INDIAN ROAD CONSTRUCTION INDUSTRY

READY FOR GROWTH?

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List of Acronyms

CDC	Consultancy Development Council
CIDC	Construction Industry Development Council
CII	Confederation of Indian Industries
DBM	Design, Build, Maintain and Operate
DPR	Detailed Project Report
DRB	Dispute Resolution Board
ESOP	Employee Stock Option Plan
FDI	Foreign Direct Investment
FI	Financial Institutions
FIDIC	International Federation of Consulting Engineers
FICCI	Federation of Indian Chambers of Commerce and Industry
GOI	Government of India
HR	Human Resources
IRC	Indian Road Congress
IT	Information Technology
JV	Joint Venture
LTPBC	Long-term Performance-based Contract
MoEF	Ministry of Environment and Forestry
MoSRTH	Ministry of Shipping, Road Transport and Highways
NABARD	National Bank of Agriculture and Rural Development
NAC	National Academy of Construction
NH	National Highways
NHAI	National Highways Authority of India
NHDP	National Highways Development Project
PMGSY	Pradhan Mantri Gram Sadak Yojana *(Prime Minister's Rural Roads Program)*
PPP	Public Private Partnership
PPPAC	PPP Appraisal Committee
PWD	Public Works Department
R&D	Research and Development
RR	Rural Roads
SH	State Highways
SME	Small and medium enterprises
SPV	Special Purpose Vehicle
VAT	Value Added Tax
VE	Value Engineering
WCT	Works Contract Tax

INDIA'S ROAD CONSTRUCTION INDUSTRY: READY FOR GROWTH?

India: What is its Growth Potential?

1. India's economic growth is accelerating and is now targeted to average 8-10% in the coming few years. It is the third largest economy in Asia, with a GNP of over $950 billion. This makes India an attractive destination for foreign investments in manufacturing and services. Such growth needs to be fuelled and sustained by good economic policies, political stability, and well functioning infrastructure for water, power and the various modes of transport, as well as liveable cities, housing and communications. Large-scale investment in all the above through public and/or private funding has now been recognized as a "must" to take India into the next decade. Cognizant of this, the governments at the central and state levels have, for the past decade, developed plans and investment programs in the various sectors.

Why Target the Road Construction Industry?

2. One of the biggest constraints on rapid economic and industrial growth and its sustenance is the poor quality, or even absence, of physical infrastructure. Throughout the world, road transport is considered one of the major facilitators to economic growth, due to its key role in moving people and freight. In India, roads carry about 85% of all passenger transport and 65% of all freight movements, and the shares are growing. This trend is unlikely to change. It is therefore essential to plan for investment in roads, commensurate with the demand. Data collected from various sources show that over the five years 2007-12 about Rs. 3,600 billion (about US$88 billion) need to be invested in roads of all categories: national highways, state roads and rural roads.

3. The Government of India (GOI) has taken steps to facilitate delivery of road construction and maintenance. It has, during the past few years, developed legal and policy frameworks, model agreements, and has created incentives for increasing private sector participation. However, much more will need to be done to achieve the targeted growth. The scale of investments needed in the road sector is so great that one of the biggest risks to the program will be the capacity of the construction industry to deliver. Civil works account for over 95% of road project costs, a far larger proportion than in most other infrastructure sectors. Equity research and rating agencies report that some of the leading construction companies have unexecuted order books of 5-10 times their annual revenues, which they cite as an argument for buying stocks in these companies. On the contrary, this may signal an unhealthy situation in the sector. The same data may be interpreted differently to mean that on average most construction firms will take five to ten years to complete their works, pointing to a severe shortage of capacity. Other evidence supports the conclusion that there will not be enough road contractor firms, nor enough people with the requisite skills, nor adequate supplies of key materials such as bitumen, aggregates and cement.

4. Aggravating the risk for India's road construction industry is the strong competition for the same or similar resources from other developing countries in Asia such as China, Pakistan, Korea, Malaysia, Indonesia and Thailand. Even at home, the road construction industry faces intense competition from power, irrigation, water supply, housing and real estate sectors. Contractors and other resources will tend to move towards sectors and countries where they can maximize their profits based on the risk-return profile, which in turn will depend on the investment climate and business environment.

What are the Study Objectives?

5. The objectives of this study[1] are to: (i) assess the increased demand for India's road construction industry vis-à-vis the supply under different scenarios; (ii) ascertain the issues plaguing the industry and the

[1] Concept Paper – Study on Capacity of Road Construction Industry (March 2006)

constraints on upgrading its capacity to meet the demands; and (iii) recommend actions which could be adopted by the governments and other stakeholders to enhance the industry's capacity and efficiency. The ultimate objective is to help India have a strong and vibrant construction industry as it launches the 11th Five Year Plan.

How Was the Study Done?

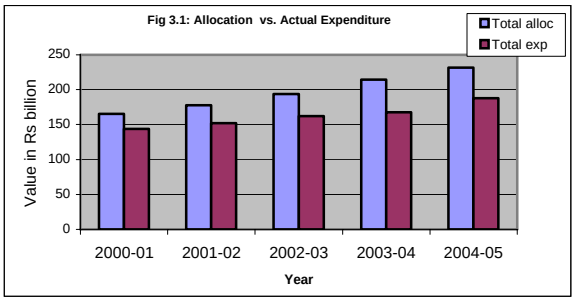
6. The World Bank team undertook in-depth sub-studies through a couple of leading Indian consulting firms, who obtained data from primary and secondary sources. The primary data were collected through questionnaires, interviews and focussed discussions with some of the key agencies involved in road development: the Ministry of Shipping, Road Transport and Highways (MoSRTH), the National Highways Authority of India (NHAI), some of the state public works departments (PWD) or equivalent road agencies, rural road agencies at the central and state levels, contractors, consultants, equipment manufacturers, material suppliers, and industry associations. Through such data collection and analyses, an assessment was made of future demand for the road construction industry, and critical issues and constraints affecting the investment climate in this sector were identified. On this basis, recommendations were offered for the various government and private stakeholders as to how the industry's capacity can be enhanced to meet the increased demand. The above effort was complemented by data on the experience and perceptions of international contractors, consultants and industry associations. Two individual international consultants interviewed key stakeholders in Europe and prepared case studies on how such similar situations were coped with by some of the more developed and developing economies, such as France, China and Malaysia. This study follows up on a similar study of 1999 and also borrows from the analyses and recommendations of allied recent studies undertaken by the Bank, namely the "Design and Construction Review Study" (draft), "Study on Improving Dispute Resolution Systems in Works Contracts" (draft) and "Study on Delays Due to Pre-construction Activities in National Highway Projects" (draft).

Table 1.1: Categories and Numbers of Stakeholders from Whom Data Collected

S. No.	Department/Company	Sample size		
		Indian	**Foreign**	**Total**
A.	Government	18	5	23
B.	Contractors	30	15	45
C.	Consultants	6	13	19
D.	Equipment manufacturers/suppliers	11	8	19
E.	Material suppliers	6		6
F.	Industry associations	5	13	18
G.	BOT concessionaires	4	1	5
H.	Financial institutions	7		7
	Total	**87**	**55**	**142**

Is There Evidence from Past Experience of Supply-side and Business Environment Constraints?

7. Comparing the past five years' budgetary allocations for roads with expenditures actually incurred (Figure 1.1) shows that spending has consistently fallen short by 15-20%. This has been true for all categories of roads. Such a shortfall indicates a lack of capacity in the contracting industry and weak planning and monitoring in the government agencies.



8. This can possibly be due to (i) supply constraints to do with the problems of lack of capacity and skills on the part of the various stakeholders of the road construction industry to deliver the work program; and (ii) business environment/investment climate issues

which affect the entry and working entry conditions of the various stakeholders, especially the private sector players.

9. These possible explanations were confirmed through discussions with the government implementing agencies, contractors, consultants, financiers and industry associations. Some important issues and concerns emerged which need to be taken into account by one and all to resolve capacity-related issues in the industry. Data analyses done by the study consultants, shown in Table 1.2, show that most of the NHAI and state road contracts suffer significant delays in time.

Table 1.2: Time and Cost Over-run Details

NHAI + State Govt Contracts	Percentage Overrun[over original estimates of time and costs]	Completed Contracts (%)		All Contracts (%) (completed + on-going)	
		Time	***Cost***	***Time***	***Cost***
	<25%	29.4	55.8	10.4	53.7
	25-50%	15.0	40.5	9.7	31.6
	50-75%	33.0	3.7	38.0	9.7
	75-100%	15.0	0.0	29.5	5.0
	>100%	7.6	0.0	12.3	0.0

10. Even if we consider that delays of less than 25% are acceptable, we find that less than 30% of the contracts finish within this acceptable limit. This automatically means that more than 70% of contracts are delayed much more than what is acceptable. It also indicates that about 40-50% of the contracts have cost overruns of more than 25%. This analysis is based on contract values at the time of contract conclusion but excludes the outstanding values which are under dispute and subjected to arbitration and other legal recourse. For the entire construction industry a rough estimate of the amount currently blocked in disputes is more than Rs. 540 billion ($12 billion). If even a part of this amount is included into the final costs for the road sector, the cost overruns may increase by at least another 10-15%. When the reasons for such variations from the original time and cost estimates were analysed and discussed with the stakeholders, the picture presented in Table 1.3 emerged.

Table 1.3: Severity of Impact as perceived by Govt Implementing Agencies (GIA) and Contractors

Resource Related (% Impact)			Business Environment Related (% Impact)		
Factors	**GIA**	**Contractors**	**Factors**	**GIA**	**Contractors**
Project Management			**Working Environment**		
▪ Inadequate allocation of funds**	11%	12%	▪ Delay in land acquisition, Rehabilitation and Resettlement of Project affected persons*	20%	15%
▪ Non-availability of funds in time**	-	10%			
▪ Inadequacy of trained staff for managing programme/ contract**	11%	11%			
Contracting Industry			▪ Delay in utility relocation*	5%	5%
▪ Non-availability of qualified contractors***	12%	9%	▪ Frequent migration of experienced staff of contractor/consultant**	4%	-
▪ Non-availability of suitable construction equipments***	10%	9%	▪ Other inter-departmental clearances e.g. delay in decision/approval by engineer/employer**	8%	12%
▪ Inadequate availability of critical material***	-	-			
▪ Inadequate design/drawings**	8%	12%	▪ Environmental Clearance*	11%	5%
Total	52%	63%	Total	48%	37%

* Pre-construction constraints/issues ** Pre-construction and during construction issues ** * During construction issues

11. A more specific study carried out on the investment climate and business environment in the road sector ranked the various parameters as in Table 1.4, showing availability of skilled staff and operational

issues (i.e. land, licensing and clearances) as the prime constraints. These are closely followed by taxation, contract enforcement and dispute resolution, and material costs and availability. The barriers to entry issues and subsidies and fiscal concessions also figure relatively high in the ranking of perceived constraints.

Table 1.4: Ranking of Investment Climate Issues

Parameters	Ranking
Availability of skilled staff	1
Operational issues: land, licenses and clearances, governance	1
Taxation issues	2
Materials cost and availability	2
Contract enforcement and dispute resolution	2
Barriers to entry	3
Subsidies and fiscal concessions	3
Finance cost and availability	4
Sector policy and institutional structure	5
Import procedures	6
Infrastructure issues	6
Industry structure	7

What are the Common Perceptions of Key Problems?

12. The common problems raised by most international as well as many Indian contractors and consultants are: (i) non-availability of encumbrance-free land in large enough sections to allow start of meaningful construction work; (ii) poor governance, corruption, lack of decision making and delegation of authority to the Employer's representative at site and infringement of powers of the independent Engineer and; and (iii) complete disregard for the dispute resolution mechanism prescribed in the contract so that all decisions finally seek a legal recourse.

13. The common issues raised by the government road agencies are: (i) frequent change in key persons by the firms; (ii) in case of associations and joint ventures with international firms, it is the local firm which does all the work contrary to the responsibilities assigned in the agreements; (iii) poor quality of surveys and designs by the consulting firms, creating large variations at the time of construction and hence delays; and (iv) poor resource planning and work scheduling by the contracting firms.

What will the Demand on the Road Construction Industry be in the Future?

14. An assessment of demand over the 8-year period from 2007-08 to 2014-15 has been made. Three scenarios considered are: (i) growth rate extrapolated from that achieved in the five years 2000-01 to 2004-05, i.e. business expansion as usual, which is considered a lower bound estimate; (ii) medium growth rate, in accordance with the vision documents of the states and the country; and (iii) high growth rate, incorporating massive investments in national highways and rural roads as proposed by GOI.

15. The main factors for which this assessment was carried out are: (i) monetary values of projected expenditure for the entire road sector; (ii) distribution of probable contract sizes to be executed in each year and therefore the need for the corresponding sizes of contractors; (iii) human resources; (iv) key road construction equipment; and (v) critical input materials like cement, bitumen, steel and aggregates. The above assessment also includes an approximate estimate for maintenance requirements.

16. The monetary expenditure (Rs. billion) in the sector over the period 2007-15, which includes some amount for maintenance) is projected as shown in Table 1.5. These give an idea of the increased expenditure that would need to happen if Scenarios 1, 2 and 3 were to happen.

Table 1.5: Projected Investments in the Road Sector (Rs. billion)

Year	2007-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	Total
Scenario 1	267.0	277.0	284.2	292.6	301.3	310.3	319.5	329.0	2,384
Scenario 2	355.5	376.3	385.9	410.3	446.4	484.3	523.1	564.1	3,546
Scenario 3	586.5	740.0	853.1	861.6	874.4	488.7	493.5	498.6	5,396

17. Based on the past trend, a rough estimate has been made of the distribution of **increased demand for the different contract sizes** for all types of road contracts in the country up to 2014-15 (Table 1.6). The contract sizes assumed for this analysis are Large (>Rs 1,250 million, i.e. $28 million), Medium (Rs. 400-1250 million), Small (Rs. 50-400 million) and Very Small (<Rs. 50 million i.e.$1 million). The number of actual Indian contractors capable of doing the medium to large road contracts may not exceed 45-50. By associating among themselves and with foreign contractors present in India (who number about 10-12) as well as with smaller contractors, the present pool of contractors has met the demand of the past five years, but with unsatisfactory results as shown in the previous section. Similarly, in most states the Pradhan Mantri Gram Sadak Yojana (the Prime Minister's the rural roads program) is also falling behind schedule, and especially in the hilly states. The table below shows that there is a need to at least double, if not triple, the pool of contractors at different levels to be able to meet the demand foreseen under Scenarios 2 and 3. In the near future the country will also need to think about another category of contractor conglomerates/joint ventures which would be "Very Large" to deliver contracts of sizes above Rs. 6,000 million ($130 million). Recent press articles indicate possibilities of such concessions.

Table 1.6: Projected Average Yearly Number of Contracts (different sizes)

Contract sizes	Scenario 1	Scenario 2	Scenario 3
Large	90	180	400
Medium	100	250	550
Small	2,800	5,100	6,600
Very small	4,100	7,100	8,800
Total	approx **7,100**	approx **12,600**	approx **16,400**

18. Similarly, **the total human resources requirement** has been projected on an approximate basis, empirically correlated with the investments/turnover. The average need over the next eight years is shown in Table 1.7. This includes staffing gaps in the road agencies at central and state levels, contractors and consultants. The skill types considered include full-fledged engineers to technical and mechanical staff. Presently about 6,000 fresh engineers and diploma holders join the road sector workforce each year, off-setting a similar number of retirements. But this does not cover the needed annual increment of 7,500-10,000 of such persons to meet the demands of Scenario 1 over the next eight years. The current pool of skilled and semi-skilled persons is estimated to be about 110,000 in the road construction sector. Scenarios 2 and 3 would require two to three times these numbers.

Table 1.7: Yearly Skilled Human Resource Requirement

Skilled HR Req'd	Scenario 1	Scenario 2	Scenario 3
Average (approx)	150,000	200,000	280,000

19. The key equipment include items such as pavers (electronic and mechanical) for bituminous and concrete pavements, hot-mix plants, motor graders, tandem rollers, crusher plants and batching plants. A rough estimate of the **total units of key equipment** likely to be needed between 2007 and 2015 is given (Table 1.8).

Table 1.8: Annual Average Requirement of Key Equipment

Equipt Units Needed	Scenario 1	Scenario 2	Scenario 3
Average (approx)	30,000	55,000	85,000

20. **Critical materials** for road construction are bitumen, cement, steel and stone metal/aggregates whose **average requirements** are given below. Except bitumen, all the other input materials mentioned above have competing demands from other sectors. It is likely that under scenarios 2 and 3 there would be a huge pressure on availability of stone aggregates and bitumen. Stone quarrying and extraction would face resource constraints due to (i) possible quarrying and mining regulations being stringent; and (ii) capacity of crushing plants as mentioned in the above table. Existing quality certification requirements of foreign cement plants is also causing some artificial restrictions to import of cement creating some scarcity. The average level of requirements for the period 2007-2015 for the key materials are projected in the Tables 1.9A & 1.9B.

Table 1.9A : Average Annual Demand for Key Construction Material

Materials Required (million tons)	**Scenario 1**	**Scenario 2**	**Scenario 3***
Stone metal	170.0	280.0	450.0
Bitumen	1.3	2.0	4.0
Cement	6.5	10.5	17.0
Steel	1.3	2.1	3.3

* Average over 2,007-12

Table 1.9B: Materials Needed for Road Construction

Gaps (million tons)	**Aggregates**	**Bitumen**	**Cement**	**Steel**
Planned capacity	Naturally occurring	6.37	255	88
Maximum Reqd. (approx)	550-600	4.6-5.2	18-20	5

The Key Principles for Building a Future Strategy

21. We can see that there is always a shortfall in absorbing budgeted finances. From the deliberations one can conclude that the overall capacity problem is broadly due to:

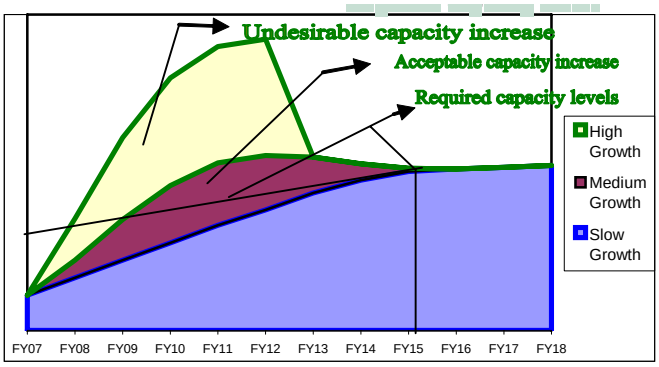
(a) The existing capacity of the industry getting locked up in the on-going contracts due to time delays in completion. These can be attributed to poor planning by the implementing agencies as well as the contractors, delays in availability of encumbrance-free construction sites, poor contract management practices, and governance and corruption issues before and during construction. According to our analysis about 70% of the capacity of contractors working on existing national and state road contracts is locked up due to delays beyond acceptable limits.

(b) Overall dearth of good road contractors/consultants in the various sizes, poor and inefficient industry structure, and a weak supply chain, resulting in severe inefficiencies in contract execution. This is all the more relevant keeping in mind the trend of contractors to move up the value chain from small to large and very large contractors and then finally becoming concessionaires in PPP projects. The risk-taking appetite is increasing, but at the same time it has to be borne in mind that works on site can be executed only by civil works contractors, whatever the source of financing.

(c) Scarcity of key input resources for road construction encountered by the contractors such as key equipment, human resources, construction materials, and working capital –that is, their non-availability at the right time in the right quantities and the right quality.

22. The above analysis points towards a supply-driven solution, where the construction industry would need to gear up to meet all demands being placed on it by the investment targets being set by the country's policy and planning bodies. India's planning bodies need to do a reality check on their investment projections and targets. One should be careful about compromises in quality which might be made on one side, as well as the country being saddled with too much excess capacity which would be idling in the future, without being able to find business. This has happened in many developed and developing countries. Infrastructure development and the corresponding investments in the transport sector are only a means to achieving the goal of good

economic growth, but this will probably need to plateau down at some point. Ideally, the capacity of the domestic construction industry should be so created and enhanced that the same capacity can be utilized well during the later stages of slowing down of investments in the sector to maintain the assets created. Any short-term excess requirements should be met by bringing in foreign firms as well as attracting international human resources (including non-resident Indians). Figure above schematically explains these situations.



23. Ways to overcome the above problems have to emerge from conventional as well as innovative thinking of Indian experts in the industry and also by adopting and adapting experience of countries, like China, which have gone through similar situations. We offer specific recommendations for addressing the above three situations. These will include ways to improve the investment climate in the road construction sector, project and contract management, capacity building and training of human resources, and the development of research and development in India's road sector.

Suggested Actions and Recommendations Emerging from the Study

24. Some key ideas and recommendations which could be taken up by the governments and the industry associations are presented below.

A. Speeding up Contract Execution through Improved Quality at Entry

25. This needs to be done with a view to ensuring timely completion of projects and thereby releasing the locked up capacity of the existing contractors. Some key recommendations to this end are –

(i) *Timely Completion of Pre-construction Activities*

26. Ensuring that pre-construction activities like land acquisition, resettlement and rehabilitation, obtaining environmental clearances, utility shifting, which clearly are the responsibilities of the government, are substantially completed before construction sites are handed over to the contractor/ developer. The current Model Concession Agreement requirement that at least 50% land free of encumbrances (in minimum continuous stretches of 10 km) should be ready for handing over to the road developer should also be made applicable to fully government-funded contracts.

27. Specific recommendations would be:

(a) for the road implementing agencies at the centre and state to set up dedicated cells adequately staffed from the respective departments like revenue, forests, environment and railways to undertake pre-construction activities and clearances;
(b) To create high-powered multi-departmental committees to expedite pre-construction activities; and
(c) as a less preferred option: to transfer the responsibilities for utility shifting and tree cutting to the works contractor, who may have better access to get these done and pay for it. (The required clearances will have to be facilitated by the government agencies).

28. A small guideline information brochure and a web page highlighting the procedural steps with expected timelines could be of help to the implementing agencies, contractors and developers. It would be managed by a high-powered committee comprising all key responsible agencies like revenue, environment and forests and other utility agencies. Also a dialogue could be taken up at senior levels in the concerned ministries (e.g. Ministry of Railways) to discuss ways of cutting out avoidable delays.

(ii) *Strengthening the Investment Planning and Programming Functions of the Road Agencies*

29. Using computerized information systems based on electronic data collection systems for road inventory and condition, these agencies must be able to plan and program their investments through 3-year rolling plans. This will enable the agency to then sequentially **allocate appropriate time** for the proper survey and designs and also take up the necessary pre-construction activities on the finally selected road corridors. Such actions would possibly help in prioritizing the sections for which the pre-construction activities have to be completed, so that they do not delay the project during actual execution. Also this will help in reducing the gap between the budgetary provisions and actual expenditure.

(iii) *Structuring Contractor and Consultant Arrangements Differently*

30. The goal is to minimize variations and disputes during execution and consequently to reduce construction time. This could be possible through clear delineation of risks and responsibilities for activities to be undertaken before start of construction and then during construction. The present trend of embracing the PPP concession framework in the roads sector --wherever found viable and feasible-- is appropriate from both angles of pushing the financing (at least partly) and the performance risks to the private sector. However, even for the fully government-funded projects, it would make eminent sense for the road agencies to gradually move to contracting methods other than the conventional item rate contracts for road construction, rehabilitation and maintenance, after taking some short-term improvement measures as discussed elsewhere in this chapter. Those could be (i) Design-Build-Maintain (DBM) contracts, (ii) Design – Build (DB) contracts and (iii) Long-Term Performance-based Contracts (LTPB). For DBM contracts (may be about ten-year concessions) the design, construction and consequent performance risk of the road is passed on to the contractor. There could be a periodic audit undertaken by the road agency or an independent consultant to check construction quality and compliance with the performance parameters. In DB contracts the design and construction risks are passed on to the contractor, who will be fully liable to produce good designs which will meet with his skills and resources, leaving little opportunity for variations due to deficiencies in surveys or designs. However, the road agency may still need to proof check the designs, provide value enhancement advice, and then either take up full time supervision or sample audits. This could be done in-house if the agency has the requisite skills or through an independent consultant. This activity is needed because the contractor is now not responsible for the performance of the road after construction is over. LTPB contracts provide a solution to the DB and item rate contracts for taking care of the maintenance aspects after the completion of the defects liability period. These could be taken up on either a network or corridor basis.

31. However, some significant difficulties are foreseen when combining the design and construction responsibilities with the contractor:

(a) how the bid documents and the contract specifications could be made specific on the minimum performance and other requirements;
(b) how the bidding parameters and the bid evaluation criteria can be formulated and used; and
(c) how the government (employer) will be able to discharge one of its primary responsibilities of handing over encumbrance-free land, in stages, to the contractor as soon as the design is completed to enable start of construction as specified in the contract.

32. In the case of conventional contracts, the quality of designs and surveys needs to be improved to prevent delays during contract execution. A possible reason could be the low cost of designs and surveys (about 1%) in India compared to other countries like China (about 2-3%). Independent peer review checking, including field verification, is important, at least on a sample basis, by either the implementing agency or an independent consultant before approving the designs. Use of value engineering techniques for ensuring sound design principles and cost optimization could be tried out for contracts larger than Rs.500 million ($11 million). Use of GIS will help in ensuring that the plans for the road alignments are on the same platform as the drawing of the land/revenue and other maps to avoid discrepancies when evaluating impacts.

33. A strategic decision in favour of green-field projects on new alignments (like bypasses and expressways) wherever economically, financially and technically feasible without much environmental and social distress, will go a long way in speeding up contracts. Time lost in delays like managing traffic, shifting utilities and moving people, during construction on existing alignments, can all be avoided, once the required land is acquired.

B. Increasing the Number of Contractors and Consultants Working in India's Road Sector

34. The Government and the industry should focus on ways and means to increase the number of players of different sizes in the road construction industry. This may be done by pursuing the following strategies:

- **Facilitating setting up of new firms in the sector**. This should be done either by new entrepreneurs setting up firms at the lower end, which could then slowly migrate up the value chain, or by creating an environment where already existing large commercial/industrial enterprises could move in with finances to set up construction or concession firms which are higher up the value chain;
- **Attracting larger construction firms from other sectors** like real estate, industrial buildings, irrigation, dams and power, to also work in the road sector;
- **Creating an environment**, free of any barriers, **to enable foreign or international firms to set up shop in India** or just be able to compete and work in India;
- **Providing an enabling environment for creation of trade associations** with a free interchange of views and advice between them and the governments. The trade associations can go a long way in helping self regulation and debarment/sanctions within their own industry groups and also help in marketing the country's needs and business strengths abroad; and finally
- **Taking a close look at the staffing levels in Indian government road agencies** and other public sector agencies, to enable them to perform the main role of policy, planning and overall management functions and then decide whether the other functions of these agencies can be spun off into autonomous construction and design outfits. This might be difficult to achieve in social terms and would need a strong political will to implement. But countries such as China, the UK and New Zealand have tried it out with some success. They could be first made into autonomous public sector undertakings and then slowly the Government might decide to divest them. This measure, if feasible, would be able to solve some of the problems of scarcity of contractors and the weak supply chain to bigger and international contractors.

35. All the above options would depend **on the investment climate prevailing in the sector and the country**. This would encompass factors like ease of being able to compete and win jobs, licensing and other clearances required, working environment like security (law and order) conditions, timely payments, availability of input resources, contract management and dispute resolution, subsidies and fiscal concessions, and profitability. Medium- to long-term planning by the Government with assured financing will encourage the road construction industry to develop, with the private players gaining confidence to take risks to set up new businesses or move in from other sectors.

(i) Making Procurement and Selection Process for Contractors and Consultants more Transparent

36. **Mandating accelerated use of e-procurement** methods will go a long way in introducing transparency and minimal interference of external factors in the selection of firms, in the beginning for contracts above a certain threshold value and then for all contracts. It will also prevent situations where the contractors allege not being able to buy the bidding documents and/or not being able to submit their bids (reasons being the formation of contractors' cartels and poor governance). This should be properly institutionalized and ensured so that the result thrown up by the computerized system can be overridden only by a high-powered committee and that too only under certain exceptional circumstances. Andhra Pradesh is one of the states which has completely adopted this and seems to be reaping considerable benefits. A post-qualification process for procuring contractors for road works will perhaps prevent collusion while bidding.

37. **Setting up web-based contractor databases** updated at periodic intervals will enable the procuring agencies to confirm and verify: (i) the detailed credentials and qualifying criteria directly and/or through a consolidated grading of the firm; and (ii) a contractors' performance database, which could include qualitative comments of previous clients as well as tangible information on performance like time delays, disputes engaged in versus the disputes lost, and defects noticed during the defects liability period. This web site, which should be accessible to anyone, could be owned, updated and managed by some industry association (like the Construction Industry Development Council --CIDC) for a fee that it could charge from the Government and the contractors.

38. To prevent misrepresentation of contractors' and consultants' qualifications, they could be certified by the respective industry associations, like CIDC or the Consultancy Development Council (CDC). These umbrella organizations could also set up state-level centres to encourage the industry at state level. This could also be done through collaboration with existing similar organizations at the state level.

(ii) Easing Barriers For New and Foreign Firms to Enter the Road Construction Sector

39. Measures worth considering include:

(a) In the case of new Indian subsidiaries of foreign firms, **allowing the experience of the parent firms with some sort of undertaking**/guarantee by the parent firm might help, provided that the capabilities and skills of the parent firm meet the work requirements.

(b) **Doing away with domestic price preference clauses** wherever they still exist, at least for medium to large contracts.

(c) **Easing visa and other travel documentation procedures for international staff working on road construction projects**, especially for those on short assignments. Visa extensions also seem to be taking an inordinately long time, far longer than in many other countries.

(d) **Bringing the construction specifications of our country on a par with international standards** for survey, design and construction of roads through a better system of R&D, which can be partly industry sponsored.

(e) **Easing qualifying criteria requirements to enable contractors from other sectors to slowly enter the road sector**, at least for some minor and/or maintenance works and then slowly build up their capacity. This could be done by the firms showing some similar experience or their capability in managing and financing contracts of similar size, and they could then participate in a joint venture or as an associate with a road construction firm.

(f) **Facilitating the access of road construction firms to working capital finance**, especially for small and unorganized players. These contractors can fill in the essential areas of maintenance and rural road works and free up the capacity of stronger contractors for taking up larger works. Here the industry associations should take upon themselves to upgrade the standards of accounting and make all transactions more transparent. Lenders and other registration agencies could use "proxies" for assessing small players. With the Reserve Bank of India extending the lending norms for small and medium enterprises (SME), it is prudent for the industry associations to get the very small, small and medium contractors to obtain an SME rating, to allow them easier access to finance.

(iii) Improving Dispute Resolution and Contract Management

40. This section is extremely important from the point of view of profitability. Profitability in the road sector among all sectors is possibly the lowest due to non-transparency and poor governance, which often leads to compromise in quality. Informal sources indicate that this is one of the prime reasons for entering into litigation by contractors to make up for the losses or scant profits. This is also probably discouraging some of the better Indian and foreign contractors from taking up item rate road contracts.

41. Timely resolution of disputes during contract execution will go a long way in reducing delays in time and increases in cost. One option could be to institutionalize the arbitration process by setting up Road

Appellate Tribunals at central and state levels. These should be independent from the implementing agencies as well as any form of regulator which the government might later decide to bring into the sector. Any disputes not resolved by the Dispute Resolution Board/Adjudicator (DRB) system provided in the contract could be referred to these Tribunals (having a fixed constitution of arbitrators specialized in contract law) and their decisions should be considered final. The existing provision of referral to an arbitration panel (made up of persons named by the contractor and client) is more time consuming and possibly results in dissatisfaction and consequent appeal in higher courts of law. Another strong suggestion is that in a sequential process of dispute resolution the decision of the previous process in the sequence should be implemented till the next higher process either reverses or changes the award. This should be applicable to both contractors/consultants and implementing agencies.

42. Another suggestion is for the employer, engineer and contractor to sit together when works begin, to clearly interpret the contract and come up with a set of bulleted guidelines clarifying their respective roles, responsibilities and approval powers. Here, it is strongly recommended that all road agencies should have some expert in contractual law to advise them to ensure correct interpretation of the contract, as well as issue notices and approvals as per the contract's provisions. This will help give the field level project officer some confidence in taking ownership of DRB awards and complying with them without pushing the decision making further upwards.

(iv) Subsidies, Fiscal Concessions and Taxation Related Issues

43. Recommendations which came out of the interviews with contractors and their associations were:

- **Abolishing works contracts tax** in states wherever it is still levied. The central sales tax is already being phased out, but all states should also fall in line.
- **Extending Section 44BBB benefits to road sector projects** to provide incentive to foreign contractors to enter the road sector. This benefit allows the foreign companies to assume that their profits will be 10% of their contract value, minimizing confusion and delay during taxation. Domestic contractors enjoy a similar tax benefit under Section 44AD.
- **Providing duty exemptions to all contractors working on contracts above a certain threshold value** instead of being provided for only certain projects funded by multi-lateral agencies or NHAI projects. Similarly, the GOI could look at the possibility of reducing customs duty on importing of capital goods and machinery used in road construction from the current level of 37%. Duty exemptions which sometimes are extended to only a part of the equipment, should be rationalized.
- Deemed export benefits should possibly be given for large road and expressway projects on the lines of the Ministry of Power's Mega Power policy. Another way to achieve a comparable fiscal incentive could be by providing faster depreciation rates on equipment.
- **Central Value Added Tax benefits are not being extended to certain road construction equipment** like crushing plants on the grounds that they produce input materials for road construction which cannot be termed as "goods". This could also be reviewed by the Government.
- Certain road contractors doing a high level of cash contracts are requesting extension of Section 80-1A benefits, which according to the current year budget clarifications were deemed applicable only to developers. Similarly there is a request from certain potential developers to reinstate the Section 10(23)G, at least for a certain period longer to enable easy access to long-term funds. For details refer to para. 40 in Chapter 4.
- **Reviewing taxation of joint-venture firms as an association of persons.** This has been preventing them from offsetting an individual member's share of profit against its individual losses and vice versa. Similarly, allow existing import benefits on equipment to be passed on to the JV members rather than the JV as an entity. It will help the members by giving them more freedom in their balance sheet assets.
- **Reviewing the double taxation of dividends which are passed on to the holding company by a Special Purpose Vehicle** set up to manage a road concession. This recommendation is applicable to all SPV developers and not just the road sector.

(v) Administrative/Procedural Issues - Licenses, Clearances, Tax Administration and Customs

44. Some important procedures need to be streamlined, including:

- **Streamlining procedures for customs and excise exemptions for import of equipment**/purchase of materials, especially duty-free import of equipment on specified projects. The requirement of producing excise/customs exemption certificate at multiple points leads to delays and procedural hassles and could be done away with.
- **Easing restrictions governing re-export and re-sale of imported equipment**. Equipment users face issues with respect to refund of import duty on re-export of imported equipment. Easing time and other restrictions currently imposed on re-sale of imported equipment eligible for duty and other exemptions will also help increase the equipment pool available within India.
- **Facilitating access to aggregates**. Several cases of mining quarries being taken over by mafia gangs have been reported and this reduces the supply of key materials such as aggregates. The Government should attempt to ensure that the Mafia is not allowed to interfere with the workings of the mining quarries. It would also be useful if each state prepared maps showing material sources and made them available on the web. Conditions and procedures for obtaining licenses for mining and quarrying should be spelt out on this web page, which could also be downloaded as a booklet.

(vi) Institutional Structure and Regulation

45. Another important aspect of investment climate is the need for safeguarding the interests of all stakeholders --users, government and the private sector players. Since a substantial part of the financing for roads comes from fuel levies and other budgetary support, **there is a strong need for an independent road board/quasi-regulator,** whose functions would be to:

(a) periodically assess the needs for investment and maintenance of all the roads;
(b) identify the sources of financing from government and fuel levies;
(c) identify the gaps in funding after a prioritization exercise and show how the private sector and other funding agencies can recoup their investments through appropriate levels of tolling;
(d) periodically review and advise the GOI/MoSRTH on the various aspects of road concession agreements, especially on the risk allocation and sharing and the need for refining them as the sector evolves;
(e) manage a dedicated road fund, if one exists; and
(f) set up a medium-term monitoring framework for the performance of different categories of roads, irrespective of operating and maintenance rights, and ensure its adherence.

This road board should comprise members from the key stakeholders (government and private) and be set up at both central and state levels.

(vii) Timely Completion of Contracts to Quality Standards

46. It has been noticed that bonus or early completion incentives are working well in works contracts let out by private concessionaires. This could also be an important incentive for cash contractors to complete works on time and prevent delays on the contractors' part in government-financed contracts. However, this needs good contract management by the client and timely decision making. Delegation of powers to the appropriate implementing agencies will help them take decisions and not resort to a legal/dispute resolution mechanism at the drop of a hat. At the same time strict enforcement of penalties available in the contract for poor quality and unjustified delays should be ensured. Consultants need to be made more accountable for the quality of design and supervision advice provided by them through contractual means.

C. Improving the Availability of Inputs

47. Road agencies and the contractor/consultant key persons need to be better trained to tackle contracts with newer forms of financing and risk sharing options. Thorough knowledge of the forms of contracting and concessions and the liabilities and accountabilities of all parties is very important for all signatories.

Moreover, conventional input-based contracts are being slowly and steadily replaced by performance-based contracts, and new materials are being used which perform better over the long run but are marginally costlier at an initial level. Specialized training needs for these different aspects of contracting and construction engineering need to be imparted to the road agencies as well as to contractors and consultants.

(i) Human Resources

50. India is a young country: about 50% of its population is below the age of 25 years. As such it seems anomalous that it should be faced with a human resources crunch. During the past decade, civil engineering is slowly regaining its lost glory but the demand for civil and road engineers is far more than the supply. Many of the graduates move to other attractive options of working with information technology, financial and other sectors, which pay better and probably are much less physically demanding. Options of working in developed countries which offer a better quality of life is an added benefit in working in these sectors. Some important recommendations for improving the quantity and quality of manpower are:

- **Empowering construction industry associations**: Many of the large and medium contractors of the country are closely held family-managed firms with very little professionalism. Many skilled and capable employees know that rising above certain limits is not possible in such companies. Public ownership with professional management will be an ideal solution for large construction firms. This will enable the private sector to bring in the incentives like employee stock options (ESOPs), which are absent in the present form of family-based organizations. Construction industry associations can go a long way in professionalizing management within construction firms by bringing in registration/rating/grading and performance management for employees.
- **Providing for merit-based rewards and promotions in the private and public sector** agencies and disseminate the concept of incentives for employees who perform well (including ESOPs in private firms), to improve the attractiveness of the road sector firms.
- **Active marketing** by contractors, consultants, implementing agencies and the respective industry associations; and **sponsor students in their final year** for good practical project theses based on real-life problems. This may go a long way in attracting more graduate and post-graduate students into the road sector.
- **Looking at options for hiving off parts of public works departments** and other government agencies into autonomous construction/design firms which may increase the availability of highly skilled staff in the fields of construction and designing. If implemented, this would reallocate presently sub-optimally utilized engineering and other technical human resources to more active and needy parts of the industry.
- The Government and one of the industry associations could **take up and prepare a training policy and strategy for the entire road sector** of the country. This could talk about institutionalizing training as an integral part of the jobs, finding the funding needed, and mapping out the key skill gaps. This report has done a preliminary study but this needs far more detailing.
- **Setting up more regional centres for training** road construction engineers, skilled workers and unskilled labourers. One example is the training centre called National Academy of Construction in Hyderabad set up as a PPP effort. There is an urgent need for replicating such structures in at least the major regions of the country. The National Institute of Construction Management and Research is another agency which provides training on construction management for contractor personnel.
- Fresh graduates and post-graduates joining the road sector agencies, especially with the contractors and consultants, are put right away on the job – either at construction sites or other design and planning offices. This tends to infect them with some of the incorrect practices. Instead, it may be good idea to **make them undergo a 6-month freshman's training at a reputed institute with some certification** --which will need periodic validation.
- **On-the-job training at construction sites with best practices** (like Delhi Metro) may also encourage the students to take up the challenges of mega-construction projects.
- **Introducing new courses to strengthen the project and contract management aspects, PPP roles and needs** and basic aspects of project/non-recourse financing.

(ii) Equipment

50. Key ways to overcome constraints in the supply of equipment and spares (in addition to incentives mentioned above under exemptions for duties and taxes) are:

- A dedicated construction equipment manufacturing association could be set up. It could be affiliated to some international organization of a similar kind. This is important from the view point of carrying out frequent assessments of the market potential, supply gaps and methods for filling them.
- Scarcity of spare parts for equipment already in use is a big problem for contractors when implementing key time-bound projects. The long lead times to supply spare parts when needed in a timely manner delay projects. Appropriate vendor bases in each region to be set up by both national and international manufacturers aiming to achieve timely delivery should be one of the objectives of manufacturing firms.
- Small and medium-size contractors complain of obstacles to buying equipment, especially for shorter duration contracts. At the same time, larger Indian and international contractors are able to import some listed equipment through incentives provided for certain types of projects. However, there are delays in paper processing and delivery at site. Equipment leasing and rental seem to be viable options but they are not well established in India. It may be worthwhile to explore what actions would be appropriate for governments (central or state) to take to facilitate the setting up by the private sector of equipment leasing companies.

(iii) Material Resources

50. Scarcity of materials is not seen as a big issue in general. But naturally occurring stone metal and aggregates will indeed be a problem. Even at the present level of construction under way in the country, it has been observed that crushed aggregates production is always behind schedule and causes delays. Access to mines and quarries is sometimes difficult due to strict regulations in environmentally sensitive areas, and this is further aggravated by poor crushing capacities planned by contractors. Implementing some of the recommendations mentioned above under B (v) and (vi) might improve the situation. Recently localized scarcity of cement has been observed due to the prevailing monopolistic situation of the Indian cement manufacturers. This is probably because of the Cement Quality Control Order of 2003, which requires Bureau of India certification for foreign cement manufacturing units, and the difficulties associated with this process. This could be reviewed and actions taken based on the practices followed in other countries. Locally available alternative materials and industrial wastes may prove acceptable substitutes without compromising on quality.

D. Marketing Indian Road Sector and Experience Sharing within India

51. During our discussions with international firms and associations, one point raised was the lack of information available about the investment and business potential in the road sector in India and about recent regulatory/fiscal/procedural changes happening in the country. Prime road sector agencies like the MoSRTH and the Indian Roads Congress (IRC) and industry associations like CIDC can help in marketing the opportunities that exist in India for foreign road contractors, consultants and concessionaires. This could be done by collabourating with the commercial attaché in Indian embassies/ high commissions abroad. Annual road shows on each continent (probably in a different country each year) could highlight the opportunities in Indian markets and the steps the Indian Government is taking to welcome international firms and expertise. The successes and failures should be candidly presented. This will also provide a forum for the Indian government to take note of any remaining concerns the international community has and ways to help solve them. This marketing exercise will help in attracting to India not only foreigners but also persons of Indian origin working abroad.

52. Similarly, many innovative and good practices are being followed in different states, but they exist in silos. International organizations when they work across different states find this amazing and it is therefore recommended that, apart from the annual IRC sessions, there could be many more opportunities for the

engineering and other road sector communities to visit other states and learn more about the best practices in construction, institutional structure, governance and transparency, and fiduciary provisions.

Suggestion for Taking Forward the Recommendations of This Study

53. After an in-principle acceptance of the study by GOI, it is suggested that the Planning Commission/Department of Economic Affairs could set up a steering committee or task force to look into the detailed recommendations of this and other studies, workshops and conferences. This will help to secure high-level stakeholder commitment and to ensure ownership of the final action plan. The terms of reference would be to look into the detailed recommendation matrix at the end of this chapter, and then to take up actions which could result in quick wins in the short term, and then some of the more difficult ones with a view to the medium to long term. The time duration for this review could be about 2 months. After the action plan is finalized a series of virtual workshops could be held using the Bank's Global Development Learning Network with access to the National Informatics Centre Network, in some of the state capitals like Andhra Pradesh, Gujarat, Karnataka and Uttar Pradesh.

Possible Areas for Bank's Future Assistance

54. The Bank could actively collaborate with the Government and the industry and work together with them in taking forward the findings of the study through the following possible interventions –

(a) Incorporating some of the recommendations mentioned above in the design of future Bank-funded projects, such as: long-term contracts, creating autonomous road corporations, independent road boards, and supporting PPP.
(b) Helping the central and state governments in improving governance through advice and help in the implementation of e-governance/procurement, disclosure to comply with the Right To Information Act, and setting up databases of vendor qualifications and performance.
(c) Facilitating international knowledge transfer and help --especially in key institutional areas like management and financing of road network assets– through knowledge sharing trips internationally.
(d) Helping in piloting the transition from fully government road departments like public works departments to autonomous organizations by creating public sector undertakings which can compete in the domestic market – an experience which has been successfully tried out in countries such as China and the UK.
(e) Training and sharing experience in good practices and the latest in the field of engineering and research. Key areas could be new materials, survey techniques like aerial photogrammetry, new geodetic systems, latest construction techniques, value engineering methods, and road safety audits.
(f) Assisting, through technical and advisory services, to study some of the recommendations in greater depth and then help in implementing the suggested actions, specifically in the critical areas of management of human resources, equipment and natural aggregates.

Matrix of Suggested Actions

55. This note has aimed to offer India's government and other stakeholders suggestions for radical expansion of its road construction industry. Without such capacity, the lack of a good road network is likely to constrain the country's ambitious economic plans. Our recommendations are summarized in the attached matrix (Annex 1). The Bank hopes that its suggestions will stimulate a national debate as to how this challenge can be met.

Recommendations & Suggested Action Plan — Annex - 1

S. No.	Recommendation area {Key issues addressed}	Responsibility	Recommended Actions		
			Immediate/Short-Term (0 - 2 years)	Medium Term (2 – 5 years)	Long-Term (5 – 10 years)
1.	***Sector policy and policy implementation;*** Key issues addressed: ▪ Improving investment climate ▪ Strengthening pre-investment planning ▪ Enhancing project readiness	▪ Planning Commission ▪ MoSRTH ▪ State implementing agencies ▪ Ministry of Law	▪ Widen the ambit of reform.		
			▪ Start drafting and then pass a construction law to deal with aspects like legal framework for establishing and operating construction firms, their procurement, legal liabilities, dispute resolution mechanisms, safety, quality, & market regulations.		
		▪ MoSRTH ▪ State implementing agencies	▪ Select the right model for PSP projects including appropriate types of bidding.		
		▪ Planning commission ▪ MoSRTH/NHAI ▪ State implementing agencies	▪ Undertake a Master Planning exercise; Prepare multi-year rolling and annual plans based on actual road needs and budget based on them.		
			▪ Ensure at least 50% of land free of encumbrances is handed over to contractors/ concessionaires in at least 10km stretches.		
			▪ Develop framework to opt for green-field projects (with new alignments, bypasses and expressways) wherever economically, financially, technically feasible	▪ Implement framework for green-field projects.	
			▪ Create an environment for forming trade associations with opportunities for free and open dialogue with the governments. Encourage self regulation by the industry (refer S No 7)		
			▪ Develop training policy for the entire road sector to cover private and government workers at all levels in centre and states.	▪ Approve and start implementing training policy	

2.	***Institutional structure and regulation*** Key issues addressed: ▪ Improving investment and business environment ▪ Strengthening project planning & management	▪ Planning commission ▪ MoSRTH ▪ State Finance and Road departments	▪ Take a policy decision to set up a Road Board (with government and non-government members) at central and state levels as a quasi–regulator/advisor to: (i) assess the gaps between road sector needs and available funds, and strategies to make up the gaps; (ii) advise the governments on the model concession agreements and tolling levels (iii) manage the dedicated road fund, if one exists; and (iv) set up a monitoring framework and ensure its adherence for the performance of the roads irrespective of current ownership.	▪ Implement establishment of decision to establish road boards at central and state levels.	
		▪ MoSRTH / NHAI	▪ Initiate capacity building of NHAI to include a core cadre of its own officers		
		▪ State Governments ▪ State road agencies	▪ Create state road corporations, wherever feasible, to plan and manage core network, i.e., high-traffic corridors within the state.	▪ Develop and implement options to limit the role of PWDs to core functions like policy, planning and overall management and unbundle the remaining functions into autonomous public sector undertakings (or profit centres) specialized in designs and/or construction.	
3.	***Marketing India's road sector abroad and knowledge sharing*** Key issues addressed: ▪ Raising the awareness levels of Indian road sector plans and other updates internationally; ▪ Improving the awareness of good practices happening within and outside the country	▪ Ministry of External Affairs ▪ Indian High Commissions ▪ MoSTRH & Indian Roads Congress ▪ Ministry of Finance ▪ Industry Associations	▪ Have annual road shows and conferences in different countries to let the world know of India's updated investment plans and any changes in the business environment.		
			▪ Encourage sharing of best practices among state road sector agencies in the country at more frequent specialized knowledge sharing fora in the format of IRC sessions.		
			▪ Devise web-based dissemination strategies to provide up-to-date information about the Indian road sector and any other industry initiatives.		

4.	***Contract enforcement and dispute resolution.*** Key issues addressed: ▪ Improved business environment; ▪ Strengthen dispute resolution mechanism	▪ Law ministry and state departments ▪ MoSRTH ▪ State Road Agencies	▪ Decide on setting up Roads Appellate Tribunal (RAT), as a permanent body, at central and state levels for arbitration if the DRB mechanism provided in the contract fails during contract/concession execution; ▪ Under the DRB mechanism, ensure that the final decision of the previous process is made binding on either party until changed or reversed. ▪ Insert Prompt Payment clauses in contracts especially in states in poor financial conditions with clear penalties.	▪ Implement decision to set up RAT ▪ Develop performance management system for contractors and consultants.	
			▪ Increase delegation of powers to the field manager to respect the DRB decision without pushing it up for further action. Having a legal person in the implementing agency may help in taking such decisions.		
5.	***Contract structure and risk sharing, with strengthened independent supervision arrangements.*** Key issues addressed: ▪ Enhanced efficiency of contract delivery; ▪ Better risk allocation and accountability.	▪ MoSRTH ▪ NHAI ▪ State Road agencies	Take a policy decision to structure contracts differently – to pass on more risks to the contractors, so as to avoid delays during contract execution due to design/survey inconsistencies, i.e. ▪ BOT/DBFO-shadow tolling/SPV type concessions; ▪ Design-Build-Maintain or Design-Build or Long term performance-based contracts;	▪ Implement decision on alternative contract structures	
			▪ Introduce bonus or early completion incentives for contractors and consultants to facilitate early completion. ▪ Ensure strict imposition of penalties for works contracts and introduce penalty/accountability clauses for consultants		

6.	***Administrative/procedural issues- licenses, clearances and Customs*** Key issues addressed: ▪ Improved project readiness; ▪ Improving the business environment and investment climate.	▪ MoSRTH ▪ NHAI ▪ State governments and road agencies ▪ Revenue, forest and railway ministries at centre and respective departments at state level.	Land acquisition and other pre-construction clearances – ▪ Create high-powered multi-departmental government committees at state and central levels to facilitate clearances and for acquiring land.		
			▪ Create specialized pre-construction units within each implementing agency, appropriately staffed, at state and central level to facilitate easy licenses and clearances for LA, environment, forests and railways;		
			▪ Create a web page and produce an information brochure of all clearances licenses required and minimum timelines to help the implementing agencies and project developers.		
		▪ Ministry of Finance ▪ State Governments	▪ Create a ***single window mechanism*** for obtaining duty exemptions and other licenses/clearances for special projects.		
		▪ Ministry of External Affairs	▪ Streamline the process of award of visas to foreign personnel (especially from countries like Thailand, Philippines) including visa extensions for expatriates and NRIs.		
		▪ Ministry of Finance ▪ Directorate General of Foreign Trade (DGFT), Ministry of Commerce & Industry	Ease constraints on re-export/re-sale of imported equipment: ▪ Streamline procedures to minimize delays in refund of import duties on re-export of used equipment; ▪ Remove/reduce restrictions on resale of imported equipment with exemptions within India.		

7.	***The bidding process and easing entry barriers*** Key issues addressed: ▪ Improving transparency and governance; ▪ Increased participation of contractors;	▪ Planning commission ▪ Ministry of Finance ▪ MoSRTH / NHAI ▪ State road agencies ▪ Ministry of Rural Dev/ NRRDA ▪ CIDC / CII / FICCI	▪ Take a policy decision to make the bidding process fair and transparent through e-procurement and vendor databases. ▪ For PPP concessions, follow two-stage procurement process, as recommended by the PPPAC.	▪ Implement e-procurement of tenders to minimize collusion, cartels and prevention of bidding; ▪ Establish web-based vendor databases (in collaboration with industry) for verifying the qualifications and performance of the contractors/ consultants; ▪ Encourage certification of qualifications by industry associations like CIDC/CDC at central and state levels	
		▪ MoSRTH / NHAI ▪ State road agencies	Ease entry barriers for foreign firms (entry criteria) by – ▪ Withdrawing preference for domestic firms, wherever it still exists, at least above a certain threshold (say Rs.400 million); ▪ Including parent firms' experience to be taken into account for evaluating foreign contractors/concessionaires with Indian subsidiaries. ▪ Withdrawing requirement of lead partner to hold 51% stake in SPV throughout PPP concession period. Exit should be allowed after a minimal holding period.		
		▪ MoSRTH ▪ NHAI ▪ State road agencies	Make criteria more effective for participation of Joint Ventures (JV): ▪ Register joint-deed/JV agreements, giving commitment of partners to honour stipulated responsibilities.		
		▪ PM's office & home ministry/departments ▪ State and central govt & road agencies	▪ Ensure that working conditions in selected states with poor law & order are eased by providing better security.		

8.	***Subsidies & fiscal concessions and taxation-related issues*** Key issues addressed: ▪ Improving profitability in the road construction industry; ▪ Improving the investment climate ▪ Expanding the equipment resource base within the country.	▪ Ministry of Finance ▪ MoSRTH ▪ Directorate General of Foreign Trade (DGFT)	Provide import duty exemptions on imported equipment and all input materials: ▪ for all projects above a certain threshold value instead of only multilateral funded or NHDP projects. ▪ to subcontractors working under main firms who import/ buy equipment.		
			Lower duty on importing equipment purchased abroad by contractors who have worked abroad. Lower customs duty on capital goods & equipment from current levels of about 37% and rationalize to include all parts of any equipmt.		
		▪ Ministry of Finance ▪ DGFT	Provide deemed export benefits for equipment under ICB for large road projects along lines of Mega Power Policy or provide increased tax depreciation rates on equipmt.		
		▪ Ministry of Finance	Abolish WCT wherever it still exists which creates much confusion.		
			Provide CENVAT benefits to road equipment like crushers.		
			Extend Section 44BBB benefits to foreign road contractors.		
			Rationalize JV taxation - Rather than as an Association of Persons, allow JV members to import equipment on their books rather than on the books of JV.		
			Enable SPV or subsidiaries to pass on double taxation of dividends to the holding company.		
			Revisit option of reinstating Section 10(23)G tax benefits (for a limited period) for project developers and investors and extend to road projects.		

9.	***Access to finance/credit*** Key issues addressed: ▪ Improving the investment climate; ▪ Improving the working and other capital flows;	▪ Industry associations (e.g. CIDC, CII, SMERA) ▪ Industry players ▪ GOI ▪ State Governments	Make the industry more organized through (i) a culture of rating/grading; and (ii) making financial statements more transparent by - ▪ registration of contractors above certain threshold (say Rs 1million) ▪ encouragement of grading/rating and ISO certification ▪ mandatory ratings for SMEs and small contractors	
		▪ GOI ▪ Lenders and FIIs ▪ Multilateral Banks	Take following steps to facilitate long-term finance for project developers and concessionaires: ▪ ease flow of long-term finance; ▪ develop secondary corporate bond markets to increase liquidity; ▪ introduce new instruments like take-out and mezzanine financing; ▪ encourage new players like insurance cos., pension funds and other FIs to participate in the long-term debt markets and financing of road infrastructure projects; and ▪ promote credit enhancement services by specialized credit guarantee firms such as monocline insurance providers.	
10.	***Critical input material resources*** Key issues addressed: ▪ Accessibility to naturally occurring sand and stones increased ▪ Increased use of alternative materials.	▪ MoSRTH & State road agencies. ▪ Industry associations and players ▪ Ministry of mines ▪ MoSTRH / IRC ▪ Ministry of Commerce	▪ Map key input material sources like stone & sand quarries, bitumen outlets, cement and steel factories and putting them on the web.	
			▪ Develop a mechanism for use of alternative locally available materials, industrial waste and better alternative specifications/technology (also mandate in case there is a scarcity of materials).	
			▪ Ensure government facilitation of mining quarries – freeing them from mafia and other monopolistic ownership.	
			▪ Review the BIS certification requirement for importing cement so as to make it consistent with best practices used internationally and ease imports.	
11.	***Availability of plant and equipment*** Key issues addressed: ▪ Increased access to and use of modern and latest technology plant/equipment especially among the medium & small contractors.	▪ Ministry of Finance/ DEA ▪ DGFT ▪ MoSRTH	▪ Create a dedicated industry body/association to represent equipment manufacturing industry ▪ Facilitate development of a good equipment rental and leasing market by passing on benefits of import and excise duty exemptions and other such financial incentives to equipment banks and leasing companies.	

12.	***Capacity & quality of human resources*** Key issues addressed: ▪ Increasing the size of the HR pool in the Road Sector; ▪ Improving the quality of human resources which should get translated into more efficient planning, designing, construction and monitoring. ▪ Creating better labour working conditions to enhance output and prevent exploitation.	▪ Industry associations ▪ Industry players ▪ Central and State Governments	Increase the human resources pool by ▪ incentivizing through better salaries, merit recognition and offering ESOPs like software cos. ▪ active marketing with pre-final year students of engineering and diploma colleges and sponsoring final year student project works or fees or both. ▪ professionalize the management in contracting firms, allowing any person to be able to enter the senior management levels based on merit; ▪ expanding government-supported vocational and technical education systems right up to the rural levels and upgrading some of the good existing ones into centres of excellence for certain specific trades. ▪ creating incentives to attract foreign and non-resident Indian engineers to work in India.		
		▪ All India Council for Technical Education (AICTE) ▪ Industry associations ▪ Central and State Governments	Improve quality of the human resources pool by - ▪ Taking a policy decision to establish more specialized training centres ▪ considering training as part of the performance appraisal process for Government engineers. ▪ Incorporating weighting to recent training in relevant area to key personnel when evaluating bids.	▪ Establish more regional/state training institutions like NITHE, NAC of AP, NICMAR to train and re-train all types of persons from labourers to mechanics and technicians to engineers and managers in govt & private firms; ▪ Provide specialized freshmen training for students from colleges entering road sector along with certification, which will need periodic validation; ▪ Encourage on-the-job training at construction sites with best practices at college level.	
		▪ Central and State Governments ▪ Industry players	Improve the labour conditions of work and living by - ▪ ensuring good working conditions and occupational, environmental, housing and safety standards – follow the EHS standards of ISO; ▪ mandating social security schemes such as welfare funds for construction workers implemented across all states; ▪ passing Unorganized Workers Bill into an act and implementing it; ▪ ensuring flexibility in employing contract labour through appropriate modifications at state level as per Contract Labour Act (1970) and the proposed amendment of 2002; ▪ speedy implementation of the Construction and other Building Workers Act 1996 by all states		

13.	***Research and development*** Key aspects addressed: ▪ Improving the road construction specification to international standards to ease barriers to technology transfer.	▪ MoSRTH / IRC /HRB ▪ Ministry of Finance ▪ Industry association and players	Develop a R&D Vision and Policy for the sector through which - ▪ the Highway Research Board is made the apex body for implementing the vision on a PPP basis; ▪ tax incentives are provided for setting up and operating R&D centres in the private sector; ▪ there is a mechanism for doing field trials – providing sites and a back-up mechanism to write off failures.		
14.	***Value engineering*** Key issues addressed: ▪ Improved quality at entry. ▪ Better value for money.	▪ MosRTH/NHAI ▪ State road agencies	Introduce a VE exercise to ensure optimal design, better quality control process, sample ground-truthing of surveys, road safety audit at concept and design stage (at least for projects costing more than Rs. 500 million) and introduce tpractice of peer review of DPRs prepared by consultants		
15.	***Industry structure and profitability*** Key issues addressed: ▪ Better business environment ▪ Improved profitability for various industry players.	▪ MoSRTH / NHAI ▪ State road agencies ▪ Industry associations and players	Inculcate better work through: ▪ increased delegation of powers to the project level officers in the government to take financial and other administrative decisions to prevent disputes going beyond the DRB stage. ▪ Resolution of issues and disputes as a team rather than taking adversarial positions. ▪ Promotion of self-regulation & corporate governance within the industry.		
		▪ MoSRTH / NHAI ▪ State road agencies ▪ Industry associations ▪ Industry players	Safeguard against inflation & cost escalation for key materials by: ▪ Introducing price escalation clauses in all contracts above 3 months duration and linking price increase of key inputs to alternate (to WPI) cost indices which are more realistic; consider pass through feature in exceptions. ▪ Greater use of index futures.		
				Strengthen the supply chain through a vigorous vendor development process: ▪ Create specialist sub-contractors with regional knowledge, equipment suppliers/ banks.	
				▪ Creation of state-owned enterprises (from existing PWDs) wherever possible (as mentioned under 2 above) for design and construction will strengthen the supply chain for big national and foreign firms.	