INDIA-COUNTRY REPORT

2005-2006

PREPARED BY

CONSTRUCTION INDUSTRY DEVELOPMENT COUNCIL
INDIA

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Contents

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Section 1: Executive Summary

1.1 Pre-amble

The India Country Report for 2005-2006 has been prepared by Construction Industry Development Council (CIDC) to present a brief outlook of the Construction Industry of India. CIDC is the apex body of Construction Industry of India and is promoted jointly by the Planning Commission, Govt. of India and the Construction Industry of India. The report describes, in brief, the political, social and legal framework. The report details the economic overview, administrative and regulatory features, enhancement and development of Indian Construction Industry and the globalization of construction services with a perspective of WTO and GATS.

1.2 Country Overview

1.2.1 Political, Social & Legal framework:

- Secular Constitution.
- Stable Democratic environment since 1947.
- Broad consensus on Economic policy across party lines.
- Independent multi-tier judicial system.
- Judicial systems in sync with international practices.
- Preferred language of domestic business & international interactions is English.

1.2.2 Economic Overview

1.2.3 India's economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries and a multitude of support services & industries. Production, trade, and investment reforms have provided new opportunities for Indian businesspersons. India has an estimated 350 million middle class consumers. :

- India is the second fastest growing economy of the world at present. India has recorded one of the highest growth rates in the 1990s. The target of the 10th Five Year Plan (2002-07) is 8%. India's services sector growth of 7.9% over the period 1990-2001 is the second highest in the world.

- A unique feature of the transition of the Indian economy has been high growth with stability.
- 4th largest economy in terms of purchasing power parity.
- 350 million middle-class consumer market.
- Steady economic growth over 50 years.
- Increasingly transparent & open policies to access, investment, location, choice of technology, import and export.
- Government rapidly moving out of ownership / Management of commercial enterprises by a process of disinvestment of existing Government-owned businesses.
- Positive outlook to international investments & trade policies.
- Fiscal incentives & Central Government & States support in physical & social infrastructure development.
- Very large pool of educated and trained & skilled manpower
- Rapidly developing R&D, infrastructure, technical and marketing services.
- Agricultural self-sufficiency, rich mineral base and abundance of other natural resources.
- Large, diversified and geographically well distributed manufacturing capability.
- Diversified infrastructure facilities available and under development.
- Sound banking system with a network of 70,000 branches, among the largest in the world supported by national and state level financial institutions.
- Leading International Banks entrenched and expanding.
- Vibrant capital market comprising 23 stock exchanges with over 9000 listed companies.

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- Large Coastline with easy access to South Asian markets.
- India has the third largest investor base in the world.

2: Macro Economic Review and Outlook

2.1 Main Macroeconomic Indicators

2.1.1 Overview of national economy

	1998	1999	2000	2001	2002	2003	2004	2005
GDP at real prices	**10.49**	**11.43**	**11.93**	**12.58**	**13.40**	**14.27**	**15.01**	**16.21**
GDP at current market prices	**14.27**	**17.02**	**18.96**	**20.80**	**23.04**	**24.79**	**27.43**	**27.6**
% GDP growth (Real Prices)	5.01	8.96	4.37	5.45	6.52	4.8	7.5	8
Primary sector (mining, agriculture etc)	**9.41**	**11.27**	**12.34**	**13.41**	**14.50**	**15.67**	**16.4**	**17.22**
(%) Growth	11.62	19.77	9.49	8.67	8.16	7.68	7.1	5
Manufacturing Sector	**0.93**	**1.03**	**1.16**	**1.23**	**1.38**	**1.54**	**1.64**	
(%) Growth	8.50	10.75	12.62	6.03	11.95	6.4	6.6	6.4
Service Sector	**1.86**	**2.45**	**2.91**	**3.26**	**3.78**	**4.38**	**4.74**	
(%) Growth	10.00	31.72	18.78	12.03	15.95	16.64	8.2	10.2
Construction Sector	**2.10**	**2.35**	**2.55**	**2.85**	**3.24**	**3.78**	**4.44**	**5.1**
(%) Growth	12.00	8.10	12.33	13.73	16.55	17.49	15	12
Population* (Millions)	983	1001	1019	1037	1055	1073	1088	1103
Population growth rate (%)	1.85	1.83	1.80	1.77	1.76	1.73	1.41	1.4
Total labour force in Construction	31	31	31.5	31.5	31.5	32	32.5	32.85
Construction labour force growth rate (%)	1.5	0	1.61	0.00	0.00	1.2	1	1.1
Unemployment Rate #	#	#	#	#	#	#	#	#
Short term interest rate (%)	18-20	17-18.5	17-18.5	14-16	11-14	11-12	11	11
Long term interest rate (%)	10-13	10-12.5	10-12.5	9-11.5	9-11.5	6-11	6-11	6-11
Average Consumer price index @	405	424	441	458	468	481	492	505
% change in CPI	13.13	4.69	4.01	3.85	2.18	2.77	2.5	2.6
Base lending rate (Commercial Banks)	13	12.5	12.5	10	10	11	10.25	10.25
Base lending rate (Finance Companies)	15	14.5	14.5	12.5	12.5	9	9	9

Source : Central Statistical Organisation & Union Budget – 2003-04
Base Year - 1993-94 for all except CPI @ Base Year 1982 = 100 (Source – Labour Bureau, GOI)
* Revised Estimate (CSO), ** Advance Estimate (CSO)
*** Projected (Union Budget 2002-03)
# Major employment is in unorganised sectors. No verifiable data available.

Negative growth in agriculture and allied sectors during October-December 2004 pulled down the gross domestic product (GDP) growth rate in the third quarter of 2004-05 to 6.2% from 11% during the corresponding quarter in the previous financial year. The overall growth

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during the first nine-month of the current fiscal was also lower at 6.7% as against 8.6% during the corresponding period in the previous fiscal. The agriculture and allied sector growth during April-December 2004 was 0.3% as against 9.3% during April-December 2003. According to the figures released by the Central Statistical Organisation (CSO) on Thursday, the slowdown in GDP growth was mainly due to a 1.1% fall in farm output during October-December 2004 over a handsome 18.2% growth in the corresponding quarter a year ago. Manufacturing sector logged double-digit growth of 10.4%, while trade, hotel, transport and communication activities grew by 10.5%. Mining and quarrying growth rate dropped to 4.8% in the third quarter of this fiscal against 5.8% in the corresponding period of previous year. Electricity, gas and water supply, however, increased by 4.4% against 3%. Financing, insurance, real estate and business services increased by 8.1% in third quarter of 2004-05 against 7.3% in the corresponding period previous fiscal. Community, social and personal services grew by 5.8% against 5.2% in the corresponding period a year ago. However the growth figures are quite good as compared to figures of other countries. India still is one of the fastest growing economies. The FDI in construction project has been allowed 100% and thus the FDI conditions are the most favourable now.

The Delhi metro project (DMRC), estimated at 1 billion $, is also in an advanced stage of construction where part of it has already been completed and is being used. Tunnel construction part is progressing as per schedule. Encouraged by the growth of DMRC various authorities are engaged in advanced planning for similar MRT systems. Bangalore, Chennai and Mumbai are the fore runners amongst the group. This also contributes to the positive outlook.

Growth of urbanization has generated energy demands in landlocked areas which are far away from coastal/catchments areas producing petroleum/allied products. Carriage of the same has been a costly affair for the nation. In order to meet these energy demands, government has envisioned pipeline grids to convey such products through cross country. First of such cross country pipe line connection project was HBJ pipeline. Subsequent projects are Central India Pipeline Project (CIPP), Gujarat Grid, and Pipelines in the Godavary Basins etc. These projects would create infrastructure where the payback times are relatively short and therefore also help in building the confidence.

10th Five Year Plan and Construction (2002 –2007):

The 10th Five year plan brought by the Planning Commission, Government of India, which is a policy paper for the economy for the next five years (2002 – 2007) has for the first time incorporated a chapter on Construction. This shows the importance given by the Government of India to the Construction Industry. The plan encourages 8% growth in GDP for which total investment is Rs. 4,081,700 Cr. The public sector investment is 1, 1212,802 Crore and private sector investment is 2,476,100 Cr. Based on past experience construction account for 40-50% of the investment which means a figure of 2,000,000 Cr in the next five years or about 4,00,000 Cr. every year.

2.1.2 Economy in the First Half of 2005

In a global perspective, India and China are major players in developing Asia, the fastest growing region even though the world economy has only just begun to recover. India is getting gradually integrated with world economy in terms of trade and investment inflows but the pace would get accelerated with the growing demand for the country's software skills and other IT-related services through outsourcing by major international firms.

Although India is yet to hit one per cent as its share of world trade, which is likely to be realised by 2007, exports and imports have risen as a ratio of GDP from 21 to 33 per cent within a decade.

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Lower interest rates, a revival of export growth, large foreign exchange reserves and the large food stocks that have contained inflation have contributed to the industrial recovery.

However, further fiscal consolidation and economic reforms are needed to sustain rapid economic growth, together with higher infrastructure investments, technology development for improvements in competitiveness and the removal of various rigidities in labor laws.

2.2 Economic Outlook in the next 5 years

The Planning Commission had set a target of average 7.4% year on year growth target upto 2011. Targets for the 5 year Plans are:

- Ninth Plan (1997 – 2002) - 6.5% (revised). Achieved 6.2% (provisional estimate).
- Tenth Plan (2002 - 2007) - 7.7%
- Eleventh Plan (2007 – 2012) - 8%

Demands on Infrastructure are expected to be very high as Infrastructure has been identified as a major growth driver (Source - Union Budget 2002-03). To sum up the Government's direction statement in the summing up of the Union Budget for 2002-03:

"The Indian economy responded to the economic reforms of the 1990s with a higher growth performance than in previous decades. The economy has, therefore, shown that it is capable of achieving high growth rates in response to the implementation of appropriate economic reform policies. Consequently, higher growth rates in the rest of the decade can indeed be achieved through further deepening of the economic reform process. Second generation reforms have been initiated already and, as their implementation proceeds, acceleration in economic growth can be expected in the coming years. However, the crucial issue of fiscal imbalance at both the Central and State levels needs to be addressed with some urgency in order to improve the overall health of the economy.

Economic reforms are a continuous process which needs to be adjusted as the economic environment changes, both domestically and internationally. The year 2001 has been a difficult year for almost all economies of the world. World economic growth slowed down as did trade growth. The current signals are that recovery is expected in 2002. This should help in the expansion of International trade and in rejuvenating of Indian export growth. As the world economy picks up, the deflationary trend experienced in the prices of commodities and manufactured products would also begin to be reversed enabling improved profitability in the Indian manufacturing sector as well. The continued implementation of reforms along with this upturn in the economic environment is likely to help in regeneration of economic activity in the months and years to come."

The demands projected for various major sectors in the next three Plans are as follows :

Projected Demand for Electrical Energy

	ENERGY REQUIREMENT (Mkwh)			PEAK LOAD (MW)		
	2001-02 End of 9th Plan	2006-07 End of 10th Plan	2011-12 End of 11th Plan	2001-02 End of 9th Plan	2006-07 End of 10th Plan	2011-12 End of 11th Plan
ALL INDIA	569650	781863	1058440	95757	130944	176647

Source: Central Electricity Authority, Government of India.

Projected Demand for Other forms of Energy

	2001-2	2006-7	2011-2
Petroleum Pdts. (MMT)*	104.9	153.0	226.3
Coal (MMT)*	114.0	140.0	179.5

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Natural Gas (MCM)* 15730 18291 20853

NOTE :(1) * Excluding demand for power generation.
(2) Figures in bracket are the CAGR over the period.
Source: Ninth Plan Report, Government of India.

2.3 Overview of Construction Industry

Type of Development	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
(billion Rs (INR) at current Price)						
Residential	100	90	95	150	145	180
Commercial	150	160	165	150	155	170
Industrial	650	750	770	840	865	960
Infrastructure	1000	1100	1240	1410	1735	2070
Others	(Included in above categories)					
Total	**1900**	**2100**	**2270**	**2550**	**2900**	**3380**
Gross Built-up Area (Thousand Square Metres)						
Total	19,445	29,625	30,000	35,000	35,150	40,800
Residential	10,695	9,625	11,000	16,000	15,500	19,250
Commercial	18,750	20,000	19,000	19,000	19,650	21,550
Industrial	Not represented in sq m					
Infrastructure						
Others						

Over the next decade an average annual GDP growth rate of 7.4% per cent over the next 15 years has been targeted by the Planning Commission. Infrastructure growth has been identified as the major vehicle of growth, to achieve this target.

Construction investment (In Billion INR) - Current Prices							
	1998-99	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003*-04**	**2004*-05**
Residential Construction(A)	**100**	**90**	**95**	**150**	**145**	**180**	**209**
public	48	43	46	65	55	77	89
private	52	47	49	85	90	103	120
Non-residential Construction(B)	**150**	**160**	**165**	**150**	**155**	**170**	**197**
public	53	56	58	55	47	50	58
private	97	104	107	95	108	120	139
Civil Engineering Construction(C)	**1650**	**1850**	**2010**	**2250**	**2600**	**3030**	**3515**

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public	1190	1350	1480	1645	1890	2155	2500
private	460	500	530	605	710	875	1015
Total construction investment(A+B+C)	**1900**	**2100**	**2270**	**2550**	**2900**	**3380**	**3921**
Total public	1291	1449	1584	1765	1992	2282	2647
Total private	609	651	686	785	908	1098	1274
Percentage Change in INR value - Constant Prices							
	1998-99	**1999-00**	**2000-01**	**2001**-02**	**2002-03**	**2003*-04**	**2004*-05**
	(%)	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**
Residential Construction(A)	-	-11.50	3.38	55.26	-4.76	22.41	14.47
public	-	-11.88	4.73	38.94	-16.64	38.05	13.95
private	-	-11.15	2.14	70.59	4.32	12.85	14.86
Non-residential Construction(B)	-	4.87	1.01	-10.6	1.81	8.15	14.24
public	-	3.77	1.55	-6.73	-15.81	4.90	14.36
private	-	5.46	0.73	-12.66	12.00	9.56	14.20
Civil Engineering Construction(C)	-	10.22	4.6	10.08	13.85	14.91	14.37
public	-	11.51	5.55	9.30	13.20	12.43	14.37
private	-	6.87	3.82	12.25	15.62	21.52	14.36
Total construction investment(A+B+C)	-	8.65	4.1	10.47	12.04	14.93	14.37
Total public	-	10.33	5.31	9.58	11.19	12.96	14.36
Total private	-	5.09	3.22	12.53	13.96	19.24	14.39
* 2001,2002 are forecast Constant Prices at 1997 level. GDP deflator applied							
**Repeal of ULCRA, Tax benefits and other reforms, initiation of Highways and Port Projects							

2.4 Construction Industry Outlook in next five years

2.4.1 CIVIL AVIATION

The Opportunities

Domestic and international passenger traffic in India is projected to grow annually at 12.5 per cent and 7 per cent respectively over the next decade, and domestic and International cargo traffic at 4.5 per cent and 12 per cent. By the year 2005, Indian airports are likely to be handling 60 million International passengers, and 300,000 tonnes of domestic and 1.2 million tonnes of International cargo.

The Airport Authority of India (Amendment) Bill, 2003 has been passed by parliament. The Bill provides a legal framework for operational and managerial independence to private operators. It also seeks to ensure a level playing field to private sector greenfield airports by lifting control of AAI except in certain respects. The Amendment Bill defines a private airport-one that is 'owned, developed or managed' by any agency or person other than AAI or a state government, or managed jointly by AAI, a state government, and a private player, where the latter's share is more than 50 percent – and allows leasing of existing airports to private operators.

The Andhra Pradesh government has allotted a Rs. 315 crore interest-free loan and Rs. 107 crore advanced development fees as grant to the international airport project at Shamshabad near Hyderabad. The GMR- Malaysia Airport Holdings Berhard (MAHB) consortium, which has projected a

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total cost for Phase I at Rs. 1162 crore, is expected to sign up with the state government and the AAI to build the new airport at Hyderabad.

Among the private sector-aided airports expected to be developed in the next five years are Hassan (Karnataka), Mumbai, Goa and Bangalore. These airports are capital-intensive projects, which have to be run efficiently to make them commercially profitable. The Mumbai project, for instance, will cost estimated Rs 16 billion (US$ 457 million). The Government has also decided to concentrate on developing existing airports rather than on new airports. The AAI is investing Rs 4.4 billion (US$ 125.7 million) to develop model airports in 12 cities, equipped with state-of-the-art equipment.

Part financing of facilities through a tax paid by embarking international air passengers is an idea being tried out at Kozhikode, which generates large West Asia-bound traffic. A similar method may be adopted for development of airports in Rajasthan and Goa, which are popular tourist destinations.

Among airport construction projects with private participation, the Kochi international airport has progressed the furthest: beyond initial planning and past the land acquisition stage. The project is expected to cost around Rs 1.6 billion (US$ 45.7 million) in the first phase, and go up to around Rs 3 billion (US$ 85.7 million) finally. In the first phase, equity will account for Rs 640 million (US$ 18.3 million), 26 per cent of which is held by the government of the state of Kerala, and the rest by non-resident Indians, banks, users (airline firms) and contractors. The rest of the project will be funded by term loans and short-term borrowings for working capital from banks.

The AAI has also drawn up an Rs 40 billion (US$ 1.1 billion) plan to modernise and expand its airspace management and infrastructure to meet the demand growth projected for the coming five years. The growth strategy envisages not only better passenger facilities but also improved navigational and communications systems. The first phase will involve upgradation of conventional communication and navigational and surveillance systems as an immediate measure. The internal resources generated at present being inadequate, the AAI plans to enhance revenues through rationalisation of the tariff structure, as well as from commercial, cargo and duty-free shops.

India could step closer to wide-ranging reform of its aviation sector after public consultation closes today for a committee drafting the country's new civil aviation policy.

2.4.2 COAL

India has seven per cent of the world's proven coal reserves. Coal supplies approximately 60 per cent of the country's total energy requirements. It has coal reserves of 245.9 billion tonnes. By current estimates the reserves are enough to meet India's needs for at least another 100 years.

Coal mining in India dates back to the 18th century, and the regulatory framework for the industry was conceived in 1923. In 1972-73, the Indian government nationalised the coal industry, primarily to develop the sector, since it was considered to be of strategic importance for rapid industrial development. Coal India Ltd (CIL) was incorporated as a holding company for seven coal producing subsidiaries and a planning and design-focused company.

As part of the economic liberalisation programme, government controls regarding pricing and distribution are being relaxed and a new coal policy proposing to permit private sector participation in commercial coal mining is being considered.

The Opportunities:

India's coal demand is expected to increase several-fold within the next 5 to 10 years due to the completion of on-going coal-based power projects, and demand from metallurgical and other industries.

The country ‘s annual production is less than demand. The annual production of coal is of the order of 3.5 billion tonnes while the annual demand 3.7 billion tonnes.

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The highest priority ought to have been for the development and use of high ash Indian coals with greater efficiency and reliability, including at lower capital cost. Unfortunately, 2 kinds of problems have been set the coal sector. one is that the coal sector is controlled by a mafia and a public sector that shows the worst kind of inefficiency. Output per man shift (OMS) and such other physical parameters of mining efficiency and productivity have been abysmally low despite the vast investment in the sector. Only a privatisation with the entry of both foreign and domestic players and a taming of the mafia would work. Even the first effort, viz. the award of large coal mining blocks to private parties for non-captive use, has to began. The second set of problems relate to R&D to use high ash content coals more effectively. Bharat Heavy electrical' (BHELs) valiant efforts at developing IGCC(integrated coal gasification and combined cycle) power plants where coal is gasified to be burnt in combined cycle gas turbines, has resulted in pilot and small-scale plants. But unfortunately their efforts to seek national commitment and government contributions to raise the Rs, 600 crore or so required to scale up the technology has not borne fruit. One can't think of a higher national energy research priority that requires state support than for the IGCC scale up .But the complete abdication of any strategic intent in policy making today has resulted in bypassing many such opportunities. Similarly other possible opportunities in methane, in situ gasification requiring national level R&D response would be bypassed.

CIL and its subsidiaries alone will not be able to meet this demand. The investment needed to bridge the gap of 400 million tonnes between the present level of production in the public sector (290 million tonnes in 1995-96) and the projected demand for 2009-10 is estimated to be US$18 billion.

The public sector corporations are expected to increase their production by about 250 million tonnes by 2009-10, subject to their making an additional investment of US$8-10 billion. This would still leave a gap of 150 million tonnes, which will have to beset by imports in the short run and by new investments in the long run. India's coal sector therefore offers immense potential for the astute investor.

2.4.3 OIL & NATURAL GAS

Opportunities:

Reforms in India's oil and gas were initiated with an official document entitled Hydrocarbon vision 2025.It set out the medium and long term vision for achieving energy security through two thrust areas, namely, increased domestic production and investment in oil equity abroad. The exercise comprised the following steps:-

(a) opening up new investments in exploration ,production, refining, pipelines, and marketing to private and foreign capital;
(b) introducing competition between various players in each segment of the industry;
(c) dismantling the administered price mechanism and integration of domestic market prices with international markets; and
(d) divesting government stake in Nationalised Oil Companies (NOCs) and the privatisation of their management.

Oil Companies have set aside US$1.8 billion to redevelop and upgrade existing producing oil wells and gas fields. They expect to boost recovery rates from 26 percent to 32 per cent. The major projects planned by ONGC for the next 2 to 3 years.

Schemes	Capital Expenditure in Rs crore (US $ million)	Incremental oil (million tonnes)	Completion Schedule
Mumbai High North	2929.40(610)	24.8	2003-7
Mumbai High	5255.97 (1100)	35.95	- do -

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South			
IOR-Neelam	347.69 (72.3)	2.06	- do-
IOR-Gandhar	473.23 (98.54)	4.34	- do -
Heera and South Heera fields	309.08 (64.38)	3.19	- do-
Gandhar Redevelopment	385.99 (80.21)	4.69	- do -

2.4.3 MINING

India's Geological and Metallogenic history is believed to be similar to the mineral-rich Australia, South Africa, South America and Antarctica, which it is supposed to have formed the pre-historic landmass referred to as Gondwanaland. Producing 84 minerals out of which four are fuel minerals, 11 metallic, 49 non-metallic and 20 minor minerals, India is wholly or largely self-sufficient in about 40 minerals. These constitute primary raw materials for thermal power, iron and steel, aluminium, cement, refractories, ceramics, glass and inorganic chemicals.

India is the world's largest producer of mica blocks and splitting. With the recent spurt in global demand for chromite, India has stepped up production to be fourth among all chromite producers of the world. Besides India ranks among the top producers of barytes, bauxite and iron ore, coal and lignite and aluminium. It exports minerals both in the raw and processed forms. India is an emerging world player in industrial minerals and is already influential in talc, barytes and wollastonite.

However, there exists immense scope for exploration of known deposits and discoveries of new ones. Both the Government of India and various state governments are aware of the potential, and have been consistently opening up the mining sector to private investors with funds, technology, managerial expertise and commitment.

The Opportunities:

The existing investment gap in the Mining sector needs to be covered by the private sector and more importantly Multinational Corporations. India is looking for state-of-the-art technological and management expertise, which can improve productivity through good planning and design of mines, reduction of costs, and optimisation of smelting and refining operations and by-product recoveries.

- Within India, with increasing levels of consumption, infrastructural development and growth of the economy, mineral demand is expected to grow very fast. The emergence of a vibrant middle class has created robust demand for base metal products, in addition to the traditional demand for gold and silver.
- India offers an unmatched opportunity to multinational corporations to set up production facilities based on lower wage costs to tap its large domestic market and export prospects.
- Local producers have been attempting to integrate their operations with the global industry, most successfully accomplished in the aluminium sector.
- The government proposes to take further steps to facilitate the financing of exploration and mine development.

Potential Investment Areas Based on geological setting, existing exploration database, mineral occurrences, characteristics of known deposits and deposits under exploitation, and resources position, these are some of the areas which the investors could look at :

- Potential areas for exploration ventures include gold, diamond, copper, lead-zinc, nickel, cobalt, molybdenum, lithium, tin, tungsten, silver, the platinum group of metals and other rare metals, chromite and manganese ore, and fertiliser minerals.

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- There are significant opportunities in the development and production of surplus commodities such as iron ore and bauxite, mica, potash, a few low-grade ores; mining of small gold deposits; development of gold resources located in the frontal Himalayan belt; mining known deposits of economic and marginal categories such as base metals in Bihar and Rajasthan; and exploration of lateric nickel in Orissa and, molybdenum in Tamil Nadu and tin in Haryana.

- Considerable potential exists for manufacturing units for value added products.

- As surface exploration techniques have already been extensively used, there exist opportunities for future discoveries in sub surface deposits.

IRON ORE

Developing iron ore deposits in the Bihar-Orissa sector and the Bellary-Hospet sector of Karnataka; setting up rail links and augmenting existing port facilities.

CHROMITE
Underground mining technology to recover deposits below 65 metres in depth in chromite mines in the Sukinda Valley in Orissa.

SOAPSTONE
Underground mining technology in soapstone mines in the state of Rajasthan where the mineral lies more than 100 metres deep.

POTASH
Appropriate mining methods to recover deep-seated potash deposits in Rajasthan.

GRANITE
Joint ventures with existing mine owners to develop large-scale modern quarries; infrastructure development for efficient linkage of quarry to ports.

Metallurgy/Mineral Processing

IRON AND STEEL:

- At present. Total (crude) steel making capacity is over 30 million tonnes and India, the 8th largest producer of steel in the world.
- The production of steel in 2003-04 is 34.85 million tonnes as against 32.63 million tonnes in 2002-03 thereby registering an increase of 7.2%.
- The demand of steel has been firmed up both at home as well as internationally.
- India has been annually importing around 1.5 million Tonnes of steel.
- Iron & Steel are freely exportable and India is a net exporter of steel.
- Advance Licensing Scheme allows duty free import of raw materials for exports

Opportunities

The liberalization of industrial policy and other initiatives taken by the Government have given a definite impetus for entry, participation and growth of the private sector in the steel industry. While the existing units are being modernized/expanded, a large number of new/Greenfield steel plants have also come up in different parts of the country based on modern, cost effective, state of the art technologies.

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Increasing role of private sector in total production can be seen from the fact that its share has increased from 51.4% in 1991-92 to approximately 72% in 2004-05. This trend is likely to continue.

ALUMINA AND ALUMINIUM

Worldwide, aluminium is used in various sectors, prominent among which are transportation, packaging, building/construction, electricity and consumer durables. Primary aluminium is processed further into bars, rods, billets, plates, sheets, foils, etc which are used in a variety of products such as air conditioners, refrigerators, aircraft (structure and engines), automotives (body parts and engines), bridges, food containers, drink cans, cooking and packaging foils, window and door frames for buildings and electric cables.

India is an important player in the aluminium sector, especially because of its abundant bauxite reserves (primary raw material in the production of aluminium), which make the country one of the lowest cost producers of the metal in the world.

At present, the Indian aluminium industry consists of primary integrated producers (who procure and process bauxite into aluminium) and secondary fabrication units (who convert aluminium ingots into rolled/extruded products.

Opportunities

The total annual consumption of aluminium in India in FY2005 is estimated at 760,000 tonnes.

The domestic demand for aluminium has increased at a compounded annual growth rate (CAGR) of 5% during FY2000-FY2004. While the growth in demand on year-on-year (y-o-y) basis was low during FY2001 and FY2002, it picked up after FY2003. Rising Gross Domestic Product (GDP) growth rate, and increase in the range of aluminium products have been the main drivers of this growth in demand for aluminium in the country.
The domestic annual production of aluminium has increased at a CAGR of 8% during FY1999-FY-2004, i.e.from o.54million tonnes to 0.82 million tonnes. The production has risen keeping pace with surging demand and increasing prices. Consequently, there has been a sharp increase of 18.57% on y-o-y basis in production during FY2004 as compared with FY2003.

The domestic consumption of aluminium is expected to grow in the annual range of 6-8% on the strength of the encouraging outlook for the following end-user segments:-

- **Construction:** Housing demand is expected to remain robust because of enabling factors such as low real estate prices, tax relief against interest cost on housing finance, lower interest cost on housing finance, lower interest rates and availability of housing finance for duration as long as 30 years. Further drivers of construction sector growth in India would be the upcoming highway projects.
- **Electrical sector**
- **Automotives**
- **Packaging**

Setting up alumina plants

NICKEL

Setting up plants; supply of appropriate technology to extract the metal

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TITANIUM

Establishing facilities for titanium sponge and metal production as well as for machining the metal

LEAD-ZINC

Techno-economic consultancy to Hindustan Zinc Ltd to recover values from the tailings of lead-zinc concentrator

KAOLIN

Modern processing technology to recover high-quality products, say for utilisation in paper and other industries, calcined and surface-coated varieties, and other value-added products.

STEATITE/TALC

Processing of steatite to produce a purer, whiter and finer micronised product and value-added materials by surface coating with chemicals.

WOLLASTONITE

Modern technology for production process; manufacture of value-added items through micronisation and surface coating.

Project Opportunities

Exploration

DIAMOND
Systematic and technologically advanced exploration to locate large workable deposits.

GOLD
Modern geo chemical and geophysical investigation methods are likely to unearth economic deposits in greenstone areas of Central, Eastern and Western India, and in banded iron ore formations, laterites and alluvial placers in various parts of the country.

COPPER
Transfer of technology such as in situ leaching to recover ore located below 1,000 m depth in Hindustan Copper Ltd's Mosabani mines in the state of Bihar.

CEMENT

CMA is the apex representative body of large cement manufacturers in India. It is a unique body with the private as well as the public sector cement units as it s members.

Opportunities

- To promote Indian cement industry’s growth

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- To protect consumer interests
- To identify newer usages of cement
- To establish contacts with similar bodies abroad for exchange of information data, publications, etc.

2.4.4 PORTS

India enjoys a strategic location in the Indian Ocean and has a vast coastline of around 6,000 km. However, due to the conscious policy the country followed for over four decades self-reliance through import substitution rather than export-led growth-its share in international trade was not significant. India's economic strategy has, however, been changed radically in the last few years. As India globalises its economy fast, it will need to handle a growing volume of international trade. Thus, the up gradation and expansion of its ports will be a key success factor for India's economic development programme

The Opportunities

Under the Government of India's Eighth Five-year Plan (1992-97), outlay for major ports was Rs 32 billion (US$0.9 billion). But it is estimated that investments worth Rs 254 billion (US$7.3 billion) are necessary to create the 350 million tonnes of additional capacity needed by 2005-06 Of this, the ports' internal resources are likely to yield Rs 135 billion (US$3.9 billion) between 1996 and 2006. The balance of around Rs 119 billion (US$3.4 billion) will need to come from other sources like the domestic capital market or through international capital flows.

The 4 major ports-Jawaharlal Nehru Port Trust(JNPT), Mumbai Port Trust, Cochin Port Trust, and Kandla Port Trust have drawn plans to add a container terminal each. The government is following the 'landlord port model' where private parties will operate terminals and other services while the ownership of land, waterfront, and security would remain under government control.

JM Baxi & Company along with the Dubai Ports Authority is setting up the Visakha Container Terminal. P & O Ports, through its Mauritius registered company, took over the Mundra International Container Terminal, earlier known as Aani Container (Mundra) Terminals Ltd and A P Mollier Group (a Danish company which owns Maersk Sealand) is likely to take over the Pipavav Port.

2.4.5 ROADS

Industrialisation in India has brought in its wake considerable demand for more and better roads. A better road network will result in enormous savings, estimated to be between Rs 200 and 300 billion (US$5.7-8.6 billion) per annum. Improvement of the road network will also enable commercial vehicles to run 500-600 km per day, which is the average distance covered by them in the developed world, as opposed to the 200-300 km per day average in India currently.

The Opportunities:

Roads in India are categorised as Expressways, National Highways, State Highways Major District Roads, Other District Roads and village roads. The investments needed over the next 10 years, till 2005-06, for the development of the National and State Highways are estimated to total Rs 1,180 billion (US$ 33.7 billion). Of this, budgetary resources are expected to provide Rs 465 billion (US$ 13.3 billion), and multilateral and bilateral agencies Rs 220 billion (US$6.3 billion). Private sector investment required is at least Rs 290 billion (US$ 8.3 billion).

National Highways Development Programme: As the two mammoth trunk road projects – the Golden Quadrilateral (GQ) (5846 km) and the North South – East and West corridor (7300 km) – move towards completion, albeit with some delays, private sector interest and participation in the projects has been unprecedented. It has been reported that only 45 percent of the GQ project will be

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completed by December 2003. By the end of December 2003, four-laning and upgradation in 2630 km is excepted to be completed. While the centre has officially extended the deadline for finishing the project to December 2004, the Ministry of Road Transport and Highways (MoRTH) has informed the Planning Commission that the work will not be completed before mid-2005. it has been reported that the National Highways development programme (NHDP) is one of the 7 schemes that the Prime Minister will direct to ensure the timely completion of the GQ Project and the north-south and east-west road corridors. The Cabinet Committee on economic Reforms(CCER) has approved the list of schemes to be taken up on priority basis in 2003-04.

2003-04 budget announcements, the MoRTH proposes to take up 4-laning of about 10,000 km of national highways through private sector participation on Build, Operate, and Transfer (BOT) basis. MoRTH is proposing 'viability gap funding' which in essence are cash flows to be provided by MoRTH during the concession period to ensure financial viability. MoRTH proposes to take up about 650 km of road stretches in the fiscal year 2003-04. The National Highways Authority of India (NHAI) is also evaluating various options (project recourse debt, NHAI- guaranteed loans/bonds, etc.) for financing the port-connectivity projects.

Multilateral agencies are providing funds to state governments for upgrading the state highways as roads are being considered an important aspect of infrastructure, which helps to ameliorate poverty. Tamil Nadu and Madhya Pradesh are the two states, which have received commitments from multilateral agencies.

The World Bank has approved a US$ 348 million loan to improve the quality of 750 km of state highways in Tamil Nadu Road sector Project. In addition, 14 bypasses will be upgraded to two lanes with or without paved shoulders and 2000 km of roads will be taken up for major maintenance. International consultants have carried out the road segment designs. The scheme is to be implemented by the state highways department. The government on its part will provide US$ 102 million to the US$450 million project. The World Bank loan is payable in 20 years and has a 5 year grace period.

The government of Madhya Pradesh has taken up upgradation of state highways and major district roads covering a distance of about 1900 kms in two phases. An investment of US$ 341.4 million is being entailed and this will be met by loans from the Asian Development Bank (ADB). (US$ 180 million) and with state government funding. The Phase I scheme involves strengthening and widening of 6 state highways for a total distance of 353 km at a cost of Rs. 2610 million under 4 packages.

THE KERALA ROAD FUND

The objective of the Kerala Road Fund is to assist the commercialisation efforts of the state government over the long term and hasten development of high quality but affordable road infrastructure in the state through private sector participation not only in commercially viable projects, but also in projects which, while not commercially viable on stand-alone basis, but are strategically important for the state, through suitable implementation structures, to attract private investment and to make optimal use of the funds available with the Road Fund. IDFC, together with iDeCK, has assisted the Government of Kerala in developing the operating framework and business plan for the Kerala Road Fund.

Sources of Funding

The Kerala Road Fund would have the following revenue streams as sources of funds:

- All moneys received from the central Road Fund established under the Central Road Fund Act, 2000;
- 10 percent of the tax collected by the state government in the previous year under the provisions of the Kerala Motor Vehicles Taxation Act, 1976;
- All fees, fines, and other amounts collected by the state government as per the provisions of the Kerala Highway Protection Act, 1999;

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- All payments made by the concessionaire as per the concession agreements executed under the provisions of the Road Fund Act;
- All amounts standing to the credit of the Bridges Fund established under Section 12 of the Kerala Tolls Act, 1976;
- The user fees collected by the government agency, or the statutory body under the Road Fund Act;
- Grants or loans or advances made by the Government of India or any institution;
- Grants or loans or advances made by the Government of Kerala; and
- Income from treasury operations.

The cumulative funds that could be available for project funding over the next 10 years is estimated at around Rs. 1300 crore.

Support and incentives

- The roads sector has been declared an industry to facilitate commercial borrowings.
- The Government will provide financial support to help the developer overcome problems of short-term repayment and debt servicing.
- To encourage private sector participation, the NHAI has been empowered to pick up equity in the projects.
- The NHAI will also consider providing traffic support to projects by way of revenue shortfall loans.
- The foreign exchange risk sharing pattern is in the process of being evolved.

Issues

The Government will carry out all preparatory work for the projects identified for private investment and meet the cost of

- Detailed feasibility study, which will review the project from the economic viewpoint after addressing the project risks. The feasibility study will establish the scope of the project. It will lay down standards and specifications for construction, finalise alignment and determine land requirement. It will also provide a plan for relocation/shifting of utility services and perform a social assessment of the project. The feasibility study is designed to identify rehabilitation and resettlement issues, forecast traffic and analyse requirements of highway-related activities.
- Land for right-of-way and en route facilities.
- Clearance for the right-of-way land: relocation of utility services, cutting of trees, resettlement and rehabilitation of the affected establishments.
- All the environmental clearances relating to the project.

Concession period: This period comprises

- The construction period which will be project-specific;
- The period for which the developer is permitted to levy a user fee and is liable to maintain the facility. This timeframe will be determined on the basis of competitive bidding and may go up to a maximum of 30 years.

The concession period may be extended suitably to cover any default of the Government in fulfilling its obligations. If the developer completes the construction ahead of schedule, he can start collecting

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user fees immediately at the rates applicable for the year when the road was originally expected to open for traffic. Similarly, if the enterprise is late in completing the construction, its fee collection period will reduce correspondingly.

Project Components

- Highway construction
- Wayside amenities like restaurants, motels and rest and parking areas as may be identified by the IA, which will also acquire the land for these. The developer will be free to generate revenues by licensing these establishments to anyone for timeframes limited by the concession period.

Other real estate development options include

- Loading and unloading terminals for cargo
- Warehouses
- Vehicle repair facilities
- Vehicle component shops
- Restaurants
- Hotels, motels
- Insurance and medical facilities

The developers are required to bear the cost of the land needed for these facilities, but the IA will assist in acquiring the land. The layouts for the facilities prepared by the developers have to be approved by the IA as per parameters stated in the bidding documents. The IA may opt to undertake this type of real estate development itself as part of the project and use the income generated to subsidise toll charges that may otherwise seem unsustainable. It can also assign real estate development to a third agency on the basis of competitive bidding.

In addition to the toll, the developer will be permitted to allow advertisement displays/ billboards within the right-of-way and outside. Invitation of Bids The projects are classified thus:

- Category I: Four laning / Six laning of National Highways and Expressways etc. each costing more than Rs. 1 billion (US $28.6 million) as per the feasibility study.
- Category II: Railway overbridges, bypasses, bridges tunnels and interchanges, each project costing less than Rs 1 billion (US$ 28.6 million) as per the feasibility study.

For Category I and II projects, a two-stage bidding process will be followed. Proposals will first be invited from bidders for pre-qualification. Financial bids will be invited from short-listed bidders.

Proposals for short-listing of bidders for Category II will be evaluated, inter alia, on the following parameters:

- Track record of the enterprise
- Track record of the contractors and consultants
- Financial strength of the enterprise
- Its capacity to raise funds from the market
- Quality and adequacy of the organisational and institutional arrangements proposed for implementation

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Evaluation of financial bids will be carried out on the principle of least cost to the user.

Bid Security Bids will have to be accompanied by a bid security bond of 1 per cent of the project cost as determined in the feasibility study.

Performance Security The successful enterprise will have to furnish a performance security bond of 3 per cent of the cost of project as indicated in the feasibility study. This will be discharged after 25 per cent of the works has been completed.

Land Acquisition An Act now empowers the Government to quickly take possession of land for National Highway development. Once the Government decides to acquire the land, the owner has to surrender it. He can only raise disputes about the compensation.

Transfer of Land The land for highway construction and en route facilities will be licensed to the enterprise for the concession period. License documentation expenses such as stamp duty will be borne by the developer. The developer is not allowed to sub-lease the land to anyone, but can license en route facilities.

Project Construction The project has to be completed within the period specified for construction, conforming to the standards and specifications prescribed in the agreement and to the satisfaction of the IA.

Management of the Highway Stretch The developer will have the power to regulate and control traffic on the highway stretch operated by it. No sales tax or octroi barriers will be allowed on the highway stretch, except for unified check barriers at inter-state borders, located outside the right-of-way with proper entry/ exit layouts.

Fee Revisions After the road is commissioned for traffic, fee revisions linked to the Wholesale Price Index will be allowed. Full inflation-offset compensation will be provided for an initial specified period; this will be progressively reduced thereafter in accordance with the bid conditions.

Regulatory Framework The IA will carry out the regulatory functions. The upper limit of the user fee applicable for the initial years will be stipulated in the agreement, together with the fee revision formula applicable for subsequent years. An appropriate upper limit of fees shall be notified by the Government from time to time. The IA will ensure that the highway facility is available to all users on equal terms and no one is charged more than the notified fee, harassed in any manner or subjected to any unfair or restrictive practices.

Transfer of Project At the end of the concession period, the project the assets built within the right-of-way and the junction and intersection areas and the en route highway-related facilities shall be transferred in sound condition by the enterprise to the Government free of cost.

Exceptional Circumstances and Force Majeure The financial liability of the Government will be limited, except in cases where the continued collection of tolls by the developer is frustrated by a change in policy or force majeure such as a law and order situation. The concession agreement will provide for suitable compensation in these circumstances consistent with international norms.

Railways

Demand for rail services has grown in tandem with economic expansion, quickly outstripping the supply capacity of existing assets (GOI 2002). Pricing anomalies and different priorities assigned to the Indian Railways (IR) stretched the internal resources to the extent that regular maintenance of fixed assets was accorded low priority. As a result, important infrastructure deficits have appeared. These deficits have created serious bottlenecks that hamper further growth on certain sections of IR. The need to increase investment in infrastructure was recognized in the late 1990s.

Opportunities

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National rail Vikas Yojana: In order to meet competition from other modes of transportation on the most congested routes of IR and to make the transport sector competitive, the Prime Minister announced the National rail Vikas Yojana (MRVY) in December 2002. Under this scheme, IR envisages to increase capacity of the rail golden quadrilateral, provide better connectivity of the network to major ports, and build a few critical bridges over the rivers Ganga, Brahmaputra, and Kosi. An SPV-Rail Vikas Nigam Limited (RVNL) – has been incorporated to carry out the specific projects under the NRVY. Funds required for the NRVY are Rs. 15,000 crore. Out of this approximately Rs. 4500 crore has been promised by the ADB. The funds are to be disbursed over a 10-year period. It is estimated that Rs 8000 crore would be required to enhance the capacity of the rail golden quadrilateral. IR is working on a proposal to offer projects under the NRVY to private operators on BOT basis using annuity payment scheme on the lines of road projects. These initiatives are undertaken to increase the freight and passenger-carrying capacity of the railways.

Rapid Mass Transport System

Opportunities

Delhi Metro's first section from Shahdara_Tis Hazari was inaugurated on 24 December 2002. PhaseI of the project has three lines: Shahdara-Tri Nagar-Barwala (28 km), Vishwa Vidyalaya-Central Secretariat (11 km), and Barakhamba Road-Connaught Place-Dwarka (23 km). This phase of the project is expected to be completed by Sepetember 2005. Doubts have been raised about the long term viability of the Delhi Metro project, costs for which not discounting for inflation – are 60 percent higher than Kolkata's and 113 percent cost of around Rs 160 crore (expenditure was Rs 10,571 crore for the 66 km first phase, including an 11 km underground stretch) was mucj higher than the per-km cost of around Rs 100 crore for the Kolkata Metro and Rs 75 crore for the Singapore Metro. Delhi Metro Rail Corporation (DMRC) has clarified that the higher project costs were largely due to the use of imported technology, but the matter needs investigation. To reduce overall project cost, the DMRC has projected raising around 6 percent of its total project cost by way of property development and is aiming to generate around Rs 600 crore through real-estate projects by the year 2005.

Hyderabad, Mumbai, Bangalore, and other cities, where metro projects are already under way, are likely to gain handsomely from DMRSs experience. With several domestic firms gaining technical expertise in the Delhi Metro Project, the capital cost of new metro projects coming up in these cities could be only a fraction of the Delhi project. For instance, the average project cost of the metro being envisaged in hyderabad is only around Rs 80 crore per km, against Rs 160 crore per km for the Delhi Metro. The detailed project report for the 39.45 km Hyderabad-Secunderabad metro project has been estimated at Rs. 3205 crore at April 2003 prices, which translates into a per-km cost of Rs. 81.2 crore.

Mumbai Urban Transport Project (MUTP), envisaged to bring about improvement in the traffic and transportation situation in the Mumbai Metropolitan Region, (MMR) got a fillip with the sanction of a World Bank loan. Mumbai Metropolitan regional Development Authority (MMRDA) is the executing authority for the project. MUTP envisages investment in suburban railway projects, local bus transport, new roads, bridges, pedestrian subways, and traffic management activities. Mumbai rail Vikas Corporation a joint venture of IR and the government of Maharashtra has been established for implementation of rail projects under MUTP and other projects of IR in the MMR. The total estimated cost of the project is Rs 4526 crore and the World Bank has sanctioned a loan of Rs. 2602 crore, that is,57 percent of the total cost on 18 June 2002.

The government of Maharashtra has planned to spend Rs 2000 crore in upgrading the urban road network of Mumbai. The project includes 42 flyovers, 16 elevated roads, 16 rail over bridges, 14 vehicular subways, and 15 pedestrian subways. Funds would be provided by the state government (Rs 500 crore), Brihanmumbai Municipal Corporation (Rs 300 crore), MMRDA (Rs 1000 crore), and GOI (Rs 200 crore). No extra tolls are envisaged to finance the project. It is hoped that the improvement in the road infrastructure will firm up real estate prices which will lead to higher property taxes which in turn will pay for the development. The project is being managed by MMRDA.

2.4.6 URBAN INFRASTRUCTURE

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India today faces the problems which most economies have faced at some point their evolution: the problems associated with urbanisation. In 1951, 83 per cent of the Indian population lived in rural areas. The figure has since then reduced to 74 per cent of a population which has doubled in the last 46 years.

Much of the investments flowing into India since the economic reforms began in 1991 have been and will continue to be in the urban centres. Naturally, India's cities and their infrastructure services find themselves under tremendous pressure.

The Government of India recognises that a large portion of these investment and service needs must be met by the private sector, and welcomes domestic and international investors in urban infrastructure.

The Opportunities:

Urban infrastructure projects are eminently suitable for public-private partnerships. Arrangements such as Build-Own-Operate (BOO), Build-Own-Operate-Transfer (BOOT), Build-Own-Lease-Transfer (BOLT), are promising options.

The Central and state governments welcome private initiatives and public-private participation in sectors like water supply, sanitation, public transport, and township and land development. The Indian Government stands committed to provide support in the form of equity contribution, a package of concessions, dedicated levies to repay loans, and a transparent regulatory framework.

Private investors are encouraged to negotiate the concessions required to make their investments safe and paying.

One significant fact that investors should consider is that local agencies in India have shown phenomenal progress in the recovery of costs of services and some have achieved full cost recovery. The city of Visakhapatnam in Andhra Pradesh offers a good example of how cross-subsidisation between consumer groups can make water supply systems run on commercial principles. The municipal corporation of Ahmedabad in Gujarat has performed a remarkable turnaround from a perennially loss-making body to a highly profitable organisation and has already launched the country's first Municipal Bond.

Major World bank Urban Infrastructure projects coming up in Rajasthan and Kolkata

According to the Asian Development Bank, Asia will remain the world's fastest-growing area this year despite the adverse effects of SARS and the war in Iraq, with growth likely to accelerate in 2004 as global demand recovers. India and China Dominating the growth in South Asia.

Opportunities

Pooled Financed development Fund (PFDF) : has also received in-principle clearance but no allocation has been made. The fund is to have an initial corpus of Rs. 400 crore for facilitating market access for small and medium cities through establishment of debt service reserve facility and grant for reforms. This fund is to be operationalized with support from the US-FIRE project.

Urban Reform India Fund (URIF) : has an outlay of Rs. 500 crore, especially to provided incentives to state governments to make the land and housing marker efficient.

Urban Sanitation Mission : has been allocated Rs 2500 crore by the Planning Commission in the Tenth Five Year-Plan. Of this, 70-80 percent will be in the form of grants, 20-30 percent as loans at market rates of interest. One precondition for disbursement of the loan is the use of private sector participation.

Water Supply

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Privatisation could be introduced in case of new townships and projects for planning, designing, source development, execution of works, operation and maintenance including billing and collection. In case of metros and mega cities, water supply augmentation schemes for source development, conveyance of raw water, its treatment and bulk supply to the city water supply authorities, maintenance of pumping stations, water treatment plants and city distribution systems can be undertaken by private agencies.

Socially equitable, and economically efficient supply options would be possible only if water is considered as an urban common property resource (CPR). Such a conceptual shift necessarily addresses (i) the definition of the property rights and the CPR relationships at stake, (ii) the governance of the sector, and (iii) the need for setting up coordinated dejure rights on the resource through both channels of local (including civil society) and global actors. In both Chennai and Kolkata the property rights are exercised by the municipality (state) and private individuals and entrepreneurs, but lack of coordination between the two leads to higher cost than necessary.

Water scenarios are city-dependent. If there is an opportunity to jointly promote decentralized techniques, decentralized management, and delegation of management, even in limited respects to the local private entrepreneurs and communities, one should consider the initial situation, and adopt a more dynamic approach. Indeed, the Chennai example shows both governance and a technical-cum-managerial solidity of the system that allows capacity building through delegation and technical decentralization.

The traditional question of giving water to the private sphere as a concession versus leaving it within the public sphere can be examined in this very framework. There are no credible projects for a large (international) private water companies. On the contrary, and despite the doubts and hesitations on its possible implementation, Mumbai seems to mostly focus on schemes supported by large international organisations. Chennai at the moment is in the intermediary position, as it simultaneously considers local outsourcing for the water supply and sanitation operation, and large private companies as far as waste disposal is concerned.

River Linking Project

Linking of Rivers is of great importance, the project is of such a magnitude that it can happen once in the lifetime of a nation, it is Rs.5,60000 crore project of water linking rivers and is stipulated to be completed by 2016, and the project would benefit the nation as a whole.

The three member task force initially addresses four major issues.

1. To attain political consensus with all the states.
2. The finances for the project, the funding of the project by Govt. bodies as well as private sector. The initial estimate was put at 5.6 lakh crore.
3. The best mechanism to implement the project and to prioritise.

Opportunities:

By integrating all of them together for irrigation, drinking water, navigation, fisheries, recreation and power generation. The primary objective remains drought and food relief, employment generation and increase in food production, which can easily go up to 450 million tonnes through increased irrigation. Thus it is a multi-purpose project and the country's GDP itself can go up by about four to five percentage points.

Sewerage

Similarly, in case of sewerage and sewage treatment, works such as maintenance of pumping stations, sewage treatment plants and city sewerage systems could also be taken up. Keeping in view the ever-increasing demands for fresh water, the private agencies may also install tertiary treatment

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plants for reuse and recycling of sewage and industrial effluents for various non-domestic uses.

Solid Waste Management

Solid Waste Management is another activity which could be taken over profitably by the private sector provided resources recovery is contemplated to make the system self-sufficient and financially viable. In addition, efforts should be made to manufacture various equipment and machinery such as pipes, pumps, quality control equipment and machinery required in the water and wastewater treatment plants etc. within the country by various foreign manufacturing concerns in collaboration with the Indian companies as joint ventures for the Indian market.

Urban Public Transport

India has 23 metropolitan cities. The number is likely to go up to 40 by the year 2001. All offer attractive investment opportunities in public transport. City-wise studies have been carried out for Delhi, Bangalore, Calcutta, Chennai, Hyderabad, Mumbai, Ahmedabad, Jaipur, Surat, Jammu, Nagpur, Vijayawada, Lucknow, Cuttack and Bhubaneshwar.

India welcomes private investment in Mass Rapid Transit Systems (MRTS) and Light Rail Transit Systems (LRTS). Governmental support for such projects may include rights for development of property, foregoing returns/ dividends on any investments made by the Government, the availability of budgetary sources for part-repayment of loans and tariff agreements.

The proposed Mass Rapid Transit System for Delhi offers good potential for public-private partnerships and the project is already in an advanced stage of planning. Bangalore and Hyderabad are also planning rail-based public transit systems.

Roads, Bridges, Flyovers

Bypasses to large cities and bridges are investment opportunities. There exists tremendous potential for private investment in construction and maintenance of ring roads, arterial and sub-arterial roads, bridges, flyovers and other facilities in cities.

Housing

The National Housing Policy, 1998 has been formulated to address the issue of sustainable development of infrastructure and for strong public-private partnership for shelter delivery. Private investment in the sector is brisk and the opportunities are unlimited. The Government would provide fiscal concession to carry out legal and regulatory reforms and create and enabling environment.

As per the action plan under the 2 million Housing Programme, Ministry of Urban Affairs and Employment has embarked upon facilitating construction of 7 lakh additional housing units in urban areas every year. HUDCO is entrusted with financing 4 lakh units and balance 3 lakh units per year will be met other HFIs recognised by National Housing bank, Cooperative Sector and Corporate Sector. As on 30.03.99, HUDCO has sanctioned schemes for construction of over 4 Lakh houses under the 2 million Housing Programme.

The Urban Land (Ceiling and Regulation) Act, 1976 was repealed through an ordinance notified on 11.01.99. This has since been approved by parliament and the Repeal Act notified on 22.03.99. Government has issued detailed guidelines to all State governments and Union Territories to protect the interests of people belonging to Economically Weaker Section and Lower Income Group.

The Ministry of Urban Affairs and Employment offers incentives to non-resident Indians and foreigner of Indian Origin as well as Overseas Corporate Bodies that are predominantly owned by them, for investment in Housing and Real Estate Sector.

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Land and Township Infrastructure Development

Returns on projects for development of land in extended areas of large cities and new townships can be well above 20 per cent. A package of concessions is being worked out.

Transmission lines

Opportunities:

The Asian Development Bank (ADB) approved today a rupee denominated loan equivalent to US$62 million for India's first public-private partnership in the power transmission sector.

A joint venture (JV) company will, on a build-own-operate-transfer (BOOT) basis, construct power transmission lines from Siliguri in West Bengal to Mandaula near the capital, Delhi. These comprise 1,133 km of 400 kilovolts (kV) lines and 20 km of 220 kV lines.

The JV company, Tala-Delhi Transmission Limited, will handle the operation for 30 years before turning it over to Power Grid Corporation of India Limited, a national transmission utility company owned by the Government of India. The project is due to be operational in 2006.

The transmission lines will convey power from the Tala Hydro Electric Power Project in neighbouring Bhutan as well as surplus power from India's eastern to northern region, where industries and households suffer from chronic power shortages.

Power

Opportunities:

The Asian Development Bank (ADB) today approved a US$150 million loan to India's Power Finance Corporation Ltd (PFC) to help reform the state power sector.

PFC will on lend funds to state electricity boards and other state-level power utilities that make a firm commitment to institute reforms to make the sector operationally efficient and financially self-sustaining. The funds will be used to finance projects that will reduce system losses, increase operational efficiency, and improve service delivery to consumers. The amount of the PFC loan will, in each case, be linked to the milestone corresponding to the particular stage of the agreed reform process.

The loans will help upgrade transmission and distribution systems, build transmission and distribution facilities for system expansion, and modernize generating plants.

PFC, which began lending to the power sector in 1988 and promoted reforms from 1996, is well placed to support state-level power sector reforms.

The State Power Sector Reform Project is part of a drive to make state power sectors financially self-sustaining. It aims to support reforms in selected, reform-oriented states and establish independent regulatory bodies. It will also un bundle sector entities to make them commercially and operationally autonomous and efficient, as well as financially viable.

The financial health of many of India's state electricity boards has been deteriorating because of insufficient cost recovery, inadequate tariffs, and high operating costs. Most of these boards are now being restructured under different initiatives to achieve financial viability and improve operational efficiency.

The ADB loan will finance 60% of the total cost of the project. The loan will be made from ADB's ordinary capital resources under its LIBOR-based lending facility. The loan will have a 20-year term, including a grace period of five years. The project is due to be completed in December 2007.

A capacity addition of 40,000 mw by the end of the tenth five-year plan has been targeted by the power ministry, including 3000 mw of capacity from non-conventional energy sources.

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The ministry of power has finalised the 13 private power projects totalling around 4500 mw for achieving financial closure by September 2004. The new list of projects are as follows:

Project	Capacity (MW)
Kathupalli, TN	1047
Bina, MP	578
Ramagundam, AP	520
Goindwal Sahib (Punjab)	500
Ghogha, Gujurat	375
Pathdi, Chhattisgarh	250
Bijapur, Karnataka	350
Hassan, Karnataka	189
Kaninminke, Karnataka	108
Bihta, Bihar	135
Saini, HP	100
Allain Duhangan, HP	192
Dhamwari Sunda, HP	70

RURAL INFRASTRUCTURE

Power

Opportunities

Out of the estimated 80,000 village yet to be electrified, the Tenth Plan proposes to electrify 62,000 villages through grid supply. The balance 18,000 remote villages are proposed to be electrified by 2011-2 through the use of decentralized non-conventional sources of energy. In order to facilitate the flow of funds, the rural electrification programme has been included as a component of the Pradhan Mantri Gramodaya Yojana (PMGY) and the states are being encouraged to pool resources from other schemes under the Minimum Need programme (MNP) and Rural Infrastructure Development Fund(RIDF) to meet the objective of 100 percent electrification. A new scheme called Accelerated Rural Electrification Programme (AREP), with provision for interest subsidy, has been launched. The participation of decentralized power producers will be encouraged, especially for electrification of remote villages. Village-level organisations like Panchayat Raj Institutions (PRIs), rural cooperatives, and non-government organisations (NGOs) will play a crucial role in the rural electrification programme.

The Cabinet Committee on Economic Affairs (CCEA) has approved a 4 percent interest subsidy scheme on loans availed by the SEBs from electrification. The proposal cleared under AREP intends to ensure 100 per cent electrification of all villages by the end of the Tenth Plan period. Also, the interest subsidy would ensure that funds are available for rural electrification at the same cost as in the PMGY. The rural electrification programme has an outlay of Rs. 1.64 billion in 2002-03 and a grant of Rs. 5.64 billion for the Tenth Plan period as an interest subsidy scheme for the AREP.

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The government is planning to seek a World Bank loan to help finance rural electrification schemes in the villages. The Ministry of Power is pushing the concept of rural electricity supply companies (RESCOs) involving the private sector players by leasing out solar panel-based light systems to village homes.

Telecom

Four of the private basic operators have failed to adhere to the deadline set by the Dot for fulfilling theirrural telephony obligations. Except for HFCL Infotel Ltd in Punjab, the remaining operators , namely, Reliance Telecom,Tara Teleservices Ltd, Bharti Telenet, and ShyamTelecom have not been able to cover the stipulated 50 % of the uncovered villages (close to 39,900) in their services areas by June 2003. the task of connecting the remaining village by December 2003 seems to be remote. So far Reliance has set up close to 4000 village public telephones (VPTs) in Gujrat and Tata Teleservices has set up around 3000 VPTs in Andhra Pradesh and around 2000 VPTs in Maharashtra. Bharti and Shyam telecom too have provided around 1000 VPTs in Madhya Pradesh.The number of villages covered through VPTS has shown an upward trend with 513,127 villages having VPTs by March 2003 as compared to 469,010 by March 2003 out of a tolal of 607,491 villages.

Section 3: Administration and Regulations of Construction Industry

Construction Projects are subject to a host of Central and State laws simultaneously. Administratively and in terms of regulation, Central & State Governments have their own roles to play in Construction.

3.1 Structure and Role of Construction Administration

3.1.1 Structure and Role of Construction Administration of Central Government &
3.1.2 Structure and Role of Construction Administration of Local Government

There is focussed central machinery or structure of administration for the Construction Industry. As this sector's activities are involved with every sector of the economy, at the Central Government level, the issues related to Construction are taken up by the Planning Commission. In fact Construction was given the Identity of an Industry only two years ago.

Housing & Real Estate, constituting around 10.3% of total Construction, is the only one segment of the Construction Industry which has a Ministry called the "Ministry of Urban Affairs". Equivalent Ministries exist at State level and at Municipal/local levels. Activity at any site is governed by the State or a combination of State and Central administration, depending on the location.

Administratively the following Ministries/Departments/Organisations have operating influence over Construction Industry:

Central Government Ministries

- ✓ Ministry of Commerce
- ✓ Ministry of Finance
- ✓ Ministry of Urban Affairs and Employment
- ✓ Ministry of Industries
- ✓ Ministry of Home Affairs

Central Government Departments

- ✓ Cabinet Committee on Foreign Investment

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- ✓ Secretariat of Industrial Assistance
- ✓ Foreign Investment Promotion Board
- ✓ MRTP Commission
- ✓ Registrar of Companies
- ✓ Central Excise and Customs Department

State Government

- ✓ Revenue Department
- ✓ Urban Development Authorities
- ✓ Sales Tax
- ✓ Town and Country Planning

Autonomous Statutory Bodies

- ✓ Reserve Bank of India
- ✓ Security and Exchange Board of India
- ✓ Municipal Committee

3.1.3 Structure and Role of Associations Related in Construction Industry

Industry and Sectoral associations and Councils are increasingly playing an active and interactive role in issues relating to technology, taxation & administration of laws. From unilateral decision-making by the Government, the emphasis has started shifting to consultative decision-making in these matters. Associations are becoming more professional in terms of data-basing of their sectors and understanding of the concerns of the government while putting forward their points of view. Interactive workshops, joint conferences, joint forums are increasing and the government has been taking the industry associations in confidence before any major decisions affecting the industry.

CIDC is one such Council formed to represent the Construction Industry. It is a registered Society founded by the Planning Commission, Government of India; has membership of four other Ministries directly; has membership of the major Public Sector Undertakings from most of the other Ministries; besides having the membership of leading Private Industry Companies alongwith membership of Financing Institutions, Universities, Research Organisations & Rating Agencies.

The Real Estate Sector has a similar body “National Real Estate Development Council” (NAREDCO).

3.2 Regulations on Construction Market Access

3.2.1 Regulations of License and Permissions for Construction Industry

The laws relating to different aspects of Construction fall under different categories and collectively take care of the interests of the Construction Industry (quite like the GATS provisions). The Industry has Central, State & Municipal/local laws applicable simultaneously and the collective sums of the laws govern the Industry in that State.

Laws relating to the Housing & Real Estate Sector are quite comprehensive at both, the Central & State levels. At the Centre, the Urban Development Ministry and at State levels, equivalent Ministries take care of this politically sensitive sector of the Construction Industry. Implementation issues for housing are as complex as they are in the rest of the world.

The following laws relate to Construction Industry:

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1 Architects Act (1972)
2 Building and Construction Workers Act (1996)
3 Child Labour Act (1986)
4 Industrial Disputes Act (1947)
5 Industrial Employment (Standing Orders) Act (1946)
6 Maternity Benefit Act (1951)
7 Minimum wages Act (1948)
8 P F and Pension Act (1952)
9 Payment of Bonus Act (1965)
10 Payment of Gratuity Act (1972)
11 The Air (Prevention and Control of Pollution) Rules (1983)
12 The Environment (Protection) Act (1986)
13 The Water (Prevention and Control of Pollution) Cess Rulers (1978)
14 Trade Union Act (1926)
15 Workmen Compensation Act (1923, 1934, 1952 and 1987)

The Ministries, Departments & Organisations regulating the various Industry components are:

Central Government Ministries

Ministry of Environment and Forest
Ministry of Labour

Central Government Departments

Chief Labour Commission
Employees Provident Fund Commission
Factories Inspector
Inspector of Boilers

State Government

Fire Department
Labour Department
Law and Order
Mining Department
Pollution Control Board
Town and Country Planning
Water Supply and Public Health Department

3.3 Management System of Public or Government Construction Projects

3.3.1 Organisations of Management and Enforcement

The Ministries, Departments & Organisations managing and enforcing laws include:

Central Government Ministries

Ministry of Environment and Forest
Ministry of Labour

Central Government Departments

Chief Labour Commission
Employees Provident Fund Commission

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Factories Inspector
Inspector of Boilers

State Government

Fire Department
Labour Department
Law and Order
Mining Department
Pollution Control Board
State Electricity Board
Water Supply and Public Health Department

3.3.2 Inviting Bid System

The commonly used system is the tendering system. Across the spectrum of State Governments, Government/Quasi-Government/Autonomous bodies, Public Sector undertakings and Enterprises run by the Government, the system has variations regarding pre-qualification, specifications, earnest money, security/retention deposits, dispute resolution methods etc., but the basic lowest price bid acceptance is uniform.

Details of the system and the upcoming modifications are listed at Annexure A6

3.3.3 Management System of Quality and Safety

The Government machineries involved with Quality & Safety aspects are :

Central Government Departments

Bureau of Indian Standards
Chief Labour Commission
Inspector of Boilers
Factories Inspector

State Government

Pollution Control Board
Labour Department
Mining Department
Water Supply and Public Health Department

3.3.4 System of Checking and Accepting for Projects

3.4 Risk Management for Construction Projects

3.4.1 Surety for Construction Projects
3.4.2 Insurance for Construction Projects

At present, sureties are not available. A very few Insurance products are available for Construction. CIDC has taken a major initiative in this direction by developing ten immediately marketable products, which are being discussed with various Insurance companies for offering to the Construction Industry.

Section 4: Enhancement and Development of the Construction Industry

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4.1 Productivity

4.1.1 Value - added per Employee (Annual)

	1999	2000	2001	2002	2003	2004	2005
Construction	67,741	73,225	75,355	77,743	80,207	82,144	85,547
% change	0.74	7.49	2.83	3.07	3.17	2.41	4.14
Manufacturing	215,000	217,150	219,015	220,113	221,898	222,196	223,074
% change	0.74	0.99	0.85	0.50	0.51	0.1	0.3
Service	218,520	223,436	228,811	233,870	239,015	243,099	255,174
% change	1.47	2.20	2.35	2.16	2.20	1.7	4
Primary sector	62,500	65,300	64,850	63,720	62,592	63,142	63592
% change	-3.47	4.29	-0.69	-1.77	-1.5	0.8	0.71

NB: Primary sector includes agriculture, mining, quarrying etc. (Factored Costs)
Source : CIDC database

4.1.2 Physical Measurement of Construction Productivity

(sq. m per Man-Day)	1999	2000	2001	2002	2003	2004	2005
Public Residential	0.50	0.50	0.50	0.50	0.50	0.50	0.51
Private Residential	0.50	0.50	0.50	0.50	0.50	0.50	0.51
Commercial	0.60	0.60	0.60	0.60	0.60	0.60	0.61
Industrial	0.70	0.70	0.70	0.70	0.70	0.70	0.71

Area (sq. m) refers to total built-up area.
(The measurement may not reflect overall trend since the housing sector constitutes 8-9% of total construction activities)

4.2 Construction Cost

4.2.1 Unit Construction Cost (INR/ Sft)

	Residential (terrace) **		Residential (high rise)		Commercial office		Industrial		Hotel
	Standard	Luxurious	Standard	Luxurious	Standard	Prestige	Light	Heavy	5star
1997	825	1100	650	1100	625	950	600	800	3,500
1998	870	1200	650	1100	625	950	600	850	3,500
1999	890	1300	650	1100	625	950	600	850	3,800
2000	865	1350	640	1150	610	1050	600	870	3,950
2001	875	1370	685	1225	640	1225	615	890	4,050
2002	918	1430	719	1286	672	1286	646	934	4252
2003	964	1502	755	1350	705	1350	678	981	4465
2004	1012	1577	793	1417	740	1417	712	1030	4688
2005	1050	1600	805	1500	760	1500	750	1080	4900

4.2.2 Average Construction Material prices

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	Cement in bulk (INR per tonne	Steel bars (INR per tonne	20 mm Aggregates (INR per M3)	Concreting sand (INR per M3)	Common bricks (INR per thousand Pieces)	RMC Grade 30 (INR per M3)
1999	2800	1500	575	370	1800	2800
2000	2850	1550	600	440	1970	2850
2001	2780	1590	670	460	2100	2780
2002	2520	1560	600	529	1750	2520
2003	2755	1950	662	581	2030	2746
2004	2900	2800	665	590	2050	2971
2005	3200	3200	665	590	2100	3150

RMC: Ready Mix Concrete (limited availability and demand)

4.2.3 Construction Industry Salaries and Wages (INR)

	1999	2000	2001	2002	2003	2004	2005
Professional Per Month) Mid-Management Level	15000	15000	15000	15000	15500	15600	16000
Technicians (Per month)	5000	5500	6000	6000	6300	6350	7000
Skilled worker (Daily wage)	140	150	160	160	160	170	185
Unskilled (Daily)	72	72	80	90	120	135	150

4.2.4 Average Sectoral Wages (INR Per month)

	1999	2000	2001	2002	2003	2004	2005
Construction	6700	6700	6800	6800	6900	7050	8000
Manufacturing	14000	14000	14000	14000	14500	15000	15500
Services	12000	12000	12000	12000	12500	13000	14000
Primary sector	4900	4900	4900	4900	5000	5150	5250

4.3 Policy and Initiatives on Construction Quality

4.3.1 Enhancement of Quality Assurance

The specifications, norms and the quality of the product are laid down on the basis of codes specified by Bureau of Indian Standards (BIS). Indian Standards are fairly elaborate and are being modified to harmonise with ISO Standards. Apart from BIS, several scientific and Research and Development Institutions, CSIR, CBIR, IITs, Government & Private Material testing labs also provide necessary input support.

CIDC together with Building Materials Technology Promotion Council, Bureau of Indian Standards and several other institutions have commenced an initiative called Performance Appraisal Certification Scheme (PACS) which is authorising Test labs as well as R&D Institutions in the country to authenticate the performance related claims, made by several manufacturing organisations.

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The number of Organisations which have ISO certification is very large. However, due to the relatively small turnover of each, the volume of Production represented by these entities is very small.

4.3.2 Enhancement of Skills of Workforce

CIDC has a nationwide initiative in place, in collaboration with three leading Universities - Indira Gandhi National Open University (IGNOU) New Delhi, Dr. Bhimrao Ambedkar University, Hyderabad and Thapar Institute of Engineering & Technology, Patiala, each of which is located in a different part of India. The initiative is part of the CIDC campaign to develop a harmonised system of training of Construction Workmen across the nation. Barely 25% of Construction workers have some type of rudimentary training received from their guilds or their parents. Even these workers need some retraining to have a well rounded knowledge of the Construction Trade that they follow. Approx 22 million workers have received no training at all except what has been learned at the sites. Moreover, the level of literacy is very low. Further, with over 18 languages and 400 plus dialects, there is a great deal of opportunity to address this need for training.

In collaboration with CIDC, the Universities develop the course contents and the testing & certification procedures. 38 Construction Trades have been identified for the training modules. A number of Centres established in various Institutions / Companies / Workshops / Guilds across the country have been authorised to impart the training. At the end of each course, the CIDC-University team conducts testing & certifies eligible candidates. Emphasis of the course is on theoretical and practical aspects, and weightage is also given to previous experience. The course contents / tests have been translated into seven languages so far and work is proceeding on other languages.

The Main features of this training are:

- National level **Standardization** of curricula and competency standards, testing and recognized university certification
- **On the job** learning
- Distance learning methods with Self Instructional Materials in **vernacular languages**
- Minimum loss of wage **earning** time.
- **Packaged** programmes to be taken up at a pace convenient to learner.
- For candidates who may possess or acquire the minimum prescribed educational level, access to **upgradation** of education to diploma/ degree level.
- Successful candidates receive formal **Certificates of Competence** from the University.

The targetted objective of this exercise is to develop a pool of trained workers, to be available to the Industry, and also to help in mobility and raise the living standards of a large neglected pool of productive potential consumers.

4.3.3 Enhancement of supervisory level

The HRD program also extends to the Supervisory level and the training, testing & certification for Supervisory level has been commenced simultaneously under the same HRD scheme.

Skill Level of Workforce and supervision Level

	Total construction workforce (Nos.)	No of skilled workers	Skill level (%) (Skilled worker)	Ratio of supervisor to workers (1:XX)
1998	30,000,000	9,000,000	65%	1:24
1999	31,000,000	9,000,000	65%	1:22

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2000	31,000,000	9,000,000	68%	1:22
2001	31,500,000	9,050,000	68%	1:22
2002	31,500,000	9,050,000	68%	1:22
2003	31,500,000	9,050,000	68%	1:22
2004	32000,000	9,100,000	68%	1:22
2005	33,000,00	9,15,000	68%	1.22

Benchmark: CIDC/ University parameters; percentages determined on the basis of intake survey statistics by CIDC's Partner Institutions.

4.3.4 Enhancement of construction safety

Safety Record

	Accident frequency rate (accidents/million man-hours worked)
1998	0.08
1999	0.10
2000	0.10
2001	0.10
2002	0.09
2003	0.01
2004	0.01
2005	0.01
Target	Near Zero

4.4 Development of new technology in the construction sector

- In construction automation and mechanization
- In prefabrication technology

New technology in automation, mechanization and prefabrication

Incorporation of new technologies in Construction in India is accelerating. Some of the latest techniques being increasingly used are as follows

Technology & brief description	**Developer/ Facilitator**
1.Trenchless pipe laying technology : INDSTT is working for developing, advancing and promoting the technology in India	INDSTT (Indian Society for Trenchless Technology
2. Well foundation technology for bridges	Larsen & Toubro Ltd
3. Dry Mortar Techology	m-tec mathis technik gmbh Technology Center Thru' Voltas India Ltd
4. High Performance Fibre Reinforced Cement Composites	IIT Roorkee
5. Slurry Infiltrated Fibre Concrete (Sifcon)	IIT Roorkee
6. Stainless Steel Reinforcement Bar For Concrete	Jindals Strips Ltd

New Technology in pre-fabrication

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A start has been made in pre-fabrication, but the quantum is still too low for statistical evaluation and worthwhile data gathering

4.5 Policy and Initiatives on use of IT in Construction

Project design, development, implementation and monitoring are gradually getting transferred to the computers by Consultants, Project owners & Contractors. IIIT, a leading Software Development Centre established by the Government of Andhra Pradesh has set up an educational Institute at Hyderabad, which is dedicated to the comprehensive incorporation of IT into every aspect of the Construction Industry. Similar initiatives are being planned by some leading Corporate houses like Unitech Ltd. for the Web enabled, design, control and monitoring of Construction Projects.

CIDC has also developed the concept of a Wide Area Network based system, for the monitoring and control of Projects across dispersed centres using different IT platforms.

4.6 Research and Development

A summary of the initiatives is given below:

a) **Centres for development**

India possesses a large pool of Engineering & Technological Institutions and Research laboratories. With over 416 Engineering Institutions, and Industry Supported Research Institutions, work on the areas of environmental protection, re-engineering of work techniques and development of new technologies is being done on a continuous basis. However, comparing the outputs with the peer group, specially those from the European, American and advanced Asian countries, substantial ground needs to be covered.

b) **New Materials & practices**

As an outcome of Globalisation and relaxed entry norms for businesses from the world over, Indian Construction Industry too is adopting different and better work techniques and practices.

Manufacturing Industries are continually upgrading the quality and performance parameters of their products, to compete with the products of foreign origin, or being manufactured in India, based on foreign technology/ processes.

c) **Thrust areas**

Specific to the housing sector, the major area of thrust and concern is to make the structures to withstand seismic loading. The work in this area includes –

i) Monitoring and Forecasting of the events including the development and design of structures and also that of the work practices.
ii) Development of a regulatory framework to insure implementation of the practices thus developed.
iii) To work in the field of disaster management. It is noteworthy to mention that other natural calamities, such as cyclones, typhoons, fire hazards etc. are also being brought under this ambit.
iv) Recently work has started on design of nuclear shelters.

4.7 Environmental Conservation

- ISO 14000 Certification of Construction Companies – Not Mandatory

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- Environmental assessment methods for building design – Not Mandatory
- Environmental Impact Assessments for Projects - Mandatory
- Energy construction of office buildings (kWh/sq/m/year) – average and best practice values.
- State of environmental awareness in the Construction Industry – Level of awareness is not very high presently , however people are gradually becoming aware of the necessity of observing the statutes and improve upon the work practices to meet the norms.

Section 5 : Globalisation of the Construction Services

5.1 Government Policy on Liberalization (Source – Economic Survey 2001-02)

After the imposition of the fuel cess of Re. 1 per litre on diesel and petrol, the financing of the National Highways Development Programme (NHDP) became feasible. Proceeds from the cess are also being used to provide financing for state and rural roads. Implementation of the National Highways Development Programme for the golden quadrilateral is well underway and is expected to be implemented within the stipulated time period. The Golden Quadrilateral is expected to be largely completed by the end of 2003 and the North SouthEast West Highway by 2007. The rural roads programme has also taken off. The fuel cess, seen as a very effective user charge for the financing of roads, illustrates how it is quite possible to invest in infrastructure, as long as there is the levy of adequate user charges and financing is therefore assured. As progress in the implementation of the NHDP proceeds, the fuel cess can be leveraged further by the consistent application of affordable toll on all four-lane highways. The limited experiments with innovations such as annuity based projects can be extended effectively, particularly if they are leveraged further with levy of tolls. This would help in providing for adequate finance for the completion of the NHDP and for maintenance and operation of the highways once they are in operation.

The port sector has also achieved some degree of success with new private investments coming in new container terminals and in new private minor ports. Corporatisation of port trusts has also begun. The tariff regulatory mechanism has also performed relatively well under the Tariff Authority for Major Ports (TAMP). Although there is still some progress to be made in the regulatory structure for ports for the facilitation of greater private sector investment, here also the availability of adequate user charges has enabled appropriate new investments, which are remunerative.

The other infrastructure sectors such as railways, power, urban infrastructure and civil aviation need to see much greater reform before investments can be made for inducing further growth. In each case the regulatory mechanism is still inadequate, as is the provision of user charges. A great amount of effort has been made to reform the power sector and progress has been made in a number of states in the restructuring of State Electricity Boards and the formation of State Electricity Regulatory Commissions (SERCs). The key issue inhibiting investments in this sector is the presence of large transmission and distribution losses, a high proportion of which is essentially theft, and the levy of inadequate user charges on different consumer segments. The net result of these inadequacies is an average loss of almost one rupee for every unit of electricity generated in the country. It is naturally difficult for any commercial investment to be made, unless the revenue generated is at least equal to the cost of supply. Reform in this sector must therefore concentrate exclusively on the curbing of theft, and the restructuring of user charges, so that investment in this sector can again become viable in both the public and private sectors. These measures must now be taken with some degree of urgency if adequate power investment is to take place in the next 5 years, in both the public and private sectors. The Central Government will have to induce state level reforms with a combination of incentives and penalties.

Similarly, problems exist in the Railways which have suffered from non-remunerative investments over the past decade. With the implementation of the NHDP over the next 5 to 10 years the railways will face much greater competition from road transport. In view of the higher fuel efficiency of railway

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transport and other positive externalities, it is of the utmost importance that a bold reform programme is launched with urgency so that appropriate investments are made for achieving higher growth through technological upgradation, modernisation, efficiency and commercial orientation in the railways in the years to come. This will be helped greatly if the Indian Railways goes through a far reaching reform in orientation, making it more commercially oriented and customer focussed.

The benefit of introducing competition in domestic civil aviation has already been seen, through the upgradation of standards that came with the entry of new private airlines. However, progress in the improvement of airports has been grossly inadequate. The upgradation of India's international airports is essential to attract greater tourism interest in India, the growth in which has slowed down significantly. The current structure of air traffic and forecasts indicates that unless the major international airports in Delhi and Mumbai are significantly upgraded, capacity constraints will inhibit the growth of air traffic in the near future and hence of tourism. As these airports are privatised, the regulatory system will also need restructuring for overseeing monopoly airports and ensuring continued upgradation in air services.

Urban Development

The 2001 census shows that the level of urbanisation in India has increased from 25.7 per cent in 1990-91 to 27.8 per cent in 2001. Some states such as Tamil Nadu and Maharashtra are now more than 40 per cent urban. There are now 35 cities with a population of above 1 million, as compared with 23 in 1991. As the proportion of the urban population continue to grow, investments in urban infrastructure for the provision of services such as roads, water supply and sewerage, urban transportation and the like will need to be much higher than they then have been in the past. Recent studies also suggest that large productivity gains can be obtained, if regulatory impediments to land assembly, development and construction in urban areas are removed. Among these, the Urban Land Ceiling Act has already been repealed by the Central Government, but most State Governments are still to follow. Similarly most states have Rent Control Acts, which inhibit the construction and maintenance of rental housing. Furthermore the municipal tax system and levy of user charges continues to be grossly inadequate to finance sustained infrastructure investments in a viable fashion. New initiatives are essential at the city, state and central levels to introduce reforms in this area. The strengthening of municipal authorities in all their aspects is now an urgent need.

Much, therefore remains to be done in the area of infrastructure. That successes have been achieved in some sectors suggests that the problems that exist are amenable to solution. The provision of efficient and affordable infrastructure is essential for inducing investment in competitive activities in all other sectors.

5.2 Commitments in WTO

- **Construction and Related Engineering Services &**
- **Architectural and Engineering Services**

Sector or Subsector	Limitations on market access	Limitations on national treatment
Construction work for Civil Engineering (CPC Ex. 513) Roads & Bridges only: Construction of highways, streets, railways, runways, bridges, tunnels, subways, waterways, harbours, dams, pipelines, communication lines, power lines and construction	1. Unbound* 2. Unbound* 3. Only through incorporation with a foreign equity ceiling of 51 per cent 4. Unbound except as indicated in the horizontal	1. Unbound* 2. Unbound* 3. None 4. Unbound except as indicated in the horizontal section

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work of constructions for mining and manufacturing not elsewhere classified e.g. power plants, iron foundries, blast furnaces and coke ovens. It excludes construction work of warehouses and industrial buildings, residential and non-residential buildings.	section	

		GATS: Specific Commitments			
	Mode of Supply →	**1.Cross-border supply**	**2.Consumption abroad**	**3.Supply thru' commercial presence**	**4.Supply thru' presence of natural persons**
	↓ Group				
1	**Construction work for Civil Engineering (CPC Ex. 513) (M.A.)** **Roads & Bridges only:** Construction of highways, streets, railways, runways, bridges, tunnels, subways, waterways, harbours, dams, pipelines, communication lines, power lines and construction work of constructions for mining and manufacturing not elsewhere classified e.g. power plants, iron foundries, blast furnaces and coke ovens. It excludes construction work of warehouses and industrial buildings, residential and non-residential buildings.				
		Unbound	Unbound	Only through incorporation with a foreign equity ceiling of 51 per cent	Unbound except as indicated in the horizontal section
2	**Engineering Services (CPC 8672) M.F.N.**	Unbound	Unbound	None	Unbound except as indicated in the horizontal section
3	**Engineering Services (CPC 8672) M.A.**	None	None	Only thru' incorporation with a foreign equity ceiling of 51 %	Unbound except as indicated in the horizontal section
4	**Construction & Related Engg Services M.F.N.**	Unbound	Unbound	None	Unbound except as indicated in the horizontal section
5	**Construction & Related Engg. Services M.A.**	Unbound	Unbound	Only through incorporation with a foreign equity ceiling of 51 %	Unbound except as indicated in the horizontal section
	Abbreviation :	MFN. = Most Favoured Nation ; MA = Market Access			

Horizontal Commitments – India

Market Access

Unbound except for measures affecting the entry and temporary stay of natural persons who fall in any of the following categories :

a) Business Visitors :
b) Intra-Corporate Transferees :
c) Professional :

MFN

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Unbound, except for measures referred to under market access

5.3 Rules and Regulations for Participation of Foreign Contractors and professionals

The rules for foreign Contractors are no different from those of any other service suppliers. For incorporation permission is needed from Reserve Bank of India & FIPB.

5.4 Foreign Participation in the Domestic Market

With the rapid escalation in the quantum of Infrastructure Projects over the last year, there has been a large influx of Foreign Contractors, especially in the Highways and Power Sectors. Most major International Contractors & Consultants have established permanent bases here and are actively participating in the Infrastructure Contracts. For example in the National Highways Projects, 59 Foreign Contractors, directly or with JVs have qualified as eligible to bid. A very large number of them have participated actively in the bidding and in dollar terms have managed to get the bulk of the highway contracts.

5.5 Impact of Liberalization under the World Trade Organization

Liberalisation under the WTO has, over the last five years, guided the Government to introduce fundamental changes in the legal, contractual and corporate provisions in the existing systems. Some of the changes have been radical. The process of disinvestment of Government owned & Public Enterprises has been accelerated due to the realised inability of the Public Sector to meet the challenges posed by globalisation of businesses. Various State monopolies like Power distribution have been corporatised. Public utilities are rapidly being given under management control of the private sector. Even sensitive areas like defence are being slowly opened up to the Private sector.

The table on page 30 illustrates the effects on foreign investments under various categories as a direct result of liberalisation

ACTUAL INFLOW OF FOREIGN DIRECT INVESTMENT IN THE FOLLOWING ROUTES								
Year (Jan-Dec)	**I**	**II**	**III**	**IV**	**TOTAL**	**V**	**VI**	**GRAND TOTAL**
	Govt's approval - (FIPB, SIA route)	RBI's Automatic approval (under delegated power)	Amount of Inflows on acquisition of shares #	RBI's - Various NRI's schemes	(I to IV)	Amt. of ADRs/ GDRs /FCCBs	Closing balance of advance.	(I to VI) In Rupees million
1991	1911.8	-	-	1602.5	3514.3		-	3514.3
1992	4779.5	475.4	-	1496.9	6751.8		-	6751.8
1993	9851.6	2411	-	5604.5	17867.1		-	17867.1
1994	15007.6	3625.8	-	11185.1	29818.5	3074.3	-	32892.8

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1995	38694.4	5301.6	-	19705.6	63701.6	4498.7	-	68200.3
1996	57589.1	6196.2	3038	20620.4	87443.7	16448.3	-	103892
1997	101284	8672.2	9540.3	10396.2	129892.7	34360.6	-	164253.3
1998	82397.3	6106.5	40593.5	3594.8	132692.1	706.3©	-	133398.4
1999	61894.3	7608.1	19,608.3**	3488.3	92599	67011.1	9067.8	168677.9
2000	63425.3	16918	20580.5	3488.2	104412	69879.6	19125.8	193417.4
2001	96385.9	32410.4	29621.7	2292.5	160710.5	24874.5	7066	192651
2002 (Jan-Feb)	4615.1	5723.2	8004.4	-	18342.7	5636	4985	28963.7
Total	**537836**	**95448.4**	**130986.7**	**83475**	**847746**	**226489.4**	**40244.6**	**1114480**

Source: RBI, (ECD) Central Office, Mumbai
Total : Rs.1,114.48 (US $ 28.88) billion (1991 to February, 2002

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Annex-Structure of the Construction Industry

A1 Annual Export of Construction Services

Value in INR Cr. (1 Cr = 10 million)					
	1999-00	**2000-01**	**2001-02**	**2002-03**	**2003-04**
Oman					639.20
Qatar		3.35	1.64	58.33	216.99
Kuwait	24.25				164.82
U.A.E.	6.00	6.24	274.74		106.22
Bangladesh		6.69	286.25	0.84	93.00
Abu Dhabi			77.70	77.13	72.00
HongKong	25.00			39.00	63.74
Indonesia	102.00		9.00		18.00
Bhutan	41.26	1139.79	49.41	52.86	14.96
Japan					14.46
France					12.19
Libya	8.38		205.73	22.36	7.37
Syria				78.39	5.13
Ethiopia					1.13
Maldives				11.80	0.60
Iran					0.19

Source: Overseas Construction Council of India

A1.1 Top 5 Countries for Construction Export

Value in INR Cr. (1 Cr = 10 million)					
	1999-00	**2000-01**	**2001-02**	**2002-03**	**2003-04**
Oman					639.20
Qatar		3.35	1.64	58.33	216.99
Kuwait	24.25				164.82
U.A.E.	6.00	6.24	274.74		106.22
Bangladesh		6.69	286.25	0.84	93.00

A2 Distribution of Contractors by Employment Size

2000	Enterprise	
	Number	%
1-200 persons	26700	96.15
200-500 persons	850	3.06
500>> persons	220	0.79
Total	**27770**	**100.0**

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A3 Turnover and Number of Employees for Top 10 Local Construction Companies

	Company	Revenue					No. of Staff
		Total (INR-Million)	Buildings	Civil Engg	Others	Real Estate	
1	Larsen & Toubro Ltd. (ECC Group)	21963	7408	14555	NA	NA	7700
2	Jaiprakash Industries Ltd	8854	754	8100	NA	NA	8100
3	Hindustan Construction Co Ltd	4258	NA	4258	NA	NA	3325
4	Simplex Concrete Piles (India) Ltd	3528	NA	3528	NA	NA	2600
5	Unitech Ltd	3139	850	1329	NA	950	1250
6	Gammon India Ltd	3010	---	3010	NA	NA	1700
7	National Buildings Construction Corporation Ltd	2940	1470	60	780 (energy, environment, maintenance)	630	6500
8	Skanska Cementation India Ltd	2870	---	2870	---	---	2200
9	Bridge & Roof Co Ltd	2660	---	2660	---	---	11600
10	Punj Lloyd Ltd	2107	NA	2107	NA	NA	5500
11	Continental Construction Ltd	1323	---	608	---	---	1450

A4 Turnover and Number of Employees for Top 10 Foreign Construction Companies

Major Foreign Contractors	
Bechtel Corp (USA)	Note : Majority of the foreign companies have very small strength of permanent staff (Ranging between 25-50), contract workers of Indian origin are recruited on temporary & need based requirements. Number of such workers varies between 700-2000 depending on the nature & value of the contract being executed. Turnover figures are not available in any reliable form.
Daelim Industries Co (Korea)	
JCG Corp (Japan)	
LG Engineering (Korea)	
Lurgi (Germany)	
Snamprogetti (Italy)	
Toyo Engg Corp (Japan)	
Mitsui (Japan)	
Technimont SpA (Italy)	
Technip (France)	

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A5 Number of Construction Workers by Job Type

	Occupation	Numbers (in 000s)	%
1	Engineers	1459	4.7
2	Technicians & Foremen etc.	762	2.5
3	Clerical	1372	4.4
4	Skilled Workers	4758	15.3
5	Unskilled workers	22656	73.1

A6 Tendering and Contracting System

Basically, two systems of Tendering are followed in India :

1. In Tenders financed by the World Bank, its affiliates or multilateral agencies, FIDIC conditions apply.
2. In State & Central Government and in their Enterprises as also in Public Sector Undertakings, variations of the CPWD contract conditions are generally adopted.

Individual users as per their own specific needs have introduced their specific conditions, though the basic underlying conditions remain the same. However, over time, the variations introduced by the various departments have become manifold.

Due to massive cost & time over-runs in most Projects, in recent years the need was felt to revise the basic terms and conditions to ensure timely completion of projects.

CIDC put forward a comprehensive alternative document, designed to address the basic problems, which was debated by all concerned sections of the Government and Enterprises. This model document has now been accepted and is being issued as the model Bidding & Contract Document. Efforts are on to get this model document adopted for harmonised tendering systems.

A7 Average Exchange Rate of Local Currency to US$

***Year**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Rs/US$	42.44	43.63	46.66	48.89	45.32	45.11	45.89
% change	-7.44	-2.80	-6.94	-4.78	7.30	-0.45	1.72

* As of 31st March of the year.

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