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COUNTRY REPORT INDIA

PREPARED BY

Construction Industry Development Council

(A body established by the Planning Commission (Now Niti Aayog) Govt. of India & Construction Industry)

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Annexures:

1. PREAMBLE

Construction Industry Development Council (CIDC) has been jointly established by the Planning Commission, Government of India and the Indian Construction Industry. Since its inception in 1996, CIDC has initiated several activities for the benefit of construction industry. A notable few are:

- *Advice the Government on policy formulation related to construction industry.*
- *Standardization of construction contracts and procedures.*
- *Training manpower at skilled worker level and construction management level.*
- *Grading of construction entities*
- *Devise mechanisms for workers' welfare.*
- *Help evolve policies for financing.*
- *Dispute Resolution in Construction Contracts.*
- *Establishing construction equipment bank.*
- *Computation & publishing Construction Cost Indices*
- *Interaction and networking with international organizations to promote emerging technologies and best practices.*

2. EXECUTIVE SUMMARY

This report presents the overview of the Indian Economy & the Indian Construction Industry. Macro economic parameters pertaining to the Indian Economy & the Construction Industry are also presented. Long term agenda for the Indian Construction Industry is highlighted through the 11th & 12th Five Year Plans. Further short term policy issues related to Construction Industry are highlighted through the Union Budgets. This report also highlights the administration & regulation of the Indian Construction Industry one of the fastest growing construction industry internationally. Key areas of construction opportunity are discussed

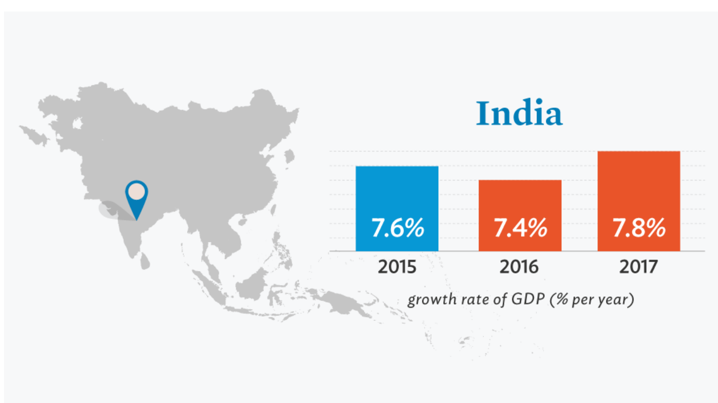
3. Economic Overview

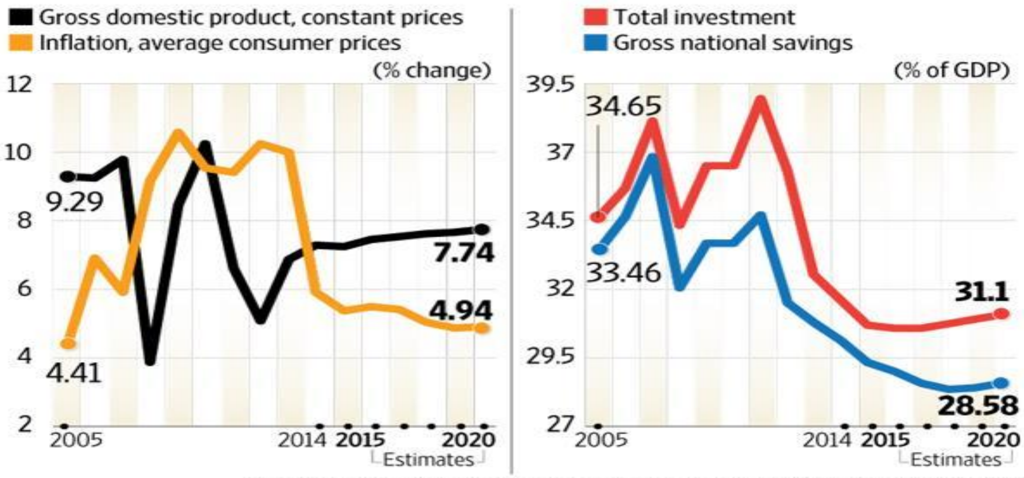
The Indian economy has emerged as a bright spot in the world economy, becoming one of the fastest growing large economies in the world. The 7.6 per cent growth in the GDP at constant market prices in 2015-16, according to the advanced estimates of the Central Statistics Office, compares favourably with growth in the previous three years; 7.2 per cent in 2014-15, 6.6 per cent in 2013-14 and 5.6 per cent in 2012-13. It is noteworthy that this growth is estimated to be achieved despite subdued global demand that dampened India's exports significantly, and two consecutive below-normal monsoons that impacted farm output and productivity.

GDP Growth

As per the Advanced Estimates released by the Central Statistics Office, the economy is estimated to grow at 7.6 per cent in 2015-16, higher than growth of 7.2 per cent achieved in 2014-15. The growth in agriculture, industry and services is estimated at 1.1 per cent, 7.3 per cent and 9.2 per cent in 2015-16 as opposed to (-) 0.2 per cent, 5.9 per cent and 10.3 per cent respectively in 2014-15. This shows a pick-up in industrial growth, driven by manufacturing which is estimated to grow at 9.5 per cent (in 2015-16), as compared to 5.5 per cent registered in 2014-15. The growth in agriculture remained low on account of second consecutive year of subdued monsoon. GDP growth during April-December 2015 (first 3 quarters) was 7.5 per cent, compared to 7.4 per cent in the same time period in 2014-15. From the demand angle, the growth in private final consumption expenditure at 7.6 per cent in 2015- 16 has been the major driver of growth. The growth of fixed investment improved from 4.9 per cent in 2014- 15 to 5.3 per cent in 2015-16. The exports and imports are both estimated to decline by 6.3 per cent in 2015- 16, the former mainly on account of subdued global demand and the latter largely reflecting the decline in international petroleum prices.

GDP INDIA





Source: International Monetary Fund, World Economic Outlook Database, October 2015

Inflation

- The year 2015-16 continues to experience moderation in general price level. The significant decline in the price of the Indian basket of crude oil, through the direct and second round effects, partly contributed to the decline in general inflation for the second successive year. The headline inflation, based on the CPI (combined) series, dipped to 4.9 per cent during 2015-16 (April-January), as against 5.9 per cent in the year 2014-15.

- The decline in core inflation was largely on account of the decline in the inflation in housing (rent), transport, communication, education and other services. The headline WPI inflation

Foreign Direct Investment

- Foreign Direct Investment into India grew 8 percent & estimated to require about USD 1 trillion during the 12th Five-Year Plan period, to fund infrastructure projects

The highest FDI came in services, followed by automobiles, telecommunications, pharmaceuticals and construction development. The FDI inflow was $6.23 Billion (2012-2013), $9.06 Billion (2013-2014), $8.20 Billion (2014-2015) and $1.39 Billion (2015-2016(first two months)

- Singapore led the FDI inflows into India with USD 5.98 billion, followed by Mauritius (USD 4.85 billion), the UK (USD 3.21 billion) and the Netherlands (USD 2.27 billion).

Foreign Institutional Investment

❖ The net investments by FIIs into Indian equity markets since the beginning of 2014 have crossed USD 5 billion over Rs 30,000 crore), while the same for debt markets also stands near USD 5 billion (about Rs 29,000 crore)- taking the total to close to Rs 60,000 crore.

❖ This includes net investments of about Rs 1,500 crore so far in April. This is despite a net outflow of about Rs 7,000 crore from debt markets, as equity markets have seen a net inflow of over Rs 8,500 crore this month till April 25, the latest trading session.

❖ They invested Rs 20,077 crore in Indian stocks in March, compared with Rs 1,404 crore in February and Rs 714 crore in January.

❖ The strong inflows in the recent months have taken the cumulative net investments of FIIs into India to close to USD 197 billion, while their investments in rupee terms is a bit away from Rs 10 lakh crore level.

Trade

❖ India's exports grew by 3.98 percent to USD 312.35 billion in FY 2013-14 while imports dipped by 8.11 percent during the period.

❖ Imports declined to USD 450.94 billion, narrowing the trade deficit to USD 138.59 billion in the last fiscal.

❖ The household sector is the main contributor to the domestic savings, but the public sector is also expected to contribute positively to savings reflecting a significant turnaround compared with past experience. The projected current account deficit could easily be higher because of the likely continuance of high oil prices but even so, it should remain sustainable given the likely availability of foreign inflows.

❖ The strategy for achieving faster growth with greater inclusiveness involves several interrelated components. These are: (i) a continuation of the policies of economic reform which have created a buoyant and competitive private sector capable of benefiting from the opportunities provided by greater integration with the world, (ii) a revival in agricultural growth which is the most important single factor affecting rural prosperity, (iii) improved access to essential services in health and education (including skill development) especially for the poor, which is essential to ensure inclusiveness and also to support rapid growth, (iv) a special thrust on infrastructure development which is a critical area for accelerating growth, (v) environmental sustainability which is becoming increasingly important, (vi) special attention to the needs of disadvantaged groups, and (vii) good governance at all levels, Central, state, and local.

❖ As in most market economies, the dominant impulse for growth will come from the private sector. India is fortunate in having a strong private sector capability ranging from agriculture, which is entirely dependent on private farmers, most of whom have modest land holdings, through small and medium entrepreneurs in industry and services to larger domestic corporate entities, many of which benefit from FDI to varying degrees. The Eleventh Plan must ensure a policy environment that is supportive of this vibrant and globalized private sector which has an important contribution to make in India's future development.

❖ Emphasizing the importance of the private sector is not to downplay the role of the government. On the contrary, apart from the usual role of government in providing a stable macroeconomic policy, the Eleventh Plan envisages a very large role for public policy in a number of sectors.

Size of Indian Household by Profile (Millions)

	2014	2015	2016
Population (million)	1,2764	1,293#	1,310"
GDP (US$ billion)	2,043	2,091	2,289"
Real GDP growth (%)	7.2	7.3	7.5"
GDP per capita (US$)	1,6014	1,6174	1,747"
Inflation (%)	5.9	4.9	5.3*
Exchange rate (per US$, period average)	61.02	64.1	69.37**
Exports (US$ billion)	328.4	259.7*	270"
Imports (US$ billion)	472.4	390.1*	404**
Export growth (%)	+2.5	-2.1*	+3.8"
Import growth (%)	-2.1	-17.4*	+3.6"

Sources: CEIC, IMF, EIU, WTO, RBI and India's Ministry of Commerce and Industry # IMF Estimate, # EIU Estimate, * *EIU Forecasts, # IMF Forecasts

India: Selected Social and Economic Indicators, 2011/12-2016/17 1/			
I. Social Indicators			
GDP (2014/15)		**Poverty (percent of population)**	
Nominal GDP (in billions of U.S. dollars):	**2,051**	**Headcount ratio at $1.90 a day (2011):**	**21.3**
GDP per capita (U.S. dollars):	**1,584**	**Undernourished (2011):**	**15.4**
Population characteristics (2014/15)		**Income distribution (2011, WDI)**	
Total (in billions):	**1.30**	**Richest 10 percent of households:**	**30.0**
Urban population (percent of total):	**32**	**Poorest 20 percent of households:**	**8.2**
Life expectancy at birth (years):	**66.0**	**Gini index (2011):**	**33.6**

II. Economic Indicators

	2011/12	2012/13	2013/14	2014/15	2015/16 Proj.	2016/17 Proj.
Growth (in percent) Real GDP (at market prices)	6.6	5.1	6.9	7.3	7.3	7.5
Industrial production	2.9	1.1	-0.1	2.8	…	….
Prices (percent change, period average) Consumer prices - Combined	9.5	9.9	9.4	5.9	5.0	5.3
Saving and investment (percent of GDP) Gross saving 2/	34.7	31.5	30.8	30.2	29.8	29.6
Gross investment 2/	38.9	36.3	32.5	31.6	31.1	31.1
Fiscal position (percent of GDP) 3/ Central government deficit	-6.1	-5.1		-4.6	-4.2	-4.0
General government deficit	-8.1	-7.4	-7.6	-7.0	-7.0	-7.0
General government debt 4/	68.1	67.5	65.8	66.1	66.3	65.7
Structural balance (% of potential GDP)	-8.4	-7.3	-7.5	-6.9	-6.9	-6.9
Structural primary balance (% of potential GDP)	-3.9	-2.8	-2.8	-2.2	-2.3	-2.1
Money and credit (y/y percent change, end-period)						
Broad money	13.5	13.6	13.4	10.8	11.1	13.6
Credit to private sector	17.8	13.5	13.7	9.2	11.1	13.7
Financial indicators (percent, end-period)						
91-day treasury bill yield (end-period) 5/	9.0	8.2	8.9	8.3	7.2	…
10-year government bond yield (end-period) 5/	8.6	8.0	8.9	7.8	7.7	…
Stock market (y/y percent change, end-period) 6/	-10.5	8.4	18.7	24.9	9.1	…
External trade 7/						
Merchandise exports (in billions of U.S. dollars)	309.8	306.6	318.6	316.5	277.9	280.1
(Annual percent change	20.9	-1.0	3.9	-0.6	-12.2	0.8
Merchandise imports (in billions of U.S. dollars)	499.5	502.2	466.2	461.5	429.8	449.3
(Annual percent change)	30.3	0.5	-7.2	-1.0	-6.9	4.5
Terms of trade (G&S, annual percent change)	-6.1	-0.3	2.3	3.5	7.0	1.8
Balance of payments (in billions of U.S. dollars)						
Current account balance	-78.2	-88.2	-32.4	-26.7	-27.7	-34.8
(In percent of GDP)	-4.2	-4.8	-1.7	-1.3	-1.3	-1.5
Foreign direct investment, net	22.1	19.8	21.6	31.3	34.2	37.4
Portfolio investment, net (equity and debt)	17.2	26.9	4.8	42.2	-6.8	12.4
Overall balance	-12.8	3.8	15.5	61.4	22.7	40.8
External indicators						
Gross reserves (in billions of U.S. dollars, end-period)	294.4	292.0	304.2	341.6	364.3	405.1
(In months of imports) 8/	6.1	6.4	6.7	7.9	8.0	7.9
External debt (in billions of U.S. dollars, end-period)	360.8	409.4	446.3	475.2	513.3	550.4
External debt (percent of GDP, end-period)	19.6	22.3	23.8	23.2	24.0	23.6
Of which: Short-term debt 9/	7.5	9.0	9.8	9.0	9.6	9.7
Ratio of gross reserves to short-term debt (end-period) 8/	2.1	1.8	1.7	1.9	1.8	1.8
Debt service ratio 10/	6.0	5.9	5.9	7.5	7.1	7.8
Real effective exchange rate (percent change) 11/						
(based on annual average level)	-3.4	-2.3	-2.4	7.3	6.0	…
Exchange rate (rupee/U.S. dollar, end-period) 5/	50.3	54.4	61.0	62.6	66.8	…
Memorandum item (in percent of GDP)						
Fiscal balance under authorities' definition	-5.8	-4.9	-4.3	-4.0	-3.9	-3.8

Sources: Data provided by the Indian authorities; CEIC Data Company Ltd; Bloomberg L.P.; World Bank, *World Development Indicators* ; and IMF staff estimates and projections.
1/ Data are for April–March fiscal years.
2/ Differs from official data, calculated with gross investment and current account. Gross investment includes errors and omissions.
3/ Divestment and license auction proceeds treated as below-the-line financing.
4/ Includes combined domestic liabilities of the center and the states, and external debt at year-end exchange rates.
5/ For 2015/16, as of 6 January 2016.
6/ For 2015/16, year-to-date as of 6 January 2016.
7/ On balance of payments basis.
8/ Imports of goods and services projected over the following 12 months.
9/ Short-term debt on residual maturity basis, including estimated short-term NRI deposits on residual maturity basis.
10/ In percent of current account receipts, excluding grants.
11/ For 2015/16, year-to-date as of November 2015.

India: Macroeconomic Framework, 2011/12–2020/21 1/										
					Prel:_________________________. Projections					
	2011/12	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**
Growth (percent change)										
Real GDP (at factor cost)	6.9	4.9	6.6	7.2	7.3	7.5	7.5	7.6	7.7	7.7
Non-agricultural sector	7.0	5.0	4.7	7.6	9.2	8.2	8.3	8.4	8.4	8.4
Prices (percent change, period average)										
Consumer prices	8.1	9.9	9.4	5.9	5.0	5.3	5.3	5.5	5.3	5.0
Saving and investment (percent of GDP)										
Gross saving 2/	34.7	31.5	30.8	30.2	29.8	29.6	29.6	30.3	30.8	31.4
Gross investment 3/	38.9	36.3	32.5	31.6	31.1	31.1	31.6	32.5	33.1	33.8
Money and credit (y/y percent change, end-period)										
Broad money	13.5	13.6	13.4	10.8	11.1	13.6	15.4	15.5	15.2	14.7
Credit to private sector	17.8	13.5	13.7	9.5	11.1	13.7	16.6	17.0	17.0	16.3
Fiscal position (percent of GDP)										
Central government balance 4/	-6.1	-5.1	-4.6	-4.2	-4.2	-4.0	-3.9	-3.9	-3.7	-3.6
General government balance 4/	-8.1	-7.4	-7.6	-7.0	-7.0	-7.0	-6.8	-6.6	-6.2	-6.0
General government debt 5/	68.1	67.5	65.8	66.1	66.3	65.7	64.9	64.1	63.0	61.8
External trade (percent change, BOP basis)										
Merchandise exports (in volume terms)	20.9	-1.0	3.9	5.8	0.8	4.9	6.5	8.5	8.2	8.0
Merchandise imports (in volume terms)	30.3	0.5	-7.2	8.3	13.0	10.0	7.5	7.3	7.3	7.3
Balance of payments (in billions of U.S. dollars)										
Current account balance	-78.2	-88.2	-32.4	-26.7	-27.7	-34.8	-52.1	-62.1	-71.4	-79.6
(in percent of GDP)	-4.2	-4.7	-1.7	-1.3	-1.3	-1.5	-2.0	-2.2	-2.3	-2.4
Foreign direct investment, net	22.1	19.8	21.6	31.3	34.2	37.4	40.7	44.4	48.8	53.6
Portfolio investment, net (equity and debt)	17.2	26.9	4.8	42.2	-6.8	12.4	26.2	28.6	31.4	34.5
Overall balance	-12.8	3.8	15.5	61.4	22.7	40.8	41.1	40.3	42.1	46.3
External indicators										
Gross reserves (in billions of U.S. dollars, end-period)	294.4	292.0	304.2	341.6	364.3	405.1	446.3	486.6	528.7	575.0
(in months of imports) 6/	6.1	6.4	6.7	7.9	8.0	7.9	7.9	7.9	7.9	7.9
External debt (in billions of U.S. dollars, end-period)	360.8	409.4	446.3	475.2	511.2	544.2	584.2	628.5	678.0	733.4
External debt (percent of GDP, end-period)	19.2	22.0	23.8	23.2	23.9	23.3	23.0	22.7	22.2	21.9
Of which : short-term debt 7/	7.4	8.9	9.8	9.0	9.6	9.7	9.9	10.2	10.3	10.4
Ratio of gross reserves to short-term debt (end-period	2.1	1.8	1.7	1.9	1.8	1.8	1.8	1.7	1.7	1.6
Debt service (percent of current account receipts)	6.0	5.9	5.9	7.5	7.1	7.8	7.9	8.3	8.5	8.3
GDP in billion US$	1,880.1	1,858.7	1,876.8	2 ,051.2	2,137.4	2 ,336.6	2,544.3	2,773.9	3,047.4	3,352.1

Sources: Data provided by the Indian authorities; CEIC Data Company Ltd; and IMF staff estimates and projections.
1/ Data are for April-March fiscal years unless otherwise mentioned.
2/ Differs from official data, calculated with gross investment and current account.
3/ Statistical discrepancy adjusted.
4/ Divestment and license auction proceeds are treated as financing; includes subsidy related bond issuance.
5/ Includes combined domestic liabilities of the center and the states, inclusive of MSS bonds, and sovereign external debt at year-end exchange rates.
6/ Imports of goods and services projected over the following twelve months.
7/ Including short-term debt on contracted maturity basis, all NRI deposits, and medium and long-term debt on residual maturity basis, different from authority's definition.

3.1 Main Macroeconomic Indicators:

Key Macroeconomic Indicators: 2003-14							*(Percent)*		
Year	Real GDP Growth (factor cost)	Real GDP Growth (market prices)	GFD/GDP (Centre)	CAB/GDP	Non-oil CAB/GDP	WPI Inflation	CPI Inflation	REER Index @	Real Policy Rate #
2003-04	8.0	7.9	4.3	2.3	5.0	5.5	3.9	96.8	-0.4
2004-05	7.1	7.9	3.9	-0.3	2.8	6.5	3.8	99.9	-0.6
2005-06	9.5	9.3	4.0	-1.2	2.7	4.4	4.4	102.7	1.7
2006-07	9.6	9.3	3.3	-1.0	3.0	6.6	6.7	101.0	3.1
2007-08	9.3	9.8	2.5	-1.3	2.9	4.7	6.2	108.6	2.2
2008-09	6.7	3.9	6.0	-2.3	3.1	8.1	9.1	97.8	0.9
2009-10	8.6	8.5	6.5	-2.8	1.5	3.8	12.2	95.3	1.5
2010-11	8.9	10.3	4.8	-2.7	1.1	9.6	10.5	103.5	2.0
2011-12	6.7	6.6	5.7	-4.2	1.1	8.9	8.4	100.7	1.0
2012-13	4.5	4.7	4.9	-4.7	1.1	7.4	10.4	96.3	1.9
2013-14	4.9	4.6	4.6	-2.3 &					

Note:
@: 36-currency real effective exchange rate index (2004-5=100).
#: Nominal effective policy rate less 12-month moving average of non-manufactured products WPI inflation. &: April-December.
Source: Reserve Bank of India; Central Statistical Organization.

Savings and Investment:

(Percent to GDP)

Item	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009.10	2010-11	2011-12	2012-13
1 Household sector	23.1	23.6	23.5	23.2	22.4	23.6	25.2	23.1	22.8	21.9
Financial saving	11.0	10.1	11.9	11.3	11.6	10.1	12.0	9.9	7.0	7.1
Financial assets	13.7	13.8	15.8	17.8	15.5	12.9	15.3	13.9	10.6	10.8
of which: Bank deposits	5.5	5.4	7.2	10.0	7.8	7.4	6.1	7.0	5.9	5.9
Financial liabilities	2.5	3.7	5.0	6.6	3.8	2.9	3.1	3.6	3.1	3.2
Saving in physical assets	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.2	15.8	14.8
2 Private corporate sector	4.6	6.6	7.5	7.9	9.4	7.4	8.4	8.0	7.3	7.1
3 Public sector	1.3	2.3	2.4	3.6	5.0	1.0	0.2	2.6	1.2	1.2
of which: Government administration and quasi government bodies	-3.3	-2.3	-2.1	-1.0	0.5	-2.8	-3.1	-0.5	-2.0	-1.9
4 Total domestic savings (1+2+3)	29.0	32.4	33.4	34.6	36.8	32.0	33.7	33.7	31.3	30.1
5 Gross capital formation	26.1	32.5	34.3	35.9	38.0	35.5	36.3	36.5	36.4	34.7
Public sector	6.6	7.4	7.9	8.3	8.9	9.4	9.2	8.4	7.7	8.1
Private corporate sector	6.5	10.3	13.6	14.5	17.3	11.3	12.1	12.8	10.1	9.2
Household sector	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.2	15.8	14.8
Valuables	0.9	1.3	1.1	1.2	1.1	1.3	1.8	2.1	2.7	2.6
6 Gross fixed capital formation	24.5	28.7	30.3	31.3	32.9	32.3	31.7	30.9	31.8	30.4
7 Change in stocks	0.7	2.5	2.8	3.4	4.0	1.9	2.8	3.5	1.9	1.7
8 Errors & omissions	0.7	0.4	0.4	0.2	0.1	-1.2	0.2	0.0	-0.9	0.1
9 Total investment (5+8=6+7+8+5d)	26.8	32.8	34.7	35.7	38.1	34.3	36.5	36.5	35.5	34.8
Memo:										
10 Saving-Investment Balance, net (4-9)	2.2	-0.4	-1.2	-1.1	-1.3	-2.3	-2.8	-2.8	-4.2	-4.7
Household financial savings, net	11.0	10.1	11.9	11.3	11.6	10.1	12.0	9.9	7.0	7.1
Private corporate sector, net	-1.9	-3.8	-6.1	-6.6	-7.9	-3.9	-3.8	-4.8	-2.8	-2.1
Public sector, net	-5.3	-5.1	-5.5	-4.7	-3.9	-8.5	-9.0	-5.8	-6.5	-6.9
11 Household financial savings (net) available for private corporate sector (10a + 10c)	5.7	5.0	6.3	6.5	7.8	1.7	3.0	4.1	0.5	0.2

Source:Central Statistical Organization; Reserve Bank of India.

Industrial Growth:

(Percent)

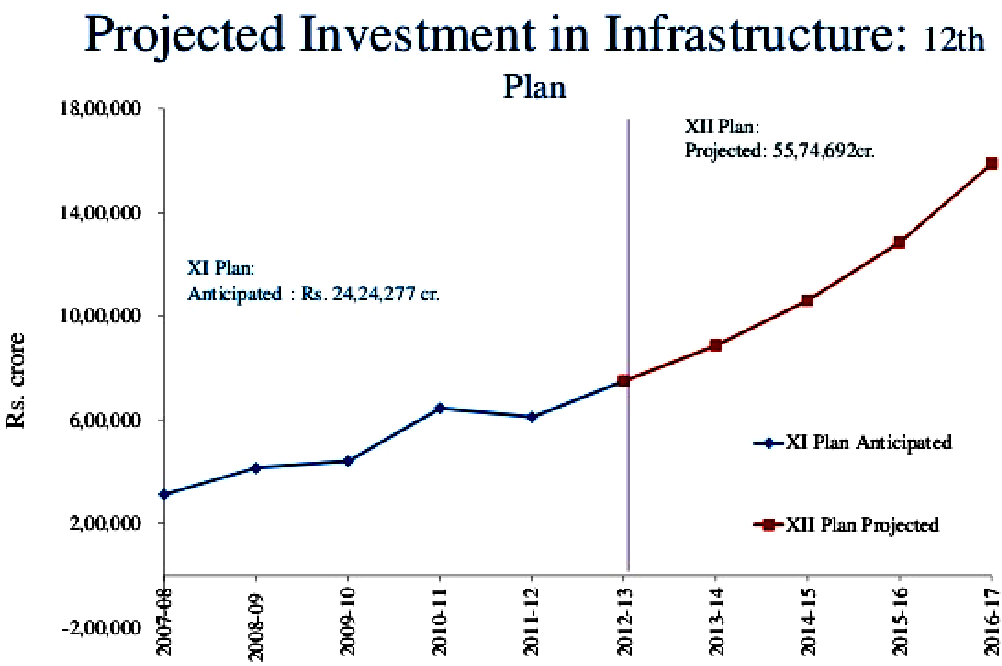
	Index of Industrial Production		Annual Survey of Industries @			GDP at constant prices	
Year	Manufacturing	General	Output	Net Value Added	Gross Value Added	Manufacturing	Industry #
2000-01	5.4	4.9	-0.1	-10.3	-8.4	7.3	6.0
2001-02	2.9	2.8	2.0	-1.3	0.9	2.3	2.6
2002-03	6.0	5.8	14.4	16.3	13.9	6.9	7.2
2003-04	7.4	7.0	7.8	11.5	9.5	6.3	7.3
2004-05	13.2	11.7	22.3	20.6	17.7	7.4	9.8
2005-06	10.3	8.6	11.4	17.2	15.0	10.1	9.7
2006-07	15.0	12.9	19.4	20.1	19.4	14.3	12.2
2007-08	18.4	15.5	10.0	16.1	14.6	10.3	9.7
2008-09	2.5	2.5	11.1	3.2	4.2	4.3	4.4
2009-10	4.8	5.3	11.6	9.7	11.5	11.3	9.2
2010-11	9.0	8.2	18.5	12.6	12.0	8.9	7.6
2011-12	3.0	2.9	15.3	10.7	10.4	7.4	7.8
2012-13	1.2	1.0	n.a	n.a	n.a	1.1	1.0
Averages							
1980s	7.4	7.6	8.1	7.3	7.9	6.2	5.8
1990s	6.5	6.3	7.3	6.8	6.9	5.8	5.7
2000s	8.6	7.7	11.0	10.3	9.8	8.0	7.8
2003-08	12.8	11.1	14.2	17.1	15.2	9.7	9.7
2008-12	4.8	4.7	14.1	9.1	9.5	8.0	7.2

@: Growth rates are based on MI data deflated by WPI-Manufactured Products index. ft: including construction.
Source: Central Statistical Organization.

Broad Macro-Economic Parameters - Previous Plans and Targets for Twelfth Plan

		IXth Plan	Xth Plan	XIth Plan	XIIth Plan	
					9.0	9.5
1	Investment Rate (Gross Capital Formation adjusted for errors and omissions)	24.6	31.8	36.4	38.7	41.4
2	Fixed Investment of which	23.2	28.4	30.9	33.5	35.5
	Household Sector	9.9	11.7	11.6	12.0	12.0
	Private Corporate **Sector**	6.6	9.6	11.0	12.4	13.5
	Public Sector	6.6	7.1	8.3	9.1	10.0
3	Savings Ram of which	23.7	31.7	34.0	36.2	38.9
	Household Sector	20.5	23.2	23.2	24.0	24.5
	Private Corporate Sector	4.0	6.4	8.2	8.5	9.2
	Public Savings of which	-0.8	2.0	15	3.7	5.2
	Govt. Admin.	-4.9	-2.6	-1.3	-0.5	0.8
	Public Enterprises	4.0	4.6	3.8	4.0	4.5
4	Current Account Balance of which	-0.6	0.0	-24	-2.5	-25
	Trade Balance	-2.6	-25	-5.0	-4.5	-4.5
	Capital Account Balance	2.1	3.5	3.8	5.0	5.0
5	WPI Inflation Rate	4.9	5.0	6.0	4.5-5.0	5.0-5.5

2.15 The investment required to achieve 9.0 pc cent growth in the Twelfth Plan ails for some increase from the levels already achieved. The investment rate (which equals gross dome tic capital formation ad-listed for errors and omissions as a r ccntace_of GDflisestimatcd to have inc ascd to 36.4_ocrcent



3.1 Economy in 2016

India is currently one of the world's most attractive investment destinations. With the opening up of foreign direct investment (FDI) in several sectors, the country is an eye-catching destination for overseas investors. The relaxation of norms by the government has also created a vast opportunity for foreign players, who are competing for a greater role in the Indian market. Sectors projected to do well in the coming years include automotive, technology, life sciences and consumer products.

India made its entry into the club of the top 15 ultra-high-net-worth households (more than US$ 100 million in private financial wealth) in 2013 obtaining the 13th rank with 284 such households. Further, there has been marked improvement in the hiring scenario in the country, Index for Growth of Economy accelerated to 7.6% in 2015-16.

Furthermore, the US$ 1.2 trillion investment that the government has planned for the infrastructure sector in the 12th Five-Year Plan is set to help in further improving the export performance of Indian companies and the Indian growth story, which will consequently improve the overall Indian economy.

Market size

India holds a 6.4 percent share of global gross domestic product (GDP) on purchasing power parity (PPP) basis and presently is the third biggest economy in the world in terms of PPP, according to a World Bank report.

The industrial sector in India looks positive as industrial production grew at a 13-month high rate of 3.4 per cent in April 2014, driven mainly by electricity generation and manufacturing, as indicated by the Index of Industrial Production (IIP).

The trade and external sector showed improvement as exports posted double-digit growth in May, 2014, as shipments of key commodities registered strong increases.

India is all set to become the world's third largest economy by the year 2030.

Key Developments

Indian equities markets have seen foreign institutional investors (FII) net inflow of US$ 2.3 billion in May 2014, taking the total to US$ 7.8 billion so far in 2014. India is still the most loved market in this region. Some of major developments and investments in the recent past are as follows:

- ❖ Overseas investors have invested around US$ 20.4 billion in the Indian market in the first half of 2014, mainly on hopes of a stable and reform-oriented government at the Centre.

- ❖ FIIs have helped in pushing up the benchmark BSE sensex by over 20 per cent in the first six months of the year.

- ❖ Six qualified institutional placements (QIPs) launched in India during April-June 2014 raised Rs12,151 crore (US$ 2.01 billion) compared with Rs 1,222 crore (US$ 201.9 million) in the same quarter in 2013

- ❖ Venture capital (VC) investments in India surged during the first half of 2014, reflecting optimism about India's entrepreneurial ecosystem. Investments in early stage companies and startups grew nearly 40 per cent as compared with the same period in 2013.

- ❖ Private equity (PE) firm SAIF Partners plans to make up to eight investments in FY 15 across different sectors, in an effort to significantly ramp up its investment pace in India and plan for more exits through the public market.

- ❖ Sovereign wealth funds (SWFs) and overseas pension funds plan to invest in India, three sovereign funds from West Asia have invested over US$ 5 billion in the past eight months.

Sector-wise Investment in Infrastructure:
12th Plan

Sectors	Rs. crore	US $ Billion	Share (9$)
Electricity (incl. NCE)	1,820,292	350.1	32.7
Roads & Bridges	914,536	175.9	16.4
Telecommunications	943,899	181.5	16.9
Railways (incl. MRTS)	643,379	123.7	11.5
Irrigation (incl. Watershed)	504,371	97.0	9.0
Water Supply & Sanitation	255,319	49.1	4.6
Ports (including inland waterways)	197,781	38.0	35
Airports	87,714	16.9	1.6
Storage	148,933	28.6	2.7
Oil & *Gas* Pipelines	58,441	11.2	1.0
Grand Total	5,574,663	1072.1	100.0

US$ I = Rs.52 at nominal Prices

Government Initiatives

The Government of India has taken several initiatives to improve the Indian economy, which has been responsible for a number of positive outcomes.

- India's foreign exchange reserves rose by US$ 857 million for the week ending on June 27, 2014, to touch US$ 315.78 billion, while foreign currency assets rose by US$ 851 million to reach US$ 288.81 billion.
- The Ministry of Development of North Eastern Region (DoNER) has sanctioned seven new projects worth Rs 87.88 crore (US$ 14.52 million) in FY 15, which include projects for road construction, irrigation scheme and renewal of electric installations.
- In order to better the ways of doing business, the Government of India has extended the validity period of an industrial licence to three years from two years, with a provision for further extension by two years.

Road Ahead

- ❖ The total value of India's listed companies is expected to cross the US$ 1.5 trillion mark within the next 12 months as India enters the top 10 club of countries by market capitalisation.
- ❖ India could become the world's seventh biggest nation in terms of private wealth, with a 150 per cent increase in total, from US$ 2 trillion in 2013 to US$ 5 trillion by 2018, as per a recent study by the Boston Consulting Group (BCG).

Government of India's initiatives for improving trade and infrastructure can go a long way in improving the country's overall economy and make it a force to reckon with in the global economic scenario.

References: *Press Information Bureau (PIB), Media Reports, Department of Industrial Policy and Promotion (DIPP), Securities and Exchange Board of India (SEBI)*

Global Prospects

Our 2016 India attractiveness survey finds that India remains one of the top global destinations for foreign investment. The main drivers are its solid domestic market, an educated workforce and competitive labour.

India accounts for more than 20% of total capital allocated for the developing world. The infrastructure, consumer products, industrials, technology, media and telecom (TMT), and life-sciences sectors are set to drive India's growth over the next two years.

Investors are considering India for both their services and manufacturing supply chain. With the services sector forming the backbone of India's economy, the Indian Government is placing more weight on strengthening the country's manufacturing ecosystem.

Key features of India's attractiveness

India was the fourth-largest recipient of FDI in terms of projects started in 2012, and in terms of value, it accounted for 5.5% of global FDI.

Increased interest from the Middle East and Southeast Asia

Investors across the world recognize India's FDI potential. Between 2007 and 2012, the US invested the most in India, with 30.2% of projects, followed by Japan with 10.4%.

Seven of the top 10 investors in India during 2007-12 were from Western Europe, led by the UK and followed by Germany and France. India's pool of business partners is growing, with a striking 123.3% rise in the number of projects from the Middle East in 2012, mostly in financial services. Southeast Asian countries are also expanding their investment in the country, with projects mainly originating from Singapore, Malaysia and Thailand.

Top FDI destinations

Actual FDI performance show that metropolitan cities, such as Mumbai, Bengaluru, the National Capital Region (NCR), Chennai and Pune, remain key attractions.

Forty-three percent of respondents could not think of any city other than the main metropolitan areas. Among those who responded, Ahmedabad was the preferred choice in emerging cities, followed by Jaipur, Chandigarh, Coimbatore and Surat.

India's global market appeal lies in Competitive labour costs, Lucrative domestic market, Skilled workforce.
Strong management and business education system Improving telecommunications infrastructure burgeoning middle class growing domestic consumption levels

In order to realize its FDI potential, India needs to improve its operating environment and develop infrastructure. Other priorities should include boosting production, improving the taxation system, easing FDI regulations and increasing

Sectoral Growth Projections
Source: Central Statistical Organisation (CSO) –
Quarterly GVA at basic prices for Q1 2016-17 from 'Construction' sector grew by 1.5 percent as compared to growth of 5.6 percent in Q1 2015-16. Key indicators of construction sector, namely, production of cement and consumption of finished steel registered growth rates of 5.7 per cent and 0.3 percent, respectively, during

GDP at Factor Cost, Constant and Current Prices, Constant and Current Market Prices with Per Capita Value (in Rs. Crore)

Financial Year	GDP at Constant 2004-05 Prices	GDP at Constant 2004-05 Prices per	GDP at Factor Cost Current Prices	GDP at Factor Cost per Capita	GDP at Current Market Prices	GDP at Current Market Prices per Capita	Final Consumption Expenditure at Current Prices - India	Final Consumption Expenditure at Current Prices -	Gross Capital Formation at Current Prices	Gross Fixed Capital Formation at Current Prices	GDP at Constant 2004-05 Market Prices	GDP at Constant 2004-05 Market Prices
2000-01	2,348,481	2,305	2,000,743	1,963	2,177,413	2,137	1,680,061	1,406,661	528,299	495,196	2,559,711	2,512
2001-02	2,474,962	2,380	2,175,260	2,092	2,355,845	2,265	1,822,861	1,531,672	571,146	590,240	2,683,190	2,580
2002-03	2,570,935	2,435	2,343,864	2,220	2,536,327	2,402	1,921,867	1,620,293	627,743	601,120	2,785,258	2,638
2003-04	2,775,749	2,589	2,625,819	2,450	2,841,503	2,651	2,096,088	1,771,305	762,416	697,478	3,004,190	2,802
2004-05	2,971,464	2,729	2,971,464	2,729	3,242,209	2,977	2,272,026	1,917,508	1,064,041	931,028	3,242,209	2,977
2005-06	3,253,073	2,941	3,390,503	3,066	3,693,369	3,339	2,554,321	2,152,702	1,279,754	1,120,292	3,543,244	3,204
2006-07	3,564,364	3,177	3,953,276	3,523	4,294,706	3,828	2,920,144	2,476,667	1,531,433	1,343,774	3,871,489	3,451
2007-08	3,896,636	3,424	4,582,086	4,026	4,987,090	4,382	3,353,748	2,840,727	1,900,762	1,641,673	4,250,947	3,735
2008-09	4,158,676	3,604	5,303,567	4,596	5,630,063	4,879	3,864,617	3,249,284	1,931,380	1,821,099	4,416,350	3,827
2009-10	4,516,071	3,860	6,108,903	5,221	6,477,827	5,537	4,478,717	3,707,566	2,363,132	2,055,772	4,790,847	4,095
2010-11	4,918,533	4,163	7,248,860	6,112	7,784,115	6,563	5,250,459	4,360,323	2,841,457	2,407,069	5,282,386	4,454
2011-12	5,247,530	4,366	8,391,691	6,981	9,009,722	7,496	6,167,791	5,141,896	3,200,633	2,861,062	5,633,050	4,686
2012-13	5,482,111	4,505	9,388,876	7,715	10,113,281	8,310	6,961,191	5,772,059	3,521,399	3,071,543	5,899,847	4,848
2013-14 (P)	5,741,791	4,657	10,472,807	8,494	11,355,073	9,209	7,826,378	6,485,037		3,211,114	6,195,842	5,025

Source : Central Statistical Organisation (CSO) - 31/05/2014

GDP at Constant, Current & Market Prices with value of Consumption Expenditure etc. (in Rs. Crore)

Financial Year	GDP at Constant 2004-05 Prices	GDP at Factor Cost Current Prices	GDP at Constant 2004, 05 Market Prices	GDP at Current Market Prices	Final Consumption Expenditure at Constant 200405 Prices - India	Final Consumption Expenditure at Constant 2004-05 Prices-Private	Final Consumption Expenditure at Constant 2004-05 Prices - Government	At Constant 2004-2005 Prices: Gross Capital Formation (India)	At Constant 2004-2005 Prices: Gross Fixed Capital Formation (India)
2000-01	2,348,481	2,000,743	2,559,711	2,177,413	1,903,928	1,579,201	324,727	630,056	591,610
2001-02	2,474,962	2,175,260	2,683,190	2,355,845	2,005,578	1,673,209	332,369	658,827	682,143
2002-03	2,570,935	2,343,864	2,785,258	2,536,327	2,052,991	1,721,238	331,753	708,637	679,170
2003-04	2,775,749	2,625,819	3,004,190	2,841,503	2,164,189	1,823,227	340,962	819,925	750,940
2004-05	2,971,464	2,971,464	3,242,209	3,242,209	2,272,026	1,917,508	354,518	1,064,041	931,028
2005-06	3,253,073	3,390,503	3,543,244	3,693,369	2,469,316	2,083,309	386,007	1,236,927	1,081,792
2006-07	3,564,364	3,953,276	3,871,489	4,294,706	2,660,471	2,259,892	400,579	1,402,369	1,231,265
2007-08	3,896,636	4,582,086	4,250,947	4,987,090	2,910,316	2,471,397	438,919	1,656,892	1,430,764
2008-09	4,158,676	5,303,567	4,416,350	5,630,063	3,134,069	2,649,610	484,459	1,570,333	1,480,943
2009-10	4,516,071	6,108,903	4,790,847	6,477,827	3,397,005	2,845,303	551,702	1,841,262	1,594,475
2010-11	4,918,533	7,248,860	5,282,386	7,784,115	3,673,232	3,092,373	583,544	2,100,497	1,769,792
2011-12	5,247,530	8,391,691	5,633,050	9,009,722	3,969,459	3,378,506	623,574	2,183,259	1,986,645
2012-13	5,482,111	9,388,876	5,899,847	10,113,281	4,125,959	3,547,584	662,032	2,297,807	2,002,047
2013-14 (P)	5,741,791	10,472,807	6,195,842	11,355,073		3,719,568	687,388		1,999,938

Source : Central Sta istical Organisation (CSO)

Note: The 2013-14 and 2014-15 figures are RE and BE respectively. All figures reflect actual expenditure. Source: Expenditure Budget Vol. 1, 2013-14; Reserve Bank of India

Projected Investment in Infrastructure during the Twelfth Five Year Plan

Year	Base Year FY12	FY13	FY14	FY15	FY16	FY17	Total 12th Plan
GDP at FY07 Prices (Rs. Crs.)	6,314,265	6,882,549	7,501,978	8,177,156	8,913,100	9,715,280	41,190,063
Infrastructure Investment as % of GDP	8.37%	9.00%	9.50%	9.90%	10.30%	10.70%	9.95%
Infrastructure Investment (Rs. Crs. in FY07 prices)	528,316	619,429	712,688	809,538	918,049	1,039,535	4,099,239
Infrastructure Investment (Rs. Crs. in current prices)	721,781	888,572	1,073,470	1,280,315	1,524,526	1,812,581	6,579,463

Source: Mid-Term Appraisal Eleventh Five Year Plan, Planning Commission, GOI; WPI inflation used to convert to current prices; FY12 inflation based on PMEAC projection

Savings and Infrastructure Investment Needs

(as % of GDP)

	FY10	FY13	FY14	FY15	FY16	FY17
Infra Investment	7.5	9.0	9.5	9.9	10.3	10.7
Gross Domestic Savings	33.7	37.8	40.6	42.9	45.5	48.2
o/w financial savings	22.0	24.8	27.2	29.1	31.1	33.4
Incremental Infra Investment	0.3	0.6	0.5	0.4	0.4	0.4
Incremental Financial Savings	2.8		2.4	1.9	2.0	2.3
Infra Investment as % of Financial Savings	34%	36%	35%	34%	33%	32%
% share of incremental infra in incremental financial savings			21%	21%	20%	17%

Source: Mid-Term Appraisal Eleventh Five Year Plan, Reports submitted by Sub-Groups on Household Savings, Private Sector Corporate Savings & Public Sector Savings for 9% p.a. real growth and 5% p.a. inflation scenario

Investment by Centre, States & Private Sector

(Billion US$ nt nominal prices. I USS = Rs. 52)
(per cent shale in brackets)

	10th Plan (Actual)	11th Plan (Anticipated)	12th Plan (Projected)
	3,52,504	8,56,717	16,01,061
Centre	$ 68 bn	$ 165 bn	$ 308 bn
	(42)	(35)	(29)
	2,98,633	6,80,056	12,89,762
States	$ 57 bn	$ 131 bn	$ 248 bn
	(36)	(28)	(23)
	1,86,023	8,87,504	26,83,840
Private	$ 36 bn	$ 171 bn	$ 516 bn
	(22)	(37)	(48)
	8,37,159	24,24,277	55,74,663
Total	$ 161 bn	$ 466 bn	$ 1,072 bn

4. Comparison of budgetary allocation 11th (2007-12) & 12th Five Year Plan (2012-17)

For the 12th five-year plan (for the period 2012-2017) it is proposed to enhance the investment in infrastructure two folds. The estimate of additional investment for the 12th Plan period is given as follows: -

Project Investment in Infrastructure during Eleventh &Twelfth Five Year Plan

Major sectors	11th Plan (in Rs crores)		12th Plan (in Rs crores)		Increase over 11th Plan (in %)
	Realisation	% share	Projection	% share	
Agriculture and water resources	1,16,554	7.3	2,84,030	7.96	143.69
Rural Development and Panchayatiraj	3,97,524	25.01	6,73,034	18.86	69.31
Scientific departments	58,690	3.69	1,42,167	3.98	142.23
Transport and energy	2,04,076	12.84	4,48,736	12.57	119.89
Education	1,77,538	11.17	4,53,728	12.71	155.57
Health and child development	1,12,646	7.09	4,08,521	11.45	262.66
Urban Development	63,465	3.99	1,64,078	4.60	158.53
Others	4,58,849	28.87	9,94,333	27.86	116.70
Total Plan allocation	15,89,342	100.00	35,68,626	100.00	124.53

5. Key Features of Union Budget 2016-2017

THE CURRENT ECONOMIC SITUATION AND THE CHALLENGES

Decisive vote for change represents the desire of the people to grow, free themselves from the curse of poverty and use the opportunity provided by the society. Country in no mood to suffer unemployment, inadequate basic amenities, lack of infrastructure and apathetic governance.

- Challenging situation due to Sub five per cent growth and double digit inflation.

- Continued slow-down in many emerging economies a threat to sustained global recovery.

- Recovery seen with the growth rate of world economy projected at 3.6 per cent in 2014 vis-à-vis in 2013.

- First budget of this NDA government to lay down a broad policy indicator of the direction in which we wish to take this country.

- Steps announced are only the beginning of the journey towards a sustained growth of7-8 per cent or above within the next 3-4 years along with macro-economic stabilization.

- Need to revive growth in manufacturing and infrastructure sectors.

- The government is committed to achieve this target. Road map for fiscal consolidation outlines fiscal deficit of 3 % for 2016-17.
- Inflation has remain at elevated level with gradual moderation in WPI recently.
- Bold steps required to enhance economic activities and spur growth in the economy.

6. Administration and Regulation of Construction Industry

Administrative Initiatives

- Sovereign right of the Government to undertake retrospective legislation to be exercised with extreme caution and judiciousness keeping in mind the impact of each such measure on the economy and the overall investment climate.

- A stable and predictable taxation regime which will be investor friendly and spur growth.

- Legislative and administrative changes to sort out pending tax demands of more than 4 lakh crore under dispute and litigation.

- Resident tax payers enabled to obtain on advance ruling in respect of their income-tax liability above a defined threshold.

- Measures for strengthening the Authority for Advance Rulings.

ECONOMIC INITIATIVES

Foreign Direct Investment (FDI)

- Government to promote FDI selectively in sectors.
- The composite cap of foreign investment to be raised to 49 per cent with full Indian management and control through the FIPB route.
- The composite cap in the insurance sector to be increased up to 49 per cent from 26 per cent with full Indian management and control through the FIPB route.
- Requirement of the built up area and capital conditions for FDI to be reduced from 50,000 square metres to 20,000 square metres and from USD 10 million to USD 5 million respectively for development of smart cities.
- The manufacturing units to be allowed to sell its products through retail including E-commerce platforms.
- **Bank Capitalization**
- Requirement to infuse `.2,40,000 crore as equity by 2018 in our banks to be in line with Basel-III norms
- Capital of banks to be raised by increasing the shareholding of the people in a phased manner.
- **PSU Capital Expenditure**
- PSUs will invest through capital investment a total sum of ` 2,47,941 crores in the current financial year.

SMART CITIES

- A sum of ` 7060 crore is provided in the current fiscal for the project of developing "one hundred Smart Cities'

Real Estate

- Incentives for Real Estate Investment Trusts (REITS). Complete pass through for the purpose of taxation.

- A modified REITS type structure for infrastructure projects as the Infrastructure Investment Trusts (INVITS).

- These two instruments to attract long term finance from foreign and domestic sources including the NRIs.

Irrigation

- 1000 crore provided for “Pradhan Mantri Krishi Sinchayee Yojna” for assured irrigation.

EDUCATION

School Education

- Government would strive to provide toilets and drinking water in all the girls school in first phase. An amount of ` 28635 crore is being funded for Sarv Shiksha Abhiyan(SSA) and ` 4966 crore for Rashtriya madhyamic Shiksha Abhiyan (RMSA).

- A School Assessment Programme is being initiated at a cost of ` 30 crore.

- 500 crore provided for “Pandit Madan Mohan Malviya New Teachers Training Programme” to infuse new training tools and motivate teachers.
- 100 crore provided for setting up virtual classrooms as Communication Linked

- Interface for Cultivating Knowledge (CLICK) and online courses.

- **Higher Education**

- Jai Prakash Narayan National Centre for Excellence in Humanities to be set up in MP.

- 500 crore provided for setting up 5 more IITs in the Jammu, Chhattisgarh, Goa, Andhra Pradesh and Kerala.

- 5 IIMs in the States of HP, Punjab, Bihar, Odisha and Rajasthan.

- Simplification of norms to facilitate education loans for higher studies.

Information Technology

- Pan India programme “Digital India” to with an outlay of ` 500 crore to be launched.
- Programme for promoting “Good Governance” to be launched .A sum of ` 100 crore provided.

Information and Broadcasting

- 100 crore allocated for 600 new and existing Community Radio Stations.
- Film & Television Institute, Pune and Satyajit Ray Film & Television Institute, Kolkata are proposed to be accorded status of Institutes of national importance and a “National Centre for Excellence in Animation, Gaming and Special Effects to be set up.
- 100 crore is provided for Kisan TV, to disseminate real time information to the farmers on issues such as new farming techniques, water conservation, organic farming etc.

Urban Development

- Vision of the Government is that 500 urban habitations to be provided support for renewal of infrastructure and services in next 10 years through PPPs
- Present corpus of Pooled Municipal Debt Obligation Facility facility to be enlarged to 50,000 Crore from ` 5000 crore.
- 100 crore provided for Metro Projects in Lucknow and Ahmedabad.

Housing

- Extended additional tax incentive on home loans shall be provided to encourage people, especially the young, to own houses.
- Mission on Low Cost Affordable Housing anchored in the National Housing Bank to be set up.
- A sum of ` 4000 crores for NHB from the priority sector lending shortfall with a view to increase the flow of cheaper credit for affordable housing to the urban poor/EWS/ LIG segment is provided
- Slum development to be included in the list of Corporate Social Responsibility (CSR) activities to encourage the private sector to contribute more.

INDUSTRY

- Central Government Departments and Ministries to integrate their services with the e-Biz -a single window IT platform- for services on priority by 31 December this year.
- 100 crore provided for setting up a National Industrial Corridor Authority.
- Amritsar Kolkata Industrial master planning to be completed expeditiously.
- Master planning of 3 new smart cities in the Chennai-Bengaluru Industrial Corridor region, viz., Ponneri in Tamil Nadu, Krishnapatnam in Andhra Pradesh and Tumkur in Karnataka to be completed.
- Perspective plan for the Bengaluru Mumbai Economic corridor (BMEC) and Vizag-Chennai corridor to be completed with the provision for 20 new industrial clusters.

- Development of industrial corridors with emphasis on Smart Cities linked to transport connectivity to spur growth in manufacturing and urbanization will be accelerated.

- Proposed to establish an Export promotion Mission to bring all stakeholders under one umbrella.

- Apprenticeship Act to be suitably amended to make it more responsive to industry and youth.

Micro Small and Medium Enterprises (MSME) Sector

- Skill India to be launched to skill the youth with an emphasis on employability and entrepreneur skills.

- Committee to examine the financial architecture for MSME Sector, remove bottlenecks and create new rules and structures to be set up and give concrete suggestions in three months.

- Fund of Funds with a corpus of `.10,000 crore for providing equity through venture capital unds, quasi equity, soft loans and other risk capital specially to encourage new startups by youth to be set up.

- Corpus of ` 200 crore to be set up to establish Technology Centre Network.

- Definition of MSME to be reviewed to provide for a higher capital ceiling.

- Programme to facilitate forward and backward linkages with multiple value chain of manufacturing and service delivery to be put in place.

- ❖ Entrepreneur friendly legal bankruptcy framework will be developed for SMEs to enable easy exit.

- ❖ A nationwide "District level Incubation and Accelerator Programme" to be taken up for incubation of new ideas and necessary support for accelerating entrepreneurship.

INFRASTRUCTURE

- ❖ An institution to provide support to mainstreaming PPPPs called 4PIndia to be set up with a corpus of ` 500 crores.

Shipping

- ❖ 11635 crore will be allocated for the development of Outer Harbour Project in Tuticorin for phase I.

- ❖ SEZs will be developed in Kandla and JNPT.

- ❖ Comprehensive policy to be announced to promote Indian ship building industry.

Inland Navigation

- ❖ Project on Ganges called "Jal Marg Vikas' to be developed between Allahabad and Haldia.

New Airports

- ❖ Scheme for development of new airports in Tier I and Tier II Cities to be launched. Roads sector

- ❖ Sector needs huge amount of investment along with debottlenecking from maze of clearances.

- ❖ An investment of an amount of ` 37,880 crores in NHAI and State Roads is proposed which includes ` 3000 crores for the North East.

- ❖ Target of NH construction of 8500 km will be achieved in current financial year.

- ❖ Work on select expressways in parallel to the development of the Industrial Corridors will be initiated. For project preparation NHAI shall set aside a sum of ` 500 crore.

Energy

- ❖ 100 crore is allocated for a new scheme "Ultra-Modern Super Critical Coal Based Thermal Power Technology."

- ❖ Comprehensive measures for enhancing domestic coal production are being put in place.
- ❖ Adequate quantity of coal will be provided to power plants which are already commissioned or would be commissioned by March 2015.

- ❖ An exercise to rationalize coal linkages to optimize transport of coal and reduce cost of power is underway.

New & Renewable Energy

- ❖ 500 crores provided for Ultra Mega Solar Power Projects in Rajasthan, Gujarat, Tamil Nadu, Andhra Pradesh and Laddakh.

- ❖ 400 crores provided for a scheme for solar power driven agricultural pump sets and water pumping stations.

- ❖ 100 crore provided for the development of 1 MW Solar Parks on the banks of canals.

- ❖ A Green Energy Corridor Project is being implemented to facilitate evacuation of renewable energy across the country.

Petroleum & Natural Gas

- ❖ Production and exploitation of Coal Bed Methane reserves will be accelerated.
- ❖ Possibility of using modern technology to revive old or closed wells to be explored.
- ❖ Usage of PNG to be rapidly scaled up in a Mission mode.
- ❖ Proposal to develop pipelines using appropriate PPP models.

Mining

- ❖ Changes, if necessary, in the MMDR Act, 1957 to be introduced to encourage investment in mining sector and promote sustainable mining practices.

FINANCIAL SECTOR

Capital Market

- ❖ Ongoing process of consultations with all the stakeholders on the enactment of the Indian Financial Code and reports of the Financial Sector Legislative Reforms Commission (FSLRC) to be completed.

- ❖ Government in close consultation with the RBI to put in place a modern monetary policy framework.
- ❖ Following measures will be taken to energize Capital markets:
- ❖ Introduction of uniform KYC norms and inter-usability of the KYC records across the entire financial sector.
- ❖ Introduce one single operating demat account
- ❖ Uniform tax treatment for pension fund and mutual fund linked retirement plan

BANKING AND INSURANCE SECTOR

Banking

- ❖ Time bound programme as Financial Inclusion Mission to be launched on 15 August this year with focus on the weaker sections of the society.
- ❖ Banks to be encouraged to extend long term loans to infrastructure sector with flexible structuring.

- ❖ Banks to be permitted to raise long term funds for lending to infrastructure sector with minimum regulatory pre-emption such as CRR, SLR and Priority Sector Lending (PSL).

- ❖ RBI to create a framework for licensing small banks and other differentiated banks.

- ❖ Differentiated banks serving niche interests, local area banks, payment banks etc. are contemplated to meet credit and remittance needs of small businesses, unorganized sector, low income households, farmers and migrant work force.

- ❖ Six new Debt Recovery Tribunals to be set up.

- ❖ For venture capital in the MSME sector, a ` 10,000 crore fund to act as a catalyst to attract private Capital by way of providing equity , quasi equity, soft loans and other risk capital for start-up companies with suitable tax incentives to participating private funds to be established.

Insurance Sector

- ❖ The pending insurance laws (amendment) Bill to be immediately brought for consideration of the Parliament.

- The regulatory gap under the Prize Chits and Money Circulation Scheme (Banking) Act, 1978 will be bridged.

BUDGET ESTIMATES

- Mandate to be fulfilled without compromising fiscal consolidation.
- Non-plan Expenditure of ` 12,19,892 crore with additional provision for fertilizersubsidy and Capital expenditure for Armed forces.
- 5,75,000 crore Plan expenditure - increase of 26.9 per cent over actuals of 2013-14.
- Plan increase targeted towards Agriculture, capacity creation in Health and Education, Rural Roads and National Highways Infrastructure, Railways network expansion, clean energy initiatives, development of water resources and river conservation plans.
- Total expenditure of `.17,94,892 crore estimated.
- Gross Tax receipts of ` 13,64,524 crore estimated.  Net to centre of ` 9,77,258 crore estimated.

- Fiscal deficit of 4.1% of GDP and Revenue deficit of 2.9% estimated.

- New Statement to separately show plan allocation made for North Eastern Region. Allocation of ` 53,706 crore for North East Regions.
- Allocation of ` 50,548 crore under SCSP and ` 32,387 under TSP.
- Allocation for women at ` 98,030 crore and for children at ` 81,075 crore. TAX

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
- ✓ 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

7. CONSTRUCTION OPPORTUNITY & ACTIVITY

Estimated Construction Opportunity during XIIth Plan Period

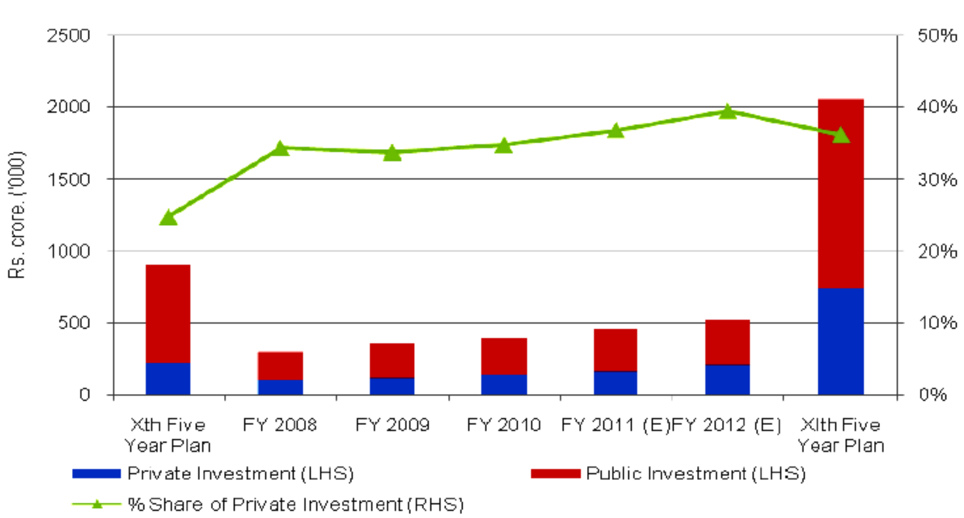
		Investment (Rs. crore)			Share (%)		Construction Intensity@ (% of Total	Construction Opportunity (Rs. crore)		
	Xth Plan	XIth Plan	XIIth Plan	Xth Plan	XIth Plan	XIIth Plan		Xth Plan	XIth Plan	XIIth Plan
Electricity	340,237	658,630	1,314,320	38%	32%	32%	40%	1,36,095	2,63,452	5,25,728
Roads & Bridges	127,107	278,658	556,072	14%	14%	14%	65%	82,620	1,81,128	3,61,447
Railways (incl. MRTS)	102,091	200,802	400,708	11%	10%	10%	75%	76,568	1,50,602	3,00,531
Irrigation	106,743	246,234	491,369	12%	12%	12%	75%	80,057	1,84,676	3,68,527
Water Supply	60,108	111,689	222,879	7%	5%	5%	60%	36,065	67,013	1,33,728
Ports	22,997	40,647	81,113	3%	2%	2%	70%	16,098	28,453	56,779
Airports	6,893	36,138	72,115	1%	2%	2%	30%	2,068	10,841	21,634
Total	766,176	1,572,798	3,138,575	85%	77%	77%		429,570	886,164	1,768,373

Assuming similar allocation among sectors during the XIth Five-Year Plan © Based on past estimates
Source: Planning Commission, GoI

Details of PPP Projects by Sector

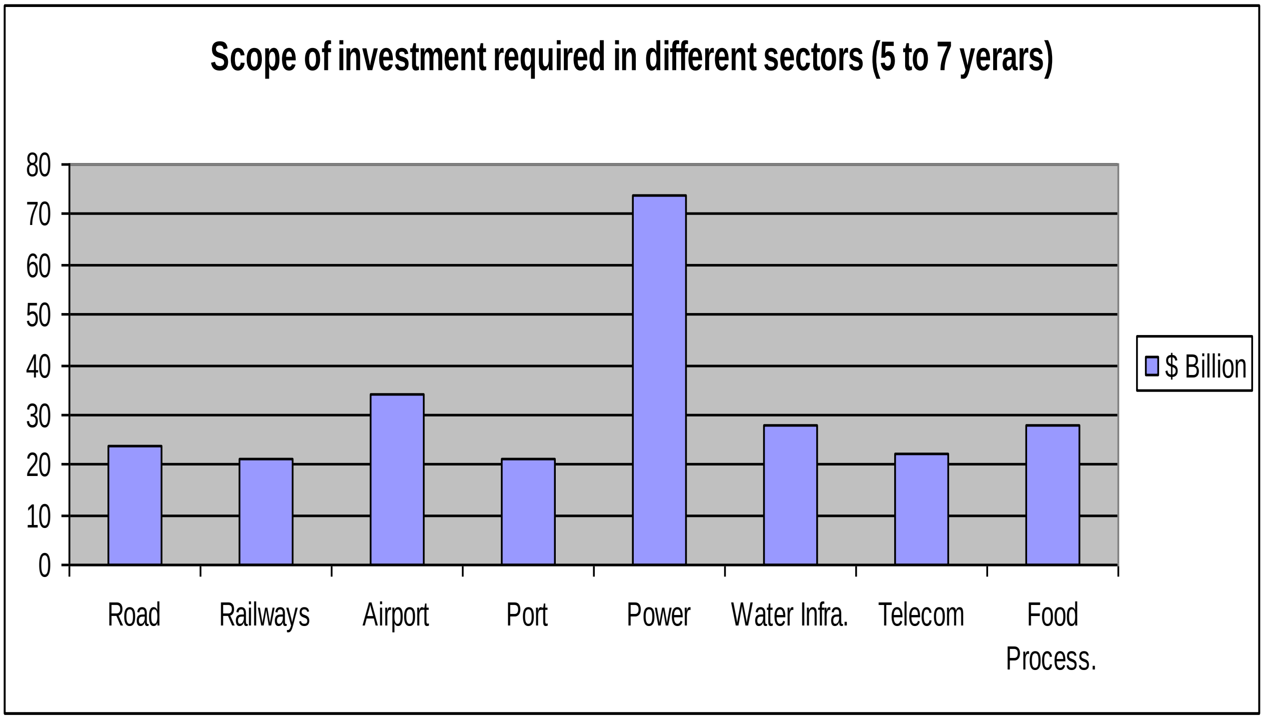
	Projects in Pipeline		Project under Implementation	
No. of Projects		Project Cost (Rs. crore)	No. of Projects	Project Cost (Rs. crore)
Roads	167	115,822	133	102,775
Ports	47	35,902	50	62,058
Airports	7	4,120	3	19,277
Railways	53	90,312	5	5,217
Power	34	62,032	15	29,448
Urban Infrastructure	65	45,708	69	18,690
Other	31	22,534	17	3,575
Total	404	376,430	292	241,040
Source: Planning Commission, GoI				

Chart 1: Trend in Infrastructure Investments



Source: Planning Commission, GoI

The scope of investment as envisaged by the Investment Commission is given in the following figure: -



FDI Infrastructure Equity Ceiling

Real Estate townships)	100%
Roads	100%
Power	100%
Airlines	74%
Airports	74%
Banks (Private)	74%
Mining	74%
Telecom	74%
Defence	49%
Insurance	49%

Annexure-1

Average Construction Material Prices as on 2016

RATES IN INR

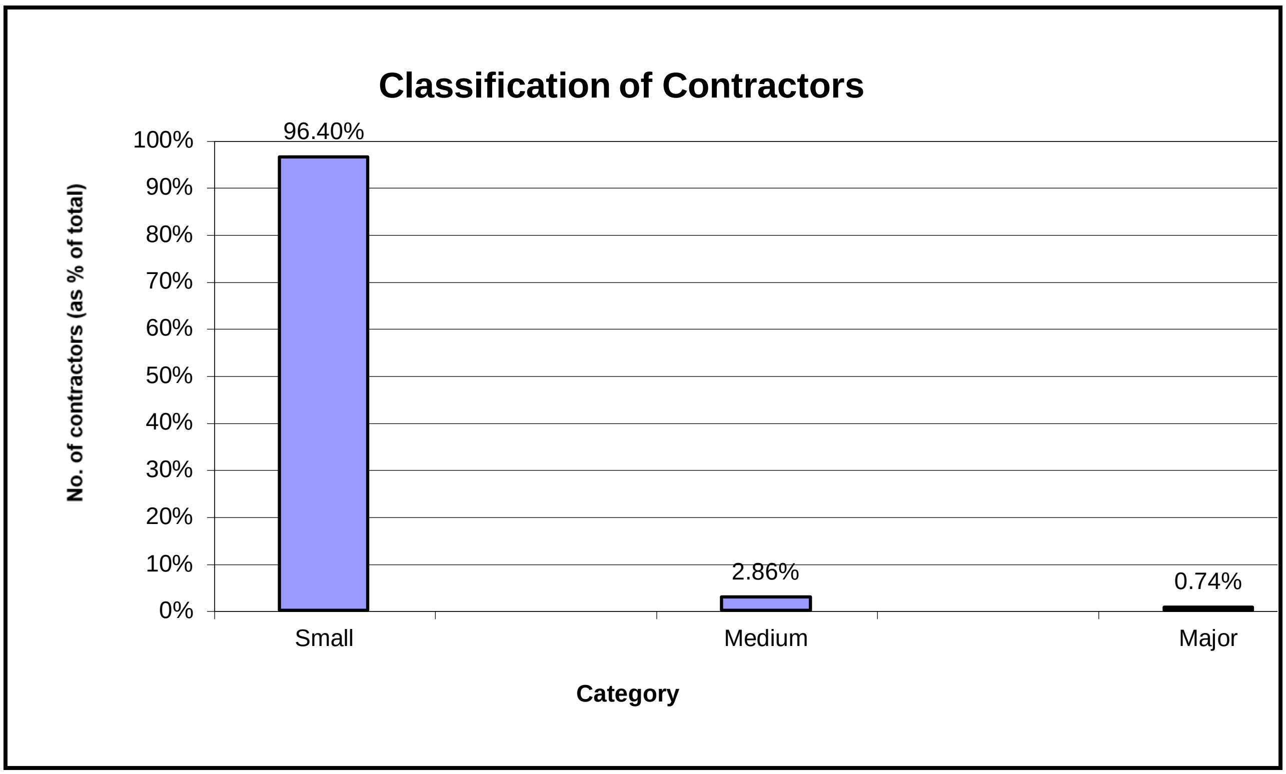
Delhi Item Rate			
S. No.	**Item**	**Unit**	**Rate**
1.	Cement – OPC	Tonne	6300
2.	Reinforcement Steel TMT – 12 mm dia	MT	35400
3.	Burnt Clay Bricks (9” x 4.5” x 3”)	Each	5.2
4.	Sand (coarse – local)	cum	1200
5.	Stone aggregates (20 mm normal size)	Cum	1175
6.	Kiln Seasoning of Timber	Cft	750
7.	Petrol	Ltr	67.86
8.	Lubricant – Grease	Ltr	250
9.	Paint – Synthetic Enamel White	Ltr	220
10.	Bitumen Grade 60/70 Bulk	MT	40885
11.	Daily wages of Labour		
12.	Unskilled	Per day	311
13.	Semi – Skilled	Per day	343
14.	Skilled	Per day	377
15.	Sr. Engineer (Civil)	Per day	700
16.	Jr. Engineer (Civil)	Per day	377

Annexure-2

CLASSIFICATION OF CONTRACTORS

Table below gives the categorization of contractors by the size of men they employ: -

S.N	No. of people employed by the agency	No. of Agency /contractors	%age	Category
1	1 to 200 persons	27,000	96.4%	Small
2	200 to 500 persons	800	2.86%	Medium
3	500 persons and above	200	0.74%	Major



Safety Record of Indian Construction Industry

Year	Accident frequency rate (accidents / million man-hours worked)
1998	0.08
1999	0.10
2000	0.10
2005	0.10
2008	0.09
2009	0.01
2010	0.01
2011	0.01
2012	0.008
2013	0.007
2014	0.007
2015	0.005
2016	0.005

Source: CIDC Survey

Annexure-3

Projected Investment as Percentage of GDP

(Rs crore at 2006–07 price)							
Years	Base year (2006–07 of Tenth Plan) (BE/RE)	2007–08	2008–09	2009–10	2010–11	2011–12	Total Eleventh Plan
GDP	4145810	4518933	4925637	5368944	5852149	6378843	27044506
Public Investment	175388	192107	227327	273543	332355	411226	1436559
Private Investment	49858	78166	94252	115724	146762	184687	619591
Total investment	225246	270273	321579	389266	479117	595913	2056150
			Investment as Percentage of GDP				
Public	4.23	4.25	4.62	5.09	5.68	6.45	5.31
Private	1.20	1.73	1.91	2.16	2.51	2.89	2.29
Total	5.43	5.98	6.53	7.25	8.19	9.34	7.60
Source: CSO for 2006–07, and computations of the Planning Commission.							

Projected Investment in Infrastructure during the Twelfth Five Year Plan:

Year	Base Year FY12	FY13	FY14	FY15	FY16	FY17	Total 12th Plan
GDP at FY07 Prices (Rs. Crs.)	6,314,265	6,882,549	7,501,978	8,177a156	8,913,100	9,715,280	41,190,063
Infrastructure Investment as % of GDP	8.37%	9.00%	9.50%	9.90%	10.30%	10.70%	9.95%
Infrastructure Investment (Rs. Crs. in FY07 prices)	528,316	619,429	712,688	809,538	918,049	1,039,535	4,099,239
Infrastructure Investment (Rs. Crs. in current prices)	721,781	888,572	1,073,470	1,280,315	1,524,526	1,812,581	6,579,463

Source: Mid-Term Appraisal Eleventh Five Year Plan, Planning Commission, G0I; WPI inflation used to convert to current prices; FY12 inflation based on PMEAC projection

Annexure-4

Salient Changes in Cross border & domestic employment procurement systems.

To enhance the efficacy of delivery of Engineering Projects, following improvements in the procurement systems are being resorted to.

1. **Engagement of Skill trained & certified work persons.**

   Understanding the need of improving the productivity of the workforces, observance of better SHE practices, & improved quality of works, major Indian project authorities have, in their procurement system introduced a Clause for Mandatory employment of skill certified work persons. Extracts of this Clause are given below.

   "The contractor shall, at all stages of work, deploy skilled/semi skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/Industrial Training Institute/National Institute of construction Management and Research (NICMAR)/ National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/ certified by State/Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer in charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer- in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer in Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding. Provided always, that the provisions of this clause, shall not be applicable for works with estimated cost put to tender being less than Rs. 5 crores."

2. **Introduction of Institutional Arbitration for effective resolution of disputes in Infrastructure Construction Projects**.
   To resolve all commercial disputes effectively & in shortest time frame, the Institutional Arbitration mechanism, in place of Ad-hoc mode of Arbitration is being introduced in the procurement systems.
   Extract of relevant Clause are given below.

“Any dispute of difference whatsoever arising between the parties and of or relating to the construction, interpretation, application, meaning, scope, operation or effect of this Contract or the validity or the breach thereof, shall be settled by arbitration in accordance with the rules of Arbitration of the Construction Industry Arbitration Council (CIAC), New Delhi and the award made in pursuance thereof shall be final and binding on the parties. The cost & expenses of Arbitration proceedings will be borne by each party as per terms of the Construction Industry Arbitration Council (CIAC), New Delhi.”

3. **Engagement of Professional Engineers**

Subsequent to the formation of the National Register of the Professional Engineers by the Engineering Council of India, and ensuring that the projects are administered only by professional engineers following Clause is being introduced in the Indian procurement system.

This would be applicable to all Engineers, irrespective of their Nationality, who are desirous to work on the Infrastructure Construction project in India.
Further details are available at web site www.ecindia.org

“ The contractor shall, at all stages of work, deploy engineers including Diploma holders, Degree holders and higher levels who are qualified and registered as Professional Engineers/ Chartered Engineers with the Engineering Council of India or the Institution of Engineers, India. The number of such registered Professional Engineers/ Chartered Engineers shall not be less than 25% of total numbers of engineers at the state of work.

Failure on the part of contractor to deploy registered Professional/ Chartered engineers will attract a compensation to be paid by contractor at the rate of Rs. 1000 per such Professional engineer per day. Decision of CPWD to whether particular engineer’s registration in valid or not and amount of compensation in case default shall be final and binding.”

4. **Engagement of certified Suppliers & Vendors**

To ensure effective & reliable Supplies for timely completion of Infrastructure Projects, several major project authorities have started sending purchase enquiries to the Vendors enlisted in the National Database of the Vendors being developed & maintained by Construction Industry Development Council.
The details could be accessed from the website www.cidc.in.

This information is being provided to the members of Asia Construct Network, to enable them to disseminate the information in their respective geographical region.

Annexure-5

EXECUTIVE SUMMARY

In the context of development of the Chapter on Construction in the 12th Plan document, the Planning Commission constituted a Steering Committee vide their order dated 4th August, 2011. Dr. Arun Maira, Hon'ble Member (Industry), Planning Commission was nominated as the Chairman of the Steering Committee, which comprised of Senior representatives of various Ministries of Government of India, Public Sector Undertakings, Construction Companies, Industry Associations and, Individual Experts from Construction Industry. The Steering Committee was convened by Dr. P R Swarup, Director General, Construction Industry Development Council, supported by several Senior Experts drawn from Construction, Legal, Technical & other sub-sectors. Dr. Manoj Singh, Advisor (Tpt), provided integral support by organizing the meetings of the steering committee, articulating and explaining the approach & also moderating the deliberations.

The introduction of Chapter on Construction in the National Plan was done in the 10th Plan (2002-2007), and recognizing the importance of construction, as a major economic entity, it was decided to amplify the deliberations during the 11th Plan as well. The 12th Plan document further amplifies the actions to be taken & also recommends actionable points. It is also envisages that, post plan document finalization a Steering Committee shall be constituted to oversee the implementation of the recommended actions made by the plan document drafting Steering Committee. The proposed terms of reference, have also been detailed in the subsequent chapters.

India has been experiencing unprecedented economic growth. During the 10th & 11th Plan periods, substantial contribution to the National Economy has come from the Construction Sector, however with the slowing down of global economies, even the Indian economy is facing certain challenges.

Maintaining the pace of growth experienced during last one decade, probably is a major issue, and this amplifies the need of bringing in further reforms and streamlining the functioning of construction industry.

Whereas, some of the policy statements recommended in the Chapters of Constructions in 10th & 11th Plan have been initiated for implementation, much needs to be done. The government has put in place policies, which have generated over **8 % growth** on an average for the past few years. The plans are on anvil to achieve **9-10 % annual growth rate in the next 5 years.** This would be the basis for generating the resources needed for the massive investments to be made in development of Physical Infrastructure & also the policy frame work to be modified, developed & adopted.

The 12th Plan envisages a growth rate of over 8% per annum, and would need infusion of substantial capital, estimated at over Rs. 50.0 lakh crores to build India's physical Infrastructure. The development of physical infrastructure, through such massive investments would need commensurate growth in delivery potentials of Construction Industry which in turn necessitates evolution of reformed practices & establishment of Institutions.

It is note worthy to mention that the present capacity of asset building of the Indian Construction Industry is estimated at Rs. 4.15 lakh crores per annum. In order to accomplish the task in hand (to build assets valuing Rs. 50 Lakh Crores), the sector has to double the capacity. The human as well as the material inputs need substantial stepping up & therefore the plans & policies too, would need rank upgradation & modifications.

Impediments therefore need to be removed and necessary facilitation need to be taken. The objectives and the approach of this Steering Committee are given below:

I. OBJECTIVES

1. To study & analyze the Indian Construction Industry, keeping in view the focus on creation of a world class infrastructure and rebuilding rural India through schemes such as Bharat Nirman & Schemes under MNREGA. To make an assessment of qualitative and quantitative capabilities of the Indian Construction Industry in the background of category-wise projections for construction and allied supporting activities in the 12^{th} Plan with a view to evolve strategies for overcoming deficiencies and bottlenecks and achieve time bound targets, by suggesting measures for better coordination among the stakeholders..

2. To review the regulatory framework governing the sector including fiscal & other regulations and suggest any changes required to make the sector more efficient & productive.

3. To review the present procedures of Government procurement including dispute resolution mechanisms for construction work and evolve measures for improvement, especially in view of increase in privatization in the infrastructure sector.

4. To review the present system for execution, supervision of progress and quality, release of funds, certification, billing and payment for work and suggest remedial measures for minimizing time and cost over-runs in projects undertaken by or on behalf of Government.

5. To review the State of present financing models for construction work; institutional financing from Banks/ Financial Institutions and their lending norms, and recommend measures to enable access to finance at globally competitive rates.

6. To focus on R&D activities in the construction sector and suggest measures for greater use of modern technologies and equipment and speedy adaptation of new methods..

7. To evaluate role of Construction Sector in generating employment, keeping in view the qualitative & quantitative changes which have occurred in the recent past and to suggest measures for qualitative upgradation and more remunerative employment in the construction industry.

8. To assess the demand of manpower, category-wise and suggest remedial measures, including skill development, to face shortages, and suggest improvements in the functioning of National Skill Development Mission.

9. To review the quality and safety aspects in construction and to suggest necessary measures, and to recommend measures for evolving a Techno-legal regime.

10. To review the status of asset management and evolve strategies for implementation at local/State/Central Government level.

11. To study the impact of this industry on environment and suggest measures to make it more environmental friendly and sustainable; to also review the present regulatory framework for environmental clearance with a view to making it more business friendly.

12. To review the status of data base in the construction sector and to suggest ways and means to upgrade, augment and effectively maintain the same on institutional basis.

13. To study the best practices adopted worldwide and draw lessons for the Indian Construction Industry.

14. To suggest a policy framework for the increasing productivity and reducing construction costs, in order to ensure the healthy development of the construction sector after examining/ reviewing of the above mentioned areas and the existing regulating framework .

15. To recommend the measures for self-regulation for the constituents of the Construction Industry.

16. To evolve suitable mechanisms to ensure implementation of the recommendations of this Group during the twelfth plan period.

17. To examine any other mater considered important by the Steering Committee.

II APPROACH

It is note worthy to mention, that the present day Government having recognized the need to develop and improve the overall physical infrastructure, is actively taking appropriate measures to improve the functioning of Construction Industry. Growth and development of the physical infrastructure is directly related to the growth of the development of National Economy. Construction is inherent to infrastructure development, and the objectives defined above were intensively deliberated by the Steering Committee and six associated Working Groups were constituted, to work on specific areas such as:-

1. **Regulatory Framework including self regulation & issues leading to time & cost over runs.**

2. Procurement systems & dispute resolution system.

3. Human Resource Development.

4. Institutional financing.

5. Quality standards & Environment Issue.

6. Research & Development.

The Chapter on Construction, therefore has been structured to encompass the issues, impediments, their solution & good practices, which could be emulated with respect to above defined key areas, Another section has been included, articulating the actionable points & identifying stake holders.

Keeping in view the continued thrust in several sub-sectors of the physical infrastructure such as, Transportation, Irrigation, Housing, Urban Utility, Civil Aviation, Agriculture, Power Generation, Water Conservation & Management and Power & Energy, the Steering Committee evolved major recommendations, which need to be instilled in the National Plan.

The approach of the Working Groups was focused towards the capacity building of Construction Industry, both in terms of quality and quantity to handle the substantial work load, that is confronting the Construction Industry. The major issues of challenge , therefore, were identified are:-

<u>Overall Vision</u>

With the slated investment of over US $ 1 Trillion or Rs. 50 Lakh crores to build the Physical Infrastructure in the Nation, thereby raising the quality of life of citizens, giving a boost to the National Economy, & generating employment, the construction sector would play a major role during the 12th Plan.

Effective management of the sector & mitigation of the bottlenecks & impediments, both in the regulatory systems and also in the working dynamics of the sector shall be essential to achieve the targets.

This would involve Institution building, systemic improvements to be instilled & creating a holistic approach to bring in required reforms to convert the rule bound & rigid structure administering the sector, to a more meaningful, vibrant & efficiently run entity.

The reforms to be brought in need to be sustainable & must spring from within as well.

Since the sector covers a wide variety of economic activities including construction of houses & buildings, Transport structures, energy systems, Petrochemicals, Industry & several more, the issues affecting the performance to this sector are both generic, and specific to the respective sub sectors.

With an average annual value of asset creation being Rs. 415,000 Crores and an employment of over 41 Million citizens the sector has many complexities, needing resolution & therefore the approach to meet the planned growth should be to handle the generic issues, which need to be looked into very urgently.

It is noteworthy to mention, that with the present capacity, as defined above the targets laid down may fall short by 45%. It is therefore necessary to critically examine following areas & do the stock taking.

- **Human Resource Development**

The key to the sustainable & robust growth of any sector in the National Economy is the Human Resource. With over 41 Million citizens under direct employment of construction entities, the sector has the distinction of being the second largest employer.

A miniscule proportion (5.65%) of this strength has the benefit of structured training & education, keeping the activity under low value/ low productivity tag.

The thrust, therefore needs to be given on creation of Institutions & Institutional frame work along with provision of Institutional resources to meet the requirements of HRD.

Training, Skill up gradation, & certification of skills need to be taken up vigorously, where the Government & Industry have to join hands. The resources to meet the monetory requirements could be channeled through welfare cess & PF deposits as well as from the training funds earmarked under various state & centrally sponsored schemes.

While developing the Institutions & creating infrastructure for the Human Resource Development, some novel actions could be taken, such as

- **a) Declaring Construction sites as places of learning.**
- **b) Introducing mandatory internship for engineers, post or during their education.**

Mere provision of financial resources may not attain the purpose if the training infrastructure is lacking, & therefore training programmes to groom the trainers & Institutional provisions need to be placed in position.

Even a fresh crop of contractor would need formal training to meet the demands.

- **Regulatory Frame Work**

The regulatory framework governing the construction sector definitely needs toning up in the 12th Plan period.

Enacting a unified set of provisions leading to enactment of a construction law would be a major necessity.

Another important aspect is to harmonize the central & state level legislations to create an improved & hassle free operating climate for construction entities.

With the size & diversity of operations in the sector, a fair amount of self regulation would also be needed to be practiced. Systemic structure, therefore would be evolve to enable the Industry to exercise self regulation, in several areas.

The 12^{th} Plan shall recommend such measures and also the formation and empowerment of Institutions to facilitate ingress of this measure.

- **<u>Procurement Practices</u>**

For effective & transparent performance of the service providers, the toning up of the Procurement Systems, prevalent in the Nation, shall be another thrust area in the 12^{th} Plan.

Following steps would be taken.

- Adoption & periodic up gradation of standard contracting conditions.
- Adoption & periodic up gradation of works manuals

The focus shall be on introducing the harmonized, equitable & transparent provisions to arrest & eliminate the time & cost over runs in the project execution.

- **<u>Dispute Resolution</u>**

Another irritant in effective project & contract execution is the delayed & amorphous dispute resolution systems being practiced.

With over Rs. 135,000 Crores investments held up in the contractual disputes & an overage period of resolution being 15 years, the dispute resolution mechanism in the country are a major contributor to the time & cost overruns of the project & a retarder to the progress.

The focus of the 12th Plan would be to insure implementation of following.

i. Institutional mode of Dispute Resolution in place of Ad-hoc mode.

ii. Implementation of the Indian Arbitration & conciliation Act 1996.

During the 12th Plan another vital action would be to educate the stake holders in these aspects.

- **<u>Quality & Standards</u>**

Construction being a capital intensive venture, the stress on quality of the built products would be another prime objective of the 12th Plan.

Construction Methodologies, products, and the eventual delivery would be benchmarked to become comparable to the International Standards. Another important area of action during the 12th Plan shall be to empower the standard Institutions.

To accomplish the task, Institutions shall be established & existing Institutions would be empowered and their functioning be harmonized.

- **<u>Environment</u>**

Construction activities are known to be the biggest energy consumers & have a profound impact on the environment.

Starting from mining of natural resources to building the end product, substantial pollution is created. The thrust of the 12th Plan would also be on

- Adhering to the Environmental Protection laws by construction Industry in a manner thet the progress is not retarded.
- Making "Green Construction" a major thrust area.

- **<u>Research & Development</u>**

Ingress & Introduction of new & smart technologies to reduce the costs & time for execution of the Projects, shall be another thrust area during the 12th Plan.
Presently little investment is made in primary R&D initiatives, specially when compared with the volume of work done annually.

During the 12th Plan period the thrust areas shall be.

i. Focus of Innovations.
ii. Strengthening the R&D Institutions & facilitating establishment of new Institutes.
iii. Incentivizing the R&D & Innovating initiatives.

- **<u>Mechanization of Work Practices</u>**.

The functioning of construction sector is primarily manual leading to low value addition, poor quality of products, and also longer time for completion.
Mechanization of operations, though gaining popularity, yet needs larger thrust. This would be another area of attention during the 12th Plan period.
Plan period would see

- Establishment of Equipment Banks.
- Better fiscal concessions for manufacturers of construction equipment, thereby reducing costs.
- Availability of trained operating & maintenance personnel.

- **Project Exports**

Construction Industry in India is generally an in bound Industry, with a very small contribution to the National Economy through Project exports.

At present only 1.85% of the total output comes from projects & need substantial rise.

During the 12th Plan period, Project export shall be another thrust area & following actions be taken.

- Generating more business for Indian construction companies through G to G interactions & bilateral treaties.

- Provision of better fiscal incentives to the project exporters both for business development & execution initiatives.

- **Institutional Financing**

Institutional Financing is the key to smooth & efficient implementation of construction projects & following shall be the thrust initiatives during the 12th Plan.

- Raising the share of Institutional lending from 1.5% to at least 5% and more to improve the liquidity of service Providers.

- Encouraging Institutions to resort to innovative products to meet the equity & debt provisions for PPP projects.

- Creating & adopting Insurance & non Insurance risk assessment & mitigation products

- Provision of working capitals for start up ventures & entrepreneurs in construction Industry.

- Establishing a nodal construction Development Bank to meet all such needs.

Establishing Institutions, nodal bodies, & facilitating Interaction among all stake holders.

Construction activities are undertaken by several Ministers, PSUs & also the developers from the corporate sector.

The most important action, to be taken during the 12th Plan period, shall be to ensure a seamless coordination among all the Project execution & Project owning agencies.

Needless to mention empowered commissions, regulators and such Organs would be established to ensure implementation of the Plans thus laid down.

III RECOMMENDATIONS

The development of recommendations took in cognizance the issues listed above, needing address and encompassed existing impediments/limitations and relevant mitigation measures, having recognized that, the Construction Industry has a great contribution potential to the overall National Economy, having displayed consistent growth trend of around 8% during last plan period. These include the macro recommendations, which require policy intervention at Central and State Governments level, action by stakeholders, and certain implementation models at gross root level, which may be elicited as examples for detailing a blue print for action.

i) Review of present procedures of procurement of projects & services including dispute resolution mechanisms, and quality issues and evolve measures for improvement, particularly in view of the increasing privatization in infrastructure sector. The Steering Committee recommends following:-

a. The Contract Conditions being used by various Project Authorities in the Country, **whether in Public or Private Sector**, should be harmonized. The recommendations issued by the **Ministry of Statistics and Programme Implementation in this regard, must be implemented fully** by all Project Owners in the Country. This would require Government's intervention to convert guidelines of MOSPI into specific directions for all Public Agencies/

Undertakings/Organizations. The recommended guidelines on contract conditions & also the model works manual are hosted on the web site www.cidc.in.

b. For the Public Private Partnership models, the Model Concession Agreement developed by the Planning Commission for the Road & Highway Sector, could be used as a base model and modifications could be made to cater to other sub-sectors, as well.

c. Necessary provisions in the procurement system, be made to ensure that standard quality certification (third party) systems are adhered to.

Some system giving incentives for timely completion and good performance by concerned construction agencies be suitably introduced. A system may also be developed and promoted to facilitate small and medium construction companies to share services and available plants and machinery at equipment banks. In fact similar systems have already been introduced in several highway construction projects of Maharashtra State Road Development Corporation.

d. The emphasis must be laid on Institutional Arbitration system, instead of Ad-hoc system, as is being followed presently. The arbitration should be in line with Indian Arbitration and Conciliation Act 1996.

e. To minimize "disputes" leading to time and cost overruns proper project planning process should be encouraged and DPRs may be completed before technical sanction.

f. Suitable institutional modifications be introduced for risk mitigations. New insurance products should be developed.

ii) A National Plan for **training and certification of Construction personnel** at all levels should be developed and implemented.

The plan should include initiating a system of 'Graded Certification' depending upon levels of proficiency achieved. To meet shortage of available trained manpower in certain urgently needed trades short terms courses may be introduced where ITI courses are of long duration.

It is further recommended that some kind of Permanent Identification number be granted to the workers, and a nationwide scheme of granting e-cards be launched for effective availability of the benefits.

The construction sites could be designated as the learning centers & introduction of mandatory Internship for the students of engineering programs both aat Diploma and Degree level be made.

iii) Well defined and harmonized institutional financing systems be evolved to build the capacity of Construction Industry.

iv) A comprehensive Draft Construction Law should be developed and the Construction Law for India be enacted through wider consultations.

v) Present system of asset management should be reviewed at local/ state/ central government levels and strengthened. A policy frame work ensuring mandatory provision for maintenance of assets supported by adequate budgetary allocations and trained manpower be set-up.

vi) A National strategy and policy framework focused particularly on productivity enhancement and cost reduction be developed to match with envisaged work load and delivery targets of various sectors and for sustainable development and growth of construction industry.

Induction of new technologies, construction systems and energy efficient materials (preferably based on waste recycling) should be adequately emphasized in the development of national strategy for enhancing productivity and efficiency and reducing cost of construction works. For rural roads sector, there appears to be strong need for developing and introducing use of "marginal materials" to enhance cost effectiveness of works.

It is therefore proposed, that a National Construction Research & Development fund be created & an authority be constituted under the auspices of a nodal ministry to administer this provision. As an initial seed support a sum of Rs. 100 crores be allocated to persue these objectives

vii) An appropriate Management Information System should be developed and implemented at National, Provincial and Local levels for construction industry. An Institution be nominated as the repository of National Data Base for Construction Industry.

viii) Systems & Institutions should be developed for expansion of network for project export and attracting more foreign investment. Interactions with Indian Missions abroad, should be intensified, through evolution of an Institutional mechanism.

ix) A mechanism for registration of professional engineers need to be established for which a nodal agency need to be identified. Intake in academic institutions be regulated to mitigate declining trend in the availability of civil engineers

x) Taxation & Regulatory Systems should be revamped. Sectoral classification and definition of Construction Industry should be established, as for taxation purposes construction "is treated as "Industry" as well as "Service" The Steering Committee recommends that construction be treated as Industry and the existing definitional anomalies, where for certain sub-sectors of construction sector, service taxes have been introduced, be removed.

xi) **Institutional Arrangements be made to identify, prevent and mitigate the effects of**

Natural Disasters. New programs should be taken as per guidelines and programs announced by National Disaster Management Authority. The Steering Committee recommends that following actions should be taken up on priority.

g. To develop the Human Resources in Disaster Mitigation and disaster resistant construction technologies and

h. Retrofitting Clinics and Disaster Identification Centres be set up in all major settlements and districts falling in disaster prone regions

xii) An Institutional mechanism need to be developed for continuous evaluation of various economic parameters such as Construction Cost Indices and impact of policies of other sectors having impact on cost of construction works.

xiii) A National Plan need to be developed for upgrading the prowesses of Engineering Consultants and advisors, and should be implemented.

xiv) Adherence of standards should be ensured through relevant regulatory provisions.

xv) A national plan to be evolved and implemented for entrepreneur development in Construction Industry for raising the capability levels.

xvi) A conceptual plan to identify a nodal organization to implement and monitor above should be formalized and implemented upon.

xvii) A national plan for insuring adherence to the Environment Protection Act (2006) be developed and Energy Efficiency issues be addressed in conformity to the Energy Conservation Act of 2001.

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THEME PAPER

INDIA

PREPARED BY

Construction Industry Development Council

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Theme Paper - India
Sustainable Construction Policy and Market

Executive Summary:

The Indian construction industry, an integral part of the economy and a conduit for a substantial part of its development investment, is not only poised for growth on account of industrialization, urbanization, economic development and people's rising expectations for improved quality of living, it is also bracing for modernization that calls for improved productivity and higher competitive edge. Its main challenges are fast growth in response to increasing demand for goods and services; technological upgrading for speed, quality, cost reduction, and substitution of manual labour; modern management practices for greater profitability and a `modern', clean image; and technical skills, financial strength and organizational competence to meet domestic and international competition and capture a part of the international market. The construction industry, steeped in traditional technology and largely informal labour practices, is in a hurry to change both its image and content.

Sustainable construction, it must be admitted, is neither the vision nor the immediate goal of its modernization thrust. It is growth, efficiency, productivity, greater share in the market and profit. Improved performance on the environmental front (reduction of pollution or substitution of high energy consuming materials), or on human aspects (better tools and working conditions for the construction workforce), is mainly a welcome by-product, useful in public relation rhetoric, not more.

India, the seventh largest country in the world, is a leading economy and home to over one billion people living in various climatic zones. The country's economy has been growing at a fast pace ever since the process of economic reforms started. Construction plays a very important role in its economy

- USD 1 Trillion investments for infrastructure sector projected during 2012-17

- USD 650 Billion investments in urban infrastructure estimated over next 20 years.
- 100% Foreign Direct Investment (FDI) permitted through the automatic route for townships, cities.
- Construction sector contributes towards 8% of the Indian GDP (at constant prices). Last five year estimates (2006-07 to 2010-11).
- Additional Fact: increased to 3.85 lakh crore (7.9% of the total GDP) in 2010-11 from 284798 crore (8% of the total GDP) in 2006-07.
- Additional Facts: Growth rate for GDP in construction 8.1%
- 100 Smart Cities and 500 AMRUT Cities will invite investment of 2 Trillion Rupees in the next five years.
- INR 62,009 Crore. would be invested under Swachh Bharat Mission (SBM) in urban areas.

SECTOR POLICIES AT PRESENT:

Smart Cities Mission; and Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

- Under 100 Smart Cities Mission, Smart Cities will be selected through a 'City Challenge Competition,' linking financing and ability to achieve multidimensional objectives of urban infrastructure development like adequate and clean water supply, sanitation and solid waste management, efficient urban mobility and public transportation, affordable housing for the poor, power supply, robust IT connectivity, governance, especially e-governance and citizen participation, safety and security of citizens, health and education and sustainable urban environment. Smart City mission will be implemented through Special Purpose Vehicles (SPV) to be managed by the state government.
- AMRUT will inculcate a project approach to ensure basic infra services such as water supply, sewerage, septage management, storm water drains, transport and development of green spaces and parks with special provision for meeting the needs of children. A minimum investment of over INR 2 lakh crore would flow into urban areas over the next five years (2015-16 – 2019-20) since States and ULBs would mobilize matching resources ranging from 50% to 66%.

The following has also been announced in the budget in relation to smart cities: -

To encourage development of 'Smart Cities', which will also provide habitation for the neo-middle class, requirement of the built-up area and capital conditions for FDI is being reduced from 50,000 sq. mts. to 20,000 sq. mts., from USD 10 Million to USD 5 Million respectively. To further encourage this, projects which commit at least 30% of the total project cost for low cost affordable housing will be exempted from minimum built-up area and capitalisation requirements. - A National Industrial Corridor Authority, with its headquarters in Pune is being set up to coordinate the development of Industrial Corridors with emphasis on Smart Cities linked to transport connectivity to spur growth in manufacturing and urbanization. - Master Planning of the Amritsar-Kolkata Industrial Corridor will be completed expeditiously for the development of Industrial Smart Cities in seven states of the country. The seven states to be covered in this project are Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal. - Master planning of three new smart cities in the Chennai-Bengaluru Industrial Corridor region, viz., Ponneri in Tamil Nadu, Krishnapatnam in Andhra Pradesh and Tumkur in Karnataka are to be completed. A Perspective Plan for the Bengaluru Mumbai Economic Corridor and Vizag-Chennai Corridor is to be· completed with provision for 20 new industrial clusters. A proposed allocation of INR 40 Billion, to set up a mission on low cost affordable housing, will be· anchored in the National Housing Bank. A proposed allocation of INR 1 Billion, to develop metro projects in Lucknow· & Ahmedabad. INR 80 Billion has been allocated for the National Housing Bank with a view to expand and continue to· support rural housing in the country. State governments concerned are purposed to be notified as sponsoring authority for metro rail projects· covered under project import regulations, 1986. The norms for FDI in the construction development sector are being eased as well. Easing of norms has· generated high interest levels from not just the foreign investors but also domestic players.

Swachh Bharat Mission (SBM):

- SBM aims at elimination of open defecation, eradication of manual scavenging, scientific Municipal Solid Waste Management, to effect behavioural change regarding healthy sanitation practices, generate awareness about sanitation and its linkage with public health, capacity augmentation for ULBs to create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance). The mission outlay is INR 62,009 crores. It covers all 4041 statutory towns.

Heritage City Development and Augmentation Yojana (HRIDAY):

- HRIDAY aims to preserve and revitalise the soul of an Indian heritage city and reflect its unique character by encouraging aesthetically appealing, accessible, informative and secured environment and to undertaking strategic and planned development of heritage cities aimed at the overall improvement in quality of life with special focus on sanitation, security, tourism, heritage revitalisation and livelihoods retaining the city's cultural. It is a central sector scheme with 100% funding coming from Central Government. Initial Phase of the HRIDAY Scheme was launched in January, 2015 for a period of 27 months in twelve identified cities viz. 1) Ajmer 2) Amritsar 3) Amaravati 4) Badami 5) Dwarka 6) Gaya 7) Kanchipuram 8) Mathura 9) Puri 10) Varanasi 11) Velankanni 12) Warangal for development of the towns under the scheme with a total outlay of Rs. 500 crores.

The 12th five years plan projects an investment of 10% of the national GDP into infrastructure which equates to a staggering $1 trillion or equivalently Rs.45 trillion.

INVESTMENT BOOST IN INFRASTRUCTURE THROUGH HIGHER PUBLIC FUNDING POSITIVE

Budgetary allocation: Total allocation for infrastructure has been increased by 1.5 times to INR· 2.8 trillion (roads, railways and urban infrastructure the biggest beneficiaries).

Roads: Investments for development of national highways proposed to be hiked by 178% year-to year· to INR 85,607 crore. A major portion of this increase will be funded by INR 4 per litre increase in road cess on petrol and diesel.

Railways: Total outlay raised by 52%, in the railway budget 2015-16, there have been many· announcements of PPP projects in areas of coastal connectivity, gauge conversation, dedicated freight corridors (DFCs) and the Mumbai suburban rail. Funding availability: An INR 200 billion National investment and Infrastructure Fund to be set up· for infrastructure finance companies to raise debt. The budget also provides for issuance of tax free bonds for roads, railways and irrigation projects, and aims to rationalize the tax regime for infrastructure investment trusts.

Other measures: The government's intent to table a Public Contracts (Settlement of Disputes) bill· will help speedy redressal of disputes in large public projects and create a conducive environment for PPP projects. At a time when private sector interest in infrastructure development is low, the increase in budgetary support holds the potential to kick-start capital investments in the economy. Moreover, the significant increase in public funding for the roads sector has the potential to boost execution of national highway projects by about 5,800 km annually and create a robust construction opportunity for road engineering procurement & construction (EPC) companies. The Union Budget 2015 has proposed that the National Investment and Infrastructure Fund will create additional funding resources for private developers, over and above the rise proposed in public funding. Moreover, rationalisation of tax regime for Infrastructure Investment Trusts may help free up private capital currently locked in completed projects.

Reasons to invest: An investment of USD 1,000 Billion has been projected for the infrastructure sector until 2017, 40% of which is to be funded by the private sector. 45% of infrastructure investment will be funneled into construction activity and 20% set to modernize the construction industry. The Indian government has undertaken a number of measures to ease access to funding for the· sector. Construction activities contribute more than 10% of India's GDP. The construction industry in India has seen sustained demand from the industrial and real estate· sector. An estimated USD 650 Billion will be required for urban infrastructure over the next 20 years. Housing for seniors has seen increased interest levels from corporates , the hospitality and· healthcare industries over the last few years.

Drivers for Sustainability

GHG emissions, climate change and sustainability are at stake. It is estimated that GHG emissions would increase from 2 billion tons to 6-7 billion tons of CO_2 in 2030.

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system. In order to have a comprehensive plan for sustainable construction, every structure may be thought about based on the following parameters:

Planning, design and specifi- cations based on performance and service life

- Construction Practices
- Material Conservation and Selection
- Demolition and recycling
- Energy Conservation

I. Planning, Design and specifications

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations thereof. To this effect, deeper study of various service life prediction models and calculations are essential. Specifications must to be performance based as opposed to their present form of being prescription based.

II. Construction Practices

It is acknowledged that wastage in the construction industry is as high as 30%. That means at the current valuation, we are talking about the wastage to the tune of Rs.1200 billion or $27 billion in India. This is in itself a large, yet relatively simple and straight forward challenge to tackle.

These wastages are activities that absorb resources, man hours and materials but create no value. Most developed countries have different forums / institutes / researchers / academic institutions for seeking solutions to mitigate these wastages and lean construction practices that emerged have yielded encouraging. Lean construction is a "way to design production systems to minimize waste of materials, time and efforts in order to generate the maximum possible value". While some novel initiatives are being taken in some parts of India to adopt leaner construction practices, India does not have a fully focused lean construction forum. Creation of an industry consortium or lean construction forum may be a good beginning.

III. Material Conservation and Selection

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularly cement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO_2 evolution associated with its manufacture. Raw materials for cement manufacture include non renewable natural resources like lime stone, aggregates, manufactured sands (fine aggregates), and so on. Hence the Indian concrete Industry needs to take a fresh look at these challenges. Some of the problems faced by Indian concrete industry towards achieving sustainability in concrete utilization are as follows:

A. Increase the use of fly ash and other cement substitutes – Studies indicate that by 2020 the economically feasible stocks of prospectable lime stone are going to be scarce. India has a reasonable availability of by-products like fly ash and GGBFS, and while this helps to an extent to lengthen the period of smooth supply of lime stone. India produces approximately 130 million tons of fly ash out of which only 35-40% is utilized. In another ten years, this production is going to double to more than 250 million tons.

B. Use of manufactured sand - Aggregate scarcity is the biggest concern today in India. On environmental grounds, there have been strict dredging restrictions from various local authorities pertaining to taking out sea sand as well as river sand. This position is more prevalent in the states of central and southern part of India. In northern India, especially in the Indo-Gangetic plains, good quality sand (FA) is available in plenty. However, due to the alluvial terrain of this region coarse aggregates are not easily available. This challenge manifests on the opposite form in central & southern India where availability of good quality fine aggregate is a constraint.

Hence the answer is to use manufactured sand which is artificially produced from rock, using a vertical shaft Impactor (VSI). VSI based manufactured sand is made by subjecting rock to operations like impact and cleavage attrition and typically results in consistently good quality products having uniform gradation and shape. This sand contains less organic and inorganic impurities too along with lesser chlorides and sulfates. As a result of lower levels of silt, clay and crusher fines there is a reduction in water demand thus improving strength and durability of the concrete. This also will reduce cement contents. As a result of less cement, fines and water in the concrete, shrinkage cracking can be reduced to enhance durability and thus sustainability. Additionally, there is substantial environmental benefit, in that the natural terrains of river basins are not disturbed too.

However, in India as of today, there are totally convenient misconceptions about manufactured sand. Manufactured sand is mistakenly equated with crushed rock fines (CRF) which is a byproduct of rock crushing to obtain coarse aggregates. CRF is a byproduct of primary and secondary crushing involving use of jaw crushers or cone crushers. Many concrete producers knowingly and unknowingly use CRF in concrete and that includes major ready mixed concrete manufacturers as well. This is obviously done due to acute shortage of river sand and also to overcome the grading deficiencies in river sand. In the days of "use whatever you get" at many places in metropolitan cities, sand received from nearby rivers is very course in nature, with fineness modulus exceeding 4. Such coarse sand is unable to produce a cohesive mix, unless it is supplemented with inert fines such as CRF. This in turn necessitates the use of excess water, creating invariably defective concrete endangering the structure's durability right at its birth. Thus India needs to switch over to using VSI manufactured sand as opposed to CRF, or we risk hampering the growth of the industry will due to under performance of the concrete thereby endangering the sustainability.

C. Use of lightweight aggregates - In India, natural lightweight aggregates are not available. The focus then moved to the use of synthetic light weight aggregate. Lightweight aggregates can be produced by sintering waste product like fly ash. There are several examples of the use of these aggregates in structural lightweight aggregate concrete, with compressive strengths ranging from 20-50 MPa (Clarke J B, Structural lightweight aggregate concrete, Chapman & Hall, 1993 U.K.) The use of sintered fly ash sounds to be a good possibility in India as fly ash is available here in abundance. Yet another reason to use lightweight aggregate is that almost 70 to 80% of India has become prone to earthquake and thus to reduce the self-weight of various structural elements of a building bridge or any other structure can be substantially reduced enhancing economy as well as safety.

D. Demolition and Recycling

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed. It is estimated that the construction industry in India generates about 10-12 million tons of waste annually. Projections for building materials requirement of the housing sector indicate a shortage of aggregates of about 55,000 million cu. m. An additional 750 million cu.m. of aggregates would be required for achieving the targets of the road sector. Recycling of aggregate material from construction and demolition waste may reduce the demand-supply gap in both these sectors. There is also an increasing-acute shortage of dumping grounds and landfills particularly in metropolitan cities. SERC, Ghaziabad had taken up a pilot R&D project on

Recycling and Reuse of Demolition and Construction Wastes in Concrete for Low Rise and Low Cost Buildings in mid nineties with the aim of developing techniques/methodologies for use of recycled aggregate concrete in construction. The experimental investigations were carried out in Mat Science laboratory and Institutes around Delhi/GZB to evaluate the mechanical properties and durability parameters of recycled aggregate concrete made with recycled coarse aggregate collected from different sources. Also, the suitability in construction of buildings has been studied.

The properties of recycled aggregates have been established and demonstrated through several experimental and field projects successfully. It has been concluded that recycled aggregates can be readily used in construction of low rise buildings, concrete paving blocks & tiles, flooring, retaining walls, approach lanes, sewerage structures, sub base course of pavements, drainage layer in highways, dry lean concrete(DLC) etc.

E. Energy Conservation

Since sources of good quality, aggregates are fast depleting, the concrete industry in India needs to prepare itself to use locally available 'marginal' aggregates. The use of local materials helps reduce the carbon footprint associated with transport. Thus, from sustainability angle, the emphasis should be placed on using locally-available aggregates, even if there are small deficiencies in their quality. It has been amply demonstrated that desired properties of concrete can be obtained by intelligent blending of available aggregates with crushed sand, inert fillers, supplementary cementitious materials and chemical admixtures.

Another important issue is that river sand and other construction materials are usually transported by road. India has a well developed and efficient rail and water transport system that need to be leveraged by the construction industry. This is not only more sustainable option but also most cost effective.

Why now is the best time to enter India? Investment opportunities in India

Construction development in residential, retail, commercial and hospitality sectors

- Technologies and solutions for smart sustainable cities and integrated townships.
- Technologies for the promotion of low cost and affordable housing.
- Green building solutions.
- Sustainable and environmentally friendly building materials.
- Training and skill development of construction sector workers.
- Smart cities, Urban water supply, urban sewerage and sewage treatment.
- FDI Policies 100% FDI through the automatic route is permitted in townships, housing, built-up infrastructure, and construction-development projects (including, but not restricted to housing, commercial premises, hotels, resorts, hospitals, educational institutions, recreational facilities, city and regional level infrastructure).
- The major conditions under which foreign investment can be made in this sector are: A minimum capitalization of USD 10 Million is envisaged for wholly-owned subsidiaries and USD.
- 5 Million for joint ventures with Indian partners. The funds will have to be brought in within six months of date commencement of business of the company. 100% FDI is allowed under the automatic route for urban infrastructure areas like urban transport, water supply, sewerage and sewage treatment subject to relevant rules and regulations.
- FDI policy for Industrial Parks 100% FDI is allowed under the automatic route. 'Industrial Park' is a project in which quality infrastructure in the form of plots of developed land or built-up space or a combination with common facilities is developed and made available to all the allottee units for the purposes of industrial activity. FDI in industrial parks is not subject to the conditionalities applicable for construction development projects etc., provided the industrial parks meet with the under-mentioned conditions

Top Reasons to Invest in India

1. Size of India India's GDP is currently US$1.3 trillion, making it the 8th largest economy in the world. However, in PPP terms, which recognizes India's low cost base, the GDP notionally rises to three times this amount (US$3.8 trillion) which places it on a similar size to Japan and, by 2013, it will become the third largest economy in the world (after the USA and China) in PPP terms. However, despite representing 7.5% of Global GDP (on a PPP basis) in 2010, India attracts less than 0.5% of investment inflows. An anomaly which is unlikely to continue for much longer!

2. Economic growth India's economy is currently growing by 8.75% per annum (in 2010) and this GDP growth rate is expected to increase to 9% - 10% per annum for each of the next 10 years. India's GDP will grow five times in the next 20 years, and GDP per capita will almost quadruple.

3. Diversity: The Indian economy offers investors exposure to a wide range of opportunities from consumer goods and pharmaceuticals to infrastructure, energy and agriculture. With its strong services sector (comprising 50% of India's economy), particularly in knowledge-based services (IT, software and business services) India has proved that industrialization and the export of commodities and resources is not the only path to rapid economic development.

4. Demographics: India is one of the youngest countries in the world, with an average age of 25 and likely to get younger. India's working-age population will increase by 240 million over the next 20 years. With a population of 1.2 billion, a strong work ethic, high levels of education, democracy, English language skills and an entrepreneurial culture, India is poised to dominate the global economy in the next 20 years.

5. High Savings: With a savings rate of 37% of GDP, India's domestic savings fuels most of its investment requirements, and only 20% of India's total public debt is sourced from foreign borrowing. With significant investment to be made in upgrading India's poor infrastructure in the next 10 years (estimated to be US$1.7 trillion) India's Government is taking various steps to further encourage private and foreign investments.

6. Domestic economy: India's domestic consumption, generally led by the private sector, has played a significant role in India's growth and is expected to remain firm as more people enter the workforce and the emerging middle classes. India's wealthiest consumers (those earning US$1m or more in PPP terms) will increase by 40 million in the next 10 years! Every sector within India's consumer market is booming, making India far less vulnerable to external shocks and pressures than other emerging markets.

7. A robust financial sector: India has a robust, diversified and well regulated financial system which has allowed it to weather the global financial crisis without any major difficulties and present an image of quality, resilience and transparency. India's banking sector is strong, with top quality balance sheets, high levels of competition (there are around 80 banks in India) and strong corporate governance.

8. Quality of Investment Markets: The Bombay Stock Exchange is the second oldest in the world (165 years) and offers investors a low cost, highly efficient, modern and well governed environment in which to prosper from India's extraordinary economic growth. The Indian stock market has generated investment returns of over 15% per annum for the last 10 years and experts expect this rate to increase in the next decade. More significantly perhaps, Indian investors have doubled.

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Member Country of

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21st AsiaConstruct Conference

Sustainable Construction Policy and Market

24-25 November, 2016

Hotel Mielparque Tokyo, Japan

COUNTRY REPORT

INDIA

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EXECUTIVE SUMMARY

- This report presents the overview of the Indian Economy & the Indian Construction Industry.
- Macro economic parameters pertaining to the Indian Economy & the Construction Industry are also presented.
- Long term agenda for the Indian Construction Industry is highlighted through the 11th & 12th Five Year Plans.
- Further short term policy issues related to Construction Industry are highlighted through the Union Budgets.
- This report also highlights the administration & regulation of the Indian Construction Industry one of the fastest
- growing construction industry internationally.
- Key areas of construction opportunity are discussed

Economic Overview

The Indian economy has emerged as a bright spot in the world economy, becoming one of the fastest growing large economies in the world. The 7.6 per cent growth in the GDP at constant market prices in 2015-16, according to the advanced estimates of the Central Statistics Office, compares favorably with growth in the previous three years; 7.2 per cent in 2014-15, 6.6 per cent in 2013-14 and 5.6 per cent in 2012-13. It is noteworthy that this growth is estimated to be achieved despite subdued global demand that dampened India's exports significantly, and two consecutive below-normal monsoons that impacted farm output and productivity.

GDP Growth

As per the Advanced Estimates released by the Central Statistics Office, the economy is estimated to grow at 7.6 per cent in 2015-16, higher than growth of 7.2 per cent achieved in 2014-15.

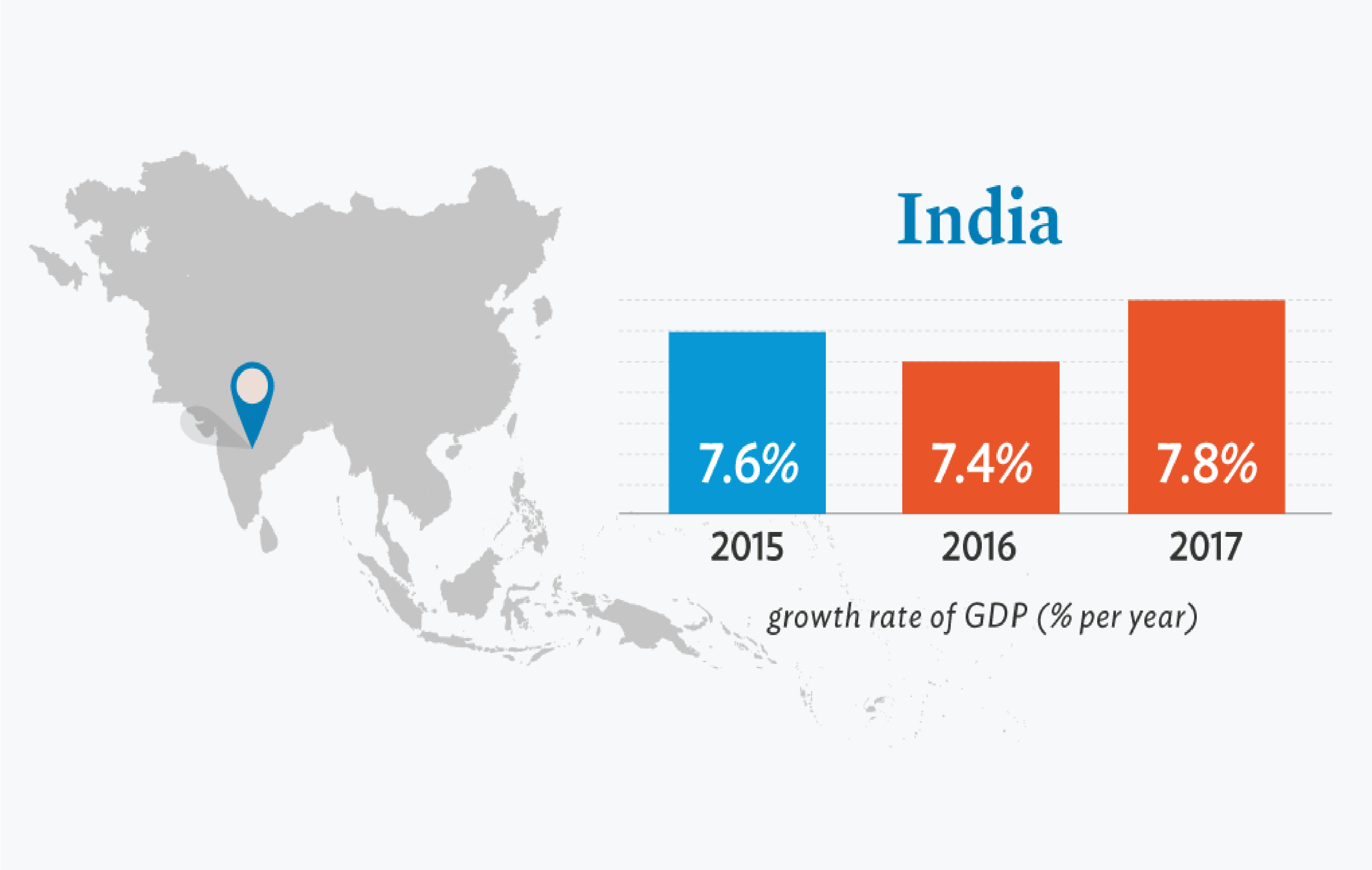
Cont….

GDP Growth

The growth in agriculture, industry and services is estimated at 1.1 per cent, 7.3 per cent and 9.2 per cent in 2015-16 as opposed to (-) 0.2 per cent, 5.9 per cent and 10.3 per cent respectively in 201415. This shows a pick-up in industrial growth, driven by manufacturing which is estimated to grow at 9.5 per cent (in 2015-16), as compared to 5.5 per cent registered in 2014-15. The growth in agriculture remained low on account of second consecutive year of subdued monsoon.

GDP growth during April-December 2015 (first 3 quarters) was 7.5 per cent, compared to 7.4 per cent in the same time period in 2014-15. From the demand angle, the growth in private final consumption expenditure at 7.6 per cent in 2015- 16 has been the major driver of growth. The growth of fixed investment improved from 4.9 per cent in 2014- 15 to 5.3 per cent in 2015-16. The exports and imports are both estimated to decline by 6.3 per cent in 2015- 16, the former mainly on account of subdued global demand and the latter largely reflecting the decline in international petroleum.

Growth rate GDP



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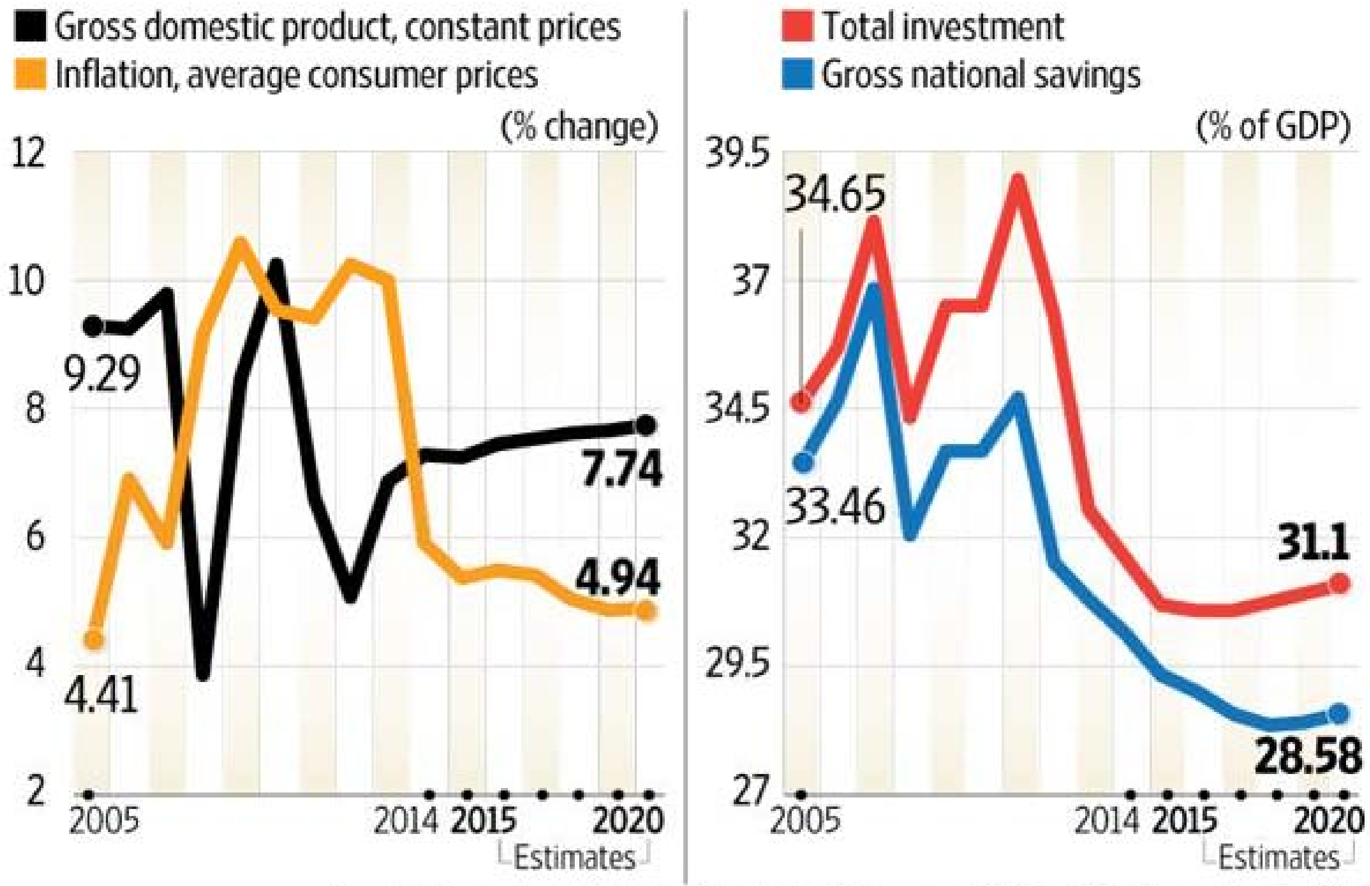

Source: International Monetary Fund, World Economic Outlook Database, October 2015

Inflation

The year 2015-16 continues to experience moderation in general price level. The significant decline in the price of the Indian basket of crude oil, through the direct and second round effects, partly contributed to the decline in general inflation for the second successive year. The headline inflation, based on the CPI (combined) series, dipped to 4.9 per cent during 2015-16 (April-January), as against 5.9 per cent in the year 2014-15. The decline in core inflation was largely on account of the decline in the inflation in housing (rent), transport, communication, education and other services. The headline WPI inflation.

Foreign Direct Investment

Foreign Direct Investment into India grew 8 percent & estimated to require about USD 1 trillion during the 12th Five-Year Plan period, to fund infrastructure projects.

The highest FDI came in services, followed by automobiles, telecommunications, pharmaceuticals and construction development. The FDI inflow was $6.23 Billion (2012-2013), $9.06 Billion (2013-2014), $8.20 Billion (2014-2015) and $1.39 Billion (2015-2016(first two months). Singapore led the FDI inflows into India with USD 5.98 billion, followed by Mauritius (USD 4.85 billion), the UK (USD 3.21 billion) and the Netherlands (USD 2.27 billion).

Foreign Institutional Investment

The net investments by FIIs into Indian equity markets since the beginning of 2014 have crossed USD 5 billion over Rs 30,000 crore), while the same for debt markets also stands near USD 5 billion (about Rs 29,000 crore)- taking the total to close to Rs 60,000 crore. This includes net investments of about Rs 1,500 crore so far in April. This is despite a net outflow of about Rs 7,000 crore from debt markets, as equity markets have seen a net inflow of over Rs 8,500 crore this month till April 25, the latest trading session.

They invested Rs 20,077 crore in Indian stocks in March, compared with Rs 1,404 crore in February and Rs 714 crore in January. The strong inflows in the recent months have taken the cumulative net investments of FIIs into India to close to USD 197 billion, while their investments in rupee terms is a bit away from Rs 10 lakh crore level.

Trade

India's exports grew by 3.98 percent to USD 312.35 billion in FY 2013-14 while imports dipped by 8.11 percent during the period.

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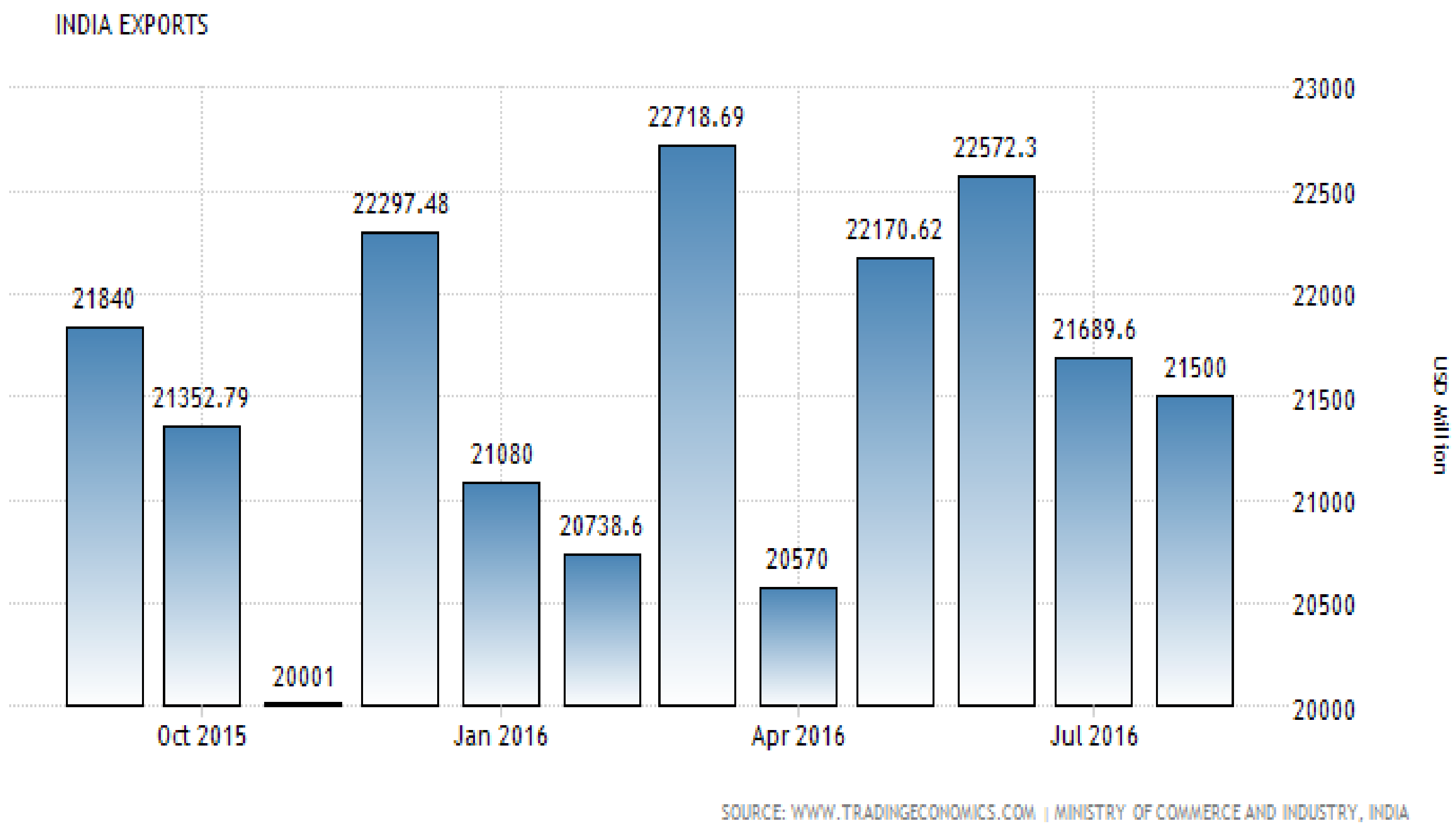

Imports declined to USD 450.94 billion, narrowing the trade deficit to USD 138.59 billion in the last fiscal.

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The household sector is the main contributor to the domestic savings, but the public sector is also expected to contribute positively to savings reflecting a significant turnaround compared with past experience. The projected current account deficit could easily be higher because of the likely continuance of high oil prices but even so, it should remain sustainable given the likely availability of foreign inflows.

The strategy for achieving faster growth with greater inclusiveness involves several interrelated components. These are: (i) a continuation of the policies of economic reform which have created a buoyant and competitive private sector capable of benefiting from the opportunities provided by greater integration with the world. (ii) a revival in agricultural growth which is the most important single factor affecting rural prosperity, (iii) improved access to essential services in health and education (including skill development) especially for the poor, which is essential to ensure inclusiveness and also to support rapid growth, (iv) a special thrust on infrastructure development which is a critical area for accelerating growth,

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(v) environmental sustainability which is becoming increasingly important, (vi) special attention to the needs of disadvantaged groups, and (vii) good governance at all levels, Central, state, and local.

As in most market economies, the dominant impulse for growth will come from the private sector. India is fortunate in having a strong private sector capability ranging from agriculture, which is entirely dependent on private farmers, most of whom have modest land holdings, through small and medium entrepreneurs in industry and services to larger domestic corporate entities, many of which benefit from FDI to varying degrees. The Eleventh Plan must ensure a policy environment that is supportive of this vibrant and globalized private sector which has an important contribution to make in India's future development. Emphasizing the importance of the private sector is not to downplay the role of the government. On the contrary, apart from the usual role of government in providing a stable macroeconomic policy, the Eleventh Plan envisages a very large role for public policy in a number of sectors.

Size of Indian Household by Profile (Millions)

	2014	2015	2016
Population (million)	1,276[4]	1,293#	1,310"
GDP (US$ billion)	2,043	2,091	2,289"
Real GDP growth (%)	7.2	7.3	7.5"
GDP per capita (US$)	1,601[4]	1,617[4]	1,747"
Inflation (%)	5.9	4.9	5.3*
Exchange rate (per US$, period average)	61.02	64.1	69.37**
Exports (US$ billion)	328.4	259.7*	270"
Imports (US$ billion)	472.4	390.1*	404**
Export growth (%)	+2.5	-2.1*	+3.8"
Import growth (%)	-2.1	-17.4*	+3.6"

Sources: CEIC, IMF, EIU, WTO, RBI and India's Ministry of Commerce and Industry # IMF Estimate
EIU Estimate, * *EIU Forecasts

Table 2. India: Selected Social and Economic Indicators, 2011/12–2016/17 1/

I. Social Indicators

GDP (2014/15)		**Poverty (percent of population)**	
Nominal GDP (in billions of U.S. dollars):	2,051	Headcount ratio at $1.90 a day (2011):	21.3
GDP per capita (U.S. dollars):	1,584	Undernourished (2011):	15.4
Population characteristics (2014/15)		**Income distribution (2011, WDI)**	
Total (in billions):	1.30	Richest 10 percent of households:	30.0
Urban population (percent of total):	32	Poorest 20 percent of households:	8.2
Life expectancy at birth (years):	66.0	Gini index (2011):	33.6

II. Economic Indicators

	2011/12	2012/13	2013/14	2014/15	2015/16 Proj.	2016/17 Proj.
Growth (in percent)						
Real GDP (at market prices)	6.6	5.1	6.9	7.3	7.3	7.5
Industrial production	2.9	1.1	-0.1	2.8	...	...
Prices (percent change, period average)						
Consumer prices - Combined	9.5	9.9	9.4	5.9	5.0	5.3
Saving and investment (percent of GDP)						
Gross saving 2/	34.7	31.5	30.8	30.2	29.8	29.6
Gross investment 2/	38.9	36.3	32.5	31.6	31.1	31.1
Fiscal position (percent of GDP) 3/						
Central government deficit	-6.1	-5.1	-4.6	-4.2	-4.2	-4.0
General government deficit	-8.1	-7.4	-7.6	-7.0	-7.0	-7.0
General government debt 4/	68.1	67.5	65.8	66.1	66.3	65.7
Structural balance (% of potential GDP)	-8.4	-7.3	-7.5	-6.9	-6.9	-6.9
Structural primary balance (% of potential GDP)	-3.9	-2.8	-2.8	-2.2	-2.3	-2.1
Money and credit (y/y percent change, end-period)						
Broad money	13.5	13.6	13.4	10.8	11.1	13.6
Credit to private sector	17.8	13.5	13.7	9.2	11.1	13.7
Financial indicators (percent, end-period)						

91-day treasury bill yield (end-period) 5/	9.0	8.2	8.9	8.3	7.2	...
10-year government bond yield (end-period) 5/	8.6	8.0	8.9	7.8	7.7	...
Stock market (y/y percent change, end-period) 6/	-10.5	8.4	18.7	24.9	-9.1	...
External trade 7/						
Merchandise exports (in billions of U.S. dollars)	309.8	306.6	318.6	316.5	277.9	280.1
(Annual percent change)	20.9	-1.0	3.9	-0.6	-12.2	0.8
Merchandise imports (in billions of U.S. dollars)	499.5	502.2	466.2	461.5	429.8	449.3
(Annual percent change)	30.3	0.5	-7.2	-1.0	-6.9	4.5
Terms of trade (G&S, annual percent change)	-6.1	-0.3	2.3	3.5	7.0	1.8
Balance of payments (in billions of U.S. dollars)						
Current account balance	-78.2	-88.2	-32.4	-26.7	-27.7	-34.8
(In percent of GDP)	-4.2	-4.8	-1.7	-1.3	-1.3	-1.5
Foreign direct investment, net	22.1	19.8	21.6	31.3	34.2	37.4
Portfolio investment, net (equity and debt)	17.2	26.9	4.8	42.2	-6.8	12.4
Overall balance	-12.8	3.8	15.5	61.4	22.7	40.8
External indicators						
Gross reserves (in billions of U.S. dollars, end-period)	294.4	292.0	304.2	341.6	364.3	405.1
(In months of imports) 8/	6.1	6.4	6.7	7.9	8.0	7.9
External debt (in billions of U.S. dollars, end-period)	360.8	409.4	446.3	475.2	513.3	550.4
External debt (percent of GDP, end-period)	19.6	22.3	23.8	23.2	24.0	23.6
Of which: Short-term debt 9/	7.5	9.0	9.8	9.0	9.6	9.7
Ratio of gross reserves to short-term debt (end-period) 8/	2.1	1.8	1.7	1.9	1.8	1.8
Debt service ratio 10/	6.0	5.9	5.9	7.5	7.1	7.8
Real effective exchange rate (percent change) 11/						
(based on annual average level)	-3.4	-2.3	-2.4	7.3	6.0	...
Exchange rate (rupee/U.S. dollar, end-period) 5/	50.3	54.4	61.0	62.6	66.8	...
Memorandum item (in percent of GDP)						
Fiscal balance under authorities' definition	-5.8	-4.9	-4.3	-4.0	-3.9	-3.8

Sources: Data provided by the Indian authorities; CEIC Data Company Ltd; Bloomberg L.P.; World Bank, *World Development Indicators*; and IMF staff estimates and projections.

Table 7. India: Macroeconomic Framework, 2011/12–2020/21 1/

				Prel.	Projections					
	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
Growth (percent change)										
Real GDP (at factor cost)	6.9	4.9	6.6	7.2	7.3	7.5	7.5	7.6	7.7	7.7
Non-agricultural sector	7.0	5.0	4.7	7.6	9.2	8.2	8.3	8.4	8.4	8.4
Prices (percent change, period average)										
Consumer prices	8.1	9.9	9.4	5.9	5.0	5.3	5.3	5.5	5.3	5.0
Saving and investment (percent of GDP)										
Gross saving 2/	34.7	31.5	30.8	30.2	29.8	29.6	29.6	30.3	30.8	31.4
Gross investment 3/	38.9	36.3	32.5	31.6	31.1	31.1	31.6	32.5	33.1	33.8
Money and credit (y/y percent change, end-period)										
Broad money	13.5	13.6	13.4	10.8	11.1	13.6	15.4	15.5	15.2	14.7
Credit to private sector	17.8	13.5	13.7	9.5	11.1	13.7	16.6	17.0	17.0	16.3
Fiscal position (percent of GDP)										
Central government balance 4/	-6.1	-5.1	-4.6	-4.2	-4.2	-4.0	-3.9	-3.9	-3.7	-3.6
General government balance 4/	-8.1	-7.4	-7.6	-7.0	-7.0	-7.0	-6.8	-6.6	-6.2	-6.0
General government debt 5/	68.1	67.5	65.8	66.1	66.3	65.7	64.9	64.1	63.0	61.8
External trade (percent change, ~~BOP basis~~)										
Merchandise exports (in volume terms)	20.9	-1.0	3.9	5.8	0.8	4.9	6.5	8.5	8.2	8.0
Merchandise imports (in volume terms)	30.3	0.5	-7.2	8.3	13.0	10.0	7.5	7.3	7.3	7.3
Balance of payments (in billions of U.S. dollars)										
Current account balance	-78.2	-88.2	-32.4	-26.7	-27.7	-34.8	-52.1	-62.1	-71.4	-79.6
(in percent of GDP)	-4.2	-4.7	-1.7	-1.3	-1.3	-1.5	-2.0	-2.2	-2.3	-2.4
Foreign direct investment, net	22.1	19.8	21.6	31.3	34.2	37.4	40.7	44.4	48.8	53.6
Portfolio investment, net (equity and debt)	17.2	26.9	4.8	42.2	-6.8	12.4	26.2	28.6	31.4	34.5
Overall balance	-12.8	3.8	15.5	61.4	22.7	40.8	41.1	40.3	42.1	46.3
External indicators										
Gross reserves (in billions of U.S. dollars, end-period)	294.4	292.0	304.2	341.6	364.3	405.1	446.3	486.6	528.7	575.0
(in months of imports) 6/	6.1	6.4	6.7	7.9	8.0	7.9	7.9	7.9	7.9	7.9
External debt (in billions of U.S. dollars, end-period)	360.8	409.4	446.3	475.2	511.2	544.2	584.2	628.5	678.0	733.4
External debt (percent of GDP, end-period)	19.2	22.0	23.8	23.2	23.9	23.3	23.0	22.7	22.2	21.9
Of which : short-term debt 7/	7.4	8.9	9.8	9.0	9.6	9.7	9.9	10.2	10.3	10.4
Ratio of gross reserves to short-term debt (end-period	2.1	1.8	1.7	1.9	1.8	1.8	1.8	1.7	1.7	1.6
Debt service (percent of current account receipts)	6.0	5.9	5.9	7.5	7.1	7.8	7.9	8.3	8.5	8.3
GDP in billion US$	1,880.1	1,858.7	1,876.8	2,051.2	2,137.4	2,336.6	2,544.3	2,773.9	3,047.4	3,352.1

Main Macroeconomic Indicators

Table 1: Key Macroeconomic Indicators: 2003-14

(Percent)

Year	Real GDP Growth (factor cost)	Real GDP Growth (market prices)	GFD/GDP (Centre)	CAB/GDP	Non-oil CAB/GDP	WPI Inflation	CPI Inflation	REER Index @	Real Policy Rate #
2003-04	8.0	7.9	4.3	2.3	5.0	5.5	3.9	96.8	-0.4
2004-05	7.1	7.9	3.9	-0.3	2.8	6.5	3.8	99.9	-0.6
2005-06	9.5	9.3	4.0	-1.2	2.7	4.4	4.4	102.7	1.7
2006-07	9.6	9.3	3.3	-1.0	3.0	6.6	6.7	101.0	3.1
2007-08	9.3	9.8	2.5	-1.3	2.9	4.7	6.2	108.6	2.2
2008-09	6.7	3.9	6.0	-2.3	3.1	8.1	9.1	97.8	0.9
2009-10	8.6	8.5	6.5	-2.8	1.5	3.8	12.2	95.3	1.5
2010-11	8.9	10.3	4.8	-2.7	1.1	9.6	10.5	103.5	2.0
2011-12	6.7	6.6	5.7	-4.2	1.1	8.9	8.4	100.7	1.0
2012-13	4.5	4.7	4.9	-4.7	1.1	7.4	10.4	96.3	1.9
2013-14	4.9	4.6	4.6	-2.3 &					

Note:

@: 36-currency real effective exchange rate index (2004-5=100).

#: Nominal effective policy rate less 12-month moving average of non-manufactured products WPI inflation.

&: April-December.

Source: Reserve Bank of India; Central Statistical Organization.

Table 6: Savings and Investment

(Percent to GDP)

Item	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
1 Household sector	23.1	23.6	23.5	23.2	22.4	23.6	25.2	23.1	22.8	21.9
a. Financial saving	11.0	10.1	11.9	11.3	11.6	10.1	12.0	9.9	7.0	7.1
Financial assets	13.7	13.8	15.8	17.8	15.5	12.9	15.3	13.9	10.6	10.8
of which: Bank deposits	5.5	5.4	7.2	10.0	7.8	7.4	6.1	7.0	5.9	5.9
Financial liabilities	2.5	3.7	5.0	6.6	3.8	2.9	3.1	3.6	3.1	3.2
b. Saving in physical assets	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.2	15.8	14.8
2 Private corporate sector	4.6	6.6	7.5	7.9	9.4	7.4	8.4	8.0	7.3	7.1
3 Public sector	1.3	2.3	2.4	3.6	5.0	1.0	0.2	2.6	1.2	1.2
of which: Government administration and quasi government bodies	-3.3	-2.3	-2.1	-1.0	0.5	-2.8	-3.1	-0.5	-2.0	-1.9
4 Total domestic savings (1+2+3)	29.0	32.4	33.4	34.6	36.8	32.0	33.7	33.7	31.3	30.1
5 Gross capital formation	26.1	32.5	34.3	35.9	38.0	35.5	36.3	36.5	36.4	34.7
a. Public sector	6.6	7.4	7.9	8.3	8.9	9.4	9.2	8.4	7.7	8.1
b. Private corporate sector	6.5	10.3	13.6	14.5	17.3	11.3	12.1	12.8	10.1	9.2
c. Household sector	12.1	13.4	11.7	11.9	10.8	13.5	13.2	13.2	15.8	14.8
d. Valuables	0.9	1.3	1.1	1.2	1.1	1.3	1.8	2.1	2.7	2.6
6 Gross fixed capital formation	24.5	28.7	30.3	31.3	32.9	32.3	31.7	30.9	31.8	30.4
7 Change in stocks	0.7	2.5	2.8	3.4	4.0	1.9	2.8	3.5	1.9	1.7
8 Errors & omissions	0.7	0.4	0.4	0.2	0.1	-1.2	0.2	0.0	-0.9	0.1
9 Total investment (5+8 = 6+7+8+5d)	26.8	32.8	34.7	35.7	38.1	34.3	36.5	36.5	35.5	34.8
Memo:										
10 Saving-Investment Balance, net (4-9)	2.2	-0.4	-1.2	-1.1	-1.3	-2.3	-2.8	-2.8	-4.2	-4.7
a. Household financial savings, net	11.0	10.1	11.9	11.3	11.6	10.1	12.0	9.9	7.0	7.1
b. Private corporate sector, net	-1.9	-3.8	-6.1	-6.6	-7.9	-3.9	-3.8	-4.8	-2.8	-2.1
c. Public sector, net	-5.3	-5.1	-5.5	-4.7	-3.9	-8.5	-9.0	-5.8	-6.5	-6.9
11 Household financial savings (net) available for private corporate sector (10a + 10c)	5.7	5.0	6.3	6.5	7.8	1.7	3.0	4.1	0.5	0.2

Source: Central Statistical Organization; Reserve Bank of India.

Table 7: Industrial Growth

(Percent)

Year	Index of Industrial Production: Manufacturing	Index of Industrial Production: General	Annual Survey of Industries @: Output	Annual Survey of Industries @: Net Value Added	Annual Survey of Industries @: Gross Value Added	GDP at constant prices: Manufacturing	GDP at constant prices: Industry #
2000-01	5.4	4.9	-0.1	-10.3	-8.4	7.3	6.0
2001-02	2.9	2.8	2.0	-1.3	0.9	2.3	2.6
2002-03	6.0	5.8	14.4	16.3	13.9	6.9	7.2
2003-04	7.4	7.0	7.8	11.5	9.5	6.3	7.3
2004-05	13.2	11.7	22.3	20.6	17.7	7.4	9.8
2005-06	10.3	8.6	11.4	17.2	15.0	10.1	9.7
2006-07	15.0	12.9	19.4	20.1	19.4	14.3	12.2
2007-08	18.4	15.5	10.0	16.1	14.6	10.3	9.7
2008-09	2.5	2.5	11.1	3.2	4.2	4.3	4.4
2009-10	4.8	5.3	11.6	9.7	11.5	11.3	9.2
2010-11	9.0	8.2	18.5	12.6	12.0	8.9	7.6
2011-12	3.0	2.9	15.3	10.7	10.4	7.4	7.8
2012-13	1.2	1.0	n.a	n.a	n.a	1.1	1.0
Averages							
1980s	7.4	7.6	8.1	7.3	7.9	6.2	5.8
1990s	6.5	6.3	7.3	6.8	6.9	5.8	5.7
2000s	8.6	7.7	11.0	10.3	9.8	8.0	7.8
2003-08	12.8	11.1	14.2	17.1	15.2	9.7	9.7
2008-12	4.8	4.7	14.1	9.1	9.5	8.0	7.2

@: Growth rates are based on ASI data deflated by WPI-Manufactured Products index.

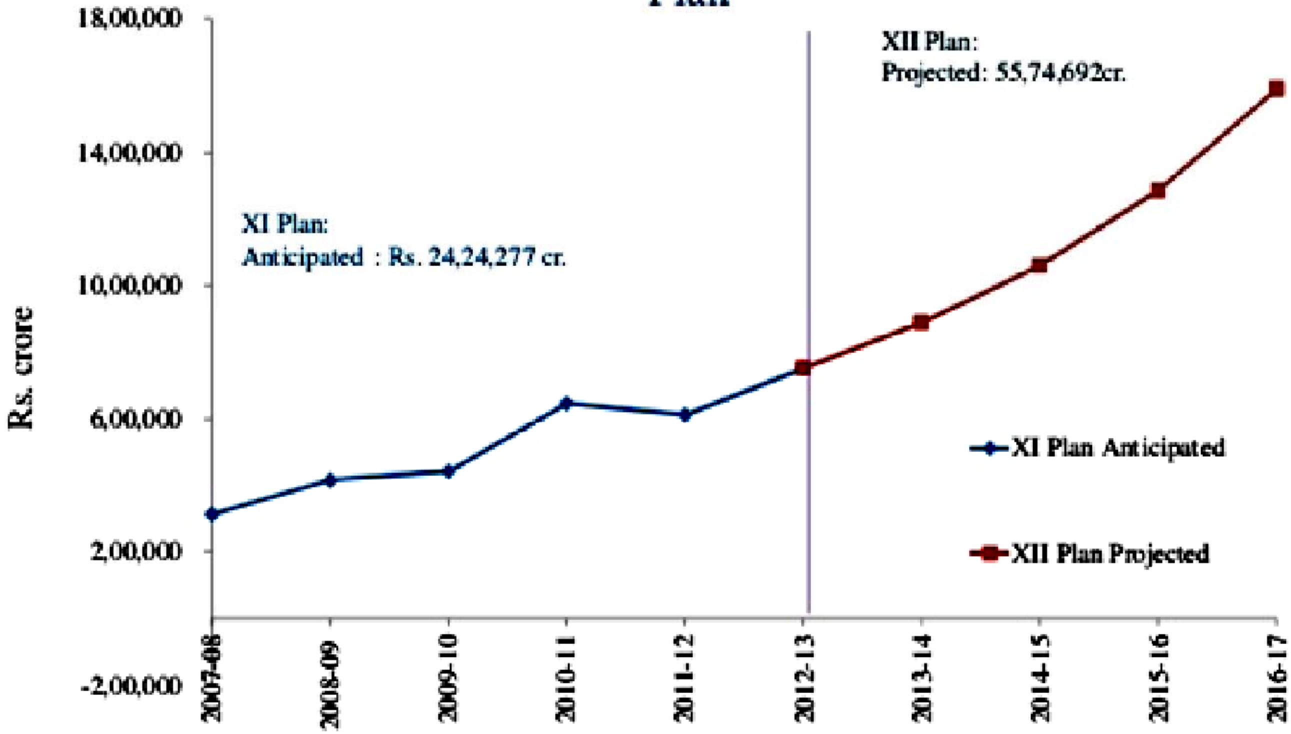
#: including construction.

Source: Central Statistical Organization.

Broad Macro-Economic Parameters - Previous Plans and Targets for Twelfth Plan

		IXth Plan	Xth Plan	XI th Plan	XII th Plan	
					9.0	9.5
1	Investment Rate (Gross Capital Formation adjusted for errors and omissions)	24.6	31.8	36.4	38.7	41.4
2	Fixed Investment *of which*	23.2	28.4	30.9	33.5	35.5
	Household Sector	9.9	11.7	11.6	12.0	12.0
	Private Corporate Sector	6.6	9.6	11.0	12.4	13.5
	Public Sector	6.6	7.1	8.3	9.1	10.0
3	Savings Rate *of which*	23.7	31.7	34.0	36.2	38.9
	Household Sector	20.5	23.2	23.2	24.0	24.5
	Private Corporate Sector	4.0	6.4	8.2	8.5	9.2
	Public Savings *of which*	-0.8	2.0	2.5	3.7	5.2
	Govt. Admin.	-4.9	-2.6	-1.3	-0.5	0.8
	Public Enterprises	4.0	4.6	3.8	4.0	4.5
4	Current Account Balance *of which*	-0.6	0.0	-2.4	-2.5	-2.5
	Trade Balance	-2.6	-2.5	-5.0	-4.5	-4.5
	Capital Account Balance	2.1	3.5	3.8	5.0	5.0
5	WPI Inflation Rate	4.9	5.0	6.0	4.5-5.0	5.0-5.5

Projected Investment in Infrastructure: 12th Plan



9

Economy in 2016

India is currently one of the world's most attractive investment destinations. With the opening up of foreign direct investment (FDI) in several sectors, the country is an eye-catching destination for overseas investors. The relaxation of norms by the government has also created a vast opportunity for foreign players, who are competing for a greater role in the Indian market.

Sectors projected to do well in the coming years include automotive, technology, life sciences and consumer products. India made its entry into the club of the top 15 ultra-high-net-worth households (more than US$ 100 million in private financial wealth) in 2013 obtaining the 13th rank with 284 such households.

Further, there has been marked improvement in the hiring scenario in the country, Index for Growth of Economy accelerated to 7.6% in 2015-16.

Furthermore, the US$ 1.2 trillion investment that the government has planned for the infrastructure sector in the 12th Five-Year Plan is set to help in further improving the export performance of Indian companies and the Indian growth story, which will consequently improve the overall Indian economy.

CONTD..

Market size

- India holds a 6.4 percent share of global gross domestic product (GDP) on purchasing power parity (PPP) basis and presently is the third biggest economy in the world in terms of PPP, according to a World Bank report.

- The industrial sector in India looks positive as industrial production grew at a 13-month high rate of 3.4 per cent in April 2014, driven mainly by electricity generation and manufacturing, as indicated by the Index of Industrial Production (IIP).

- The trade and external sector showed improvement as exports posted double-digit growth in May, 2014, as shipments of key commodities registered strong increases.

- **India is all set to become the world's third largest economy by the year 2030.**

Key Developments

- Indian equities markets have seen foreign institutional investors (FII) net inflow of US$ 2.3 billion in May 2014, taking the total to US$ 7.8 billion so far in 2014. India is still the most loved market in this region. Some of major developments and investments in the recent past are as follows:
- Overseas investors have invested around US$ 20.4 billion in the Indian market in the first half of 2014, mainly on hopes of a stable and reform-oriented government at the Centre.
- FIIs have helped in pushing up the benchmark BSE sensex by over 20 per cent in the first six months of the year.
- Six qualified institutional placements (QIPs) launched in India during April-June 2014 raised Rs12,151 crore (US$ 2.01 billion) compared with Rs 1,222 crore (US$ 201.9 million) in the same quarter in 2013.

Source: Central Statistical Organization

CONTD..

Key Developments

- Venture capital (VC) investments in India surged during the first half of 2014, reflecting optimism about India's entrepreneurial ecosystem. Investments in early stage companies and startups grew nearly 40 per cent as compared with the same period in 2013.
- Private equity (PE) firm SAIF Partners plans to make up to eight investments in FY 15 across different sectors, in an effort to significantly ramp up its investment pace in India and plan for more exits through the public market.
- Sovereign wealth funds (SWFs) and overseas pension funds plan to invest in India, three sovereign funds from West Asia have invested over US$ 5 billion in the past eight months.

Source: Central Statistical Organization

Sector-wise Investment in Infrastructure:

12th Plan

Sectors	Rs. crore	US $ Billion	Share (%)
Electricity (incl. NCE)	1,820,292	350.1	32.7
Roads & Bridges	914,536	175.9	16.4
Telecommunications	943,899	181.5	16.9
Railways (incl. MRTS)	643,379	123.7	11.5
Irrigation (incl. Watershed)	504,371	97.0	9.0
Water Supply & Sanitation	255,319	49.1	4.6
Ports (including inland waterways)	197,781	38.0	3.5
Airports	87,714	16.9	1.6
Storage	148,933	28.6	2.7
Oil & Gas Pipelines	58,441	11.2	1.0
Grand Total	5,574,663	1072.1	100.0

US$ 1 = Rs. 52 at nominal Prices[10]

Government Initiatives

The Government of India has taken several initiatives to improve the Indian economy, which has been responsible for a number of positive outcomes.

India's foreign exchange reserves rose by US$ 857 million for the week ending on June 27, 2014, to touch US$ 315.78 billion, while foreign currency assets rose by US$ 851 million to reach US$ 288.81 billion.

The Ministry of Development of North Eastern Region (DoNER) has sanctioned seven new projects worth Rs 87.88 crore (US$ 14.52 million) in FY 15, which include projects for road construction, irrigation scheme and renewal of electric installations.

In order to better the ways of doing business, the Government of India has extended the validity period of an industrial licence to three years from two years, with a provision for further extension by two years.

Road Ahead- The total value of India's listed companies is expected to cross the US$ 1.5 trillion mark within the next 12 months as India enters the top 10 club of countries by market capitalisation.

Source: *Economic Survey, 2010, # PM Economic Advisory Council's projections, e: estimate*

CONSTRUCTION INDUSTRY: SUB-SECTORS

- India could become the world's seventh biggest nation in terms of private wealth, with a 150 per cent increase in total, from US$ 2 trillion in 2013 to US$ 5 trillion by 2018, as per a recent study by the Boston Consulting Group (BCG).

- Government of India's initiatives for improving trade and infrastructure can go a long way in improving the country's overall economy and make it a force to reckon with in the global economic scenario.

- ***References:*** *Press Information Bureau (PIB), Media Reports, Department of Industrial Policy and Promotion (DIPP), Securities and Exchange Board of India (SEBI).*

CONTD..

CONSTRUCTION INDUSTRY: SUB-SECTORS

- **Global Prospects**
- Our 2016 India attractiveness survey finds that India remains one of the top global destinations for foreign investment. The main drivers are its solid domestic market, an educated workforce and competitive labour.

- India accounts for more than 20% of total capital allocated for the developing world. The infrastructure, consumer products, industrials, technology, media and telecom (TMT), and life-sciences sectors are set to drive India's growth over the next two years.

- Investors are considering India for both their services and manufacturing supply chain. With the services sector forming the backbone of India's economy, the Indian Government is placing more weight on strengthening the country's manufacturing ecosystem.

Key features of India’s attractiveness

- India was the fourth-largest recipient of FDI in terms of projects started in 2012, and in terms of value, it accounted for 5.5% of global FDI.

- Increased interest from the Middle East and Southeast Asia
- Investors across the world recognize India’s FDI potential. Between 2007 and 2012, the US invested the most in India, with 30.2% of projects, followed by Japan with 10.4%.

- Seven of the top 10 investors in India during 2007-12 were from Western Europe, led by the UK and followed by Germany and France. India's pool of business partners is growing, with a striking 123.3% rise in the number of projects from the Middle East in 2012, mostly in financial services. Southeast Asian countries are also expanding their investment in the country, with projects mainly originating from Singapore, Malaysia and Thailand.

Top FDI destinations

Actual FDI performance show that metropolitan cities, such as Mumbai, Bengaluru, the National Capital Region (NCR), Chennai and Pune, remain key attractions.

Forty-three percent of respondents could not think of any city other than the main metropolitan areas. Among those who responded, Ahmedabad was the preferred choice in emerging cities, followed by Jaipur, Chandigarh, Coimbatore and Surat.

India’s global market appeal lies in Competitive labour costs, Lucrative domestic market, Skilled workforce.

Strong management and business education system Improving telecommunications infrastructure burgeoning middle class growing domestic consumption levels. In order to realize its FDI potential, India needs to improve its operating environment and develop infrastructure. Other priorities should include boosting production, improving the taxation system, easing FDI regulations and increasing.

Quarterly GVA at basic prices for Q1 2016-17 from 'Construction' sector grew by 1.5 percent as compared to growth of 5.6 percent in Q1 2015-16. Key indicators of construction sector, namely, production of cement and consumption of finished steel registered growth rates of 5.7 per cent and 0.3 percent, respectively

GDP at Factor Cost, Constant and Current Prices, Constant and Current Market Prices with Per Capita Value (in Rs. Crore)

Financial Year	GDP at Constant 2004-05 Prices	GDP at Constant 2004-05 Prices per Capita	GDP at Factor Cost Current Prices	GDP at Factor Cost per Capita	GDP at Current Market Prices	GDP at Current Market Prices per Capita	Final Consumption Expenditure at Current Prices - India	Final Consumption Expenditure at Current Prices - Private	Gross Capital Formation at Current Prices	Gross Fixed Capital Formation at Current Prices	GDP at Constant 2004-05 Market Prices	GDP at Constant 2004-05 Market Prices per Capita
2000-01	2,348,481	2,305	2,000,743	1,963	2,177,413	2,137	1,680,061	1,406,661	528,299	495,196	2,559,711	2,512
2001-02	2,474,962	2,380	2,175,260	2,092	2,355,845	2,265	1,822,861	1,531,672	571,146	590,240	2,683,190	2,580
2002-03	2,570,935	2,435	2,343,864	2,220	2,536,327	2,402	1,921,867	1,620,293	627,743	601,120	2,785,258	2,638
2003-04	2,775,749	2,589	2,625,819	2,450	2,841,503	2,651	2,096,088	1,771,305	762,416	697,478	3,004,190	2,802
2004-05	2,971,464	2,729	2,971,464	2,729	3,242,209	2,977	2,272,026	1,917,508	1,064,041	931,028	3,242,209	2,977
2005-06	3,253,073	2,941	3,390,503	3,066	3,693,369	3,339	2,554,321	2,152,702	1,279,754	1,120,292	3,543,244	3,204
2006-07	3,564,364	3,177	3,953,276	3,523	4,294,706	3,828	2,920,144	2,476,667	1,531,433	1,343,774	3,871,489	3,451
2007-08	3,896,636	3,424	4,582,086	4,026	4,987,090	4,382	3,353,748	2,840,727	1,900,762	1,641,673	4,250,947	3,735
2008-09	4,158,676	3,604	5,303,567	4,596	5,630,063	4,879	3,864,617	3,249,284	1,931,380	1,821,099	4,416,350	3,827
2009-10	4,516,071	3,860	6,108,903	5,221	6,477,827	5,537	4,478,717	3,707,566	2,363,132	2,055,772	4,790,847	4,095
2010-11	4,918,533	4,163	7,248,860	6,112	7,784,115	6,563	5,250,459	4,360,323	2,841,457	2,407,069	5,282,386	4,454
2011-12	5,247,530	4,366	8,391,691	6,981	9,009,722	7,496	6,167,791	5,141,896	3,200,633	2,861,062	5,633,050	4,686
2012-13	5,482,111	4,505	9,388,876	7,715	10,113,281	8,310	6,961,191	5,772,059	3,521,399	3,071,543	5,899,847	4,848
2013-14 (P)	5,741,791	4,657	10,472,807	8,494	11,355,073	9,209	7,826,378	6,485,037		3,211,114	6,195,842	5,025

Source : Central Statistical Organisation (CSO) - 31/05/2014

GDP at Constant, Current & Market Prices with value of Consumption Expenditure etc. (in Rs. Crore)

Financial Year	GDP at Constant 2004-05 Prices	GDP at Factor Cost Current Prices	GDP at Constant 2004-05 Market Prices	GDP at Current Market Prices	Final Consumption Expenditure at Constant 2004-05 Prices - India	Final Consumption Expenditure at Constant 2004-05 Prices - Private	Final Consumption Expenditure at Constant 2004-05 Prices - Government	At Constant 2004-2005 Prices: Gross Capital Formation (India)	At Constant 2004-2005 Prices: Gross Fixed Capital Formation (India)
2000-01	2,348,481	2,000,743	2,559,711	2,177,413	1,903,928	1,579,201	324,727	630,056	591,610
2001-02	2,474,962	2,175,260	2,683,190	2,355,845	2,005,578	1,673,209	332,369	658,827	682,143
2002-03	2,570,935	2,343,864	2,785,258	2,536,327	2,052,991	1,721,238	331,753	708,637	679,170
2003-04	2,775,749	2,625,819	3,004,190	2,841,503	2,164,189	1,823,227	340,962	819,925	750,940
2004-05	2,971,464	2,971,464	3,242,209	3,242,209	2,272,026	1,917,508	354,518	1,064,041	931,028
2005-06	3,253,073	3,390,503	3,543,244	3,693,369	2,469,316	2,083,309	386,007	1,236,927	1,081,792
2006-07	3,564,364	3,953,276	3,871,489	4,294,706	2,660,471	2,259,892	400,579	1,402,369	1,231,265
2007-08	3,896,636	4,582,086	4,250,947	4,987,090	2,910,316	2,471,397	438,919	1,656,892	1,430,764
2008-09	4,158,676	5,303,567	4,416,350	5,630,063	3,134,069	2,649,610	484,459	1,570,333	1,480,943
2009-10	4,516,071	6,108,903	4,790,847	6,477,827	3,397,005	2,845,303	551,702	1,841,262	1,594,475
2010-11	4,918,533	7,248,860	5,282,386	7,784,115	3,673,232	3,092,373	583,544	2,100,497	1,769,792
2011-12	5,247,530	8,391,691	5,633,050	9,009,722	3,969,459	3,378,506	623,574	2,183,259	1,986,645
2012-13	5,482,111	9,388,876	5,899,847	10,113,281	4,125,959	3,547,584	662,032	2,297,807	2,002,047
2013-14 (P)	5,741,791	10,472,807	6,195,842	11,355,073		3,719,568	687,388		1,999,938

Source : Central Statistical Organisation (CSO)

Note: The 2013-14 and 2014-15 figures are RE and BE respectively. All figures reflect actual expenditure. Source: Expenditure Budget Vol. 1, 2013-14; Reserve Bank of India

Table 1: Projected Investment in Infrastructure during the Twelfth Five Year Plan

Year	Base Year FY12	FY13	FY14	FY15	FY16	FY17	Total 12th Plan
GDP at FY07 Prices (Rs. Crs.)	6,314,265	6,882,549	7,501,978	8,177,156	8,913,100	9,715,280	41,190,063
Infrastructure Investment as % of GDP	8.37%	9.00%	9.50%	9.90%	10.30%	10.70%	9.95%
Infrastructure Investment (Rs. Crs. in FY07 prices)	528,316	619,429	712,688	809,538	918,049	1,039,535	4,099,239
Infrastructure Investment (Rs. Crs. in current prices)	721,781	888,572	1,073,470	1,280,315	1,524,526	1,812,581	6,579,463

Source: Mid-Term Appraisal Eleventh Five Year Plan, Planning Commission, GOI; WPI inflation used to convert to current prices; FY12 inflation based on PMEAC projection

Table 2: Savings and Infrastructure Investment Needs

(as % of GDP)

	FY10	FY13	FY14	FY15	FY16	FY17
Infra Investment	7.5	9.0	9.5	9.9	10.3	10.7
Gross Domestic Savings	33.7	37.8	40.6	42.9	45.5	48.2
o/w financial savings	22.0	24.8	27.2	29.1	31.1	33.4
Incremental Infra Investment	0.3	0.6	0.5	0.4	0.4	0.4
Incremental Financial Savings	2.8		2.4	1.9	2.0	2.3
Infra Investment as % of Financial Savings	34%	36%	35%	34%	33%	32%
% share of incremental infra in incremental financial savings			21%	21%	20%	17%

Source: Mid-Term Appraisal Eleventh Five Year Plan, Reports submitted by Sub-Groups on Household Savings, Private Sector Corporate Savings & Public Sector Savings for 9% p.a. real growth and 5% p.a. inflation scenario

Investment by Centre, States & Private Sector

(Billion US$ at nominal prices. 1 US$ = Rs. 52)
(per cent share in brackets)

	10th Plan (Actual)	11th Plan (Anticipated)	12th Plan (Projected)
Centre	3,52,504 **$ 68 bn** (42)	8,56,717 **$ 165 bn** (35)	16,01,061 **$ 308 bn** (29)
States	2,98,633 **$ 57 bn** (36)	6,80,056 **$ 131 bn** (28)	12,89,762 **$ 248 bn** (23)
Private	1,86,023 **$ 36 bn** (22)	8,87,504 **$ 171 bn** (37)	26,83,840 **$ 516 bn** (48)
Total	**8,37,159** **$ 161 bn**	**24,24,277** **$ 466 bn**	**55,74,663** **$ 1,072 bn**

Comparison of budgetary allocation 11th (2007-12) & 12th Five Year Plan (2012-17)

For the 12th five-year plan (for the period 2012-2017) it is proposed to enhance the investment in infrastructure two folds. The estimate of additional investment for the 12th Plan period is given as follows: -

Project Investment in Infrastructure during Eleventh &Twelfth Five Year Plan

Major sectors	11th Plan (In Rs crores)		12th Plan (In Rs crores)		Increase over 11th Plan (In %)
	Realisation	% share	Projection	% share	
Agriculture and water resources	1,16,554	7.3	2,84,030	7.96	143.69
Rural Development and Panchayatiraj	3,97,524	25.01	6,73,034	18.86	69.31
Scientific departments	58,690	3.69	1,42,167	3.98	142.23
Transport and energy	2,04,076	12.84	4,48,736	12.57	119.89
Education	1,77,538	11.17	4,53,728	12.71	155.57
Health and child development	1,12,646	7.09	4,08,521	11.45	262.66
Urban Development	63,465	3.99	1,64,078	4.60	158.53
Others	4,58,849	28.87	9,94,333	27.86	116.70
Total Plan allocation	15,89,342	100.00	35,68,626	100.00	124.53

Key Features of Union Budget 2016-2017

THE CURRENT ECONOMIC SITUATION AND THE CHALLENGES

Decisive vote for change represents the desire of the people to grow, free themselves from the curse of poverty and use the opportunity provided by the society. Country in no mood to suffer unemployment, inadequate basic amenities, lack of infrastructure and apathetic governance.

Challenging situation due to Sub five per cent growth and double digit inflation.

Continued slow-down in many emerging economies a threat to sustained global recovery.

Recovery seen with the growth rate of world economy projected at 3.6 per cent in 2014 vis-à-vis in 2013.

First budget of this NDA government to lay down a broad policy indicator of the direction in which we wish to take this country.

Steps announced are only the beginning of the journey towards a sustained growth of7- 8 per cent or above within the next 3-4 years along with macro-economic stabilization.

CONTD..

Key Features of Union Budget 2016-2017

THE CURRENT ECONOMIC SITUATION AND THE CHALLENGES

Need to revive growth in manufacturing and infrastructure sectors.

The government is committed to achieve this target. Road map for fiscal consolidation outlines fiscal deficit of 3 % for 2016-17.

Inflation has remain at elevated level with gradual moderation in WPI recently.

Bold steps required to enhance economic activities and spur growth in the economy.

Administration and Regulation of Construction Industry Administrative Initiatives

Sovereign right of the Government to undertake retrospective legislation to be exercised with extreme caution and judiciousness keeping in mind the impact of each such measure on the economy and the overall investment climate.

A stable and predictable taxation regime which will be investor friendly and spur growth.

CONTD..

Legislative and administrative changes to sort out pending tax demands of more than 4 lakh crore under dispute and litigation.

Resident tax payers enabled to obtain on advance ruling in respect of their income-tax liability above a defined threshold. Measures for strengthening the Authority for Advance Rulings.

ECONOMIC INITIATIVES

Foreign Direct Investment (FDI) - Government to promote FDI selectively in sectors. The composite cap of foreign investment to be raised to 49 per cent with full Indian management and control through the FIPB route.

The composite cap in the insurance sector to be increased up to 49 per cent from 26 per cent with full Indian management and control through the FIPB route. Requirement of the built up area and capital conditions for FDI to be reduced from 50,000 square metres to 20,000 square metres and from USD 10 million to USD 5 million respectively for development of smart cities.

The manufacturing units to be allowed to sell its products through retail including E commerce platforms.

CONTD..

Bank Capitalization

Requirement to infuse `.2,40,000 crore as equity by 2018 in our banks to be in line with Basel-III norms. Capital of banks to be raised by increasing the shareholding of the people in a phased manner.

PSU Capital Expenditure

PSUs will invest through capital investment a total sum of ` 2,47,941 crores in the current financial year.

SMART CITIES

A sum of ` 7060 crore is provided in the current fiscal for the project of developing "one hundred Smart Cities'

Real Estate

Incentives for Real Estate Investment Trusts (REITS). Complete pass through for the purpose of taxation. A modified REITS type structure for infrastructure projects as the Infrastructure Investment Trusts (INVITS). These two instruments to attract long term finance from foreign and domestic sources including the NRIs.

Irrigation

1000 crore provided for "Pradhan Mantri Krishi Sinchayee Yojna" for assured irrigation.

EDUCATION

School Education

Government would strive to provide toilets and drinking water in all the girls school in first phase. An amount of Rs.28635 crore is being funded for Sarv Shiksha Abhiyan(SSA) and Rs.4966 crore for Rashtriya madhyamic Shiksha Abhiyan (RMSA).

A School Assessment Programme is being initiated at a cost of Rs.30 crore.

Rs.500 crore provided for "Pandit Madan Mohan Malviya New Teachers Training Programme" to infuse new training tools and motivate teachers. Rs.100 crore provided for setting up virtual classrooms as Communication Linked. Interface for Cultivating Knowledge (CLICK) and online courses.

Higher Education

Jai Prakash Narayan National Centre for Excellence in Humanities to be set up in MP. Rs.500 crore provided for setting up 5 more IITs in the Jammu, Chhattisgarh, Goa, Andhra Pradesh and Kerala.

Rs.5 IIMs in the States of HP, Punjab, Bihar, Odisha and Rajasthan.

Simplification of norms to facilitate education loans for higher studies.

Information Technology -Pan India programme "Digital India" to with an outlay of Rs.500 crore to be launched. Programme for promoting "Good Governance" to be launched .A sum of ` 100 crore provided.

Information and Broadcasting – Rs.100 crore allocated for 600 new and existing Community Radio Stations. Film & Television Institute, Pune and Satyajit Ray Film & Television Institute, Kolkata are proposed to be accorded status of Institutes of national importance and a "National Centre for Excellence in Animation, Gaming and Special Effects to be set up.

Rs.100 crore is provided for Kisan TV, to disseminate real time information to the farmers on issues such as new farming techniques, water conservation, organic farming etc.

Urban Development- Vision of the Government is that 500 urban habitations to be provided support for renewal of infrastructure and services in next 10 years through PPPs.

Present corpus of Pooled Municipal Debt Obligation Facility facility to be enlarged to 50,000 Crore from Rs.5000 crore.

Rs.100 crore provided for Metro Projects in Lucknow and Ahmedabad.

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Housing-Extended additional tax incentive on home loans shall be provided to encourage people, especially the young, to own houses. Mission on Low Cost Affordable Housing anchored in the National Housing Bank to be set up.

A sum of Rs.4000 crores for NHB from the priority sector lending shortfall with a view to increase the flow of cheaper credit for affordable housing to the urban poor/EWS/ LIG segment is provided. Slum development to be included in the list of Corporate Social Responsibility (CSR) activities to encourage the private sector to contribute more.

INDUSTRY

Central Government Departments and Ministries to integrate their services with the e-Biz -a single window IT platform- for services on priority by 31 December this year. Rs.100 crore provided for setting up a National Industrial Corridor Authority.

Amritsar Kolkata Industrial master planning to be completed expeditiously. Master planning of 3 new smart cities in the Chennai-Bengaluru Industrial Corridor region, viz., Ponneri in Tamil Nadu, Krishnapatnam in Andhra Pradesh and Tumkur in Karnataka to be completed. Perspective plan for the Bengaluru Mumbai Economic corridor (BMEC) and Vizag- Chennai corridor to be completed with the provision for 20 new industrial clusters.

Development of industrial corridors with emphasis on Smart Cities linked to transport connectivity to spur growth in manufacturing and urbanization will be accelerated. Proposed to establish an Export promotion Mission to bring all stakeholders under one umbrella.

Apprenticeship Act to be suitably amended to make it more responsive to industry and youth. Micro Small and Medium Enterprises (MSME) Sector

Skill India to be launched to skill the youth with an emphasis on employability and entrepreneur skills. Committee to examine the financial architecture for MSME Sector, remove bottlenecks and create new rules and structures to be set up and give concrete suggestions in three months.

Fund of Funds with a corpus of Rs.10,000 crore for providing equity through venture capital funds, quasi equity, soft loans and other risk capital specially to encourage new startups by youth to be set up. Corpus of Rs.200 crore to be set up to establish Technology Centre Network. Definition of MSME to be reviewed to provide for a higher capital ceiling.

Programme to facilitate forward and backward linkages with multiple value chain of manufacturing and service delivery to be put in place. Entrepreneur friendly legal bankruptcy framework will be developed for SMEs to enable easy exit.

A nationwide "District level Incubation and Accelerator Programme" to be taken up for incubation of new ideas and necessary support for accelerating entrepreneurship.

INFRASTRUCTURE –
An institution to provide support to mainstreaming PPPPs called 4PIndia to be set up with a corpus of Rs.500 crores. Shipping Rs.11635 crore will be allocated for the development of Outer Harbour Project in Tuticorin for phase I. SEZs will be developed in Kandla and JNPT.

Comprehensive policy to be announced to promote Indian ship building industry. Inland Navigation Project on Ganges called "Jal Marg Vikas' to be developed between Allahabad and Haldia.

New Airports

Scheme for development of new airports in Tier I and Tier II Cities to be launched. Roads sector. Sector needs huge amount of investment along with debottlenecking from maze of clearances.

An investment of an amount of Rs.37,880 crores in NHAI and State Roads is proposed which includes Rs.3000 crores for the North East.

Target of NH construction of 8500 km will be achieved in current financial year.

Work on select expressways in parallel to the development of the Industrial Corridors will be initiated. For project preparation NHAI shall set aside a sum of Rs.500 crore.

Energy

100 crore is allocated for a new scheme "Ultra-Modern Super Critical Coal Based Thermal Power Technology." Comprehensive measures for enhancing domestic coal production are being put in place.

Adequate quantity of coal will be provided to power plants which are already commissioned or would be commissioned by March 2015.

An exercise to rationalize coal linkages to optimize transport of coal and reduce cost of power is underway.

New & Renewable Energy

500 crores provided for Ultra Mega Solar Power Projects in Rajasthan, Gujarat, Tamil Nadu, Andhra Pradesh and Laddakh.

400 crores provided for a scheme for solar power driven agricultural pump sets and water pumping stations.

100 crore provided for the development of 1 MW Solar Parks on the banks of canals.

A Green Energy Corridor Project is being implemented to facilitate evacuation of renewable energy across the country.

Petroleum & Natural Gas

Production and exploitation of Coal Bed Methane reserves will be accelerated. Possibility of using modern technology to revive old or closed wells to be explored. Usage of PNG to be rapidly scaled up in a Mission mode. Proposal to develop pipelines using appropriate PPP models. Mining

Changes, if necessary, in the MMDR Act, 1957 to be introduced to encourage investment in mining sector and promote sustainable mining practices.

FINANCIAL SECTOR

Capital Market Ongoing process of consultations with all the stakeholders on the enactment of the Indian Financial Code and reports of the Financial Sector Legislative Reforms Commission (FSLRC) to be completed. Government in close consultation with the RBI to put in place a modern monetary policy framework.

Intro Following measures will be taken to energize Capital markets duction of uniform KYC norms and inter-usability of the KYC records across the entire financial sector. Introduce one single operating demat account. Uniform tax treatment for pension fund and mutual fund linked retirement plan

BANKING AND INSURANCE SECTOR

Banking -Time bound programme as Financial Inclusion Mission to be launched on 15 August this year with focus on the weaker sections of the society. Banks to be encouraged to extend long term loans to infrastructure sector with flexible structuring.

Banks to be permitted to raise long term funds for lending to infrastructure sector with minimum regulatory pre-emption such as CRR, SLR and Priority Sector Lending (PSL). RBI to create a framework for licensing small banks and other differentiated banks.

Differentiated banks serving niche interests, local area banks, payment banks etc. are contemplated to meet credit and remittance needs of small businesses, unorganized sector, low income households, farmers and migrant work force.

Six new Debt Recovery Tribunals to be set up.

For venture capital in the MSME sector, a Rs.10,000 crore fund to act as a catalyst to attract private Capital by way of providing equity , quasi equity, soft loans and other risk capital for start-up companies with suitable tax incentives to participating private funds to be established.

Insurance Sector

The pending insurance laws (amendment) Bill to be immediately brought for consideration of the Parliament. The regulatory gap under the Prize Chits and Money Circulation Scheme (Banking) Act, 1978 will be bridged.

BUDGET ESTIMATES

Mandate to be fulfilled without compromising fiscal consolidation. Non-plan Expenditure of ` 12,19,892 crore with additional provision for fertilizersubsidy and Capital expenditure for Armed forces.

Rs.5,75,000 crore Plan expenditure - increase of 26.9 per cent over actuals of 2013-14. Plan increase targeted towards Agriculture, capacity creation in Health and Education, Rural Roads and National Highways Infrastructure, Railways network expansion, clean energy initiatives, development of water resources and river conservation plans. Total expenditure of Rs.17,94,892 crore estimated.

Gross Tax receipts of Rs.13,64,524 crore estimated. Net to centre of Rs.9,77,258 crore estimated. Fiscal deficit of 4.1% of GDP and Revenue deficit of 2.9% estimated. New Statement to separately show plan allocation made for North Eastern Region. Allocation of Rs.53,706 crore for North East Regions. Allocation of Rs.50,548 crore under SCSP and ` 32,387 under TSP. Allocation for women at Rs.98,030 crore and for children at Rs.81,075 crore. TAX.

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
- 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

CONSTRUCTION OPPORTUNITY & ACTIVITY

Estimated Construction Opportunity during XIIth Plan Period

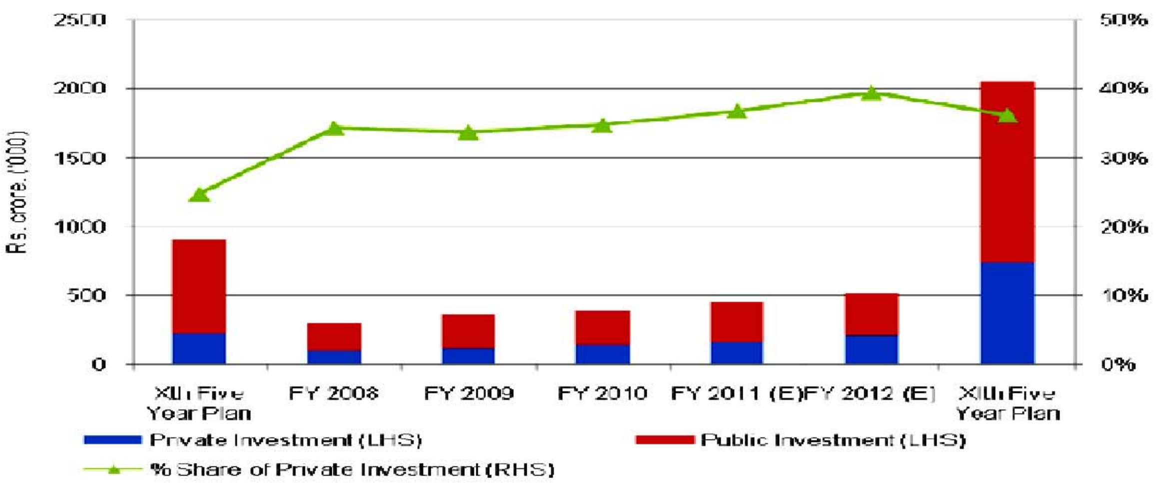
	Investment (Rs. crore)			Share (%)			Construction Intensity@ (% of Total Cost)	Construction Opportunity (Rs. crore)		
	Xth Plan	XIth Plan	XIIth Plan	Xth Plan	XIth Plan	XIIth Plan		Xth Plan	XIth Plan	XIIth Plan
Electricity	340,237	658,630	1,314,320	38%	32%	32%	40%	1,36,095	2,63,452	5,25,728
Roads & Bridges	127,107	278,658	556,072	14%	14%	14%	65%	82,620	1,81,128	3,61,447
Railways (incl. MRTS)	102,091	200,802	400,708	11%	10%	10%	75%	76,568	1,50,602	3,00,531
Irrigation	106,743	246,234	491,369	12%	12%	12%	75%	80,057	1,84,676	3,68,527
Water Supply	60,108	111,689	222,879	7%	5%	5%	60%	36,065	67,013	1,33,728
Ports	22,997	40,647	81,113	3%	2%	2%	70%	16,098	28,453	56,779
Airports	6,893	36,138	72,115	1%	2%	2%	30%	2,068	10,841	21,634
Total	766,176	1,572,798	3,138,575	85%	77%	77%		429,570	886,164	1,768,373

Assuming similar allocation among sectors during the XIth Five-Year Plan © Based on past estimates
Source: Planning Commission, GoI

Details of PPP Projects by Sector

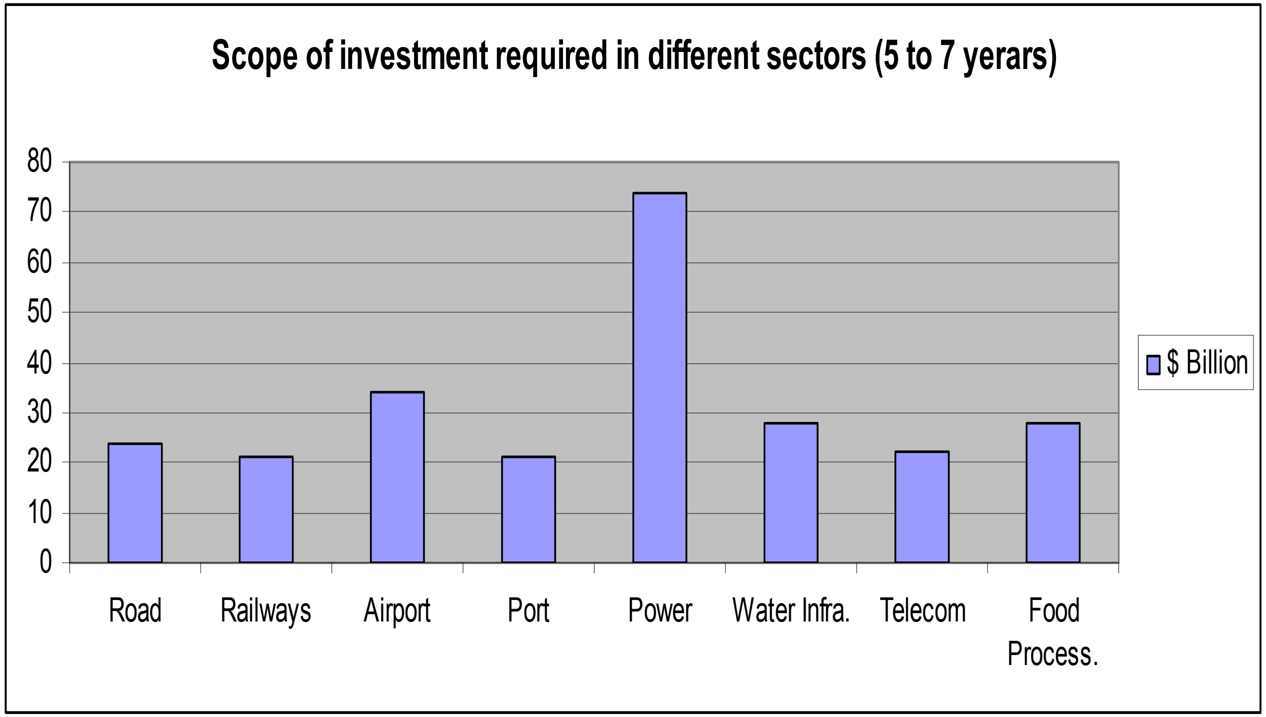
	Projects in Pipeline		Project under Implementation	
No. of Projects		Project Cost (Rs. crore)	No. of Projects	Project Cost (Rs. crore)
Roads	167	115,822	133	102,775
Ports	47	35,902	50	62,058
Airports	7	4,120	3	19,277
Railways	53	90,312	5	5,217
Power	34	62,032	15	29,448
Urban Infrastructure	65	45,708	69	18,690
Other	31	22,534	17	3,575
Total	404	376,430	292	241,040
Source: Planning Commission, GoI				

Chart 1: Trend in Infrastructure Investments



Source: Planning Commission, GoI

The scope of investment as envisaged by the Investment Commission is given in the following figure: -



FDI Infrastructure Equity Ceiling

Real Estate townships)	-	100%
Roads	-	100%
Power	-	100%
Airlines	-	74%
Airports	-	74%
Banks (Private)	-	74%
Mining	-	74%
Telecom	-	74%
Defence	-	49%
Insurance	-	49%

Annexure-1

Average Construction Material Prices as on 2016

RATES IN INR

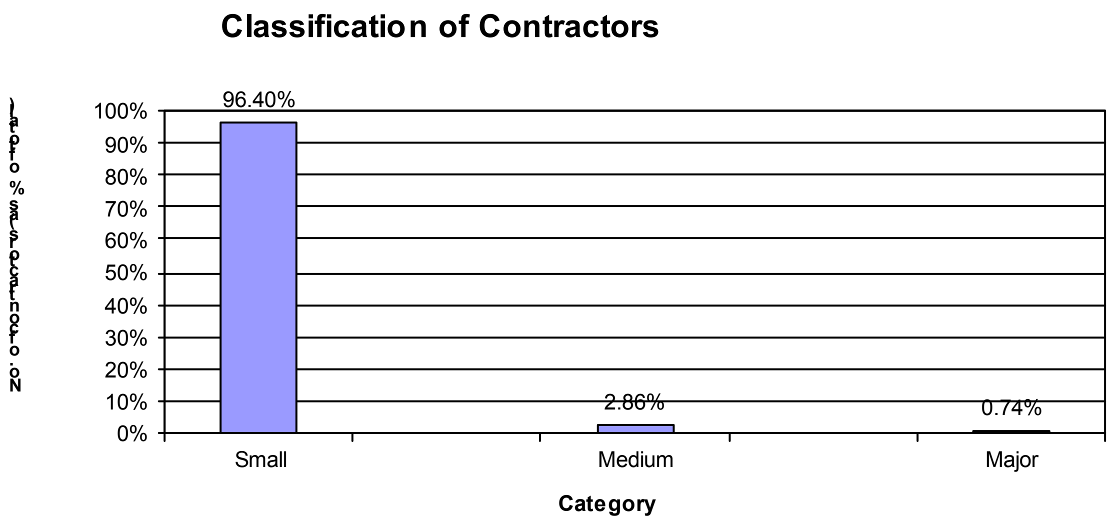
Delhi Item Rate

S. No.	Item	Unit	Rate
	Cement – OPC	Tonne	6300
	Reinforcement Steel TMT – 12 mm dia	MT	35400
	Burnt Clay Bricks (9” x 4.5” x 3”)	Each	5.2
	Sand (coarse – local)	cum	1200
	Stone aggregates (20 mm normal size)	Cum	1175
	Kiln Seasoning of Timber	Cft	750
	Petrol	Ltr	67.86
	Lubricant – Grease	Ltr	250
	Paint – Synthetic Enamel White	Ltr	220
	Bitumen Grade 60/70 Bulk	MT	40885
	Daily wages of Labour		
	Unskilled	Per day	311
	Semi – Skilled	Per day	343
	Skilled	Per day	377
	Sr. Engineer (Civil)	Per day	700
	Jr. Engineer (Civil)	Per day	377

CLASSIFICATION OF CONTRACTORS

Table below gives the categorization of contractors by the size of men they employ: -

S.N	No. of people employed by the agency	No. of Agency /contractors	%age	Category
1	1 to 200 persons	27,000	96.4%	Small
2	200 to 500 persons	800	2.86%	Medium
3	500 persons and above	200	0.74%	Major



Safety Record of Indian Construction Industry

Year	Accident frequency rate (accidents / million man-hours worked)
1998	0.08
1999	0.10
2000	0.10
2005	0.10
2008	0.09
2009	0.01
2010	0.01
2011	0.01
2012	0.008
2013	0.007
2014	0.007
2015	0.005
2016	0.005

Annexure-3

Projected Investment as Percentage of GDP

(Rs crore at 2006–07 price)							
Years	Base year						Total
	(2006–07 of Tenth Plan)	2007–08	2008–09	2009–10	2010–11	2011–12	Eleventh Plan
	(BE/RE)						
GDP	4145810	4518933	4925637	5368944	5852149	6378843	27044506
Public Investment	175388	192107	227327	273543	332355	411226	1436559
Private Investment	49858	78166	94252	115724	146762	184687	619591
Total investment	225246	270273	321579	389266	479117	595913	2056150
			Investment as Percentage of				
Public	4.23	4.25	4.62	5.09	5.68	6.45	5.31
Private	1.20	1.73	1.91	2.16	2.51	2.89	2.29
Total	5.43	5.98	6.53	7.25	8.19	9.34	7.60
Source: CSO for 2006–07, and computations of the Planning Commission.							

Projected Investment in Infrastructure during the Twelfth Five Year Plan:

Year	Base Year FY12	FY13	FY14	FY15	FY16	FY17	Total 12th Plan
GDP at FY07 Prices (Rs. Crs.)	6,314,265	6,882,549	7,501,978	8,177a156	8,913,100	9,715,280	41,190,063
Infrastructure Investment as % of GDP	8.37%	9.00%	9.50%	9.90%	10.30%	10.70%	9.95%
Infrastructure Investment (Rs. Crs. in FY07 prices)	528,316	619,429	712,688	809,538	918,049	1,039,535	4,099,239
Infrastructure Investment (Rs. Crs. in current prices)	721,781	888,572	1,073,470	1,280,315	1,524,526	1,812,581	6,579,463

Source: Mid-Term Appraisal Eleventh Five Year Plan, Planning Commission, G0I; WPI inflation used to convert to current prices; FY12 inflation based on PMEAC projection

EXECUTIVE SUMMARY

In the context of development of the Chapter on Construction in the 12th Plan document, the Planning Commission constituted a Steering Committee vide their order dated 4th August, 2011. Dr. Arun Maira, Hon'ble Member (Industry), Planning Commission was nominated as the Chairman of the Steering Committee, which comprised of Senior representatives of various Ministries of Government of India, Public Sector Undertakings, Construction Companies, Industry Associations and, Individual Experts from Construction Industry. The Steering Committee was convened by Dr. P R Swarup, Director General, Construction Industry Development Council, supported by several Senior Experts drawn from Construction, Legal, Technical & other sub-sectors. Dr. Manoj Singh, Advisor (Tpt), provided integral support by organizing the meetings of the steering committee, articulating and explaining the approach & also moderating the deliberations.

The introduction of Chapter on Construction in the National Plan was done in the 10th Plan (2002-2007), and recognizing the importance of construction, as a major economic entity, it was decided to amplify the deliberations during the 11th Plan as well. The 12th Plan document further amplifies the actions to be taken & also recommends actionable points. It is also envisages that, post plan document finalization a Steering Committee shall be constituted to oversee the implementation of the recommended actions made by the plan document drafting Steering Committee. The proposed terms of reference, have also been detailed in the subsequent chapters. India has been experiencing unprecedented economic growth. During the 10th & 11th Plan periods, substantial contribution to the National Economy has come from the Construction Sector, however with the slowing down of global economies, even the Indian economy is facing certain challenges.

Maintaining the pace of growth experienced during last one decade, probably is a major issue, and this amplifies the need of bringing in further reforms and streamlining the functioning of construction industry. Whereas, some of the policy statements recommended in the Chapters of Constructions in 10th & 11th Plan have been initiated for implementation, much needs to be done. The government has put in place policies, which have generated over **8 % growth** on an average for the past few years. The plans are on anvil to achieve **9-10 % annual growth rate in the next 5 years.** This would be the basis for generating the resources needed for the massive investments to be made in development of Physical Infrastructure & also the policy frame work to be modified, developed & adopted.

The 12th Plan envisages a growth rate of over 8% per annum, and would need infusion of substantial capital, estimated at over Rs. 50.0 lakh crores to build India's physical Infrastructure. The development of physical infrastructure, through such massive investments would need commensurate growth in delivery potentials of Construction Industry which in turn necessitates evolution of reformed practices & establishment of Institutions. It is note worthy to mention that the present capacity of asset building of the Indian Construction Industry is estimated at Rs. 4.15 lakh crores per annum. In order to accomplish the task in hand (to build assets valuing Rs. 50 Lakh Crores), the sector has to double the capacity. The human as well as the material inputs need substantial stepping up & therefore the plans & policies too, would need rank upgradation & modifications.

Impediments therefore need to be removed and necessary facilitation need to be taken. The objectives and the approach of this Steering Committee are given below:

OBLECTIVES

1. To study & analyze the Indian Construction Industry, keeping in view the focus on creation of a world class infrastructure and rebuilding rural India through schemes such as Bharat Nirman & Schemes under MNREGA. To make an assessment of qualitative and quantitative capabilities of the Indian Construction Industry in the background of category-wise projections for construction and allied supporting activities in the 12^{th} Plan with a view to evolve strategies for overcoming deficiencies and bottlenecks and achieve time bound targets, by suggesting measures for better coordination among the stakeholders..
2. To review the regulatory framework governing the sector including fiscal & other regulations and suggest any changes required to make the sector more efficient & productive.
3. To review the present procedures of Government procurement including dispute resolution mechanisms for construction work and evolve measures for improvement, especially in view of increase in privatization in the infrastructure sector.
4. To review the present system for execution, supervision of progress and quality, release of funds, certification, billing and payment for work and suggest remedial measures for minimizing time and cost over-runs in projects undertaken by or on behalf of Government.

Conti……….

OBLECTIVES

5. To review the State of present financing models for construction work; institutional financing from Banks/ Financial Institutions and their lending norms, and recommend measures to enable access to finance at globally competitive rates.
6. To focus on R&D activities in the construction sector and suggest measures for greater use of modern technologies and equipment and speedy adaptation of new methods..
7. To evaluate role of Construction Sector in generating employment, keeping in view the qualitative & quantitative changes which have occurred in the recent past and to suggest measures for qualitative upgradation and more remunerative employment in the construction industry.
8. To assess the demand of manpower, category-wise and suggest remedial measures, including skill development, to face shortages, and suggest improvements in the functioning of National Skill Development Mission.
9. To review the quality and safety aspects in construction and to suggest necessary measures, and to recommend measures for evolving a Techno-legal regime.
10. To review the status of asset management and evolve strategies for implementation at local/State/Central Government level.

Conti………

11. To study the impact of this industry on environment and suggest measures to make it more environmental friendly and sustainable; to also review the present regulatory framework for environmental clearance with a view to making it more business friendly.

12. To review the status of data base in the construction sector and to suggest ways and means to upgrade, augment and effectively maintain the same on institutional basis.

13. To study the best practices adopted worldwide and draw lessons for the Indian Construction Industry.

14. To suggest a policy framework for the increasing productivity and reducing construction costs, in order to ensure the healthy development of the construction sector after examining/ reviewing of the above mentioned areas and the existing regulating framework .

15. To recommend the measures for self-regulation for the constituents of the Construction Industry.

16. To evolve suitable mechanisms to ensure implementation of the recommendations of this Group during the twelfth plan period.

17. To examine any other mater considered important by the Steering Committee.

Conti………

Approach

It is note worthy to mention, that the present day Government having recognized the need to develop and improve the overall physical infrastructure, is actively taking appropriate measures to improve the functioning of Construction Industry. Growth and development of the physical infrastructure is directly related to the growth of the development of National Economy. Construction is inherent to infrastructure development, and the objectives defined above were intensively deliberated by the Steering Committee and six associated Working Groups were constituted, to work on specific areas such as:-

1. Regulatory Framework including self regulation & issues leading to time & cost over runs.
2. Procurement systems & dispute resolution system.
3. Human Resource Development.
4. Institutional financing.
5. Quality standards & Environment Issue.
6. Research & Development.

Conti……….

The Chapter on Construction, therefore has been structured to encompass the issues, impediments, their solution & good practices, which could be emulated with respect to above defined key areas, Another section has been included, articulating the actionable points & identifying stake holders.

Keeping in view the continued thrust in several sub-sectors of the physical infrastructure such as, Transportation, Irrigation, Housing, Urban Utility, Civil Aviation, Agriculture, Power Generation, Water Conservation & Management and Power & Energy, the Steering Committee evolved major recommendations, which need to be instilled in the National Plan.

The approach of the Working Groups was focused towards the capacity building of Construction Industry, both in terms of quality and quantity to handle the substantial work load, that is confronting the Construction Industry. The major issues of challenge , therefore, were identified are:-

Conti……….

Overall Vision

With the slated investment of over US $ 1 Trillion or Rs. 50 Lakh crores to build the Physical Infrastructure in the Nation, thereby raising the quality of life of citizens, giving a boost to the National Economy, & generating employment, the construction sector would play a major role during the 12th Plan.

Effective management of the sector & mitigation of the bottlenecks & impediments, both in the regulatory systems and also in the working dynamics of the sector shall be essential to achieve the targets.

This would involve Institution building, systemic improvements to be instilled & creating a holistic approach to bring in required reforms to convert the rule bound & rigid structure administering the sector, to a more meaningful, vibrant & efficiently run entity. The reforms to be brought in need to be sustainable & must spring from within as well.

Since the sector covers a wide variety of economic activities including construction of houses & buildings, Transport structures, energy systems, Petrochemicals, Industry & several more, the issues affecting the performance to this sector are both generic, and specific to the respective sub sectors.

Conti……….

With an average annual value of asset creation being Rs. 415,000 Crores and an employment of over 41 Million citizens the sector has many complexities, needing resolution & therefore the approach to meet the planned growth should be to handle the generic issues, which need to be looked into very urgently. It is noteworthy to mention, that with the present capacity, as defined above the targets laid down may fall short by 45%. It is therefore necessary to critically examine following areas & do the stock taking.

- **Human Resource Development**

The key to the sustainable & robust growth of any sector in the National Economy is the Human Resource. With over 41 Million citizens under direct employment of construction entities, the sector has the distinction of being the second largest employer. A miniscule proportion (5.65%) of this strength has the benefit of structured training & education, keeping the activity under low value/ low productivity tag. The thrust, therefore needs to be given on creation of Institutions & Institutional frame work along with provision of Institutional resources to meet the requirements of HRD.

Training, Skill up gradation, & certification of skills need to be taken up vigorously, where the Government & Industry have to join hands. The resources to meet the monetory requirements could be channeled through welfare cess & PF deposits as well as from the training funds earmarked under various state & centrally sponsored schemes. While developing the Institutions & creating infrastructure for the Human Resource Development, some novel actions could be taken, such as Declaring Construction sites as places of learning. Introducing mandatory internship for engineers, post or during their education.

Conti……….

Mere provision of financial resources may not attain the purpose if the training infrastructure is lacking, & therefore training programmes to groom the trainers & Institutional provisions need to be placed in position.

Even a fresh crop of contractor would need formal training to meet the demands.

- **<u>Regulatory Frame Work</u>**

The regulatory framework governing the construction sector definitely needs toning up in the 12^{th} Plan period.

Enacting a unified set of provisions leading to enactment of a construction law would be a major necessity.

Another important aspect is to harmonize the central & state level legislations to create an improved & hassle free operating climate for construction entities with the size & diversity of operations in the sector, a fair amount of self regulation would also be needed to be practiced. Systemic structure, therefore would be evolve to enable the Industry to exercise self regulation, in several areas. The 12^{th} Plan shall recommend such measures and also the formation and empowerment of Institutions to facilitate ingress of this measure.

Conti……….

Procurement Practices

For effective & transparent performance of the service providers, the toning up of the Procurement Systems, prevalent in the Nation, shall be another thrust area in the 12^{th} Plan.

Following steps would be taken.

Adoption & periodic up gradation of standard contracting conditions. Adoption & periodic up gradation of works manuals. The focus shall be on introducing the harmonized, equitable & transparent provisions to arrest & eliminate the time & cost over runs in the project execution.

Dispute Resolution

Another irritant in effective project & contract execution is the delayed & amorphous dispute resolution systems being practiced. With over Rs. 135,000 Crores investments held up in the contractual disputes & an overage period of resolution being 15 years, the dispute resolution mechanism in the country are a major contributor to the time & cost overruns of the project & a retarder to the progress.

The focus of the 12th Plan would be to insure implementation of following. Institutional mode of Dispute Resolution in place of Ad-hoc mode. Implementation of the Indian Arbitration & conciliation Act 1996. During the 12th Plan another vital action would be to educate the stake holders in these aspects.

Conti……….

Quality & Standards

Construction being a capital intensive venture, the stress on quality of the built products would be another prime objective of the 12th Plan. Construction Methodologies, products, and the eventual delivery would be benchmarked to become comparable to the International Standards. Another important area of action during the 12th Plan shall be to empower the standard Institutions. To accomplish the task, Institutions shall be established & existing Institutions would be empowered and their functioning be harmonized.

Environment

Construction activities are known to be the biggest energy consumers & have a profound impact on the environment. Starting from mining of natural resources to building the end product, substantial pollution is created. The thrust of the 12th Plan would also be on adhering to the Environmental Protection laws by construction Industry in a manner that the progress is not retarded. Making "Green Construction" a major thrust area.

Research & Development

Ingress & Introduction of new & smart technologies to reduce the costs & time for execution of the Projects, shall be another thrust area during the 12th Plan. Presently little investment is made in primary R&D initiatives, specially when compared with the volume of work done annually. During the 12th Plan period the thrust areas shall be. Focus of Innovations. Strengthening the R&D Institutions & facilitating establishment of new Institutes. Incentivizing the R&D & Innovating initiatives.

Mechanization of Work Practices.

The functioning of construction sector is primarily manual leading to low value addition, poor quality of products, and also longer time for completion.

Mechanization of operations, though gaining popularity, yet needs larger thrust.

This would be another area of attention during the 12th Plan period.

Plan period would see

- Establishment of Equipment Banks.
- Better fiscal concessions for manufacturers of construction equipment, thereby reducing costs.
- Availability of trained operating & maintenance personnel.

Project Exports

Construction Industry in India is generally an in bound Industry, with a very small contribution to the National Economy through Project exports.

At present only 1.85% of the total output comes from projects & need substantial rise.

During the 12th Plan period, Project export shall be another thrust area & following actions be taken.

Generating more business for Indian construction companies through G to G interactions & bilateral treaties.

Provision of better fiscal incentives to the project exporters both for business development & execution initiatives.

- **Institutional Financing**

Institutional Financing is the key to smooth & efficient implementation of construction projects & following shall be the thrust initiatives during the 12th Plan.

- Raising the share of Institutional lending from 1.5% to at least 5% and more to improve the liquidity of service Providers.
- Encouraging Institutions to resort to innovative products to meet the equity & debt provisions for PPP projects.
- Creating & adopting Insurance & non Insurance risk assessment & mitigation products
- Provision of working capitals for start up ventures & entrepreneurs in construction Industry.
- Establishing a nodal construction Development Bank to meet all such needs.

Establishing Institutions, nodal bodies, & facilitating Interaction among all stake holders.

Construction activities are undertaken by several Ministers, PSUs & also the developers from the corporate sector.

The most important action, to be taken during the 12th Plan period, shall be to ensure a seamless coordination among all the Project execution & Project owning agencies. Needless to mention empowered commissions, regulators and such Organs would be established to ensure implementation of the Plans thus laid down.

Recommendations

The development of recommendations took in cognizance the issues listed above, needing address and encompassed existing impediments/limitations and relevant mitigation measures, having recognized that, the Construction Industry has a great contribution potential to the overall National Economy, having displayed consistent growth trend of around 8% during last plan period. These include the macro recommendations, which require policy intervention at Central and State Governments level, action by stakeholders, and certain implementation models at gross root level, which may be elicited as examples for detailing a blue print for action.

I. Review of present procedures of procurement of projects & services including dispute resolution mechanisms, and quality issues and evolve measures for improvement, particularly in view of the increasing privatization in infrastructure sector. The Steering Committee recommends following:-

a) The Contract Conditions being used by various Project Authorities in the Country, **whether in Public or Private Sector**, should be harmonized. The recommendations issued by the **Ministry of Statistics and Programme Implementation in this regard, must be implemented fully** by all Project Owners in the Country. This would require Government's intervention to convert guidelines of MOSPI into specific directions for all Public Agencies/ Undertakings/Organizations. The recommended guidelines on contract conditions & also the model works manual are hosted on the web site www.cidc.in.

Conti….

Recommendations

b) For the Public Private Partnership models, the Model Concession Agreement developed by the Planning Commission for the Road & Highway Sector, could be used as a base model and modifications could be made to cater to other sub-sectors, as well.

c. Necessary provisions in the procurement system, be made to ensure that standard quality certification (third party) systems are adhered to Some system giving incentives for timely completion and good performance by concerned construction agencies be suitably introduced.
A system may also be developed and promoted to facilitate small and medium construction companies to share services and available plants and machinery at equipment banks. In fact similar systems have already been introduced in several highway construction projects of Maharashtra State Road Development Corporation.

d. The emphasis must be laid on Institutional Arbitration system, instead of Ad-hoc system, as is being followed presently. The arbitration should be in line with Indian Arbitration and Conciliation Act 1996.

Conti….

e. To minimize "disputes" leading to time and cost overruns proper project planning process should be encouraged and DPRs may be completed before technical sanction.

f. Suitable institutional modifications be introduced for risk mitigations. New insurance products should be developed.

ii. A National Plan for **training and certification of Construction personnel** at all levels should be developed and implemented.

The plan should include initiating a system of 'Graded Certification' depending upon levels of proficiency achieved. To meet shortage of available trained manpower in certain urgently needed trades short terms courses may be introduced where ITI courses are of long duration.

It is further recommended that some kind of Permanent Identification number be granted to the workers, and a nationwide scheme of granting e-cards be launched for effective availability of the benefits. The construction sites could be designated as the learning centers & introduction of mandatory Internship for the students of engineering programs both aat Diploma and Degree level be made.

Conti….

iii. Well defined and harmonized institutional financing systems be evolved to build the capacity of Construction Industry.

iv. A comprehensive Draft Construction Law should be developed and the Construction Law for India be enacted through wider consultations.

v. Present system of asset management should be reviewed at local/ state/ central government levels and strengthened. A policy frame work ensuring mandatory provision for maintenance of assets supported by adequate budgetary allocations and trained manpower be set-up.

vi. A National strategy and policy framework focused particularly on productivity enhancement and cost reduction be developed to match with envisaged work load and delivery targets of various sectors and for sustainable development and growth of construction industry.

Induction of new technologies, construction systems and energy efficient materials (preferably based on waste recycling) should be adequately emphasized in the development of national strategy for enhancing productivity and efficiency and reducing cost of construction works. For rural roads sector, there appears to be strong need for developing and introducing use of "marginal materials" to enhance cost effectiveness of works.

Conti….

It is therefore proposed, that a National Construction Research & Development fund be created & an authority be constituted under the auspices of a nodal ministry to administer this provision. As an initial seed support a sum of Rs. 100 crores be allocated to persue these objectives

vii. An appropriate Management Information System should be developed and implemented at National, Provincial and Local levels for construction industry. An Institution be nominated as the repository of National Data Base for Construction Industry.

viii. Systems & Institutions should be developed for expansion of network for project export and attracting more foreign investment. Interactions with Indian Missions abroad, should be intensified, through evolution of an Institutional mechanism.

ix. A mechanism for registration of professional engineers need to be established for which a nodal agency need to be identified. Intake in academic institutions be regulated to mitigate declining trend in the availability of civil engineers

Conti….

x. Taxation & Regulatory Systems should be revamped. Sectoral classification and definition of Construction Industry should be established, as for taxation purposes construction "is treated as "Industry" as well as "Service" The Steering Committee recommends that construction be treated as Industry and the existing definitional anomalies, where for certain sub-sectors of construction sector, service taxes have been introduced, be removed.

xi. Institutional Arrangements be made to identify, prevent and mitigate the effects of **Natural Disasters**. New programs should be taken as per guidelines and programs announced by National Disaster Management Authority. The Steering Committee recommends that following actions should be taken up on priority.

xii. To develop the Human Resources in Disaster Mitigation and disaster resistant construction technologies and etrofitting Clinics and Disaster Identification Centres be set up in all major settlements and districts falling in disaster prone regions

Conti….

xiii. An Institutional mechanism need to be developed for continuous evaluation of various economic parameters such as Construction Cost Indices and impact of policies of other sectors having impact on cost of construction works.

xiv. A National Plan need to be developed for upgrading the prowesses of Engineering Consultants and advisors, and should be implemented.

xv. Adherence of standards should be ensured through relevant regulatory provisions.

xvi. A national plan to be evolved and implemented for entrepreneur development in Construction Industry for raising the capability levels.

xvii. A conceptual plan to identify a nodal organization to implement and monitor above should be formalized and implemented upon.

xviii. A national plan for insuring adherence to the Environment Protection Act (2006) be developed and Energy Efficiency issues be addressed in conformity to the Energy Conservation Act of 2001.

<u>Annexure-5</u>

Salient Changes in Cross border & domestic employment procurement systems.

To enhance the efficacy of delivery of Engineering Projects, following improvements in the procurement systems are being resorted to.

<u>1. Engagement of Skill trained & certified work persons.</u>

Understanding the need of improving the productivity of the workforces, observance of better SHE practices, & improved quality of works, major Indian project authorities have, in their procurement system introduced a Clause for Mandatory employment of skill certified work persons. Extracts of this Clause are given below.

The contractor shall, at all stages of work, deploy skilled/semi skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute/Industrial Training Institute/National Institute of construction Management and Research (NICMAR)/ National Academy of Construction, CIDC or any similar reputed and recognized Institute managed/ certified by State/Central Government.

Conti….

The number of such qualified tradesmen shall not be less than 20% of total skilled/semi skilled workers required in each trade at any stage of work.

The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer in charge for approval.

Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer- in-Charge.

Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer in Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding. Provided always, that the provisions of this clause, shall not be applicable for works with estimated cost put to tender being less than Rs. 5 crores."

2. Introduction of Institutional Arbitration for effective resolution of disputes in Infrastructure Construction Projects.

To resolve all commercial disputes effectively & in shortest time frame, the Institutional Arbitration mechanism, in place of Ad-hoc mode of Arbitration is being introduced in the procurement systems.
Extract of relevant Clause are given below.

"Any dispute of difference whatsoever arising between the parties and of or relating to the construction, interpretation, application, meaning, scope, operation or effect of this Contract or the validity or the breach thereof, shall be settled by arbitration in accordance with the rules of Arbitration of the Construction Industry Arbitration Council (CIAC), New Delhi and the award made in pursuance thereof shall be final and binding on the parties.

The cost & expenses of Arbitration proceedings will be borne by each party as per terms of the Construction Industry Arbitration Council (CIAC), New Delhi."

3. Engagement of Professional Engineers

Subsequent to the formation of the National Register of the Professional Engineers by the Engineering Council of India, and ensuring that the projects are administered only by professional engineers following Clause is being introduced in the Indian procurement system.

This would be applicable to all Engineers, irrespective of their Nationality, who are desirous to work on the Infrastructure Construction project in India.
Further details are available at web site www.ecindia.org.

" The contractor shall, at all stages of work, deploy engineers including Diploma holders, Degree holders and higher levels who are qualified and registered as Professional Engineers/ Chartered Engineers with the Engineering Council of India or the Institution of Engineers, India. The number of such registered Professional Engineers/ Chartered Engineers shall not be less than 25% of total numbers of engineers at the state of work. Failure on the part of contractor to deploy registered Professional/ Chartered engineers will attract a compensation to be paid by contractor at the rate of Rs. 1000 per such Professional engineer per day. Decision of CPWD to whether particular engineer's registration in valid or not and amount of compensation in case default shall be final and binding."

4. **Engagement of certified Suppliers & Vendors**

To ensure effective & reliable Supplies for timely completion of Infrastructure Projects, several major project authorities have started sending purchase enquiries to the Vendors enlisted in the National Database of the Vendors being developed & maintained by Construction Industry Development Council.

The details could be accessed from the website www.cidc.in.

This information is being provided to the members of Asia Construct Network, to enable them to disseminate the information in their respective geographical region.

Thank You

For more details about CIDC activities,
please visit www.cidc.in

Member Country of

AsiaConstruct

21st AsiaConstruct Conference

Sustainable Construction Policy and Market

24-25 November, 2016

Hotel Mielparque Tokyo, Japan

SUSTAINABLE CONSTRUCTION POLICY AND MARKET

Presented by-

Mr. Deepak Mazumdar, Sr. Addl. Director

Construction Industry Development Council

(A body established by the Planning Commission

(Now Niti Aayog) Govt. of India & Construction Industry)

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Sustainable Construction Policy and Market

The Indian construction industry, an integral part of the economy and a conduit for a substantial part of its development investment, is not only poised for growth on account of industrialization, urbanization, economic development and people's rising expectations for improved quality of living, it is also bracing for modernization that calls for improved productivity and higher competitive edge. Its main challenges are fast growth in response to increasing demand for goods and services; technological upgrading for speed, quality, cost reduction, and substitution of manual labour; modern management practices for greater profitability and a `modern', clean image; and technical skills, financial strength and organizational competence to meet domestic and international competition and capture a part of the international market.

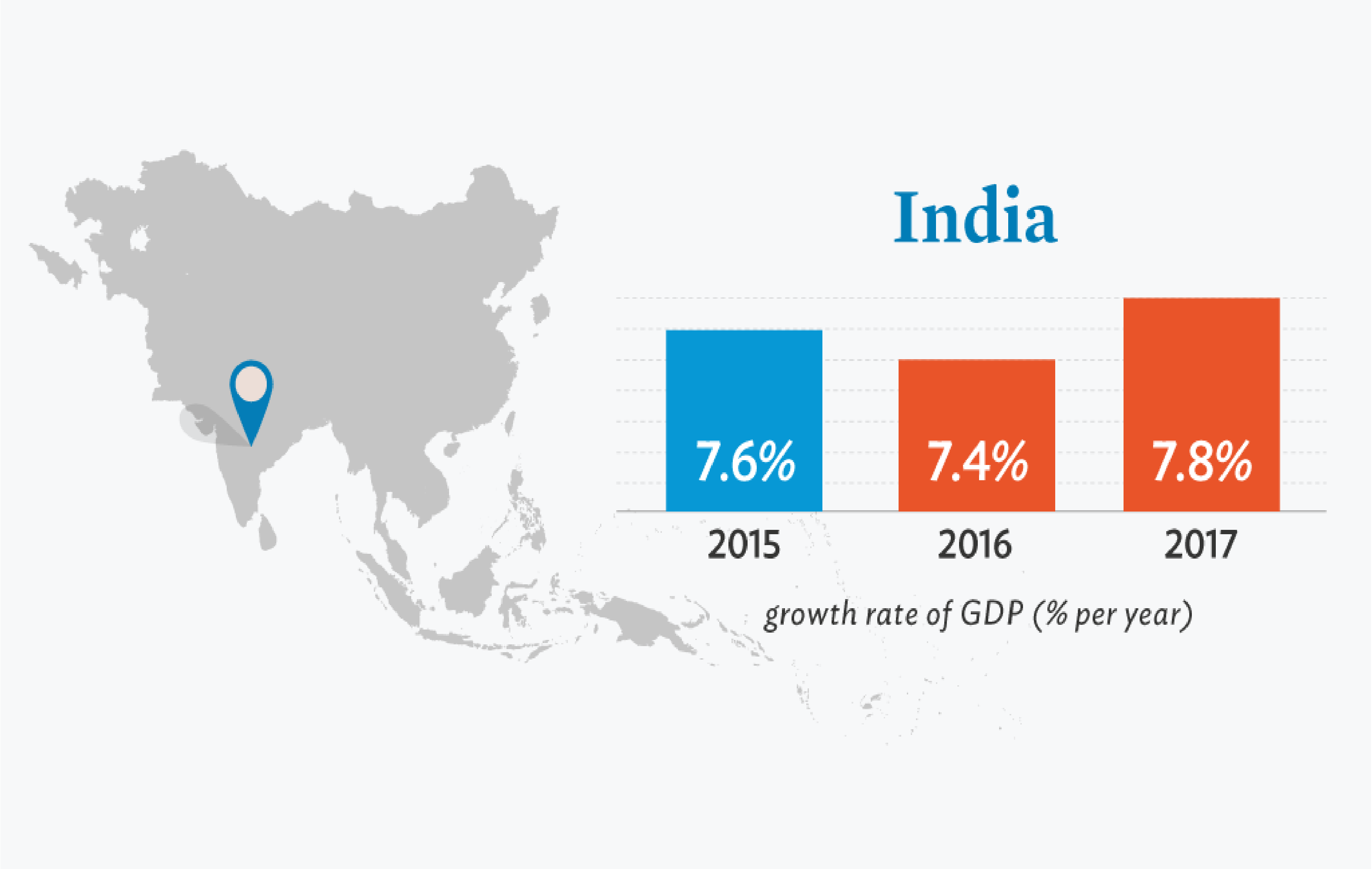
The construction industry, steeped in traditional technology and largely informal labour practices, is in a hurry to change both its image and content.

Sustainable construction, it must be admitted, is neither the vision nor the immediate goal of its modernization thrust. It is growth, efficiency, productivity, greater share in the market and profit. Improved performance on the environmental front (reduction of pollution or substitution of high energy consuming materials), or on human aspects (better tools and working conditions for the construction workforce), is mainly a welcome by-product, useful in public relation rhetoric, not more.

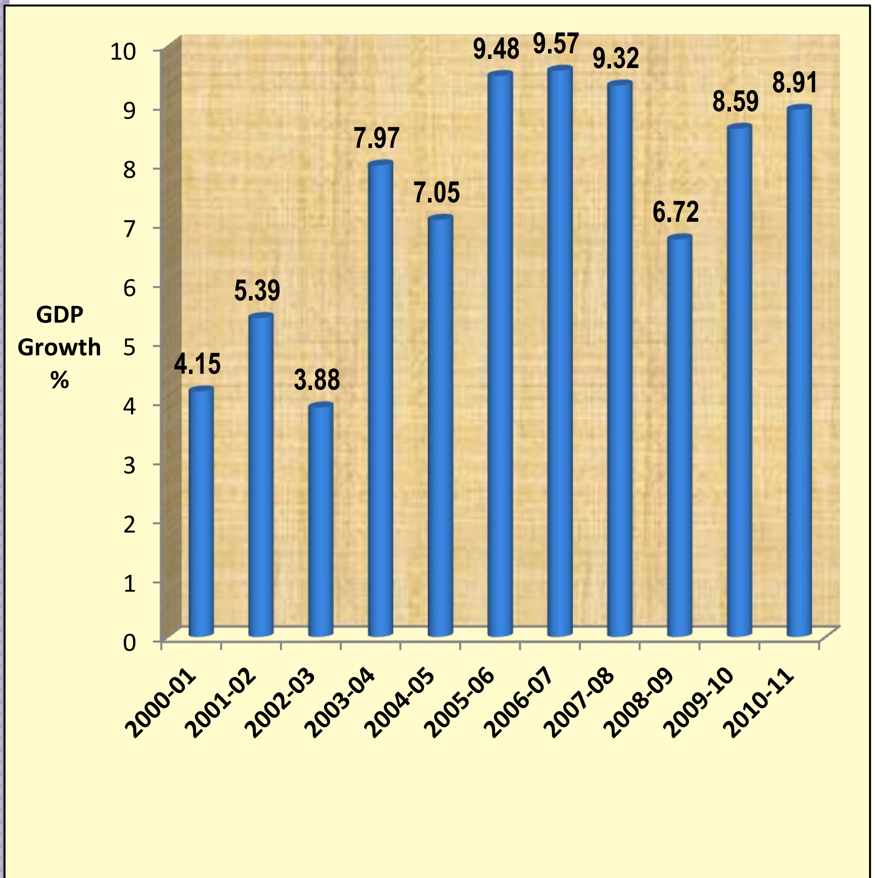
India, the seventh largest country in the world, is a leading economy and home to over one billion people living in various climatic zones. The country’s economy has been growing at a fast pace ever since the process of economic reforms started. Construction plays a very important role in its economy

- USD 1 Trillion investments for infrastructure sector
- projected during 2012-17
- USD 650 Billion investments in urban infrastructure estimated over next 20 years.
- 100% Foreign Direct Investment (FDI) permitted through the automatic route for townships, cities.
- Construction sector contributes towards 8% of the Indian GDP (at constant prices). Last five year estimates (2006-07 to 2010-11).
- Additional Fact: increased to 3.85 lakh crore (7.9% of the total GDP) in 2010-11 from 284798 crore (8% of the total GDP) in 2006-07.
- Additional Facts: Growth rate for GDP in construction 8.1%
- 100 Smart Cities and 500 AMRUT Cities will invite investment of 2 Trillion Rupees in the next five years.
- INR 62,009 Crore. would be invested under Swachh Bharat Mission (SBM) in urban areas.

Growth rate GDP

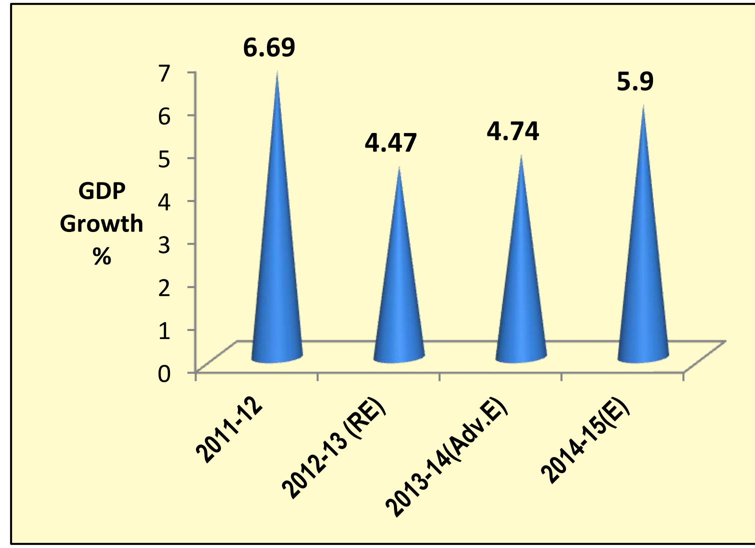


India's Growth (con'd)

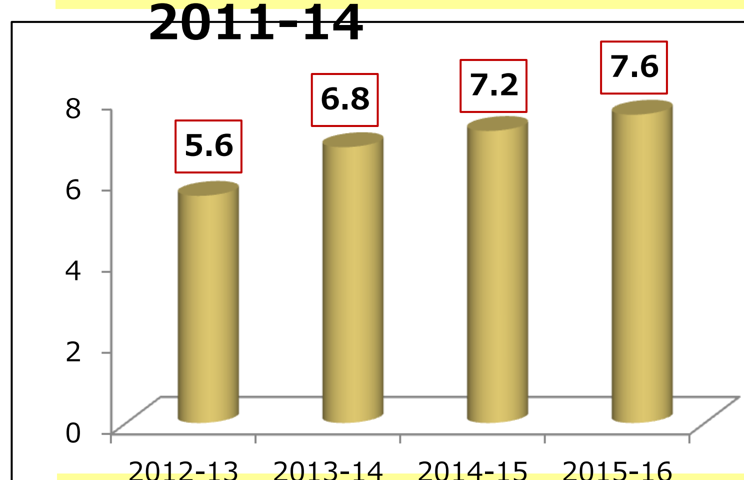


Real GDP Growth (Factor Cost)

Source: Ministry of Statistics and Program Implementation



Economic Slow Down 2011-14



Revised GDP: 2012-16

India's Growth (con'd)

Recent Positive Turn

- Inflation slows down
- Reduction in oil prices
- Fiscal deficit under control
- Stable government at national level
- Business sentiments vastly improved

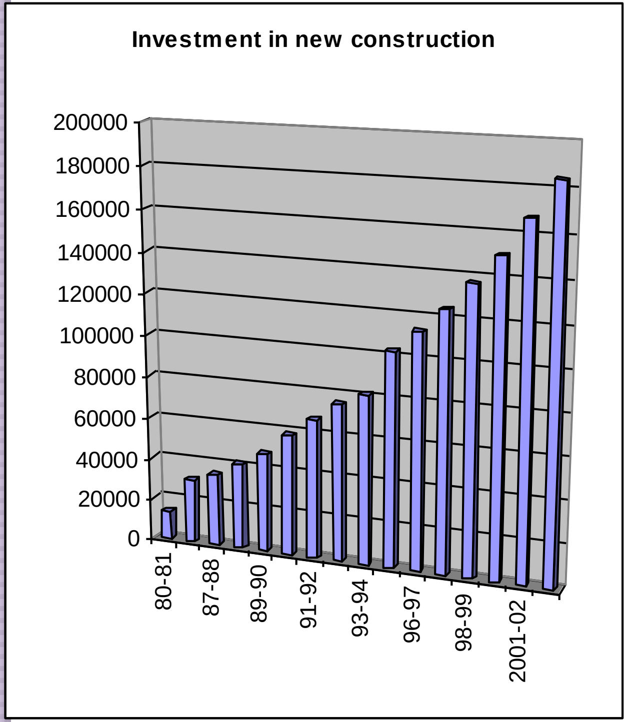
Projected Growth Rates: India, China and World

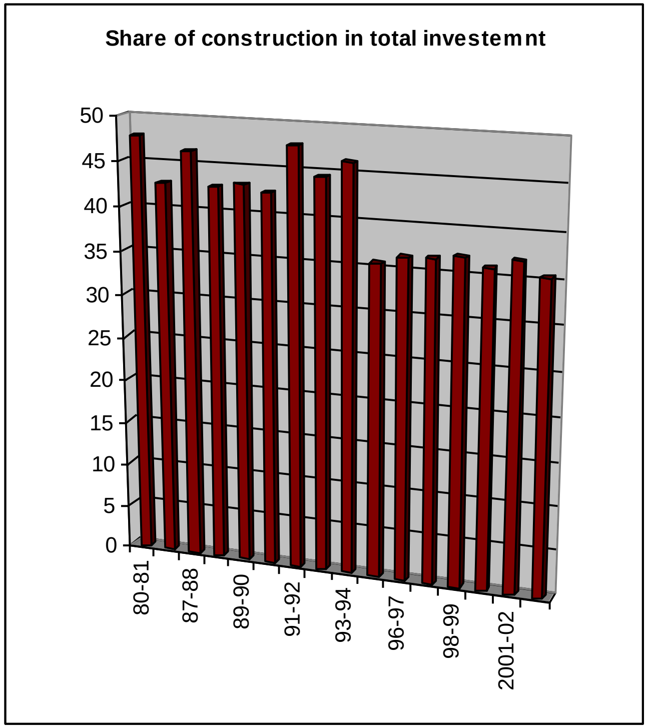
Year	2012	2013	2014 (E)	2015 (F)	2015(F)	2017(F)
India	4.7	5	5.6	6.4	7	7
China	7.7	7.7	7.4	7.1	7	6.9
World	2.4	2.5	2.6	3	3.3	3.2

Source : Global Economic Prospects, World Bank Report 2015

Indian Construction Industry

- **Construction – Second largest activity after agriculture**
- **Employs 35 million people**
- **Indian Construction industry valued at US$ 126 million – Ranked 3rd largest in the world**

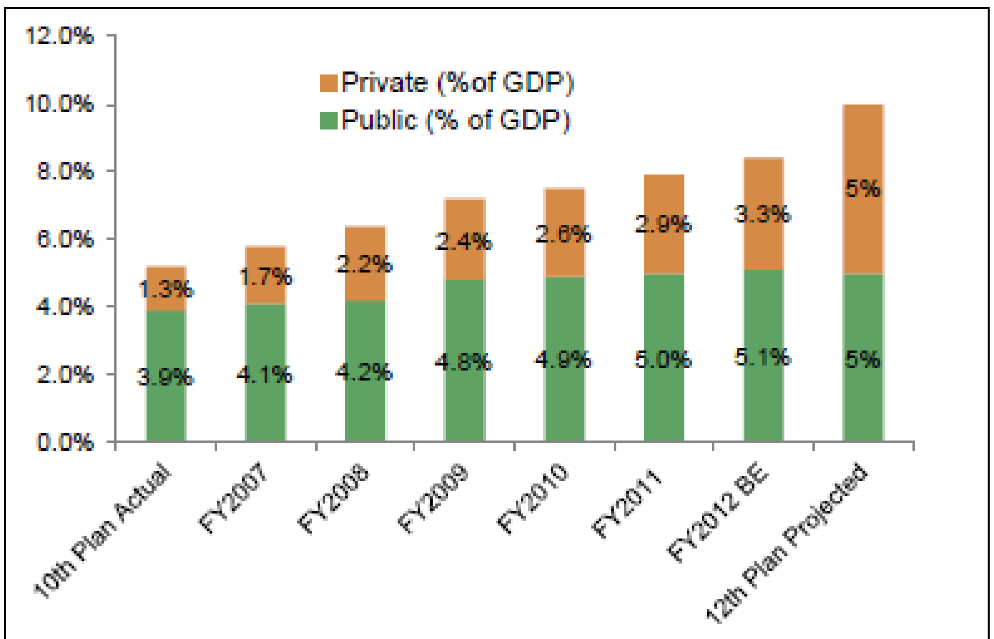




Source: NICMAR

Indian Construction Industry (con'd)

- **50% of demand for construction comes from Infrastructure**
- **US $ 1,000 Billion investments planned for infrastructure during 2012-17**
- **US $ 650 Billion investments in urban infrastructure estimated over next 20 years**



100% increase in infrastructure investment over 11th Plan expenditure!

SECTOR POLICIES AT PRESENT:

Smart Cities Mission; and Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

- Under 100 Smart Cities Mission, Smart Cities will be selected through a ‘City Challenge Competition,’ linking financing and ability to achieve multidimensional objectives of urban infrastructure development like adequate and clean water supply, sanitation and solid waste management, efficient urban mobility and public transportation, affordable housing for the poor, power supply, robust IT connectivity, governance, especially e-governance and citizen participation, safety and security of citizens, health and education and sustainable urban environment. Smart City mission will be implemented through Special Purpose Vehicles (SPV) to be managed by the state government.

- AMRUT will inculcate a project approach to ensure basic infra services such as water supply, sewerage, septage management, storm water drains, transport and development of green spaces and parks with special provision for meeting the needs of children. A minimum investment of over INR 2 lakh crore would flow into urban areas over the next five years (2015-16 – 2019-20) since States and ULBs would mobilize matching resources ranging from 50% to 66%.

The following has also been announced in the budget in relation to smart cities: -

To encourage development of ‘Smart Cities’, which will also provide habitation for the neo-middle class, requirement of the built-up area and capital conditions for FDI is being reduced from 50,000 sq. mts. to 20,000 sq. mts., from USD 10 Million to USD 5 Million respectively. To further encourage this, projects which commit at least 30% of the total project cost for low cost affordable housing will be exempted from minimum built-up area and capitalisation requirements. - A National Industrial Corridor Authority, with its headquarters in Pune is being set up to coordinate the development of Industrial Corridors with emphasis on Smart Cities linked to transport connectivity to spur growth in manufacturing and urbanization. - Master Planning of the Amritsar-Kolkata Industrial Corridor will be completed expeditiously for the development of Industrial Smart Cities in seven states of the country. The seven states to be covered in this project are Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal. - Master planning of three new smart cities in the Chennai-Bengaluru Industrial Corridor region, viz., Ponneri in Tamil Nadu, Krishnapatnam in Andhra Pradesh and Tumkur in Karnataka are to be completed.

A Perspective Plan for the Bengaluru Mumbai Economic Corridor and Vizag-Chennai Corridor is to be· completed with provision for 20 new industrial clusters. A proposed allocation of INR 40 Billion, to set up a mission on low cost affordable housing, will be· anchored in the National Housing Bank. A proposed allocation of INR 1 Billion, to develop metro projects in Lucknow· & Ahmedabad. INR 80 Billion has been allocated for the National Housing Bank with a view to expand and continue to· support rural housing in the country. State governments concerned are purposed to be notified as sponsoring authority for metro rail projects· covered under project import regulations, 1986. The norms for FDI in the construction development sector are being eased as well. Easing of norms has· generated high interest levels from not just the foreign investors but also domestic players.

Swachh Bharat Mission (SBM):

- SBM aims at elimination of open defecation, eradication of manual scavenging, scientific Municipal Solid Waste Management, to effect behavioural change regarding healthy sanitation practices, generate awareness about sanitation and its linkage with public health, capacity augmentation for ULBs to create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance). The mission outlay is INR 62,009 crores. It covers all 4041 statutory towns.

Heritage City Development and Augmentation Yojana (HRIDAY):

- HRIDAY aims to preserve and revitalise the soul of an Indian herita and reflect its unique character by encouraging aesthetically appealing, accessible, informative and secured environment and to undertaking strategic and planned development of heritage cities aimed at the overall improvement in quality of life with special focus on sanitation, security, tourism, heritage revitalisation and livelihoods retaining the city's cultural. It is a central sector scheme with 100% funding coming from Central Government. Initial Phase of the HRIDAY Scheme was launched in January, 2015 for a period of 27 months in twelve identified cities viz. 1) Ajmer 2) Amritsar 3) Amaravati 4) Badami 5) Dwarka 6) Gaya 7) Kanchipuram 8) Mathura 9) Puri 10) Varanasi 11) Velankanni 12) Warangal for development of the towns under the scheme with a total outlay of Rs. 500 crores.

The 12th five years plan projects an investment of 10% of the national GDP into infrastructure which equates to a staggering $1 trillion or equivalently Rs.45 trillion.

INVESTMENT BOOST IN INFRASTRUCTURE THROUGH HIGHER PUBLIC FUNDING POSITIVE

Budgetary allocation: Total allocation for infrastructure has been increased by 1.5 times to INR· 2.8 trillion (roads, railways and urban infrastructure the biggest beneficiaries).

Roads: Investments for development of national highways proposed to be hiked by 178% year-to year· to INR 85,607 crore. A major portion of this increase will be funded by INR 4 per litre increase in road cess on petrol and diesel.

Railways: Total outlay raised by 52%, in the railway budget 2015-16, there have been many· announcements of PPP projects in areas of coastal connectivity, gauge conversation, dedicated freight corridors (DFCs) and the Mumbai suburban rail. Funding availability: An INR 200 billion National investment and Infrastructure Fund to be set up· for infrastructure finance companies to raise debt. The budget also provides for issuance of tax free bonds for roads, railways and irrigation projects, and aims to rationalize the tax regime for infrastructure investment trusts.

Other measures: The government's intent to table a Public Contracts (Settlement of Disputes) bill· will help speedy redressal of disputes in large public projects and create a conducive environment for PPP projects. At a time when private sector interest in infrastructure development is low, the increase in budgetary support holds the potential to kick-start capital investments in the economy. Moreover, the significant increase in public funding for the roads sector has the potential to boost execution of national highway projects by about 5,800 km annually and create a robust construction opportunity for road engineering procurement & construction (EPC) companies. The Union Budget 2015 has proposed that the National Investment and Infrastructure Fund will create additional funding resources for private developers, over and above the rise proposed in public funding. Moreover, rationalisation of tax regime for Infrastructure Investment Trusts may help free up private capital currently locked in completed projects

Reasons to invest: An investment of USD 1,000 Billion has been projected infrastructure sector until 2017, 40% of which is to be funded by the private sector. 45% of infrastructure investment will be funneled into construction activity and 20% set to modernize the construction industry. The Indian government has undertaken a number of measures to ease access to funding for the· sector. Construction activities contribute more than 10% of India’s GDP. The construction industry in India has seen sustained demand from the industrial and real estate· sector. An estimated USD 650 Billion will be required for urban infrastructure over the next 20 years. Housing for seniors has seen increased interest levels from corporates , the hospitality and· healthcare industries over the last few years.

Drivers for Sustainability

GHG emissions, climate change and sustainability are at stake. It is estimated that GHG emissions would increase from 2 billion tons to 6-7 billion tons of CO_2 in 2030.

In mapping out sustainable practices that India must adopt a "cradle to grave" analysis is required. And for this we need to have a total approach than a patch work point system or a grade based certification system. In order to have a comprehensive plan for sustainable construction, every structure may be thought about based on the following parameters:

Planning, design and specifications based on performance and service life
Construction Practices
Material Conservation and Selection
Demolition and recycling
Energy Conservation

I. Planning, Design and specifications

Structures in India are designed well however so far in most specifications, there is no reference to any service life or calculations thereof. To this effect, deeper study of various service life prediction models and calculations are essential. Specifications must to be performance based as opposed to their present form of being prescription based.

II. Construction Practices

It is acknowledged that wastage in the construction industry is as high as 30%. That means at the current valuation, we are talking about the wastage to the tune of Rs.1200 billion or $27 billion in India. This is in itself a large, yet relatively simple and straight forward challenge to tackle.

These wastages are activities that absorb resources, man hours and materials but create no value. Most developed countries have different forums / researchers / academic institutions for seeking solutions to mitigate these wa lean construction practices that emerged have yielded encouraging. Lean construction is a "way to design production systems to minimize waste of materials, time and efforts in order to generate the maximum possible value". While some novel initiatives are being taken in some parts of India to adopt leaner construction practices, India does not have a fully focused lean construction forum. Creation of an industry consortium or lean construction forum may be a good beginning.

III. Material Conservation and Selection

Concrete is the largest synthesized material which has a per capita consumption of 1.5 tons per annum in India. Presence of concrete is all pervading simply because it has the capacity to utilize locally available ingredients, develop adequate engineering properties for a variety of applications, easily adapt to any shape and size and has comparatively low initial and maintenance costs. While concrete not be as big of an energy consumer as structural steel, aluminum and glass; concrete and particularly cement still remains a major energy 'sink' due to its sheer volume of production and also environmentally unsustainable due to large quantities of CO2 evolution associated with its manufacture. Raw materials for cement manufacture include non renewable natural resources like lime stone, aggregates, manufactured sands (fine aggregates), and so on. Hence the Indian concrete Industry needs to take a fresh look at these challenges.

Some of the problems faced by Indian concrete industry towards a g sustainability in concrete utilization are as follows:

A. Increase the use of fly ash and other cement substitutes – Studies indicate that by 2020 the economically feasible stocks of prospectable lime stone are going to be scarce. India has a reasonable availability of by-products like fly ash and GGBFS, and while this helps to an extent to lengthen the period of smooth supply of lime stone. India produces approximately 130 million tons of fly ash out of which only 35-40% is utilized. In another ten years, this production is going to double to more than 250 million tons.

B. Use of manufactured sand - Aggregate scarcity is the biggest concern today in India. On environmental grounds, there have been strict dredging restrictions from various local authorities pertaining to taking out sea sand as well as river sand. This position is more prevalent in the states of central and southern part of India. In northern India, especially in the Indo-Gangetic plains, good quality sand (FA) is available in plenty. However, due to the alluvial terrain of this region coarse aggregates are not easily available. This challenge manifests on the opposite form in central & southern India where availability of good quality fine aggregate is a constraint.

Hence the answer is to use manufactured sand which is artificially produced from rock, using a vertical shaft Impactor (VSI). VSI based manufactured sand is made by subjecting rock to operations like impact and cleavage attrition and typically results in consistently good quality products having uniform gradation and shape. This sand contains less organic and inorganic impurities too along with lesser chlorides and sulfates. As a result of lower levels of silt, clay and crusher fines there is a reduction in water demand thus improving strength and durability of the concrete. This also will reduce cement contents. As a result of less cement, fines and water in the concrete, shrinkage cracking can be reduced to enhance durability and thus sustainability. Additionally, there is substantial environmental benefit, in that the natural terrains of river basins are not disturbed too.

However, in India as of today, there are totally convenient misconceptions about manufactured sand. Manufactured sand is mistakenly equated with crushed rock fines (CRF) which is a byproduct of rock crushing to obtain coarse aggregates. CRF is a byproduct of primary and secondary crushing involving use of jaw crushers or cone crushers.

Many concrete producers knowingly and unknowingly use CRF in concrete and that includes major ready mixed concrete manufacturers as well. This is obviously done due to acute shortage of river sand and also to overcome the grading deficiencies in river sand. In the days of "use whatever you get" at many places in metropolitan cities, sand received from nearby rivers is very course in nature, with fineness modulus exceeding 4. Such coarse sand is unable to produce a cohesive mix, unless it is supplemented with inert fines such as CRF. This in turn necessitates the use of excess water, creating invariably defective concrete endangering the structure's durability right at its birth. Thus India needs to switch over to using VSI manufactured sand as opposed to CRF, or we risk hampering the growth of the industry will due to under performance of the concrete thereby endangering the sustainability.

C. Use of lightweight aggregates - In India, natural lightweight aggregates are not available. The focus then moved to the use of synthetic light weight aggregate. Lightweight aggregates can be produced by sintering waste product like fly ash. There are several examples of the use of these aggregates in structural lightweight aggregate concrete, with compressive strengths ranging from 20-50 MPa (Clarke J B, Structural lightweight aggregate concrete, Chapman & Hall, 1993 U.K.) The use of sintered fly ash sounds to be a good possibility in India as fly ash is available here in abundance. Yet another reason to use lightweight aggregate is that almost 70 to 80% of India has become prone to earthquake and thus to reduce the self-weight of various structural elements of a building bridge or any other structure can be substantially reduced enhancing economy as well as safety.

D. Demolition and Recycling

In India, the use of recycled aggregates has not been adequately explored. Reportedly, the construction and demolition waste has substantially increased as new super structures are being built on land after tearing down the smaller structures that previously existed. It is estimated that the construction industry in India generates about 10-12 million tons of waste annually. Projections for building materials requirement of the housing sector indicate a shortage of aggregates of about 55,000 million cu. m. An additional 750 million cu.m. of aggregates would be required for achieving the targets of the road sector.

Recycling of aggregate material from construction and demolition waste may reduce the demand-supply gap in both these sectors. There is also an increasing-acute shortage of dumping grounds and landfills particularly in metropolitan cities. SERC, Ghaziabad had taken up a pilot R&D project on Recycling and Reuse of Demolition and Construction Wastes in Concrete for Low Rise and Low Cost Buildings in mid nineties with the aim of developing techniques/methodologies for use of recycled aggregate concrete in construction. The experimental investigations were carried out in Mat Science laboratory and Institutes around Delhi/GZB to evaluate the mechanical properties and durability parameters of recycled aggregate concrete made with recycled coarse aggregate collected from different sources. Also, the suitability in construction of buildings has been studied.

The properties of recycled aggregates have been established and demonstrated through several experimental and field projects successfully. It has been concluded that recycled aggregates can be readily used in construction of low rise buildings, concrete paving blocks & tiles, flooring, retaining walls, approach lanes, sewerage structures, sub base course of pavements, drainage layer in highways, dry lean concrete(DLC) etc.

E. Energy Conservation

Since sources of good quality, aggregates are fast depleting, the concrete industry in India needs to prepare itself to use locally available 'marginal' aggregates. The use of local materials helps reduce the carbon footprint associated with transport. Thus, from sustainability angle, the emphasis should be placed on using locally-available aggregates, even if there are small deficiencies in their quality. It has been amply demonstrated that desired properties of concrete can be obtained by intelligent blending of available aggregates with crushed sand, inert fillers, supplementary cementitious materials and chemical admixtures.

Another important issue is that river sand and other construction materials are usually transported by road. India has a well developed and efficient rail and water transport system that need to be leveraged by the construction industry. This is not only more sustainable option but also most cost effective.

Why now is the best time to enter India? Investment opportunities in India

Construction development in residential, retail, commercial and hospitality sectors

Technologies and solutions for smart sustainable cities and integrated townships.

Technologies for the promotion of low cost and affordable housing.
Green building solutions.
Sustainable and environmentally friendly building materials.
Training and skill development of construction sector workers.
Smart cities, Urban water supply, urban sewerage and sewage treatment.

FDI Policies 100% FDI through the automatic route is permitted in townships, housing, built-up infrastructure, and construction-development projects (including, but not restricted to housing, commercial premises, hotels, resorts, hospitals, educational institutions, recreational facilities, city and regional level infrastructure).

The major conditions under which foreign investment can be made in this sector are: A minimum capitalization of USD 10 Million is envisaged for wholly-owned subsidiaries and USD.

5 Million for joint ventures with Indian partners. The funds will have to be brought in within six months of date commencement of business of the company. 100% FDI is allowed under the automatic route for urban infrastructure areas like urban transport, water supply, sewerage and sewage treatment subject to relevant rules and regulations.

FDI policy for Industrial Parks 100% FDI is allowed under the automatic route. ‘Industrial Park’ is a project in which quality infrastructure in the form of plots of developed land or built-up space or a combination with common facilities is developed and made available to all the allottee units for the purposes of industrial activity. FDI in industrial parks is not subject to the conditionalities applicable for construction development projects etc., provided the industrial parks meet with the under-mentioned conditions

Top Reasons to Invest in India

Size of India India's GDP is currently US$1.3 trillion, making it the 8th largest economy in the world. However, in PPP terms, which recognizes India's low cost base, the GDP notionally rises to three times this amount (US$3.8 trillion) which places it on a similar size to Japan and, by 2013, it will become the third largest economy in the world (after the USA and China) in PPP terms. However, despite representing 7.5% of Global GDP (on a PPP basis) in 2010, India attracts less than 0.5% of investment inflows. An anomaly which is unlikely to continue for much longer!

Economic growth India's economy is currently growing by 8.75% per annum (in 2010) and this GDP growth rate is expected to increase to 9% - 10% per annum for each of the next 10 years. India's GDP will grow five times in the next 20 years, and GDP per capita will almost quadruple.

Diversity: The Indian economy offers investors exposure to a wide range of opportunities from consumer goods and pharmaceuticals to infrastructure, energy and agriculture. With its strong services sector (comprising 50% of India's economy), particularly in knowledge-based services (IT, software and business services) India has proved that industrialization and the export of commodities and resources is not the only path to rapid economic development.

Demographics: India is one of the youngest countries in the world, with an average age of 25 and likely to get younger. India's working-age population will increase by 240 million over the next 20 years. With a population of 1.2 billion, a strong work ethic, high levels of education, democracy, English language skills and an entrepreneurial culture, India is poised to dominate the global economy in the next 20 years.

High Savings: With a savings rate of 37% of GDP, India's domestic savings fuels most of its investment requirements, and only 20% of India's total public debt is sourced from foreign borrowing. With significant investment to be made in upgrading India's poor infrastructure in the next 10 years (estimated to be US$1.7 trillion) India's Government is taking various steps to further encourage private and foreign investments.

Domestic economy: India's domestic consumption, generally led by the private sector, has played a significant role in India's growth and is expected to remain firm as more people enter the workforce and the emerging middle classes. India's wealthiest consumers (those earning US$1m or more in PPP terms) will increase by 40 million in the next 10 years! Every sector within India's consumer market is booming, making India far less vulnerable to external shocks and pressures than other emerging markets.

A robust financial sector: India has a robust, diversified and well regulated financial system which has allowed it to weather the global financial crisis without any major difficulties and present an image of quality, resilience and transparency. India's banking sector is strong, with top quality balance sheets, high levels of competition (there are around 80 banks in India) and strong corporate governance.

Quality of Investment Markets: The Bombay Stock Exchange is the second oldest in the world (165 years) and offers investors a low cost, highly efficient, modern and well governed environment in which to prosper from India's extraordinary economic growth. The Indian stock market has generated investment returns of over 15% per annum for the last 10 years and experts expect this rate to increase in the next decade. More significantly perhaps, Indian investors have doubled.

Amaravati, the dream capital of Andhra Pradesh

- An area covering 30 villages between Vijayawada and Guntur, some 35 km away from Amaravati town. For, this is the only place where the Krishna flows north instead of east or south.

The Andhra Pradesh government, through the AP Capital Region Development Authority, got some 30,000 acres of land .

The seed capital development area will cover 16.7 sq km and comprise the AP Legislative Assembly, Legislative Council, High Court, Secretariat, Raj Bhavan, quarters for the ministers and officials, and the township for government officials.

Expected to be completed by 2018-19, the Seed Capital Area (SCA) will be home to about 3 lakh residents.

The business hub is expected to generate about 7 lakh jobs in various sectors, including government. There will be a thriving, state of the art, Central Business District (CBD) for business and living

The master plan envisages nodes and corridors for a transit-oriented development approach.

- So, there will be an integrated network of 12km of Metro railways,
- 15km of Bus Rapid Transit systems,
- 7km of downtown roads,
- 26km of arterial and sub-arterial roads
- 53km of collector roads.

The city has been split into the CBD, residential townships, institutions, parks and gardens, water bodies, recreational spaces, waterfront etc. The city will be planned on sustainable development principles, with extensive, open green spaces, to add value to the urban ecosystem.

A regional expressway and an outer regional expressway will connect various towns to the core capital region. A dedicated freight corridor will connect with highways leading to New Delhi via Hyderabad. National Waterway 4 proposed to be developed on Wazirabad-Vijayawada-Vodarevu Port and Wazirabad-Vijayawada-Rajahmundry-Kakinada routes connecting other places via rivulets and canals. An airport planned at Mangalagiri, and five corridors will have high-speed railways

The more-or-less smooth acquisition of 32,000 acres of land from farmers by the Mr N Chandrababu Naidu government to build Amaravati, the new capital of Andhra Pradesh

Thank you

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