

## Chapter 7

### Analysis & Findings

#### 7.1 Introduction:

By 1995-96, road has become the dominant mode of transport with 60% share in freight and 80% share in passenger traffic. 38,500 Km of National Highways formed about 1.93% of the nearly 2 million Km total road network, but carried about 40% of the total road traffic. As on 2011-12, the total length of National Highway is about 71,772 Km which formed 1.7% of the nearly 4 million Km total road network and it carries 40% of the total road traffic.

The share of road traffic in total traffic has grown from 13.8% of freight traffic and 15.4% of passenger traffic in 1950-51 to an estimated 62.9% of freight traffic and 87% of passenger traffic by the end of 2009-10. Transport sector contributes about 6% of Indian GDP. The share of road sector in it has increased from 63% in 1999-2000 to 73% in 2008-09.

It was felt that road infrastructure had to be strengthened with liberalisation of the Indian economy. India witnessed great strides in road development especially after the inception of National Highways Development Programmes since 1999 being implemented by National Highways Authority of India. The overall status of different phases of NHDP which involves development of 54,454 Km in 7 phases, is shown in Table 7.1.<sup>106</sup>

<sup>106</sup> Government of India, MoRTH (2012), *Annual Report (2011-12)*, New Delhi: MoRTH

Table 7.1

Overall status of NHDP as on 30.11.2012					
PH	Road Network	Approval	Total Length (in Km)	Length completed (in Km)	% Completed
I	4 laning GQ (5846 Km), NS-EW (981 Km), Port & Others (671 Km)	Dec., 2000 Rs. 30,300 Cr (1999 prices)	7498	7506	Completed
II	4 laning NS-EW (6161 Km), Others (486 Km)	Dec., 2003 Rs. 34,339 Cr (2002 prices)	6647	5717	86%
III	4 laning connectivity	March, 2005 / March, 2006 Rs. 80,626 Cr	12109	4454	36.78%
IV	2 laning with paved shoulders	Dec., 06 to Dec., 09	20000	18	0.09%
V	6 laning of GQ & High Density	Oct., 2006 Rs. 41,210 Cr (2006 prices)	6500	1221	18.78%
VI	Express ways	Nov., 2006 Rs. 16,680 Cr (2006 prices)	1000	0	0%
VII	Ring Roads, Bypasses & Flyovers	Dec., 2007 Rs. 16,680 Cr (2007 prices)	700	19	2.71%
	<b>Total</b>		<b>54454</b>	<b>18935</b>	<b>34.77%</b>

(Source: Annual Report (2011-12), MoRTH, & 155<sup>th</sup> MIS Report, NHAI)

The period from 1999-2004, involved awarding of NHDP phase-I & phase-II projects, which are largely implemented on E.P.C. mode. In January, 2005, the committee on infrastructure adopted an action plan for NHDP. The total road to be developed including balance of NHDP phase-I & II was 45,974 Km. The projects envisaged to be taken on BOT(Toll), BOT(Annuity) & EPC would be 23,757 Km (52%), 15,937 Km (34%) & 6280 Km (14%) respectively. The overall projects to be taken on PPP (i.e. BOT(Toll) & BOT(Annuity)) would cover 39,694 Km (86%).<sup>107</sup>

In a meeting held under the chairmanship of the P.M. on 15, March, 2005, it was decided that besides awarding contract under BOT for a total road length

<sup>107</sup> Government of India, Planning Commission (2006), *Report of the Core Group Financing of NHDP*, New Delhi: The Secretariat for the Committee on Infrastructure

of upto 2100 Km under NHDP phase-II, all future programmes / projects would be awarded only on BOT basis. The year 2005 can be regarded as a watershed in NHDP. PPP in the form of BOT(Toll) & BOT(Annuity) has picked up well since 2005 for NHDP projects. As on November, 2012 total 234 NHDP projects have been awarded on PPP mode (BOT(Toll) & BOT(Annuity)). The phase wise and year wise details are as under.<sup>108</sup>

**Table: 7.2**  
**NHDP Projects awarded on PPP mode**

Year	BOT (Toll)							BOT (Annuity)						Grand Total	
	NHDP Phases							NHDP Phases							
	I	II	III	IV	V	VII	All	I	II	III	IV	V	Ot.		All
1998	1						1							0	1
1999	1						1							0	1
2000							0							0	0
2001	2						2							0	2
2002	4						4	8						8	12
2003	1						1							0	1
2004							0							0	0
2005		12	15				27		3					3	30
2006		3	5		2		10		11					11	21
2007			10				10		2	1				3	13
2008					6		6							0	6
2009		3	20			1	24			3				3	27
2010		1	26	4	11	1	43		5	7	1		2	15	58
2011			13	12	6		31			7	1			8	39
2012		1	9	6	6		22				1			1	23
<b>Total</b>	<b>9</b>	<b>20</b>	<b>98</b>	<b>22</b>	<b>31</b>	<b>2</b>	<b>182</b>	<b>8</b>	<b>21</b>	<b>18</b>	<b>3</b>		<b>2</b>	<b>52</b>	<b>234</b>

(Source: List of PPP Projects on NHA website <http://www.nhai.org>)

The years 2007 & 2008 show a dip in the NHDP projects awarded on PPP mode due to slowdown in financial market world wide. The investment in infrastructure increased from Rs. 8,87,794 Crore (5.07% of GDP) in 10<sup>th</sup> plan to Rs. 20,56,150 Crore (7.6% of GDP) in 11<sup>th</sup> plan and will be Rs. 40,00,000 Crore (10.25% of GDP) in 12<sup>th</sup> plan. The investment in Highway was 15% of

<sup>108</sup> List of PPP Projects on NHA website <http://www.nhai.org>

overall investment. The private sector investment in infrastructure has increased from 19% in 10<sup>th</sup> plan to 36% in 11<sup>th</sup> plan and will be 50% in 12<sup>th</sup> Plan.

To sustain a GDP growth of 9%, investment in infrastructure should be 10%-11% of GDP. The budgetary resources are scarce and limited and the preference of allotment will be in sectors which are not financially viable such as irrigation, hydro & solar power, water supply & sanitary services etc.. So, the involvement of private sector in financially viable projects is the need of hour mainly due to fiscal concern, new public management, availability of additional resources and for efficiency in project delivery & operation.

Increased adoption of BOT(Toll) was facilitated by policy initiatives of Government of India (GoI) and the evolution of well balanced MCA for BOT (Toll) road projects. In this study attempt has been made to evaluate the performance of PPP projects in the National Highways world wide and performance of NHDP projects in different modes i.e. EPC, BOT(Annuity) & BOT(Toll).

## 7.2 Evaluation of Performance of NHDP Projects

As on November, 2012 ; NHAI has awarded total 310 nos (9911 Km) on EPC mode, 51 Nos (2878 Km) on BOT (Annuity) and 186 Nos (14,344 Km) on BOT (Toll) mode. Out of which, the contracts completed are 247 nos (9125 Km) on EPC mode, 20 Nos (1103 Km) on BOT (Annuity) and 51 Nos (2,949 Km) on BOT (Toll) mode.<sup>109</sup> The analysis of completed projects and projects under implementation which are likely to be completed as per contract by November,

<sup>109</sup> Government of India, NHAI (November, 2012), 155<sup>th</sup> MIS Report, New Delhi: NHAI

2012 have been done.

The benefits that were expected to accrue from BOT (Toll) projects were identified as reduced construction time, reduced cost overrun, reduction in litigation in the form of reduced number of projects that went for Arbitrary Tribunal (AT) and courts for dispute resolution and compensation. The benefits were analysed as follows.

#### **7.2.1 Reduced construction time:**

A comparative analysis of time overrun for EPC, BOT (Annuity) & BOT (Toll) modes for 212, 19 & 47 completed projects respectively and 51, 5 & 23 projects under implementation (which were due for completion on November, 2012) was done (**Refer Appendix - 1 to 7**). In case of completed projects, the average time overrun was 20.3 months, 7.0 months and 10.0 months for EPC, BOT (Annuity) & BOT (Toll) respectively. In case of projects under implementation (which were due for completion on November, 2012), the anticipated average time overrun was 49.8 months, 42.6 months and 19.1 months for EPC, BOT (Annuity) & BOT (Toll) respectively. In terms of total analysed projects, BOT (Toll) projects was found to have lower average time overrun of 13.0 months compared to 26.0 months of EPC and 14.4 months of BOT (Annuity) projects. In terms of total projects, the average time overrun for EPC projects was twice the time overrun for BOT (Toll) projects.

#### **7.2.2 Reduced cost overrun:**

The cost overrun was not applicable in BOT (Toll) and BOT (Annuity) projects as the construction risk was borne by the concessionaire, unless there was a significant change in the scope of work. The projects under implementation were not considered here as the cost overrun data would be

known only when the projects were completed. The analysis of 202 completed projects executed through EPC mode of delivery between 1996 and 2009 have been done for cost overrun along with time overrun (**Refer Appendix-8**). It showed that average percent cost overrun over contracted amount was 30%. The corresponding average time overrun was 18.6 months. The cost overrun was partly due to time overrun, although a perfect relationship between the two could not be observed.

The delays in the completion of EPC projects deny toll revenues till COD. Assuming that the annual toll revenues would be about 15% of the capital costs with revenue sharing model, the total revenue loss over 18.6 months for the NHAI would add up to 23% of the capital costs. Further, assuming interest during delay would cost about 10% of the project costs, the total loss to the exchequer would be about 63% (30%+23%+10%) of project costs.

### **7.2.3 Reduction in litigation:**

The share of completed projects that went to AT for dispute resolution were 46.2% & 3.9% for completed EPC, & BOT (Toll) projects respectively and Nil for BOT(Annuity) (**Refer Appendix-9**). The average amount pending before AT for completed projects was 32.4 Cr. & 2.1 Cr. for EPC & BOT (Toll) respectively. The share of completed projects that went to court for dispute resolution was 25.5% for EPC and it was nil for BOT(Annuity) & BOT (Toll) projects. The average amount pending before Court for completed projects was 7.9 Crore for EPC.

The share of projects under implementation that went to AT was 19% for EPC and it was nil for BOT (Annuity) & BOT (Toll) projects (**Refer Appendix-10**). The average amount pending before AT for EPC projects under



implementation was 8.4 Cr. The share of EPC projects under implementation that went to court was 3.2% for EPC and it was nil for BOT(Annuity) & BOT (Toll) projects. The average amount pending before court for projects under implementation was 1.2 cr. for EPC.

From the above analysis, it could be inferred that there was a clear reduction in the percent share of projects that went for dispute resolution and the average amount pending before AT and court for BOT(Annuity) & BOT (Toll) mode of delivery in comparison with EPC.

### **7.3 Increase in PPP projects awarded:**

The approval of MCA by the IMG in 2005 and the subsequent publishing of MCA for PPPs in National Highways gave a fillip to PPP projects in 2005 with 27 BOT (Toll) & 3 BOT (Annuity) projects totalling about 1700 km. Due to global economic depression, there was a lull in 2007 and 2008 with 13 and 6 projects on PPP mode respectively. With the improved MCA published in 2009, the PPP projects awarded in 2009, 2010 and 2011 went to 27, 58 and 39, with longer stretches. The average length of stretch awarded on PPP mode has been increasing from 50 Km in 2002-03 to (100 to 130) km during 2009-12.<sup>110</sup>

India's success with PPP, which mainly came from NHDP among others, was acknowledged by World Bank. The World Bank recognized India's progress in PPP mode and highlighted that India was the top recipient of Private Participation in Infrastructure (PPI) since 2006 in developing countries, the year in which the structured MCA was made available with Col approval. The World Bank has also mentioned that India's 43 new projects on PPI in the

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<sup>110</sup> List of PPP Projects on NHA website <http://www.nhai.org>

