

**“Conference on - Operation, Maintenance and  
Tolling in Road Sector:  
Needs, Requirements, Issues and Opportunities”**

**The OMT Opportunity**

**13 -14 December 2011**

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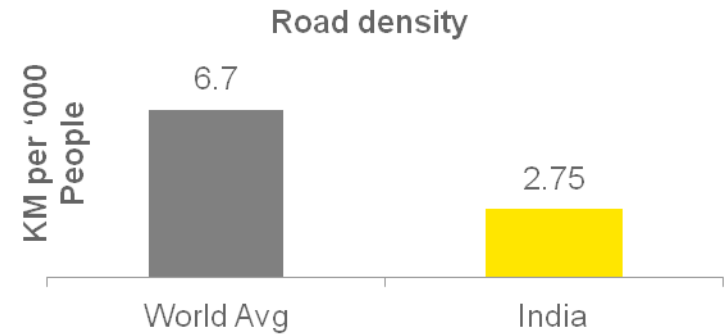
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# Indian Highway Sector scenario

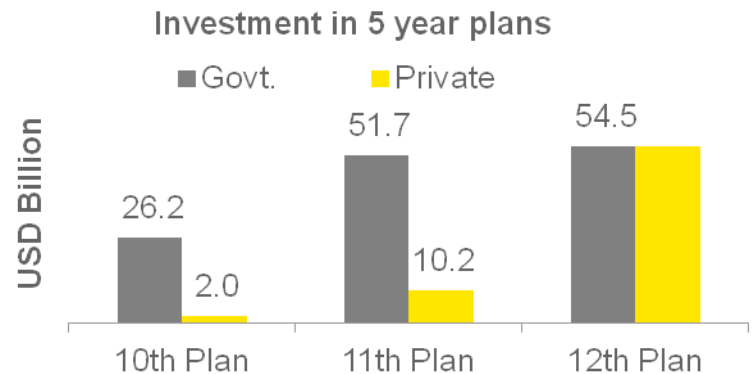


# Indian Highway Sector Scenario

- ▶ India has the world's second largest road network of 3.3 million Km
- ▶ Yet the density of roads in India is less than 50% of the global average.
- ▶ National Highways carry 40% of the total traffic while contributing only to 2% of the entire network
- ▶ Further, a quarter of Indian highways are congested as a result of which trucks cover less than 200 km a day, less than 50% of global average
- ▶ Urgent need to increase capacity. – Can we achieve construction of 20 km / day against the current average of 8 km / day.
- ▶ In 12<sup>th</sup> Five Year Plan, total investment is almost doubled with private sector investment expected to be around USD 55 billion

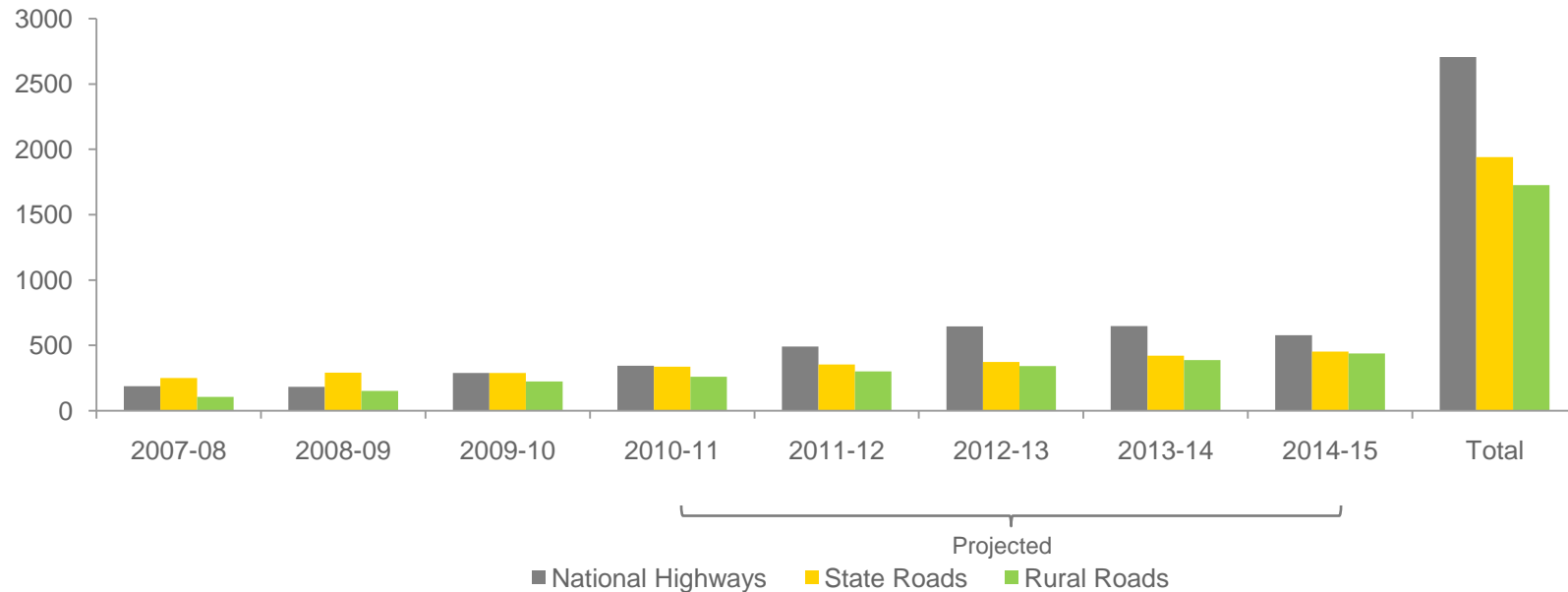


Source: World Bank



Source: FICCI and Planning commission.  
Conversion rate used is 1 USD = Rs 45

# Roads and Highways - Opportunity



Source: CrisInfac Report on Indian Infrastructure, 2010

## ▶ **Mega projects**

- Nine Mega projects have been identified with the length of each project varying between 390 to 700 km.
- An estimated investment of USD 9.4 billion and development of 2,930 km of stretches is expected

## ▶ **Expressways**

- New expressway program outlined which plans to build 18,637 km of Greenfield national expressways by 2022
- 1,000 km of new expressways is expected to be completed over the next 5 years at an estimated cost of USD 4.5 billion

Focus has been mainly on **Construct, Construct, Construct**

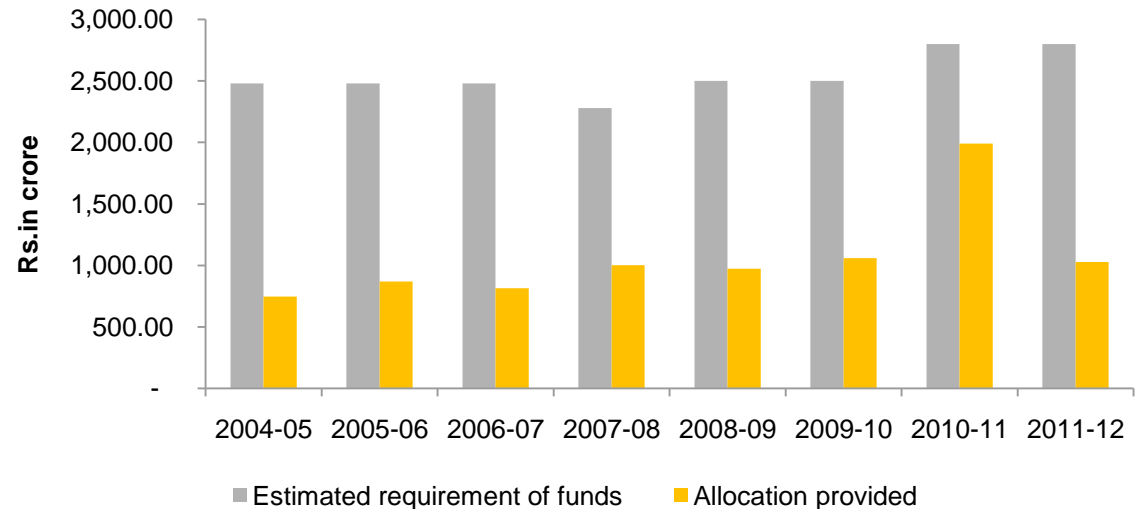
# Maintenance of Roads and Highways



# Maintenance of Roads and Highways

- ▶ The Central Government is responsible for development and maintenance of the National Highways system.
- ▶ The Ministry is carrying out development and maintenance work of National Highways through the following agencies, viz.
  - ▶ National Highways Authority of India (NHA),
  - ▶ State Public Works Departments (PWDs) and
  - ▶ Border Road Organization (BRO).
- ▶ Operation and maintenance of roads has not received the attention it needs and deserves.

Details of estimated fund requirements for maintenance & Repair of National Highways and actual allocation



Source: Funds for maintenance of Highways, PIB – 24<sup>th</sup> Nov 2011, Ministry of Road Transport & Highways

***The basic cause for poor management of National Highways had been the lack of fund made available for maintenance as per norms***

# Operate, Maintain and Transfer (OMT) - concept

- ▶ Recognizing the transport growth and the inadequacy of budgetary outlays to address this constraint, the government of India decided in 1995 to invite private investment in the highways sector.
- ▶ The maintenance strategy has been to "build, neglect and rebuild". As a result, the quality and condition of most roads is poor, causing losses to road users as well as the economy.
- ▶ Therefore, Operate , Maintain and Transfer (OMT ) concept was introduced with the objective to assure the Road User of adequate service quality and safety

***An OMT project consists of and is a fusion of two contracts,***

***(a) a contract for right to collect toll***

***(b) a contract for O&M.***

*Hence, it provides consistent revenue to NHAI on one hand and Just-in-Time (JIT) maintenance*

- ▶ All the formats - BOT(toll), BOT (annuity) & OMT include
  - ▶ Performance based maintenance
  - ▶ Periodic maintenance
  - ▶ Routine maintenance (minor repairs, cleaning of carriageway, shoulders, cross drainage structures etc.)
  - ▶ Road Property Management (Road signages, median, road furniture, crash barriers etc.)
  - ▶ Incident Management (Route patrol, Ambulance at average interval of 50km)



# Importance of OMT contract

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The concept of OMT contracts originated from the consideration of the following 4 factors

- ▶ Lack of manpower/personnel for measuring the quantities of activities involved in the more traditional maintenance contracts and for monitoring performance standards
- ▶ Need to shift greater responsibility to Contractors throughout the entire contract period as well as to stimulate and profit from their innovative capacity
- ▶ Frequency of claims resulting from the necessity to increase the quantities of activities initially calculated and included in the original contracts
- ▶ Need to focus more on customer's satisfaction, seeking to identify the outcomes, products or services that the road users expect to be delivered, and to monitor and pay for those services on the basis of customer-based performance indicators;

# Advantages of OMT contract

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- ▶ Potential increase in the level of service
- ▶ Potential reduction in costs
- ▶ Sharing of risks with the private operator
- ▶ Value for money to the private agency and its customers
- ▶ Limited supervision by the Authority
- ▶ Single agency for toll collection and maintenance; therefore avoiding multiple agencies such as
  - ▶ *O&M Contractor*
  - ▶ *Technical Consultant for Supervision*
  - ▶ *Toll Agency*
- ▶ Faster implementation
- ▶ Low investments
- ▶ Higher competition - Higher revenues
- ▶ Funding not a constraint - International funding agencies also promote / encourage adoption of OMT

Toll Collection rights are given to private operator

- ▶ where concession period is expired or to be expired incase of limited Traffic
- ▶ Four lane constructed on EPC
- ▶ Annuity projects

# Maintenance of Highways under various formats

## PPP – BOT

- ▶ Construction of Road – Concessionaire on BOT
- ▶ Maintenance – Concessionaire
- ▶ Monitored by – Technical divisions
- ▶ Concession period – around 30 years
- ▶ Involves Financial close & Formation of SPV
- ▶ Risks undertaken
  - ▶ NHAI – Political risk, Force Majeure
  - ▶ Concessionaire - Time and cost overrun risk, finance risk, termination risk, Operation and maintenance risk, traffic risk

## EPC

- ▶ Construction of road – EPC Contractor
- ▶ Maintenance – NHAI through O & M contracts
- ▶ Monitored by – NHAI (CM) divisions
- ▶ Duration of O&M contract – 1 year
- ▶ No Financial close or formation of SPV
- ▶ Risks undertaken
  - ▶ NHAI – Design risk, operation risk, Traffic risk
  - ▶ Concessionaire - Time and cost overrun risk, finance risk, termination risk

## OMT

- ▶ Construction of Road – by EPC contractor or PPP concessionaire
- ▶ OMT concession signed between NHAI and OMT concessionaire
- ▶ Monitored by – Technical divisions
- ▶ Concession period – 4 / 9 years
- ▶ No financial closure but involves Formation of SPV / LLP
- ▶ Risks undertaken
  - ▶ NHAI – Political, Force Majeure, Latent defects
  - ▶ Concessionaire – Operation and maintenance risk, traffic risk
- ▶ Concessionaire is given toll collection rights
- ▶ Sweetener – Additional toll collecting rights for toll plazas on Annuity projects adjacent to the project stretch



# Initiatives by State Governments for highway maintenance

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## Gujarat State Highway Project (GSHP)

- ▶ The Gujarat State Highway Project (GSHP) was designed to address several key sector issues by:
  - a) strengthening the institutional capacity of the Roads and Buildings Department (R&BD) to better manage the State road network, through the development and implementation of a comprehensive institutional strengthening action plan;
  - (b) improving the capacity and structural quality of key segments of the core State road network, by widening and strengthening of about 800-900 km of SHs; and
  - c) reducing the maintenance backlog, by funding the periodic maintenance of about 1,000 km of high priority State roads.
- ▶ **Outcome**
  - ▶ Reduction in travel time by 10% on about 1,900 km of roads improved and maintained under the project;
  - ▶ Maintenance funding was increased by 10% in real terms over the next five years;
  - ▶ Maintenance backlog reduced by 50% as against 20% targeted on state highways by 2007
  - ▶ About 800-900 km of high priority state highways improved by December 2004;
  - ▶ About 1,000 km of state roads maintained to a “good” standard by December 2002;
  - ▶ The planned institutional strengthening strategy under the project was substantially and soundly achieved by the end of the project.
  - ▶ More than 1500 R&BD and project-related staff trained in relevant training schemes as against planned 500

# Initiatives by State Governments for highway maintenance

## Andhra Pradesh Road Sector Project (APRSP)

- ▶ 400 kms improved under Widening and Strengthening component
- ▶ 1734 kms improved under Heavy Periodic Maintenance.
- ▶ 1162 kms implemented under Pilot performance Based Maintenance Contracts in 4 Districts of Kurnool, Nalgonda, Chittoor and Guntur.
- ▶ The GOAP proposed a second project i.e. AP Road Sector Project (APRSP) with the loan assistance of World Bank for improvement and better management of the roads
- ▶ Major components of the Project
  - ▶ Up-gradation and Improvement component for 429 Kms. (2 lanes and 4 lanes) Rs. 1545.61 Cr.
  - ▶ Long Term Performance Based Maintenance Contracts (LTPBMC) for 6241 Kms. Rs. 1427.66 Cr.
  - ▶ Institutional Strengthening, Road Safety & PPP Facilitation Support etc., Rs. 191.40 Cr.
- ▶ Cost of the project is estimated at Rs. 3165.00 Cr. (@ Rs. 49.00 per dollar).
- ▶ Project duration 5 years from signing of loan agreement (2010-2015)

## Himachal Pradesh State Roads Project (HPSRP)

- ▶ The Component 1 (Core Network Upgrading) - upgrading of 447 km of roads in the Core Road Network (CRN)
- ▶ The Component 2 (Core Network Maintenance and Management) –
  - a) *periodic maintenance and minor rehabilitation of about 2,000 km of the Core Road Network;*
  - b) *piloting performance-based maintenance contracts;*
  - c) *accident black spot improvements;*
  - d) *pre-investment studies for road network improvement and maintenance; and*
  - e) *capacity enhancement in road maintenance, financing, and management.*
- ▶ Periodic maintenance of 900 km roads in CRN completed,
- ▶ Works in 147 km of roads are in progress,
- ▶ Works in another 402 km are in final stage of procurement.
- ▶ For pilot performance based maintenance contracts, bidding documents have been finalized but bids are to be invited.
- ▶ Consulting services for accident black spot improvements are in progress.



# International experience – Privatization of highway maintenance

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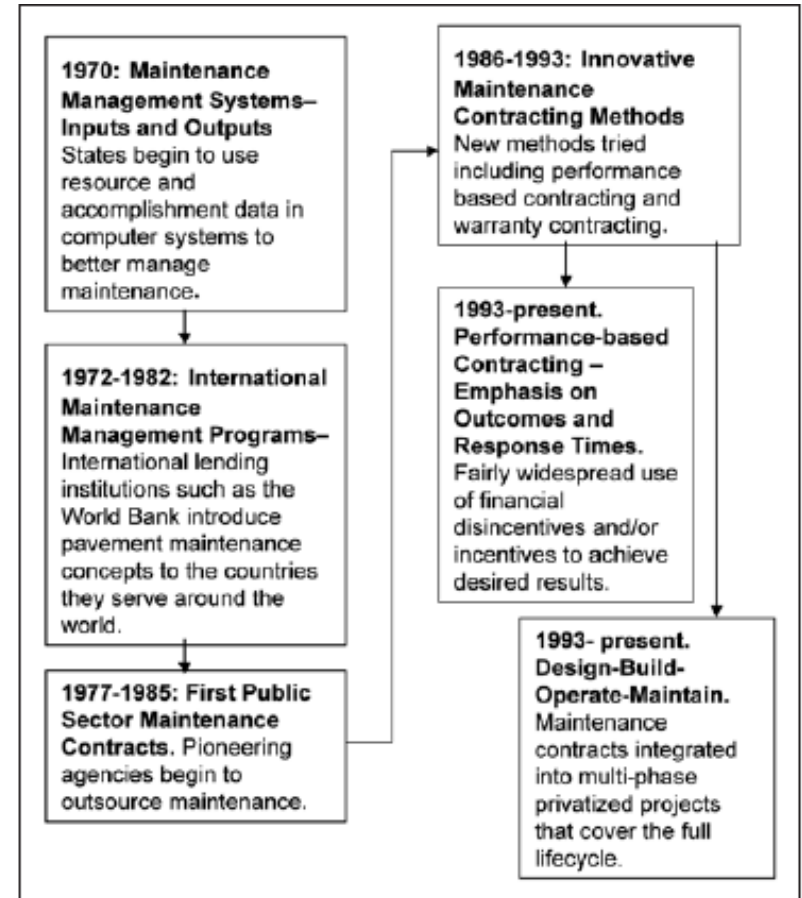
- ▶ Privatization of highway maintenance originated in British Columbia, Canada and has further been widely used in USA, Australia, New Zealand, England and Finland
- ▶ It has resulted in cost savings that can be measured against engineers' bid estimates, the cost of in house staff to perform the maintenance before the contract, the cost of performing maintenance by a control group (usually in-house staff), or other baselines

## Cost savings of Performance based maintenance contracts relative to conventional Contracts in selected countries

Country	Cost Savings
Norway	20-40%
Sweden	30%
Finland	30-35%
Holland	30-40%
Estonia	20-40%
England	10%
Australia	10-40%
New Zealand	20-30%
United States	10-15%
Canada	10-20%

Source: P. Pakkala cited in World Bank Transport Note No. TN-27, Sep. 2005.

## Evolution of Outsourcing operation and maintenance contracts



Source: NCHRP – Performance based contracting for maintenance , 2009



# International experience – Privatization of highway maintenance

## Road maintenance in Spain

### 1st phase: Road Administration Direct Management

- ▶ Own personnel
- ▶ Own machinery
- ▶ Own purchasing department
- ▶ Own engineering department
- ▶ Subcontracting major rehabilitation operations to private companies

### Problems:

- ▶ Productivity - high number of personnel
- ▶ Machinery maintenance
- ▶ Low specialization
- ▶ Old personnel

### 2nd phase: Road Administration Direct Management

- ▶ Own reduced personnel
  - ▶ Own reduced machinery
  - ▶ Own purchasing department
  - ▶ PERIODIC MAINTENANCE - Subcontracting of specific activities to specialized private companies (horizontal marks, vertical signs, barriers, etc.)
  - ▶ Subcontracting of major rehabilitation operations to private companies
- } Routine maintenance

### 3rd phase: Externalization of Road Maintenance

- ▶ Reduced personnel only controllers
- ▶ No own machinery
- ▶ No own purchasing department
- ▶ Reduced engineering department only controllers



## **COMPREHENSIVE MAINTENANCE CONTRACT**

### Services Companies Specialized on Maintenance

- ▶ Routine and Periodic Maintenance of each contract Managed by a Private Company controlled by Road Authority
- ▶ Winter serviceability
- ▶ Inventory (data base) and management system

- ▶ **1st Comprehensive Maintenance Contract (Pilot Project) - 1986**
- ▶ **Project - Madrid Ring Motorway (M30)**
- ▶ **Length: 32,5 km ; Period: 2 years**
- ▶ **Today more than 150 Contracts on National Roads**

# International experience – Privatization of highway maintenance

## Florida

- ▶ Infrastructure Corporation of America (ICA) was the first asset management company in Florida to offer an innovative alternate program to perform routine maintenance of management services related to roadway, bridge and toll facilities.
- ▶ ICA currently performs total asset management services and complete maintenance on 253 centerline miles of Interstate 75 in Florida.
- ▶ The 7-year, USD77.5 million performance-based contract is for “fence-to-fence” maintenance services.
- ▶ Florida has realized significant savings from using total asset management.
  - ▶ ICA’s winning bid was 12.2 percent below the Florida DOT’s funding estimates in year one, ranging up to 22.2 percent below the estimate in year seven.
- ▶ At the same time, quality has not been sacrificed at the expense of cost savings.
- ▶ The last Level of Service rating conducted on the asset yielded a composite score of 90. compared to 80 set forth in the contract.

## New Zealand

- ▶ In the last 10 years nearly all road and highway works have been outsourced in New Zealand.
- ▶ All of the contracts contain end-result specifications and quality assurance measures.
- ▶ The government has developed a 10-year maintenance contract known as a “performance specified maintenance contract.”
- ▶ The contractor takes total responsibility for delivering pre-agreed service levels.
- ▶ Regular audits are carried out to determine compliance.
- ▶ These contracts have saved New Zealand approximately 20 % and improved services as well.
- ▶ Better services are being delivered at much lower costs.
- ▶ In the last 11 years the actual maintenance cost has remained nearly the same in real dollars, yet traffic volumes have increased by 52 % and accident rates have decreased by 45 %

# Size of the OMT opportunity

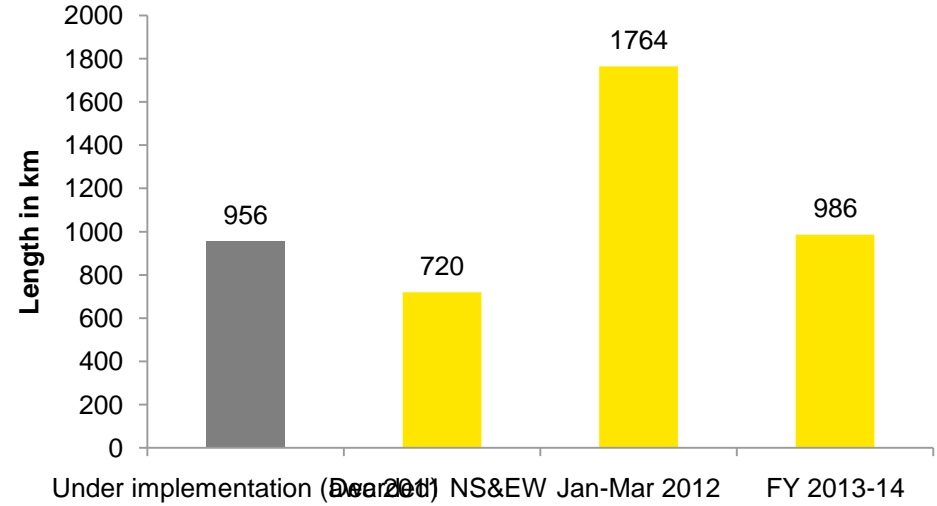
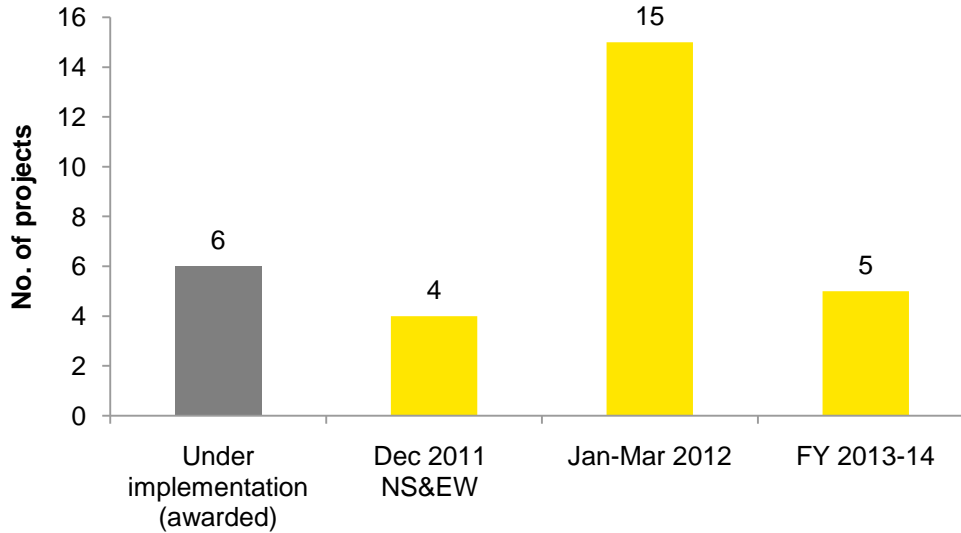


# Size of the OMT opportunity

Category – National Highways	Length in km	Maintenance by
Completed under PPP – BOT	10,000	Concessionaire
Completed under EPC	4,900	NHAI
GQ	3350	
NS & EW	1520	
Under implementation	9,886	BOT/ EPC contractor
Balance for award	29,681	Respective State PWDs / NHAI
<b>OMT projects</b>	Approx. 3700	OMT concessionaire

OMT projects	No. of projects	Length in km
Under implementation (Awarded)	6	956 km
Proposed	24	2750 km
<b>Total</b>	<b>30</b>	<b>3706 km</b>

# OMT Current size and potential



**Total proposed stretches - 24 projects**

**Total proposed stretches - 2750 km**

*Current BOT projects and EPC contracts are potential projects to be given on OMT in future*

# Key issues and concerns



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- ▶ The basic cause for poor management of National Highways is the lack of fund made available for maintenance as per norms
- ▶ Quality of the roads constructed on EPC contract are not up to the mark, resulting in high maintenance cost for OMT concessionaire
- ▶ If the site consists incomplete stretches at the time of handing over to the concessionaire, it may lead to conflicts.
- ▶ Delay in approvals for construction of project facilities from concerned departments
- ▶ Lack of interest in big infrastructure Companies mainly due to
  - ▶ Entry of small infrastructure companies as the technical qualification criteria is limited to project cost.
  - ▶ Low profit margin for the concessionaire due to high number of bidders
  - ▶ Short concession period – either 4 or 9 years
  - ▶ Rate of traffic growth to determine the profitability
- ▶ Need for more mechanization in highway maintenance
- ▶ OMT is currently prevalent in National Highway space; however there is a need for introducing OMT contracts in State Highways as well



# End of Presentation

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