

Appendix-I

Some Physical Targets for Infrastructure in the Eleventh Plan

• Power

- Additional power generation capacity of about 78,577 MW
- Reaching electricity to all un-electrified hamlets and providing access to all rural households through Rajiv Gandhi Grameen Vidyutikaran Yojna (RGGVY)

• National Highways

- Six-laning 6,500 km of Golden Quadrilateral and selected National Highways
- Four-laning 6,736 km on North-South and East-West Corridors
- Four-laning 20,000 km of National Highways
- Widening 20,000 km of National Highways to two lanes
- Developing 1,000 km of Expressways
- Constructing 8,737 km of roads, including 3,846 km of National Highways in the North-East

Rural Roads

- Constructing 1,29,707 km of new rural roads, and renewing and upgrading existing 1,77,726 km covering 60,638 rural habitations

Ports

- Capacity addition of 485 million MT in Major Ports, 345 million MT in Minor Ports

Airports

- Modernisation and redevelopment of 4 metro and 35 non-metro airports
- Constructing 3 greenfield airports in North East
- Constructing 7 other greenfield airports
- Upgrading CNS/ATM facilities

Railways

- Constructing Dedicated Freight Corridors between Mumbai-Delhi and Ludhiana- Kolkata
- 8,132 km of new railway lines; gauge conversion of 7,148 km
- Modernisation and redevelopment of 22 railway stations
- Introduction of private entities in container trains for rapid addition of rolling stock and capacity

Telecommunications and Information Technology

- Achieving a telecom subscriber base of 600 million, with 200 million rural telephone connections
- Achieving a broadband coverage of 20 million and 40 million internet connections

Irrigation

- Developing 16 million hectares through major, medium and minor irrigation works

Appendix-II

Projects awarded on Negative Grant

Road Section	Length (Km.)	Estimated Cost (INR Crore)	Estimated Cost (USD Million)	Grant (INR Crore)	Grant (USD Million)
Delhi-Gurgaon	28	710	169	61	12
Rajkot Bypass-Jetpur	36	388	92	59	12
Panipat elevated Highways	10	270	64	96	19
Salem- Karur	42	253	60	46	9
Krishnagiri - Thopurghat	62	372	89	140	28
Tindivanam-Ulundurpet	71	480	114	152	30
Thirssur-Angamali	40	312	74	84	17
Jalandhar- Amritsar	49	263	63	7	1
Ambala-Zirakpur	36	298	71	106	21
Dhule-Pimpalgaon	118	556	132	59	12
Vadodara Bharuch	83	660	157	471	94
Bharuch-Surat	65	492	117	504	101

Projects awarded on Revenue Share Basis

Road Section	Length (Km.)	Estimated Cost (INR Crore)	Estimated Cost (USD Million)	Revenue Share (%)
Surat-Dahisar	239	2600	619	38%
Gurgaon-Jaipur	225	1900	452	48%
Panipat-Jalandhar	291	2200	523	20%
Chennai-Tada	42	317	76	17%
Vijayawada-Chikaluripet	85	1173	280	2%

Source: Govt. of India, Ministry of Road Transport and Highways (2009), *Guidelines for Investment in Roads Sector*, New Delhi: MoRTH

Appendix-III

Case Study 1: Financing of an Annuity payment based project

Project Details: Four laning of a highway stretch of 60 km

Concession Period: 17.5 years (including construction period)

Cost of Project: Rs. 3.20 Billion.

Financing Scheme: The project was financed on the basis of Debt-Equity Ratio of 3:1, of this, Senior Debt was Rs. 2.4 billion and Rs. 800 million was in the form of Equity and Quasi-equity.

Debt Terms: Tenor - 13 years door-to-door; Interest rate = 12% per annum; to be reset after 3 years.

Risk Analysis and Mitigation:

• Completion Risk

- ❖ Delay in acquiring & handing over land by NHAI - NHAI to provide land before commencement of the concession period
- ❖ Time / Cost Overrun – mitigated by a fixed time - fixed price EPC Contract and limited sponsor response for overruns.

• Operating Risk – An O&M contract with appropriate penal provisions was executed with a leading road services company. The sponsors past experience in operating infrastructure projects was also critically evaluated.

• Revenue Risk – The annuity payment is to be made by NHAI a AAA rated statutory body. In addition a letter of credit to cover one annuity payment was provided by NHAI.

• Force majeure Risks: Debt is fully protected in case of termination of contract due to political and indirect political risks. For non political events insurance cover would afford the needed protection.

Refinancing: The project sponsors have since raised Rs. 3.75 Billion through refinancing of project debt and securitization of future receivables. The debt tenor was also increased to 14 years and interest rate reduced to 7.5-7.75% per annum, with limited resets at end of every 5 years. The sponsors have also provided recourse to lenders for events not covered under the concession contract. The refinancing on such competitive terms was possible due to strong

support from NHAI, a well crafted contract, decline in interest rates and strong ongoing involvement and support from the project sponsors.

Key Lessons: Significant efforts in re-engineering have resulted in very competitive construction costs for the project as a result of which a very competitive bid was submitted. With risks appropriately analysed and allocated, the project sponsors were able to take advantage of a declining interest rate scenario. Innovation in financing (securitisation of annuity receivables) and financial engineering have significantly improved the project economics and equity returns for sponsors.⁷³

⁷³ Cherian Thomas,(2009), "Domestic Financing and Special Financial Institutions for PPP Projects", Paper presented at UNESCAP Inter-regional Expert Group Meeting on Public Private Partnerships in Infrastructure Development, Bangkok

Appendix-IV

Table 1: Work Plan upto 2013-14

Mode Of delivery	Yearwise Length in Km					Total
	2009-10	2010-11	2011-12	2012-13	2013-14	
BOT (Toll)						
4 lane - Phase III	4,373	-	-	-	-	4,373
4 lane - Phase II	55	-	-	-	-	55
6 lane - Phase V	2,403	1,200	-	-	1477	5,080
Expressways - Ph.VI	-	-	436	604	-	1,040
2 lane with paved Shoulder - Ph III	1977	-	-	-	-	1,977
2 Lane - Phase IV	-	4,086	3,075	339	-	7,500
4 lane - Phase VII	-	-	681	-	-	681
BOT (Annuity)						
4 lane - Phase III	524	-	-	-	-	524
4 lane - Phase II	380	-	-	-	-	380
J&K - Phase II	239	-	-	-	-	239
2 lane with paved Shoulder - Ph III	1,477	-	-	-	-	1,477
2 Lane - Phase IV	-	4,645	4,000	1,355	-	10,000
4 Lane - SARDP NE	394	-	-	-	-	394
EPC						
4 Lane - SARDP NE	330	-	-	-	-	330
2 Lane - Phase IV	-	1,161	1,000	339	-	2,500
2 lane with paved Shoulder - Ph III	500	-	-	-	-	500
Total	12,652	11,092	9,192	2,637	1,477	37,050

Appendix-V

NHAI Work Plan upto 2013-14

Mode Of delivery	Yearwise Length in Km					Total
	2009-10	2010-11	2011-12	2012-13	2013-14	
BOT (Toll)						
4 lane - Phase III	4,373	-	-	-	-	4,373
4 lane - Phase II	55	-	-	-	-	55
6 lane - Phase V	2,403	1,200	-	-	1477	5,080
Expressways - Ph.VI	-	-	436	604	-	1,040
2 lane with paved Shoulder - Ph III	1977	-	-	-	-	1,977
2 Lane - Phase IV	-	4,086	3,075	339	-	7,500
4 lane - Phase VII	-	-	681	-	-	681
BOT (Annuity)						
4 lane - Phase III	524	-	-	-	-	524
4 lane - Phase II	380	-	-	-	-	380
J&K - Phase II	239	-	-	-	-	239
2 lane with paved Shoulder - Ph III	1,477	-	-	-	-	1,477
2 Lane - Phase IV	-	4,645	4,000	1,355	-	10,000
4 Lane - SARDP NE	394	-	-	-	-	394
EPC						
4 Lane - SARDP NE	330	-	-	-	-	330
2 Lane - Phase IV	-	1,161	1,000	339	-	2,500
2 lane with paved Shoulder - Ph III	500	-	-	-	-	500
Total	12,652	11,092	9,192	2,637	1,477	37,050

Appendix VI - Part 1: Analysis of Completed Projects under BOT (Annuity)							
Sl.No.	Name of the contract package as per award	NH No.	Length (Km.)	Date of Start	Completion As per Contract	Actual Completion	Delay in Months
NHDP Phase-I Projects							
1	Belgaum-Maharashtra Border(Pkg-IV)	4	77.00	Jun-02	Dec-04	Oct-04	-2
2	Tuni-Ankapalli Km 300-359 BOT [A]-III	5	58.95	May-02	Nov-04	Jan-05	2
3	Rajahmundry-Dharmavaram AP-15 Km 200-254 BOT [A]-I	5	53.00	May-02	Nov-04	Mar-05	4
4	Dharmavaram-Tuni AP-16 Km 254-300 BOT [A]-II	5	47.00	May-02	Nov-04	Aug-05	9
5	Nellore bypass	5	17.17	Oct-02	Oct-04	Sep-04	-1
6	Panagarh-Palsit	2	64.46	Jun-02	Dec-04	Jun-05	6
7	Palsit-Dankuni Durgapur Expressway	2	65.00	Oct-02	Feb-05	Jul-05	5
8	Tambaram-Tindivanam (BOT/ANNUITY)	45	93.00	May-02	Nov-04	Jan-05	2
NHDP Phase-II Projects							
9	Palanpur to Swaroopganj (earlier Pindwara - Palanpur) (Km 264.00-340.00 of NH 14)	14	76.00	Sep-06	Mar-09	May-09	2
10	Armur - Kalkallu Village (NS-2/AP-2)	7	85.74	Sep-06	Mar-09	Mar-09	0
			637.32				27
ALL ANNUITY PROJECTS		No. of Projects	Length (in Km)	Avg. Project Size (in Km)	Total Delay (in Months)	Avg. Delay (in Months)	Avg Delay for delayed projects
		10	637.32	63.73	27	2.7	4.3

Appendix VI - Part 2: Analysis of Completed Projects under BOT (Toll)

Sl.No.	Name of the contract package as per award	NH No.	Length (Km.)	Date of Start	Completion As per Contract	Actual Completion	Delay in Months
NHDP Phase-I Projects							
1	Jaipur-Kishangarh	8	90.38	Aug-03	Sep-05	Mar-05	-6
2	ROB Kishangarh	8	1.00	Mar-98	Feb-00	Feb-00	0
3	Satara-Karnataka Border(Kagal)	4	133.00	Feb-02	May-04	Mar-06	22
4	Nelamangla - Tumkur (BOT)	4	32.50	Jun-02	Nov-03	Dec-03	1
5	Tada - Nellore (Pkg. AP-7&8) on GQ	5	110.52	Aug-01	Dec-03	Dec-03	0
6	Vivekananda Bridge (2nd)	2	6.00	Sep-02	Apr-06	Jun-07	14
7	Delhi-Gurgaon (Access controlled 8/6 Lane)	8	27.70	Apr-02	Jul-05	Jan-08	30
8	Nandigama-Ibrahimpuram(Km.217-252 of NH-9)	5	35.00	Aug-01	Dec-03	Jun-04	6
9	Durg Bypass on NH-6	6	18.00	Mar-99	Jan-01	Jan-01	0
			454.10				67
NHDP Phase-II Projects							
10	Panipat Elevated Highway Project (Km.86-96 on NH-1)	1	10.00	Jan-06	Jan-09	Jun-08	-7
11	Krishnagiri -Thoppurghat (Km.94-156 of NH-7)TN-1	7	62.50	Jul-06	Dec-08	Jan-09	1
12	Farukhanagar - Kottakata (NS-2/AP-3) km 34.100-80.000	7	46.16	Aug-06	Feb-09	Feb-09	0
13	Farukhanagar - Kottakata (AP-4) km 80.000-135.740	7	55.74	Aug-06	Feb-09	Mar-09	1
14	Gondal - Jetpur(Km.117-143.3) & Rajkot Bypass(Km.175-185) on NH-8B in Gujrat, Pkg-VII	8B	36.00	Sep-05	Mar-08	Mar-08	0
15	Tindivanam - Ulundurpet (Package - VI A) Km 21- Km 192.25	45	71.25	Oct-06	Mar-09	Jul-09	4

Appendix VII Completional Analysis of due contracts

Contracts due for completion upto 31st Jan 2010 w.r.t. to original date of completion and yet not completed										
Sl. No.	Contract name	Funded By	NH No	Length (Km)	Length Completed (Km)	Length UI (Km)	Start Date	Completion Date (Original)	Completion now (Anticipated)	Time Overrun (Months)
BOT (Annuity)										
1	Gorakhpur bypass (gb)	Annuity	28	32.60	0	32.60	Apr 2007	Oct 2009	Dec 2010	14
2	Bara to orai (bo)	Annuity	2,25	62.80	53	9.80	Oct 2006	Apr 2009	Mar 2010	11
3	Gwalior jhansi (c-iii)	Annuity	75	80.00	0	80.00	Jun 2007	Dec 2009	Dec 2010	12
4	Jhansi to lalitpur-up-3 (ns-1/up3)	Annuity	26	49.30	40	9.30	Mar 2007	Sep 2009	Sep 2010	12
5	Gwalior bypass (ns-1)	Annuity	3,75	42.00	10	32.00	Apr 2007	Oct 2009	Oct 2010	12
6	Lakhnadon-mp-2-mp/mh border (ns1/mp-2)	Annuity	7	49.35	40	9.35	Mar 2007	Sep 2009	Sep 2010	12
7	Jhansi to lalitpur-up-2 (ns-1/up2)	Annuity	25,26	49.70	33.5	16.20	Mar 2007	Sep 2009	Jun 2010	9
8	Mh/ap border to islam nagar (ns-2/ap6)	Annuity	7	55.00	49	6.00	May 2007	Nov 2009	Mar 2010	4
				420.75	225.5	195.25				86
				No. of Projects	8			Average Delay in Months		10.8

Appendix VIII - Part 1: Cost Analysis of Projects Completed by NHAI Under BOT Annuity							
Sl.No.	Name of the contract package as per award	NH No.	Length (Km.)	Estimated Cost (in Rs. Crore)	Actual Cost (in Rs. Crore)	Cost Variation (in Rs. Crore)	Cost per Km of Road (in Rs. Crore)
NHDP Phase-I Projects							
NHDP Phase-I Projects							
1	Belgaum-Maharashtra Border(Pkg-IV)	4	77.00	332.00	332.00	0.00	4.31
2	Tuni-Ankapalli Km 300-359 BOT [A]-III	5	58.95	283.20	283.20	0.00	4.80
3	Rajahmundry-Dharmavaram AP-15 Km 200-254 BOT [A]-I	5	53.00	206.00	206.00	0.00	3.89
4	Dharmavaram-Tuni AP-16 Km 254-300 BOT [A]-II	5	47.00	231.90	231.90	0.00	4.93
5	Nellore bypass	5	17.17	143.20	143.20	0.00	8.34
6	Panagarh-Palsit	2	64.46	350.00	350.00	0.00	5.43
7	Palsit-Dankuni Durgapur Expressway	2	65.00	432.40	432.40	0.00	6.65
8	Tambaram-Tindivanam (BOT/ANNUITY) Km 67 to Km 122	45	93.00	375.00	406.46	31.46	4.37
	NHDP-I TOTAL		475.58	2,353.70	2,385.16	31.46	5.02
NHDP Phase-II Projects							
9	Palanpur to Swaroopganj (earlier Pindwara - Palanpur) (Km 264.00-340.00 of NH 14)	14	76.00	498.00	498.00	0.00	6.55
10	Armur - Kalkallu Village (NS-2/AP-2)	7	85.74	490.00	490.00	0.00	5.71
	NHDP-II TOTAL		161.74	988.00	988.00	0.00	6.11
	Total For NHDP-I and II		637.32	3,341.70	3373.16	31.46	5.29

Appendix VIII - Part 2: Cost Analysis of Projects Completed by NHAI Under BOT Toll							
Sl.No.	Name of the contract package as per award	NH No.	Length (Km.)	Estimated Cost (in Rs. Crore)	Actual Cost (in Rs. Crore)	Cost Variation (in Rs. Crore)	Cost Per Km (in Rs. Crore)
NHDP Phase-I Projects							
1	Satara-Karnataka Border(Kagal)	4	133.00	600.00	600.00	0	4.51
2	Nelamangla - Tumkur (BOT)	4	32.50	155.00	155.00	0	4.77
3	Tada - Nellore (Pkg. AP-7&8) on GQ	5	110.52	621.35	621.35	0	5.62
4	Nandigama-Ibrahimpuram(Km.217-252 of NH-9)	5	35.00	135.00	135.00	0	3.86
5	Durg Bypass on NH-6	6	18.00	70.00	70.00	0	3.89
	NHDP-I TOTAL		329.02	1581.35	1581.35	0	4.81
NHDP Phase-II Projects							
6	Krishnagiri -Thoppurghat of NH-7 TN-1	7	62.50	372.70	372.70	0.00	5.96
7	Farukhanagar - Kottakata NS-2/AP-3	7	46.16	255.00	255.00	0.00	5.52
8	Farukhanagar - Kottakata (AP-4)	7	55.74	302.00	302.00	0.00	5.42
9	Gondal - Jetpur & Rajkot Bypass on NH-8B in Gujrat, Pkg-VII	8B	36.00	388.09	388.09	0.00	10.78
10	Tindivanam - Ulundurpet (Package - VI A)	45	71.25	480.00	480.00	0.00	6.74
11	Ulundurpet - Padalur (Package - VI B)	45	92.75	460.00	460.00	0.00	4.96
12	Salem - Karur (Trichy - Karur) of NH-7 - TN-2	7	41.55	253.50	253.50	0.00	6.10
13	Salem - Karur (Namakkal - Karur of NH-7) TN-3	7	33.48	205.60	205.60	0.00	6.14

Sl.No.	Name of the contract package as per award	NH No.	Length (Km.)	Estimated Cost (in Rs. Crore)	Actual Cost (in Rs. Crore)	Cost Variation (in Rs. Crore)	Cost Per Km (in Rs. Crore)
14	Karur - Madurai (Karur - Dindigul of NH-7) TN-4	7	68.13	327.20	327.20	0.00	4.80
15	Karur - Madurai (Dindigul - Samayanallur of NH-7) TN-5	7	53.03	283.50	283.50	0.00	5.35
16	Salem - Kerala Border of NH-47 TN-7	7	48.51	379.80	379.80	0.00	7.83
	NHDP-II TOTAL		609.10	3707.39	3707.39	0.00	6.09
NHDP Phase -III Projects							
17	Guna Bypass on NH-3	3	14.00	46.00	46.00	0.00	3.29
18	Agra - Bharatpur (Jaipur) UP/Rajasthan Border	11	45.00	195.00	195.00	0.00	4.33
19	Mahua - Jaipur	11	108.00	483.00	483.00	0.00	4.47
20	Bharatpur - Mahua	11	57.00	250.00	250.00	0.00	4.39
21	Ambala - Chandigarh (Zeerakpur) on NH-22 & on NH-21	21 & 22	36.00	298.00	298.00	0.00	8.28
22	Indore - Khalghat on NH-3	3	80.00	472.00	472.00	0.00	5.90
23	Kondhali - Telegaon	6	50.00	212.00	212.00	0.00	4.24
	NHDP-III TOTAL		390.00	1956.00	1956.00	0.00	5.02
ANALYSIS OF 4 LANE BOT TOLL PROJECTS							
		No. of Proj					
	NHDP PHASE I	5	329.02	1,581.35	1,581.35	0	4.81
	NHDP PHASE II	11	609.10	3,707.39	3,707.39	0	6.09
	NHDP PHASE III	7	390.00	1,956.00	1,956.00	0	5.02
	ALL NHDP 4 LANE BOT TOLL PROJECTS	23	1328.122	7,244.74	7,244.74	0	5.45

Appendix IX - COST BENEFIT ANALYSIS OF CASES WHERE NHAI FILED APPEAL

Category	No. of Cases	Amount claimed before DRB	Recommended amount by DRB	No. of claims before AT	Claimed Amount before AT	Amount recommended by AT	Benefits		Additional Cost		Net Benefit
							Reduction in Award	Benefit in rate from addl quantities	Interest Cost	Litigation Cost	
Unanimous decision by DRB	38	627.5	471.7	165	976.1	267.3	204.4	645.6	66.8	9.5	-773.7
A	25	86.2	53.0	82	58.6	44.6	8.4	7.1	11.2	6.3	1.9
B	9	161.2	136.4	53	133.6	85.2	51.2	-3.6	21.3	2.3	-24.1
C	4	380.1	282.3	30	783.9	137.5	144.8	642.1	34.4	1	-751.5
Majority decision by DRB	6	57.6	52.3	19	55.5	30.9	21.5	4.1	7.7	1.5	-16.3
A	4	12.8	10	8	10.7	9.7	0.3	0.9	2.4	1	2.2
B	2	44.8	42.3	11	44.8	21.2	21.2	3.2	5.3	0.5	-18.5
C	0	0	0	0	0	0	0	0	0	0	0
*Category A upto Rs 10 crore s/t 5% of contract price; Category B. Rs 10 crore to Rs 100 crore; Category C more than Rs 100 crore											
** Av period of disposal of AT cases assumed 2.5 years, interest @10% per annum on AT award											
***80% cases technical cases, 80% of the increase in claim before AT due to increase in quantity											
Litigation Cost assumed at Rs 50 lakh per package											