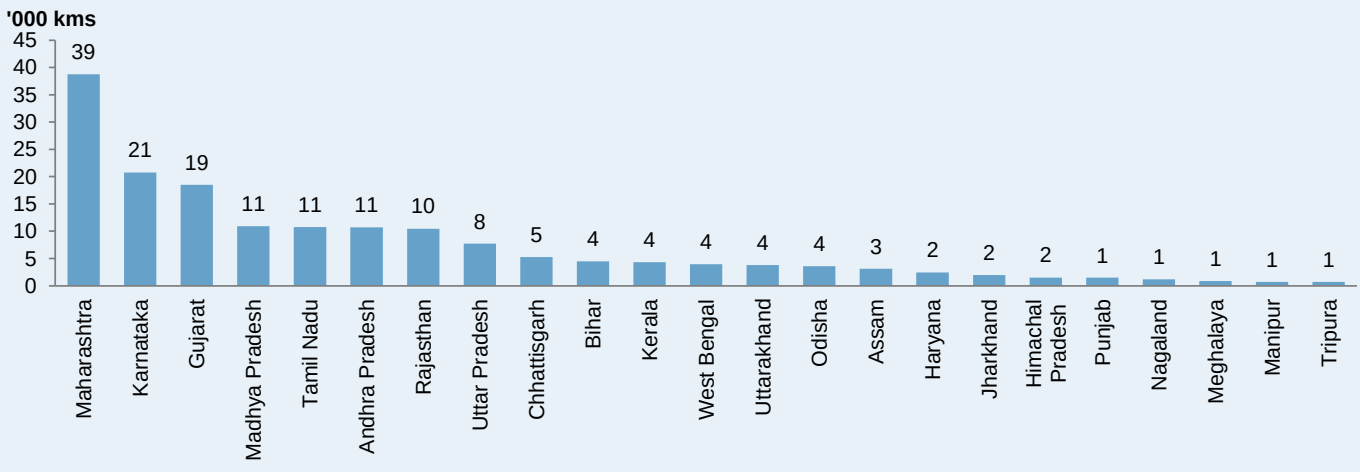

Note: Market in value terms indicates the estimated potential collection as stated in the bidding document. We have assumed the potential collection to decline in 2015-16, then almost flattish growth in 2016-17 and thereafter a 5 per cent increase in potential collection per year.

**Source: CRISIL Research Estimates**

# 9. OUTLOOK ON OMT / TOLL MARKET FROM STATE HIGHWAYS

The total length of state highways in India was around 1.69 lakh km in FY13, as per Ministry of Road Transport and Highways (MORTH).

**State highway length of Indian states (As on 31st March 2013)**




Note: Indian states with state highways length of less than 1,000 km have not been included above. These states are – Manipur, Mizoram, Tripura, Goa, A. & N. Islands, Sikkim, D. & N. Haveli, Puducherry and Jammu & Kashmir.

**Source: MORTH**

A majority of the Indian states with smaller state highway length (5,000 km or less) have not adopted the toll and OMT model as of date, however, some state road authorities of key Indian states have awarded or invited bids for toll / OMT projects. These states are Maharashtra, Karnataka, Rajasthan, Madhya Pradesh, Bihar, Odisha, Gujarat, Tamil Nadu and Haryana. Together these states account for around 129,000 km i.e., more than 75% of the total state highway length in India. The list of respective state authority, which have awarded / invited bids for toll and / or OMT projects in the past is provided below.

**List of State authorities active in undertaking OMT / Toll projects**

| State Authority | State | OMT / Toll |
|---|---|---|
| MPRDC | Madhya Pradesh | OMT |
| BSRDC | Bihar | OMT |
| KRDC | Karnataka | OMT |
| RSRDC | Rajasthan | Toll |
| RIDCOR | Rajasthan | Toll |
| HSRDC | Haryana | Toll |
| OBCC | Odisha | Toll |
| GSRICL | Gujarat | Toll |
| TNRDC | Tamil Nadu | Toll |
| MSRDC | Maharashtra | OMT / Toll |

MPRDC: Madhya Pradesh State Road Development Corporation, KRDC: Karnataka Road Development Corporation Limited. BSRDC: Bihar State Road & Bridges Development Corporation, MSRDC: Maharashtra State Road Development Corporation, RSRDC: Rajasthan State Road Development and Construction Corporation, HSRDC: Haryana State Road & Bridges Development Corporation, OBCC: Odisha Bridge & Construction Corporation Limited, GSRICL: Gujarat Road and Infrastructure Company Limited, TNRDC: Tamil nadu Road Development Company Limited and RIDCOR: Road Infrastructure Development Company of Rajasthan

**Source: CRISIL Research**

CRISIL Research assessed 10-11 key states that have witnessed relatively higher investments in state highway projects i.e. Gujarat, Tamil Nadu, Uttar Pradesh, Delhi, Madhya Pradesh, Bihar, Karnataka, Rajasthan, Haryana, Odisha, and Maharashtra.

Of these 11 states, the two states, namely Uttar Pradesh, and Delhi have not reported any focus on bidding for OMT and tolling projects for their state highways based on their current plans. Any change in their plans for considering OMT and / or tolling have not been accounted for in our outlook. Gujarat and Tamil Nadu have just initiated invitation of bids for tolling projects. Consequently we have provided below our assessment of OMT and toll collection opportunities from the aforementioned states. The assessment is based on detailed interactions with relevant state authority officials as well as analysis of the publically available information.

## A) Outlook of OMT market opportunity from key states

In 2012-13, only Madhya Pradesh invited bids for a total length of 940 km (under 11 projects) of state highways to be operated and maintained on OMT basis. The estimated cost for these OMT projects is around Rs 3.8 billion. Further in 2013-14, Madhya Pradesh invited bids for a total length of 550 km (under 11 projects) of state highways to be operated and maintained on OMT basis. The estimated cost for these OMT projects is not available.

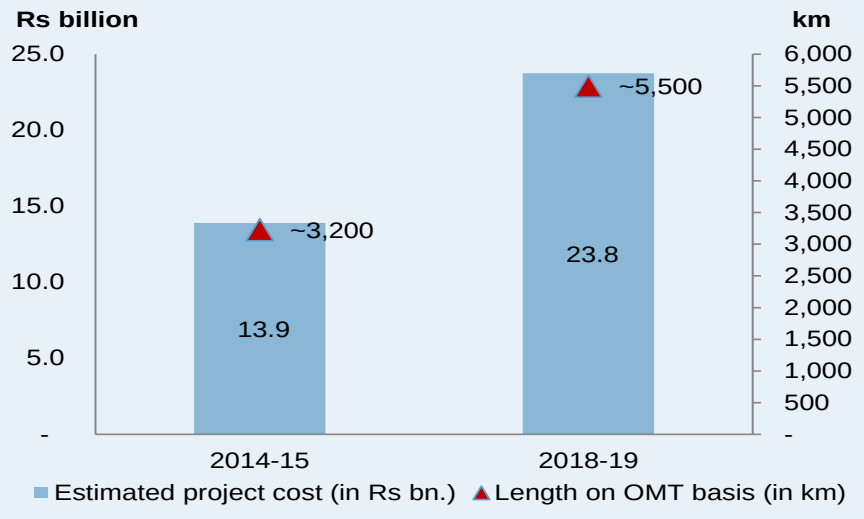
In 2013-14, Bihar and Karnataka also invited bids for around 1,300 km (under 12 projects) of state highways. The cumulative estimated cost for these projects is Rs 9 billion. Also, Maharashtra had invited bids for 1 project – Rajiv Gandhi Sea link (around 5 km) - to be operated and maintained on OMT basis. In 2014-15, MPRDC has invited bids for 434 km (9 projects). MSRDC, KRDC and BSRDC did not invite any bids during this period. In 2015-16 (till

30th November 2015), MPRDC has invited bids for 865 km (16 projects). MSRDC, KRDC and BSRDC did not invite any bids during this period.

Post discussion with the key state road development authorities, CRISIL Research estimates that bids will be invited for awarding an additional around 2,300 km of road network on OMT basis over the next four years (i.e. during 2014-15 to 2018-19). Karnataka is expected to account for around 73% of this additional length whereas Madhya Pradesh and Bihar are expected to account for around 23% and around 4%, respectively. Assuming an average length of a state authority OMT project to be 90-100 km, we expect bids for a total of 25-30 projects will be invited over the next four years (i.e. during 2014-15 to 2018-19).

This would result in the total stretch under OMT model (for which bids will be invited) to increase by 1.72 times from the current around 3,200 km to around 5,500 km by 2018-19. In terms of the market opportunity in value terms, we expect the OMT market to increase around 1.7 times from Rs 13.9 billion in 2014-15 to Rs 23.8 billion by 2018-19. Market opportunity in value terms indicates the estimated project cost. The total number of OMT projects (on bids invited basis) are expected to increase from 35 projects (in 2014-15) to 55-60 projects in 2018-19.

**OMT Market Opportunity from key states**




1. Length & market potential of OMT for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the key state authorities.
2. For calculating the estimated project cost (EPC) for a state authority project, past average EPC per km for that authority has been used.
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year
4. OMT opportunity for 2018-19 includes opportunity from states of Karnataka, Madhya Pradesh and Bihar.

**Source: CRISIL Research Estimates**

## Outlook for Madhya Pradesh (MPRDC)

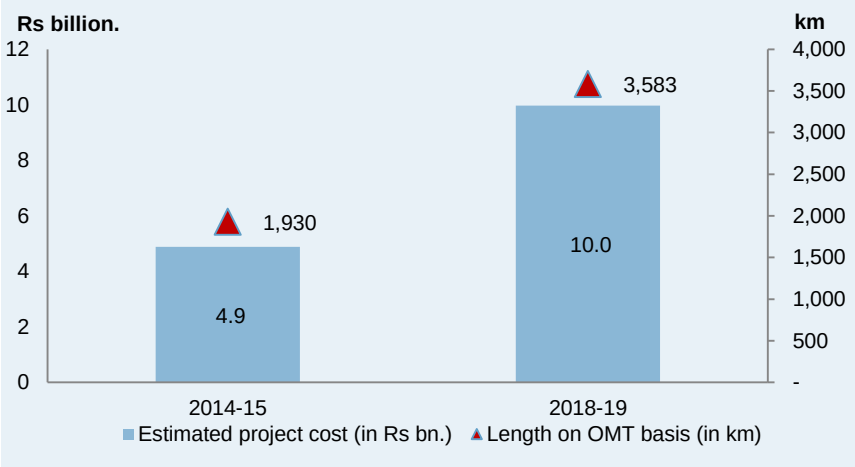
MPRDC (Madhya Pradesh State Road Development Agency), till April 2013, invited bids for 1,175 km of state highway stretches to be operated and maintained on OMT basis. However, around 240 km of state highway stretches were reinvited for bidding in February 2014. The estimated project cost of the 940 km, which were not re-invited for bidding was around Rs 3.8 billion as per the tender documents. The state authority, till March 2014, had successfully awarded state highway length of around 200 km (out of the total 940 km for which bids were invited) on OMT basis. Further, the state government had invited 11 projects amounting to 550 km of state highway stretches for bidding in February 2014.

In 2014-15, MPRDC invited prequalification bids for around 434 km (9 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. Of the 9 projects invited for bidding in 2014-15, all projects, except Budhni-Rehti-Nasrullaganj-Khategaon, were repeats from the previously invited bids. In 2015-16, till 30th November 2015, MPRDC invited prequalification bids for around 865 km (16 OMT projects) of state highways to be operated and maintained on OMT basis for a concession period of 9 years. Out of the 865 km invited for bidding so far, 486 km were repeats from the previously invited bids.

CRISIL Research expects the total stretch under OMT model (for which bids will be invited) to increase from around 1,900 km currently to around 3,600 km by 2018-19.

In terms of the market opportunity in value terms, we expect the OMT market to more than double from the current Rs 4.8 billion to Rs 9.9 billion by 2018-19. Market opportunity in value terms indicates the estimated project cost.

**OMT Market Opportunity for Madhya Pradesh**




1. Length & market potential of OMT for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the state authority.
2. For calculating the estimated project cost (EPC) for a state authority project, past average EPC per km for that authority has been used.
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year

**Source: CRISIL Research Estimates**

## Outlook for Bihar (BSRDC)

While no bids on OMT were invited by the Bihar State Road & Bridges Development Corporation (BSRDC) till 2012-13, in August 2013, it invited bids for around 480 km (under 4 OMT projects) of state highway stretches to be awarded on OMT basis. The estimated cost of these projects, as mentioned in the tender documents was around Rs 4.1 billion. These stretches were completed under BSHP-I (Bihar state highway program Phase I) in which around 820 km of state highways were planned to be developed on cash contracts basis, with the help of financial aid from ADB.

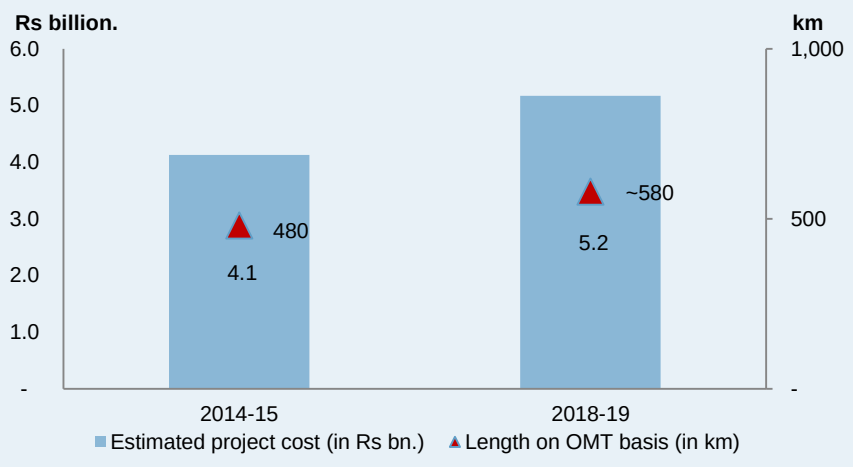
In 2014-15, however, there have been no publicly announced tenders for OMT projects and as per interactions with the state authority, private interest has also been low.

Further, the second phase of Bihar State Highway Programme (BSHP-II) is under implementation where around 350 km of state highways is expected to be developed with the help of financial aid from ADB. The expected completion date for BSHP-II is 2015-16, whereas remaining stretches under BSHP-I (around 340 km) is expected to get completed in the next 1-2 years.

CRISIL Research estimates that the total stretch under OMT model (for which bids will be invited) to increase from 480 km in 2014-15 to around 580 km by 2018-19.

In terms of the market opportunity in value terms, we expect the OMT market to be around Rs 5.2 billion by 2018-19. Market opportunity in value terms indicates the project cost.

**OMT Market Opportunity for Bihar**




1. Length & market potential of OMT for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the state authority.
2. For calculating the estimated project cost (EPC) for a state authority project, past average EPC per km for that authority has been used.
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year

**Source: CRISIL Research Estimates**

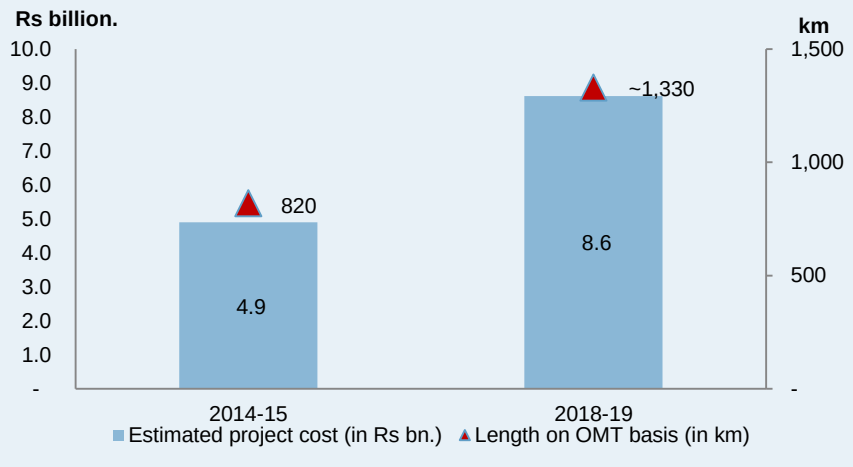
## Outlook for Karnataka (KRDC)

While no bids were invited by KRDC till 2012-13, in April 2013, KRDC invited bids for around 820 km of state highway stretches to be awarded on OMT basis. The estimated cost of these projects was around Rs 4.9 billion. All of these stretches were built by the state government using its own funds and loan assistance from various funding agencies. For sustaining the service levels of all these developed corridors, it was imperative to look at tolling and operation and maintenance options on PPP basis. In 2014-15, however, there have been no publicly announced tenders for OMT projects.

CRISIL Research estimates that the total stretch under OMT model (for which bids will be invited) will increase to around 1,330 km by 2018-19 from 820 in 2014-15.

In terms of the market opportunity in value terms, we expect the OMT market to be around Rs 8.6 billion by 2018-19. Market opportunity in value terms indicates the estimated project cost.

**OMT Market Opportunity for Karnataka**




1. Length & market potential of OMT for 2014-15 and 2018-19 is based on the projects for which bids were / are expected to be invited by the state authority.
2. For calculating the estimated project cost (EPC) for a state authority project, past average EPC per km for that authority has been used.
3. Market opportunity in value terms has been presented in terms of estimated project cost as provided by the authority at the bidding stage. We have assumed a 5% increase in estimated project cost per year

**Source: CRISIL Research Estimates**

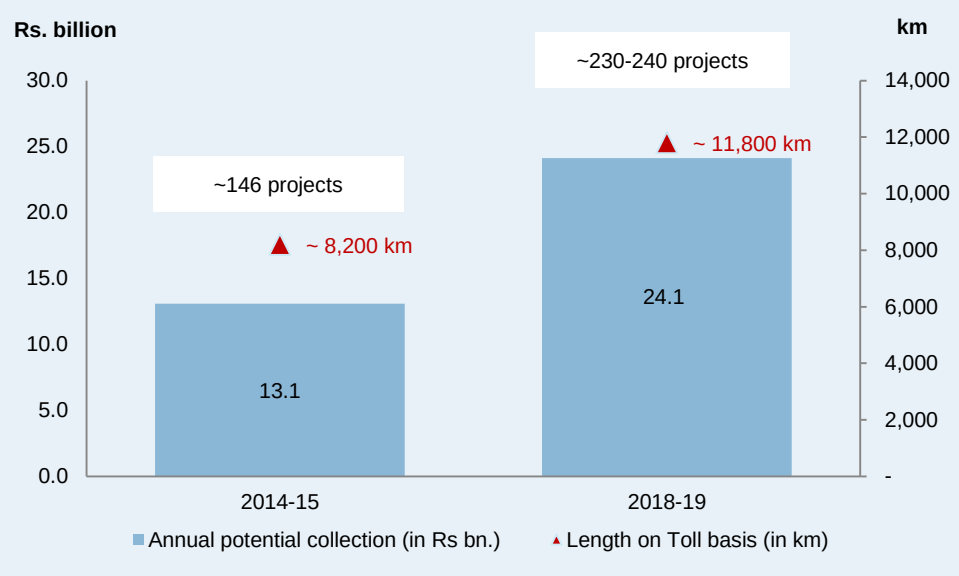
## B) Outlook of Toll Market Opportunity from key states

As of 2012-13, tolling model has found acceptance in the states of Maharashtra, Haryana, Rajasthan and Odisha. Further, Karnataka invited bids for one tolling project in 2013-14. Similarly Gujarat and Tamil Nadu both invited bids for two tolling projects each in 2013-14. In 2014-15, 2 projects were invited for bids by Maharashtra. Haryana invited bids for 8 projects while Rajasthan invited bids for a total of 27 projects in 2014-15. Gujarat, Tamil Nadu and Karnataka did not invite any bids during this period.

CRISIL Research estimates that bids will be invited for an additional ~3,500 km of road network on tolling, over the next four years (i.e. during 2014-15 to 2018-19). This would result in the total stretch under tolling (for which bids will be invited) to increase 1.4 times from the current 8,200 km to around 11,800 km by 2018-19. The number of tolling projects (on bids invited basis) are expected to increase from around 146 projects in 2014-15 to 230-240 projects in 2018-19.

In terms of market opportunity in value terms, we expect the toll market to increase 1.8 times from the current Rs 13.1 billion to Rs 24.1 billion by 2018-19. Market opportunity in value terms indicates the annual potential collection.

**Toll Market Opportunity from key states**




1. Tolled length for a single toll project has been taken as 50 km wherever length could not be sourced from primary / secondary sources.
2. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
3. For KRDC, since annual potential collection for past was not available, past average annual potential collection per km of Maharashtra and Rajasthan state authorities have been used for extrapolation of future APC.
4. We have assumed a 5% increase in annual potential collection per year
5. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by key state authorities.

**Source: CRISIL Research Estimates**

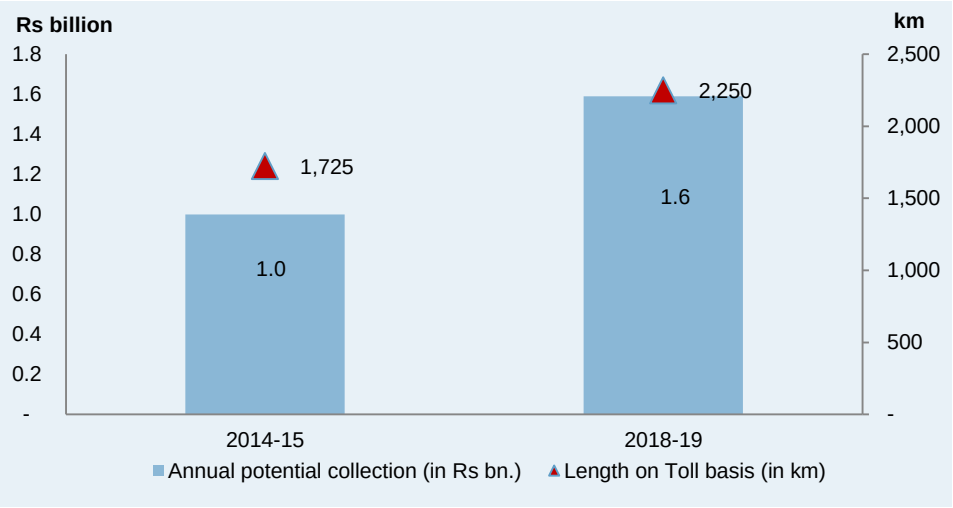
## Outlook for Haryana (HSRDC)

In 2014-15, HSRDC had around 8 tolling projects for which bids are invited by the authority, for a typical duration of 1 year. This takes the total number of tolling projects invited by HSRDC during the period between 2012-13 and 2014-15, to 32 with a total length of 1,725 km.

CRISIL Research estimates (assuming an average length of 50 km per tolling project) that the total stretch under tolling (for which bids will be invited) to increase 1.3 times from the current 1,725 km to around 2,250 km by 2018-19.

In terms of the market opportunity in value terms, we expect the toll market in Haryana to increase 1.6 times from the current Rs 1 billion to Rs 1.6 billion by 2018-19. Market opportunity in value terms indicates the annual potential collection of toll.

**Toll Market Opportunity for Haryana**




1. Tolled length for a single project has been taken as 50 km as total length on tolling could not be sourced from primary / secondary sources.
2. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
3. We have assumed a 5% increase in annual potential collection per year
4. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authority.

**Source: CRISIL Research Estimates**

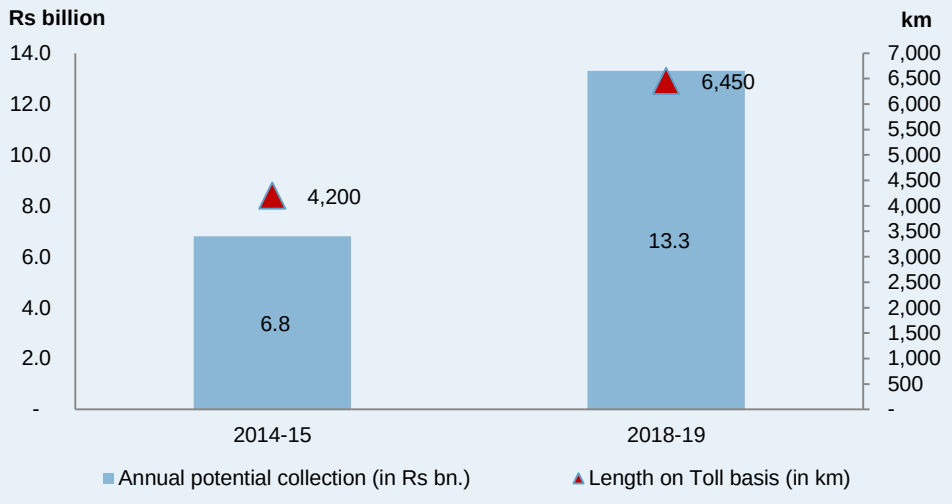
## Outlook for Rajasthan (RIDCOR and RSRDC)

As of 2014-15, RIDCOR and RSRDC have around 4,200 km of state highway stretches for which bids are invited for tolling (typically for a duration of 1 or 2 years). The estimated annual potential collection, as available from RFP documents and as per discussion with authorities, is around Rs 6.8 billion.

Further RSRDC and RIDCOR are expected to invite bids for tolling of around 1700 km and around 550 km, respectively, over the next four years (i.e. during 2015-16 to 2018-19). This would result in the total stretch under tolling (for which bids will be invited) to increase 1.5 times from the current 4,200 km to around 6,450 km by 2018-19.

In terms of the market opportunity in value terms, we expect the toll market of Rajasthan (RIDCOR and RSRDC combined) to almost double from the current Rs 6.8 billion to Rs 13.3 billion by 2018-19. Market opportunity in value terms indicates the annual potential collection of toll.

**Toll Market Opportunity of Rajasthan**




**1. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.**

**2. We have assumed a 5% increase in annual potential collection per year**

**3. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authorities.**

**Source: CRISIL Research Estimates**

## *RIDCOR*

RIDCOR is a 50:50 joint venture between IL&FS and the Government of Rajasthan. The authority is undertaking development of around 1,600 km of state highway stretches in Rajasthan under three phases.

**Phases wise lengths under RIDCOR**

| Phases | Length (in km) |
|---|---|
| Phase I | 1,050 |
| Phase II | 260 |
| Phase III | 300 |
| Total | ~1,600 |

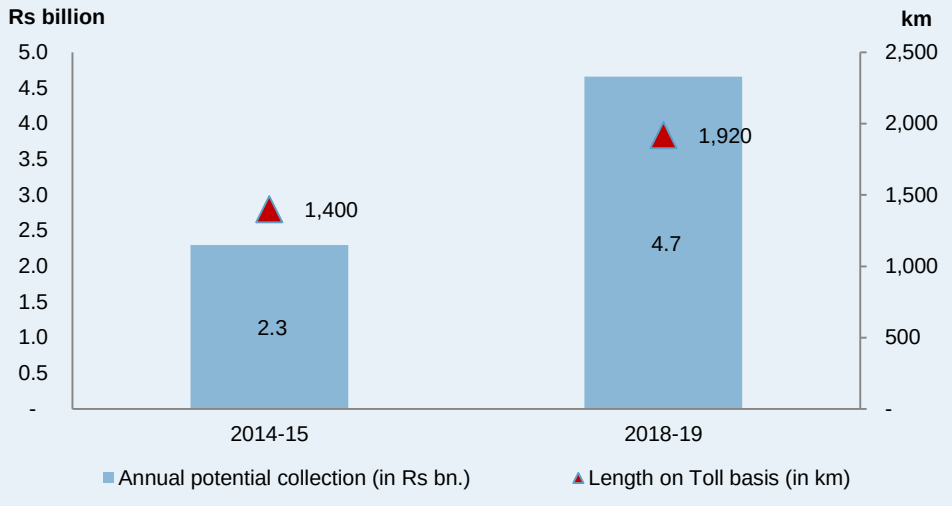
**Source: Company sources, CRISIL Research Estimates**

As of 2012-13, Phase I and some of the projects under Phase II were completed, amounting to around 1,140 km of state highway length. As of 2012-13, the authority has invited bids for all completed projects under these two phases for toll collection by a third party. The estimated annual potential toll collection for these projects, as shared by the authority, was Rs 1.6-1.8 billion.

CRISIL Research expects the total stretch under tolling (for which bids will be invited) to increase 1.4 times from the current 1,400 km to around 1,920 km by 2018-19.

In terms of the market opportunity in value terms, we expect the toll market by RIDCOR to double from the current Rs 2.3 billion to Rs 4.7 billion by 2018-19. Market opportunity in value terms indicates the annual potential collection of toll.

**Toll Market Opportunity of RIDCOR**




1. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
2. We have assumed a 5% increase in annual potential collection per year
3. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authority.

**Source: CRISIL Research Estimates**

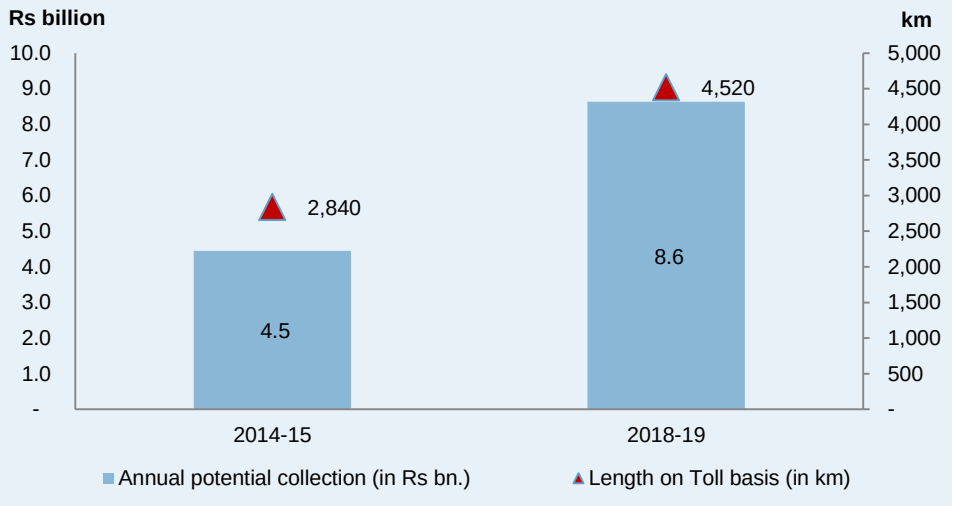
## *RSRDC*

As of March 2015, RSRDC has 2,840 km of state highway stretches (around 42 projects) for which bids were invited by the authority for tolling. The total estimated annual potential collection for these projects is around Rs 4.5 billion.

CRISIL Research estimates that the total stretch under tolling (for which bids will be invited) to increase 1.6 times from the current 2,840 km to around 4,520 km by 2018-19.

In terms of the market opportunity in value terms, we expect the toll market by RSRDC to almost double from the current Rs 4.5 billion to Rs 8.6 billion by 2018-19. Market opportunity in value terms indicates the annual potential collection of toll.

**Toll Market Opportunity of RSRDC**




1. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
2. We have assumed a 5% increase in annual potential collection per year
3. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authority.

**Source: CRISIL Research Estimates**

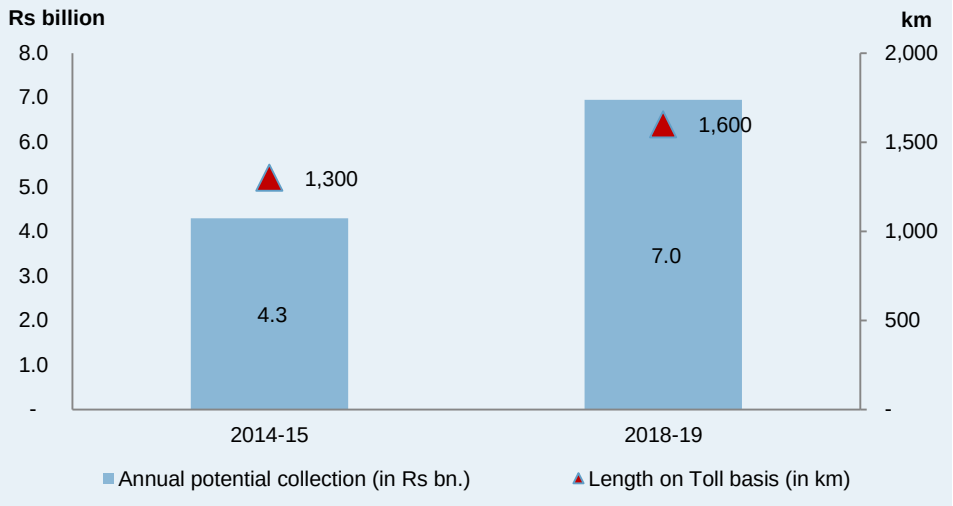
## Outlook for Maharashtra (MSRDC)

As of 2014-15, Maharashtra has around 24 toll projects for which bids are invited, typically for a tenure of 36 months, for tolling. Around 1,300 km of total length of state highways are being tolled in Maharashtra.

CRISIL Research expects around 6 more projects to come up in the next four years This would bring an additional length of 300 km for bidding in the next four years (assuming average length of 50 km per toll project). Consequently, the total stretch under tolling (for which bids will be invited) is expected to increase from around 1300 km currently to around 1600 km by 2018-19.

In terms of the market opportunity in value terms, we expect the toll market to increase 1.6 times from Rs 4.3 billion to around Rs 7.0 billion by 2018-19.

**Toll Market Opportunity for Maharashtra**




1. Tolled length for a single project has been taken as 50 km as total length on tolling could not be sourced from primary / secondary sources.
2. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
3. We have assumed a 5% increase in annual potential collection per year
4. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authority.

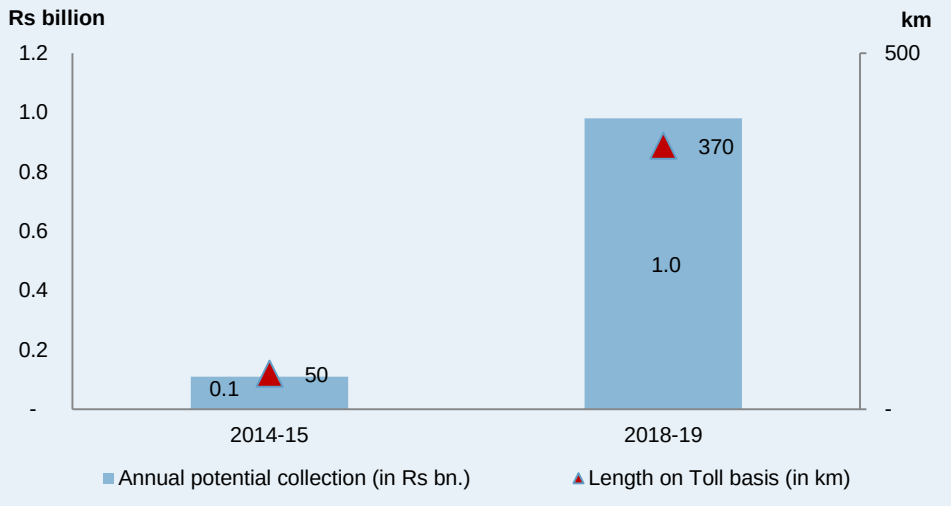
**Source: CRISIL Research Estimates**

## Outlook for Karnataka (KRDC)

Karnataka Road Development Corporation (KRDC) has recently become active in the tolling market. The authority in May 2013, for the first time, invited bids for 1 tolling project in Bellary. The length of the project is estimated to be around around 50 km. No public tender announcment has been made, however, in 2014-15.

CRISIL Research expects the total stretch under tolling (for which bids will be invited) to increase from the current around 50 km to around 370 km by 2018-19. In terms of the market opportunity in value terms, we expect the toll market to increase to around Rs 1.0 billion by 2018-19 from around Rs 0.1 billion in 2014-15.

### Toll Market Opportunity for Karnataka



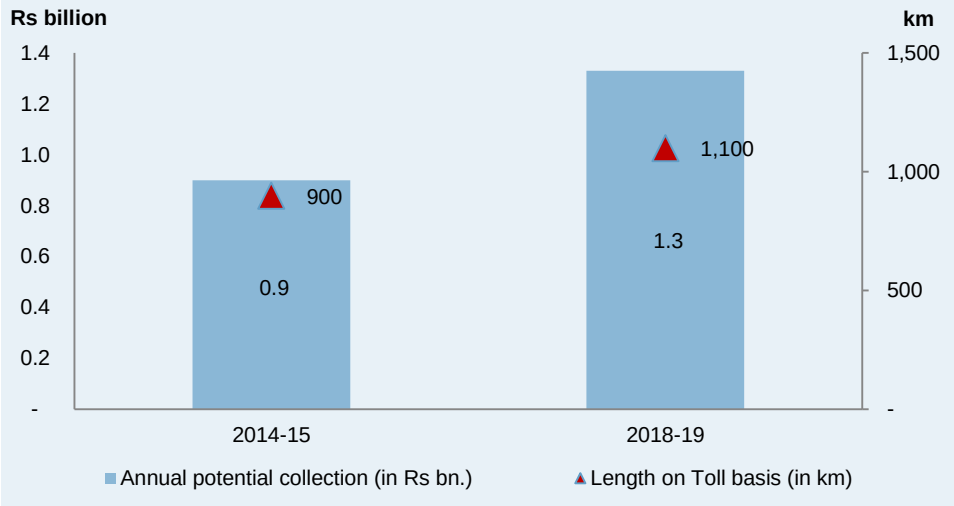

1. Tolled length for a single project has been taken as 50 km as total length on tolling could not be sourced from primary / secondary sources.
2. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
3. We have assumed a 5% increase in annual potential collection per year
4. Total estimated toll length and APC in 2018-9 is based on the projects for which bids are expected to be invited by the state authority.
5. For KRDC, since annual potential collection for past was not available, past average annual potential collection per km of Maharashtra and Rajasthan state authorities have been used for extrapolation of future APC.

## Outlook for Odisha (OBCC)

As of 2012-13, Odisha Bridge and Construction Corporation invited bids for around 300 km of state highway stretches for tolling. Three toll gates of Sundargarh, Rourkela and Sambalpur accounted for a majority of the tolling length for which bids were invited. No publicly announced tender information was available for 2014-15.

CRISIL Research estimated that the total stretch under tolling (for which bids will be invited) to increase from the current around 900 km to around 1100 km by 2018-19. In terms of the market opportunity in value terms, we expect the toll market to increase from Rs 0.9 billion to around Rs 1.3 billion by 2018-19.

## Toll Market Opportunity for Odisha



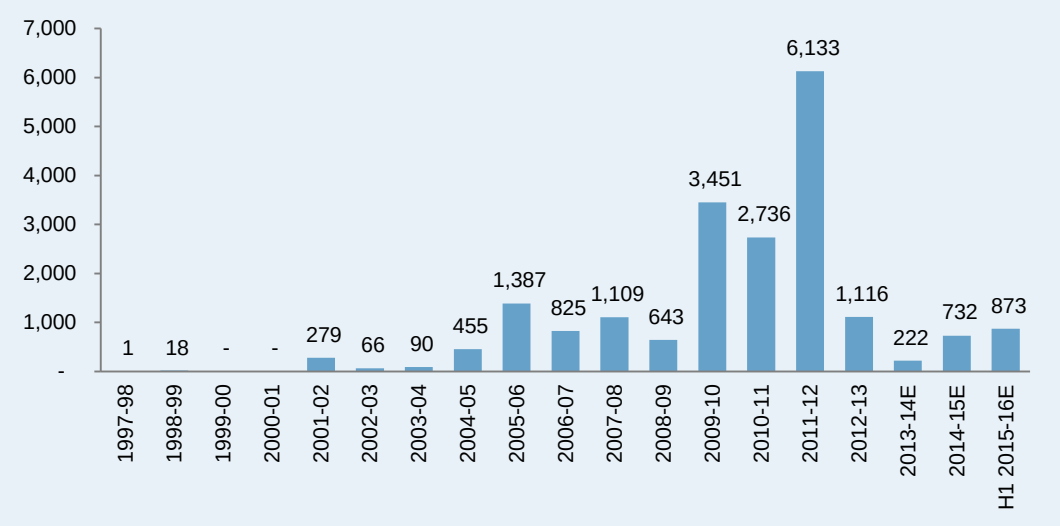

1. Tolled length for a single project has been taken as 50 km as total length on tolling could not be sourced from primary / secondary sources.
2. For calculating the annual potential collection (APC) for a state authority, past average APC per km for that authority was used.
3. We have assumed a 5% increase in annual potential collection per year
4. Total estimated toll length and APC in 2018-19 is based on the projects for which bids are expected to be invited by the state authority.

# 10. OUTLOOK ON OMT / TOLL MARKET FROM BOT OPERATORS FOR NATIONAL HIGHWAYS (INDIRECT)

## A) Drivers for indirect OMT/ Toll market from BOT (toll)

Developer interest in build-own-transfer, or BOT, road projects is dwindling, as indicated by the pace of awards under the National Highway Development Project. From 6,000 km at peak in 2011-12, project awarding by National Highways Authority of India is down to an estimated 732 km as of fiscal 2015.

**NHDP Projects Awarded by NHAI on BOT (toll) basis**




Note: The BOT (Toll) projects considered above are awarded by NHAI and does not include projects awarded by MORTH
**Source: Industry, CRISIL Research**

The reasons are not far to seek. Players in the segment are under severe financial stress, with pressure on profitability and gearing ratios. Gearing levels of many players are high because of sizeable BOT portfolios, company-specific investments in real estate, etc.

The following provides summary of financial situation of key publicly listed players in the BOT segment.

- HCC's financial level deteriorated as the fund requirement for BOT and real estate projects pushed up gearing to 19.7 in 2014-15 from 16.2 the previous year. This being the key factor for the company incurring losses at the net level in 2014-15.
- IVRCL's net loss margin widened to 42% in 2014-15 from 18% in 2013-14. A key factor is that gearing increased to 11.4 in 2014-15 from 4.2 in 2013-14.
- Gammon Infrastructure Projects Ltd's financial flexibility reduced substantially due to deterioration in gearing levels with increased funding requirement for BOT projects. The company raised Rs 2.6 billion through the qualified institutional placement route in 2014-15 and plans to use the funds to finance ongoing projects and repay debt partially. However, the equity raised is lesser than the company's outstanding debt.

- Despite high funding requirement for BOT projects, IRB managed to marginally improve its gearing to 2.9 in 2014-15 from 3.2 in 2013-14. This was on the back of a debt repayment of its operational assets and a Rs 4.4 billion qualified institutional placement (QIP) in March 2015.

| Companies | Gearing ratio | | | Net margin (%) | | |
|---|---|---|---|---|---|---|
| | 2012-13 | 2013-14 | 2014-15 | 2012-13 | 2013-14 | 2014-15 |
| **IVRCL** | 2.5 | 4.2 | 11.4 | -6.4 | -18.3 | -42.0 |
| **HCC** | 14.0 | 16.2 | 19.7 | -6.2 | -3.7 | -2.1 |
| **Gammon Infra Projects** | 4.7 | 5.5 | 7.6* | 3.6 | -12.3 | -8.4* |
| **IRB Infrastructure** | 2.7 | 3.2 | 2.9 | 15.0 | 12.3 | 13.6 |

Note: Toll rights have been considered as a part of tangible assets for the calculation of gearing ratio

* Up to September 2014

**Source: CRISIL Research, Company Reports**

High gearing limits player's financial flexibility to bag / execute more BOT projects. Therefore, many BOT players have been actively looking to sell assets to tide over the financial crunch and the impact of other external factors that have rendered toll revenue targets unattainable

### New exit policy allows for complete sale in a project

As per the new policy passed in May 2015, concessionaires for projects awarded pre and post 2009 can exit a project completely after two years of project completion. Also, developers of existing and coming projects can sell or transfer 100% stake in the special purpose vehicle (SPV) formed for the project, without having to create a new SPV. The developer's exit can, however, be effected only in consent with lenders and the NHAI.

This is in contrast to the earlier policy where developers were required to hold at least 51% equity during construction and 26% equity for up to two years after the commercial operations date. Additionally, pre-2009 concessionaires could sell only up to 74% stake in a project after two years of the commercial operations date.

## B) Market for OMT/Toll players

Operation & maintenance and toll collection are integral components of a BOT contract. Operation & maintenance of a road stretch is sometimes outsourced by a few BOT players. However, toll collection is typically done by the BOT player itself, with some components outsourced (technology, toll collection staff, etc). There have been very few instances where BOT players have outsourced projects to third party on operation-maintenance-transfer (OMT) or toll collection.

- In 2013, Reliance Infrastructure Limited invited tenders on minimum revenue guarantee model for its various toll plazas
- Lanco Infra has also in the past invited projects for tolling

Going ahead, we expect a number of BOT players to sell assets due to the financial crunch they are facing and the impact of external factors which have rendered toll revenue targets difficult to attain. Some contractors and developers are already exploring options for divesting stake in completed projects to release blocked capital and redeploy in new projects. Among others, IVRCL, Madhucon, Nagarjuna and Reliance Infrastructure, are either planning to or are in the process of divesting stake in operational road assets. On completion of the stake sale, this is expected to help improve their financial position over the next few years.

Here is an indicative list of BOT players and the projects they are planning to exit or dilute stake in:

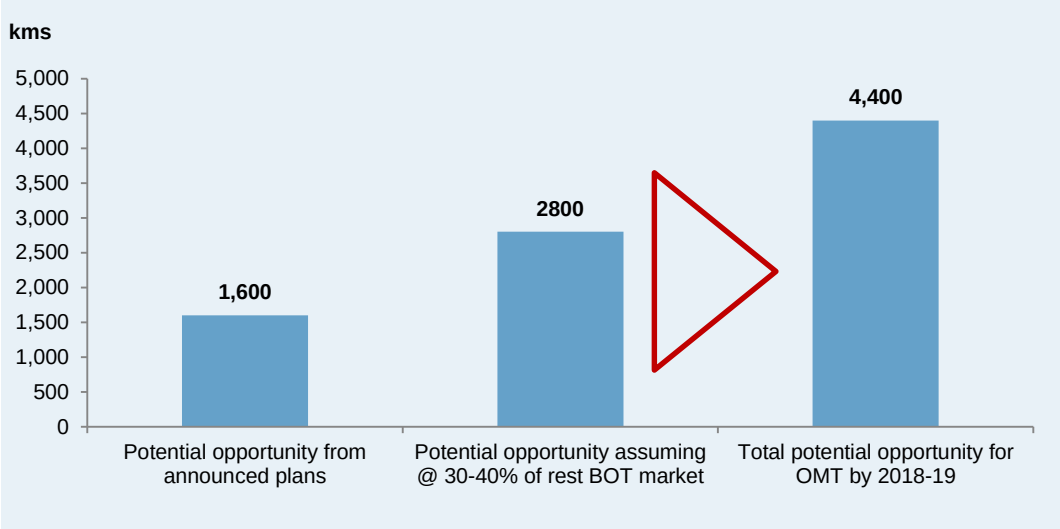
| Companies | Comments |
|---|---|
| **IVRCL** | The company has 4 ongoing BOT projects currently and 3 completed projects. The company sold 3 assets to Tata Realty and Infrastructure Ltd (TRIL) in 2013-14 and has put another 3 projects on sale in 2015-16 |
| **Nagarjuna Construction Company** | Nagarjuna Construction Company Ltd is close to raising about Rs.220 crore by selling its stake in two BOT road projects - the Western UP Tollway Ltd and the Bangalore Elevated Tollway Ltd |
| **Welspun Enterprises** | Welspun Enterprises Ltd is said to be in advanced discussions to sell its BOT-toll 'Dewas-Bhopal Corridor 'project in Madhya Pradesh to investment manager IDFC Alternative |
| **Reliance Infrastructure** | Reliance Infrastructure Ltd is in the process of divesting its roads business completely by selling all its 11 BOT toll road assets |
| **Madhucon Infra Ltd** | Madhucon Infra Ltd has entered into an agreement to sell one of its BOT-toll road assets to Cube Highways and Infrastructure Pte Ltd of Singapore for Rs.248 crore |
| **Others** | Lanco Infratech has put its divestment plans on hold by another 2 years |
| | IL&FS Transportation Networks Ltd (ITNL) is looking to sell most or all of its operational annuity road projects in an effort to reduce debt before the end of this fiscal year |
| | Gammon Infrastructure Projects Ltd has agreed to sell six road and three power projects to BIF India Holdings Pte. Ltd for about Rs.563 crore |

**Source: Industry**

Hence, based on the above announced plans and interactions with market participants, CRISIL Research expects around 4,400 km of BOT projects to be financially divested by their current operators over the next few years. This includes about 1,600 km to be divested, based the current announced plans of IVRCL, Nagarjuna Construction, Reliance Infrastructure, Madhucon, Welspun and Gammon Infrastructure. A further 2,800 km, amounting to 30-40% of BOT projects that are currently under operation, is expected to be divested by 2018-19, based on our interactions with key market participants.

It is understood that the new project owners would be primarily financial investors with limited project operation experience and hence higher propensity to outsource. Accordingly, CRISIL Research estimates the potential opportunity as indicated above once the announced and expected BOT projects sales / equity dilution get implemented, resulting in a potential opportunity for OMT players.

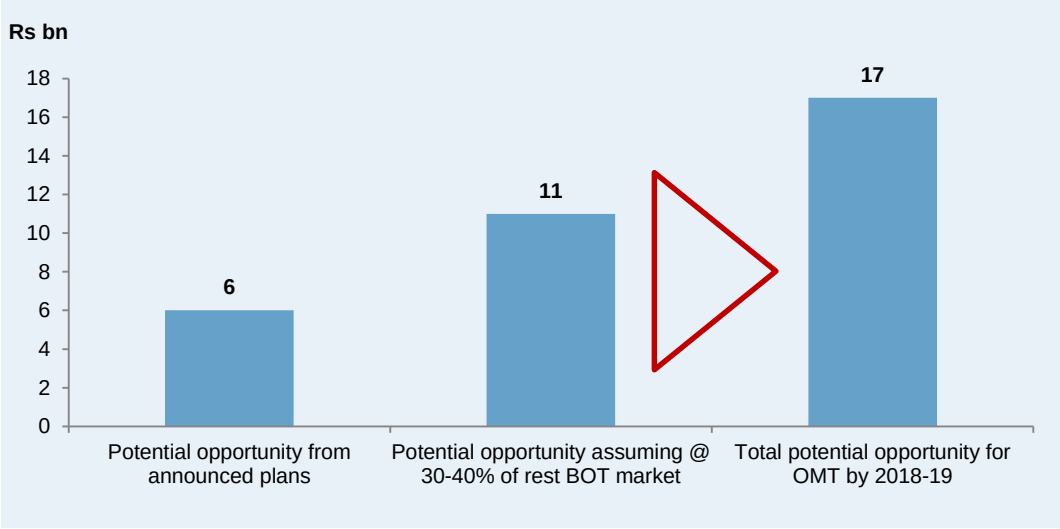
**OMT potential opportunity in terms of length (km)**




**Source: CRISIL Research Estimates**

In terms of project cost, we expect a market of around **Rs 17 billion** by 2018-19.

**OMT market in value terms (Rs billion)**




Note: (i)Market in value terms indicates the project cost
(ii) In the background of lower bitument prices, we have assumed the project cost to decline in 2015-16 followed by flattish growth in 2016-17 and thereafter a 5 per cent increase in project cost per year

**Source: CRISIL Research estimates**

CRISIL Research expects the potential market for toll collection business from these financially divested BOT projects to be very low. This is primarily due to:

- Shorter duration of contracts (typically of around 12 months, which poses uncertainty to the owner)
- Operation & maintenance risk to be borne by the concessionaire

# GLOSSARY OF AUTHORITY NAMES

- NHAI : National Highways Authority of India
- HRBC: Hooghly River Bridge Commissioners
- MPRDC: Madhya Pradesh State Road Development Corporation
- KRDC: Karnataka Road Development Corporation Limited
- BSRDC: Bihar State Road & Bridges Development Corporation
- MSRDC: Maharashtra State Road Development Corporation
- RSRDC: Rajasthan State Road Development and Construction Corporation
- HSRDC: Haryana State Road & Bridges Development Corporation
- OBCC: Odisha Bridge & Construction Corporation limited
- RIDCOR: Road Infrastructure Development Company of Rajasthan

# Our Capabilities

## Making Markets Function Better

### Economy and Industry Research

- Largest team of economy and industry research analysts in India
- Coverage on 70 industries and 139 sub-sectors; provide growth forecasts, profitability analysis, emerging trends, expected investments, industry structure and regulatory frameworks
- 90% of India's commercial banks use our industry research for credit decisions
- Special coverage on key growth sectors including real estate, infrastructure, logistics, and financial services
- Inputs to India's leading corporates in market sizing, demand forecasting, and project feasibility
- Published the first India-focused report on Ultra High Net-worth Individuals
- All opinions and forecasts reviewed by a highly qualified panel with over 200 years of cumulative experience

### Funds and Fixed Income Research

- Largest and most comprehensive database on India's debt market, covering more than 15,000 securities
- Largest provider of fixed income valuations in India
- Value more than Rs.53 trillion (USD 960 billion) of Indian debt securities, comprising outstanding securities
- Sole provider of fixed income and hybrid indices to mutual funds and insurance companies; we maintain
- 12 standard indices and over 80 customised indices
- Ranking of Indian mutual fund schemes covering 70% of assets under management and Rs.4.7 trillion (USD 85 billion) by value
- Retained by India's Employees' Provident Fund Organisation, the world's largest retirement scheme covering over 60 million individuals, for selecting fund managers and monitoring their performance

### Equity and Company Research

- Largest independent equity research house in India, focusing on small and mid-cap companies; coverage exceeds 120 companies
- Released company reports on all 1,440 companies listed and traded on the National Stock Exchange; a global first for any stock exchange
- First research house to release exchange-commissioned equity research reports in India
- Assigned the first IPO grade in India

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