



Engineering Procurement & Construction (EPC)

Braving the headwinds



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Foreword

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"If you want to build a ship, don't drum up people to collect wood and don't assign them tasks and work, but rather teach them to long for the immensity of the sea."

We belong to and represent an industry that is literally building a new 21st century India driven by aspirations of tens of millions who seek a better life, a better livelihood and more opportunity to build on their dreams. Hidden in the string of highways, factories, airports, ports, metro rail networks, dams, commercial towers and nuclear power plants is the potential for India to forge its most successful partnership ever – that between entrepreneurs and workers. As the EPC industry moves toward more maturity and more established norms and protocols, let us never forget the unique ability of this industry to transform India. Even though we live in the age of information and information technology, it is bricks and mortar that will craft the second-largest economy of the world and the largest middle class consumer base in the world in a decade or two.

There is always the temptation to be swayed and spooked by the present. To that extent, the present state of the Indian economy does appear cloudy and depressing. After years of a more than impressive surge, GDP growth rate has dipped to a disappointing 5% a year. Both the fiscal and current account deficits threaten to derail the growth momentum. Virtually double-digit consumer inflation is making life difficult for citizens. And the media is peppered with reports of how investors and entrepreneurs are holding back when it comes to letting their money talk with India. Problems related to delays, cost overruns, financial closure and profitability that confront many high profile EPC projects are

testimony to the tyranny of the present. Yet, as famous poet PB Shelley suggested more than two hundred years ago: "If winter comes, can spring be far behind?"

Global rating and consulting institutions are unanimous in saying that the longer-term prospects for the Indian economy remain extremely bright. And let us not forget one fact – when the famous BRICS report released early this century predicted that India will become the second-largest economy of the world by 2050, it was based on the assumption that GDP growth rates will average 5% to 6% a year. The fact is, India will build infrastructure across the board and both domestic and foreign investors will participate in this significant endeavor, just as they have done in China since the late 1980s. The sheer numbers are too tempting for a smart investor to ignore. I do not want to deluge you with statistics right here; so allow me to quote just one number. If India is to use a modest 10% of its GDP to invest in Infrastructure, we are talking of annual investment in excess of US\$200 billion a year. It has been estimated that India's GDP will touch US\$10 trillion by 2020. That translates into infrastructure investment of at least US\$1 trillion a year. As India builds more to feed more dreams, both GDP and infrastructure investment will keep growing.

Of course, for these long-term dreams to be realized, policy makers will need to play a more proactive role to become catalytic agents. As this intensively researched report will show, almost all the bottlenecks faced by the EPC industry can be swept away by more nuanced policies emerging from Delhi and state capitals of the country. If that happens, the EPC industry will not only build a swanky, modern and forward-looking India, but also harness the skills of 10 million youngsters who will enter the work force every year.

A stylized, handwritten signature in white ink, appearing to read 'Tejasvi Sharma'.

Mr. Tejasvi Sharma
Managing Director

EY



Dear Reader,

The Government of India's continued focus on developing India's infrastructure has resulted in an ambitious target of INR56.3 trillion in the Twelfth Five Year Plan. Out of this amount approximately 50% of the investments are to be contributed by the

private sector. Considering this major potential opportunity in the infrastructure segment, the EPC sector is likely to be benefited. The EPC market of India has been witnessing consistent changes over the last few years with increased project size and complexity, increasing private clients and entry of several foreign players.

In the current market landscape, EPC contractors have a healthy mix of both government and private sector clients, as compared to their heavy dependence on government clients until a few years ago. The concept of EPC has been evolving over the last few years and has emerged as a preferred form of contracting by clients along with PPP models. Even when projects are awarded on BOT basis, there is an EPC opportunity for market players. Currently, clients prefer to go with a single point responsibility thereby, reducing the interface and the overall duration. This has been further strengthened by the fact that the highway sector, after several years of operating in the PPP mode, is considering to award more projects on the EPC model. Specialized EPC sectors such as marine, tunneling, hydro, industrial, and oil and gas continue to prefer awarding projects in the EPC mode.

When the Tenth Five Year Plan called for inclusion of "Chapter on Construction" in the National Plan, the success story had just begun. The era witnessed private equity investments in some of the largest construction groups of our country. The companies, with fresh capital infusion, exhibited significant turnarounds with revenues multiplied significantly. Euphoria continued at the beginning of the Eleventh five year plan when mid-sized companies started to attract investors' interest. Not only the financial

investors, but the global construction majors made strategic investments, further fuelling the growth story.

The increase in EPC activity is evident from increasing order books and revenues of the large- and mid-size construction players. However, the sector is currently facing headwinds from several directions. We have observed that the growth in revenues is not truly reflective in the bottom line, primarily due to significant cost overruns, regulatory bottlenecks and aggressive bidding positions taken by a few of market players. With increasing working capital requirements and the resultant increase in leverage, the EPC players are left with limited opportunity to raise further capital to fuel growth in the current scenario. PE funds too are cautious with their new investments as there is limited opportunity of exit due to unfavorable capital markets. Furthermore, the recent turmoil in the financial sector, including the rupee depreciation, has increased the level of uncertainty in project execution. Therefore, the sector is reeling under significant liquidity constraints.

In this turbulent market situation, the contracting companies have to realign their scaling strategies and focus on innovation, project management and profitable growth as compared to order book and revenue growth. Only those who can survive the headwinds will be able to capitalize on the opportunity being provided in the Twelfth Five Year Plan. Rationalization in the bidding process is quintessential at this juncture. "Profits" and "projects" need to be managed efficiently. Currently, the market is in a fragmented state and needs to undergo a high level of transformation if future sustainability is to be assured. M&A activities in the market place are expected to improve with consolidation on the horizon. Consolidation is also likely to relieve pressure and provide exit options to a set of investors.

This report discusses the potential opportunity; recent trends witnessed by the sector, challenges for re-enforcing sustainability and possible ways to overcome the challenges. We hope you enjoy reading this report and find it insightful.

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Sushi V. Shyamal

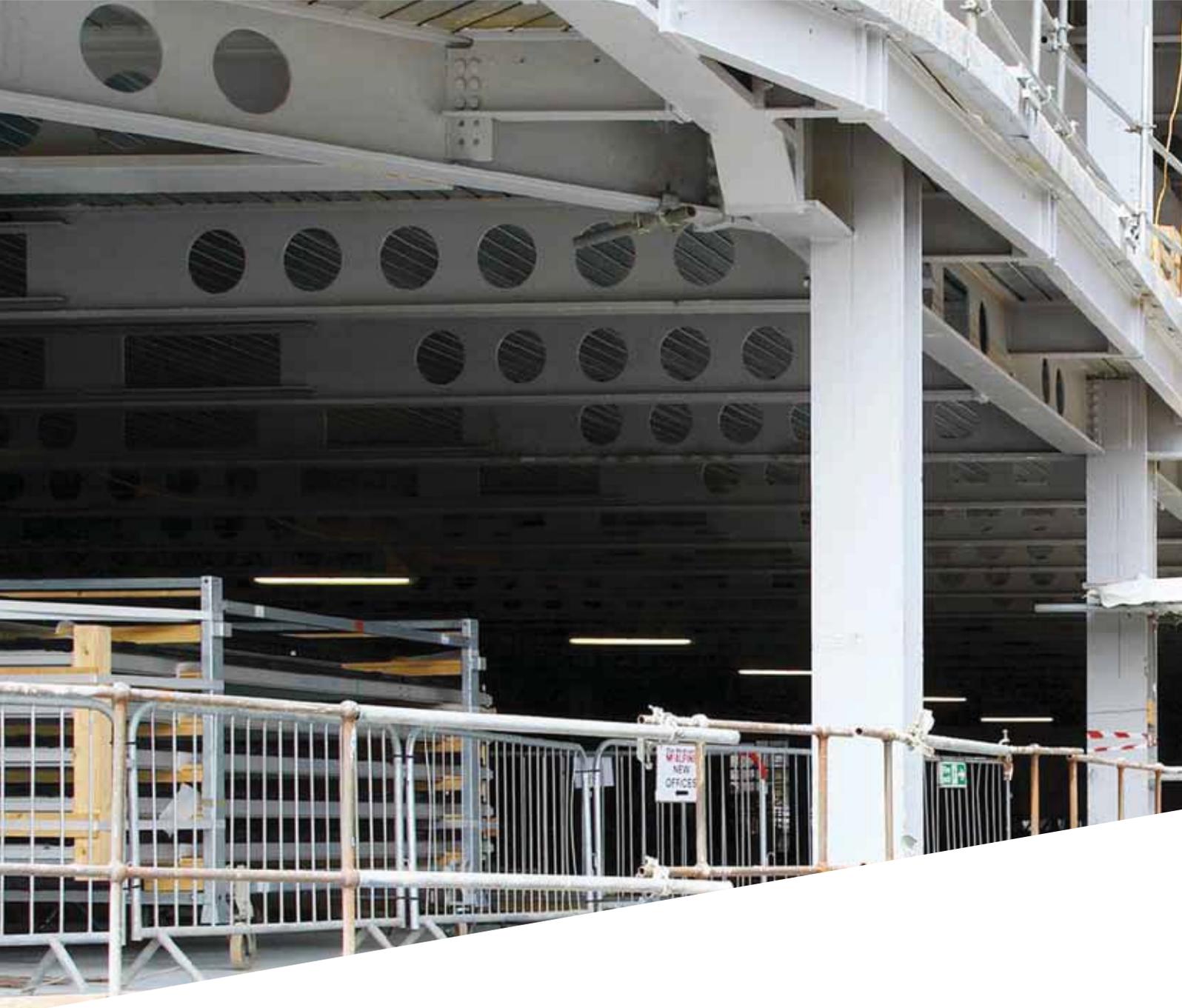
Partner, Transaction Advisory Services





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1

Introduction



1.1 Understanding EPC

From contracting to EPC - Why?

Over the years, the infrastructure business has witnessed several forms of contracting. The old models of contracting have given way to new modalities with the projects becoming more complex and risk leveraging adopted by the owners. Contracts have evolved from item rate packages to lump sum, fixed-price, fixed-time binding contracts. Slowly but steadily, the onus of project management has shifted from the owner/developer to the contractor. There is a visible shift from owner-managed projects to EPC projects and the risk of time and cost overruns has been transferred to the contractor, along with the responsibility of designing, procurement of material and construction. Although standard clauses and conditions prevailed, the EPC contract model has evolved to reflect the shift in balance of risk between the owner/developer and the contractor. This form of contract even protects the owner/developer from currency and interest rate fluctuations. Unlike other contracts where procurement and design are considered separate processes, in EPC contracts they are done simultaneously, reducing the overall duration of the project. Initially there were only few contractors who had the required technological and financial capabilities to take overall responsibilities of the complete project; therefore, large projects were divided into small EPC packages. Gradually the EPC contractors developed technical expertise and became financially competent and the project owners began to award them complete projects as a single lump sum turnkey contract.

Global outlook

Globally, EPC has become an accepted form of contract by the construction industry and the EPC contractors have adopted a modern variation called EPCM – engineering, procurement and construction management. The EPC contractors have expanded their roles and have adopted the roles of project consultants by managing the project from design to commissioning. This has limited the role of engineering consultants and large EPC companies have transformed into solution providers. Globally, large EPC players manage projects in different corners of the world with production hubs strategically located in several continents. They have highly sophisticated project management and risk management techniques, which help them to monitor and manage projects efficiently across different locations. It has been observed that some of the global players also acquire a strategic stake in the equity of the project, which express their commitment as well as provide confidence to the owners and investors.

How is EPC different from other models?

Several models of contract co-exist in the business and each is unique and fits to the requirement of the client. While some are item rate-based contracts, others provide pass-through escalations and inflation protection to the contractor. Some contracts include the client's design requirements, while others place the onus of designing on the contractor. Such contracts, with varying but specific pre-defined terms and conditions, may be categorized as package-based contracts. Contracts where the onus to deliver the project for a guaranteed price within a fixed period and with performance on the basis of pre-committed standards, lies with the contractor are categorized as turnkey contracts also known as design and build or EPC. This form of contract is attractive for customers, since the liability for the end product, including design and construction, lies with the contractor. Customers may also choose the turnkey model for only part of the project, which will then transfer the coordination role to the customer.

Under the package-based model, time and cost overrun risks may lie with the owner or developer. However, under the turnkey model, failure to comply with any of the requirements will necessarily have an adverse impact on the contractor. This model has gained popularity, since it places the responsibility for designing, procurement and construction as well as successful project delivery on the contractor. Hence, it ensures efficiency and mitigates project completion time and costs.

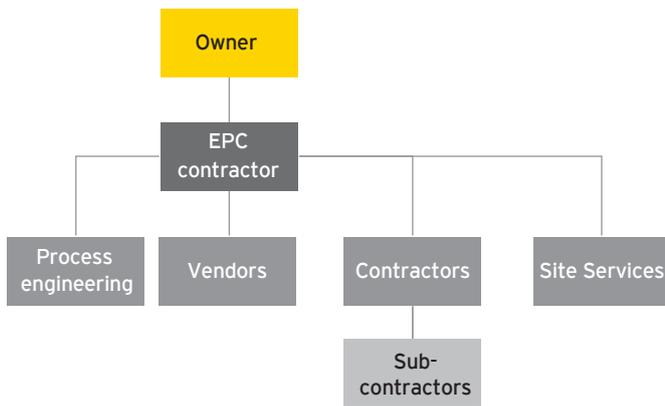
Turnkey contract vs. packaged-based contract

Criteria	Turnkey contract	Packaged-based contract
Price	Guaranteed price for execution	No guarantee on the price
Time	Guaranteed timeline for completion	No guarantee on the timeline
Procurement	Undertaken solely by the contractor	According to agreement between the two parties
Engineering/design	Responsibility of the contractor	Responsibility of the owner/developer
Responsibility	Contractor has complete responsibility	Contractor has defined responsibility
Point of contact	Contractor is single point of contact for all matters for the project developer	Owner/developer has to coordinate with several participants along with the contractors
Level of Involvement	Contractor is free to work with limited supervision delivering according to agreed milestones and specifications	Owner/developer to undertake a day-to-day supervision of most of the activities
Risk	Significant risks are transferred to the contractor	Significant risks retained with the owner/developer

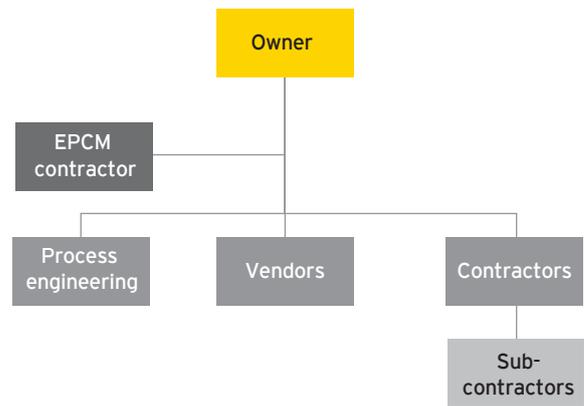
EPCM is believed to be similar to EPC contracts. In EPCM the contractor takes the responsibility of the entire project integration as well as the management control on the project. However, it is not responsible directly for the project cost and schedule. It is a professional services contract, which has a different risk allocation as well as different legal consequences. In EPCM contract, land acquisition, local issues, operation and maintenance and sale of goods after completion of project lies with the project owner. In EPCM the contractor designs, procures and manages the construction process on the owner's behalf; however, the construction is done by other parties. In large projects, EPCM contractor breaks the entire project and awards separate EPC projects in small packages.

Contractual relationship of EPC and EPCM model

EPC model



EPCM model



In the ongoing Twelfth five year plan, the Government of India (GoI) has set up an ambitious target of INR56.3 trillion for Infrastructure development¹. The Government funding for a plan of such a considerable size was not sufficient and therefore, it has relaxed policies and encouraged private parties to participate in India’s infrastructure development through the public private partnership (PPP) mode. The most common model in PPP is build-own-transfer (BOT) and is used in several road, transmission, ports, water and airport projects. PPP is quite different from EPC contracts as the developer invests to build the asset as well as owns and operates it. The developer ultimately awards the contract to an EPC contractor and on completion, operates it for a fixed duration before transferring it back to the government. The viability of EPC or PPP mode for infrastructure projects has always been a topic of debate; however, the dynamics are different from segment to segment and depend on the government’s priority to award the contracts. Some sectors, such as highways have reached a mature stage, whereas others such as the railways and urban infrastructure are yet to roll out large project programs based on PPP model.

1 “Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II),” *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013

1.2 EPC players in India

Currently, the Indian EPC sector, with its rising prominence and changing dynamics, has more than 150 participants and a multitude of stakeholders. Players have carved out a niche for themselves and have developed their reputation, based on their sector focus. Some have also divested their operations in other sectors, thereby segregating the entire EPC space, based on operational segments.

Segment	Major domestic players	Major foreign players	Insight
Infrastructure / General Contracting	Larsen & Toubro Limited, Hindustan Construction Co. Ltd., Gammon India, IVRCL, Simplex Infrastructure Ltd., Gayatri Projects Ltd., Patel Engineering Ltd., Era Infra Engineering Ltd., Sadbhav Engineering Limited, Nagarjuna Construction Company Ltd.	Isolux Corsan, ITD Cementation India Limited, IJM (India) Infrastructure Limited, Leighton, ACS Construction Group Ltd., Vinci Construction	Increasing opportunities in the infrastructure sector have attracted many new domestic as well as new entrants to this space.
Building construction – Residential and Commercial Segments	Larsen & Toubro Limited, Shapoorji Pallonji & Co. Ltd., Ahluwalia Contracts (India) Ltd., B L Kashyap & Sons Ltd, B. G. Shirke Construction Technology Private Limited, B. E. Billimoria & Co. Ltd., BSEL Infrastructure Realty Limited, Consolidated Construction Consortium Ltd., Mackintosh Burn Ltd., Man Infraconstruction Limited, Supreme Infrastructure India Ltd., Unity Infraprojects Ltd., Vascon Engineers Ltd.	Arabian Construction Company, Leighton, Samsung Engineering	Space is unorganized in nature and is dominated primarily by local contractors.
Oil & Gas EPC	Larsen & Toubro Ltd., Punj Lloyd Ltd., Petron Engineering Construction Limited, Essar Projects (India) Limited, McNally Bharat Engineering Co. Ltd., Leighton, Engineers India Limited, Fabtech Projects & Engineers Ltd., Jaihind Projects Ltd.	Aker Solutions, Leighton Welspun Contractors Pvt. Ltd., Bechtel Corporation, Linde Engineering India Pvt. Ltd., Technimont ICB, Samsung Engineering, Uhde India Limited,	Significant competition from foreign participants, especially for offshore contracts; business model focused on project management rather than direct execution
Power EPC General Power EPC and Power Transmission	Power EPC BHEL, Larsen & Toubro Ltd., Tata Projects Ltd., BGR Energy Systems Ltd., Gammon India, Gayatri Projects Ltd., McNally Bharat Engineering Co. Ltd., Shriram EPC Ltd., Tecpro Systems Ltd., Cethar Ltd. Power Transmission EMC Ltd., Jyoti Structures Ltd., Hythro Power Corporation Ltd., GET Power Pvt. Ltd., KEC International Ltd., Kalpataru Power Transmission Limited, JMC Projects (India) Ltd., Techno Electric & Engineering Company Ltd., Unitech Transmission	Doosan Power Systems, Dongfang Electric Corporation, Harbin Power Engineering Co. Ltd., KEPCO, ThyssenKrupp Industries India, Alstom T&D India, Alstom Projects India Limited, Mitsubishi Heavy Industries, Toshiba Thermal and Hydro Power Systems Company, Ansaldo STS, Babcock & Wilcox	Market segmented into niche areas; few players with presence across both BTG and BoP Dominated by equipment manufacturers who have forayed into EPC as forward integration Global players entered the market in JV with Indian players to enhance their equipment business
Specialized EPC Marine, Industrial, Railways, Tunneling, Mining etc.	Shriram EPC Ltd., Coastal Projects Ltd., Navayuga Engineering Company Ltd., Hindustan Construction Co. Ltd., Patel Engineering Ltd., Afcons Infrastructure Ltd., Simplex Infrastructure Ltd., McNally Bharat Engineering Co. Ltd., Petron Engineering Construction Ltd., Kalindee Rail Nirman (Engineers) Limited, AMR Construction Ltd.	ABB India Ltd., Uhde India Ltd., Toyo Engineering India Ltd., Continental Engineering Corporation, Marti India Private Ltd., AG Group, Samsung Engineering, ITD Cementation India Ltd.	Comprises niche players in segments such as hydel tunneling, marine construction, or industrial construction

The Indian EPC sector has both Indian and international EPC contractors. While several international EPC players have already established their presence in the Indian market in specific segments of construction, some have recently entered India and some are considering entering amid stagnant markets in Europe and the US.

Although the EPC contract and its fundamentals are similar in India and abroad, the quality and strength of the players vary. Large global players have in-house research centers and possess state-of-the-art technologies. They have, over the years, transformed themselves into solution providers from being a contractor. It has been observed that global EPC players are very strong in engineering and design while their Indian counterparts are mainly focussed on construction. A majority of local players in India have a journey to make from 'C' to EPC in the real sense.

Foreign companies have entered India through different routes. Few have chosen to acquire Indian companies, while others have entered joint ventures. This has helped foreign companies to directly gain market share as well as existing assets and projects. This is a win-win situation for domestic players as well. Joint ventures enable Indian companies to qualify for big ticket bids. There are several cases where domestic companies have tied up with foreign companies to bid for airport projects, power projects and road projects. In these arrangements, engineering and technologies are provided by the global counterpart and on ground construction is taken care of by the Indian company. This has also given an opportunity to the Indian company to upgrade on technologies and engineering.

Entry strategy of foreign EPC companies in India

Modality	Benefits to the player	Precedence
Joint venture with existing players	<ul style="list-style-type: none"> ▶ Access to knowledge capital for India entry ▶ Benefit of brand equity of the existing player 	<ul style="list-style-type: none"> ▶ In 2007, Shriram EPC formed a JV with a Belgium-based company. The JV enabled it to tap the fast-growing wet cooling and air pollution control market in India².
Acquisition of an Indian entity	<ul style="list-style-type: none"> ▶ Advantage of existing resource base ▶ Scale of operations achievable through acquisitions 	<ul style="list-style-type: none"> ▶ In December 2010, Leighton International Limited and Welspun Group formed a strategic JV to pursue EPC opportunities. Welspun had acquired a 35% stake in Leighton Contractors (India) Pvt. Ltd. for INR4.7 billion³. ▶ In 2010, The Saudi BinLadin Group (SBG) of Saudi Arabia acquired a 20% stake in Maytas Infrastructure Ltd. (MIL) for INR3.0 billion⁴. ▶ In November 2011, a Germany-based company acquired a small Oil & Gas EPC company⁵. ▶ In January 2012, Vinci entered the Indian market by buying a 100% stake in NAPC⁶. ▶ In April 2012, Hochtief entered an agreement with Coastal Projects Limited to jointly bid for projects in India⁷.

The sector, strongly upheld by the infrastructure story, has a strong potential to grow further with the Twelfth five year plan (FYP) targeting infrastructure spend of INR56.3 trillion. Even in future, infrastructure development is likely to remain the focus area of the Gol.

2 "Shriram EPC forms venture with Belgian Group," Indian Business Insight, 18 February 2007, via Factiva © 2012 Informatics (India) Ltd.
3 "Welspun, Leighton forms JV for infra business," DNA - Daily News & Analysis, 25 December 2010, via Factiva, © 2010. Diligent Media Corporation Ltd.
4 "SBG buys 20% stake in Maytas Infra," Mist News, 4 August 2010, via Factiva, © 2010 Misr Information Services and Trading.
5 "German engineering firm acquires Surat construction company," The Times of India, 4 April 2012, via Factiva © 2012 The Times of India Group
6 "French company Vinci buys NAPC," *The Hindu*, 12 January 2012, via Factiva, © 2012 Kasturi & Sons Ltd.
7 "Hochtief enters into agreement with Coastal Projects for technology assistance," *The Economic Times*, 10 April 2012, via Factiva, © 2012 The Times of India Group

Comparison of investments in FYPs

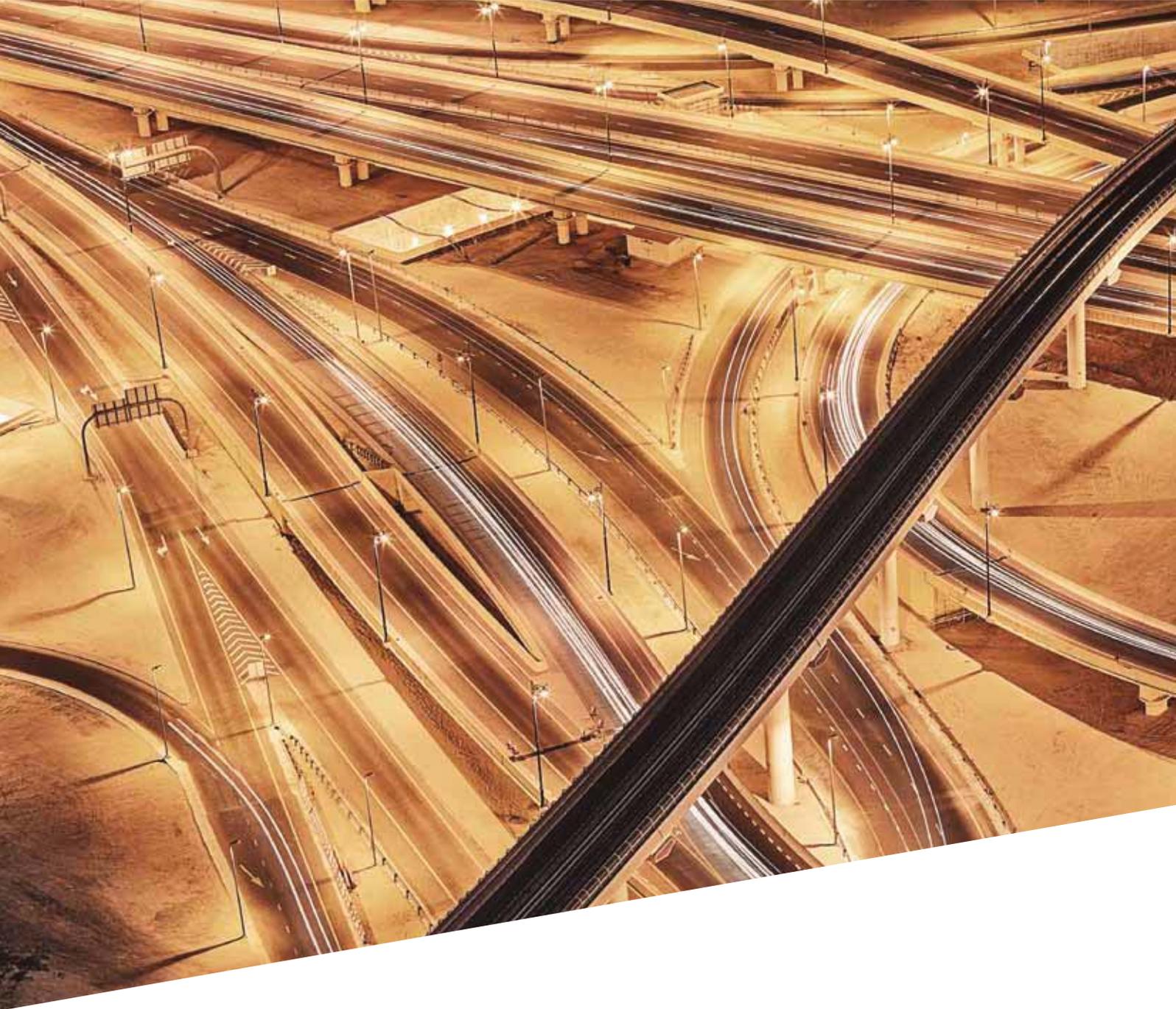
	Tenth FYP (2002-07) (INR trillion)	Eleventh FYP (2007-12) (INR trillion)	Twelfth FYP (2012-17) (INR trillion)
Planned investments	8.7	20.6	56.3
Actual Investments	9.2	23.9	NA
EPC opportunity	4.5	11.4	26.7
Sectoral mix	Power: 30%	Power: 33%	Power: 32%
	Roads: 17%	Roads: 19%	Roads: 17%
	Telecom: 16%	Telecom: 16%	Telecom: 17%
	Railways: 11%	Railways: 8%	Railways: 9%
	Irrigation: 13%	Irrigation: 10%	Irrigation: 9%
	Ports: 3%	Ports: 3%	Ports: 3%
	Oil & Gas: 2%	Oil & Gas: 2%	Oil & Gas: 4%
	Others: 8%	Others: 9%	Others: 9%
	~50% spend on power and roads – above targeted achievement in power sector	Power and roads consistently amounting to ~50% of planned expenditure – added focus on telecom	Increased thrust on telecommunications – increased expenditure on ports, oil and gas pipelines

Source: Eleventh and Twelfth Five year plan, Planning Commission

However, the scenario in the construction industry has changed in the last few years. The sector is facing a significant liquidity crunch, which is forcing leading companies to wait and watch before taking up major work. The recent financial turmoil and the rupee depreciation have added to the uncertainty faced by the industry. The sector is also facing some major bottlenecks. Issues pertaining to project take-off, particularly those relating to land acquisition and environmental clearances, delay due to regulatory changes and indecision call for immediate attention of the government to reduce execution delays and thereby control cost overruns. With such delays and uncertainty round the construction commencement, EPC pricing loses its validity. Furthermore cash stress situation, weakening financial strength of both contractors and developers, along with volatility in material price has made project execution difficult. Due to unrealistic bids by new entrants in the industry and also by the established players due to intense competition, several projects are stuck in between.

The EPC companies have to respond looking at the above challenges, “projects” and “profits” need to be managed well in the existing projects and right selection of projects along with comfortable quotes in bidding will be the key to success in future projects. Managing working capital will be crucial for the EPC companies and will also decide the fate of their survival in these tough times. Apart from construction capabilities domestic players have to transform and raise capabilities in engineering and project management with the right technological alliances.





2

Opportunities for EPC business in India

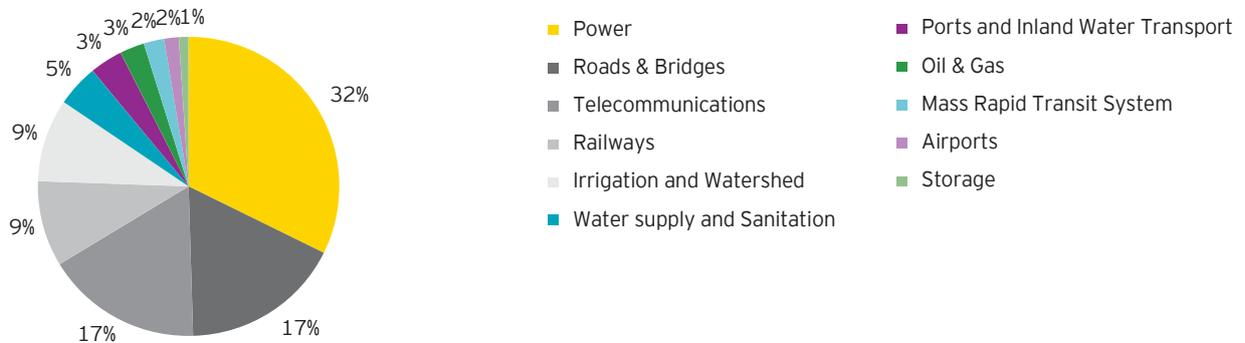


2.1 Opportunity in the Twelfth Five Year Plan (Twelfth FYP)

The Twelfth FYP envisages investment of approximately INR56.3 trillion in Indian infrastructure between 2012 and 2017. This, in turn, is expected to offer significant opportunities for EPC across various sectors⁸. During the period, the construction opportunity in the infrastructure sector is estimated to be around INR26.7 trillion (approximately 47% of planned investments). Significant investments in infrastructure projects, along with the revival in the real estate sector and growth in industrial capex are likely to boost the construction industry and act as catalyst for growth of EPC companies in India⁹.

While EPC contractors continue to be the ultimate beneficiaries of infrastructure investments, the advent of new models has changed the clientele base for them – from government authorities to a mix of public and private clients.

Planned investments in infrastructure in the Twelfth FYP: INR56,316.9 billion



Source: Twelfth Five Year Plan document, Planning Commission

⁸ "Twelfth Five Year Plan 2012-2017 - Faster, More Inclusive and Sustainable Growth (Volume I)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_1.pdf, accessed 25 October 2013.

⁹ "Report of the working group on construction for the Eleventh five year plan(2007-2012)," *Planning Commission website*, http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_constrn.pdf, accessed on 04 November 2013.

Construction opportunity in the Twelfth FYP

Sector	Total planned investment in Twelfth FYP (INR billion)	Construction intensity ¹⁰	Construction opportunity (INR billion)
Roads and bridges	9,694.1	65%	6,301.1
Railways	5,218.0	78%	4,070.0
Mass Rapid Transit System (MRTS)	1,241.6	78%	968.4
Ports and Inland Water Transport (IWT)	1,977.8	50%	988.9
Airports	877.1	42%	368.4
Water supply and sanitation	2,549.5	66%	1,682.7
Irrigation and watershed	5,043.7	75%	3,782.8
Power	18,202.4	38%	6,916.9
Telecommunications*	9,439.0	10%	943.9
Storage*	584.4	50%	292.2
Oil & Gas	1,489.3	25%	372.3
Total	56,316.9		26,687.7

Source: Twelfth Five Year Plan document, Planning Commission, EY research, *Engineering, Procurement and Construction (EPC): Driving growth efficiently*, EY, 2011;

*Construction intensity is assumed with comparison to buildings as per data available in the Planning Commission's report. In the case of telecom, construction intensity of 10% has been assumed.

The construction intensity, which varies significantly across infrastructure sectors, impacts the opportunity for EPC players more directly than the investment planned. While construction-intensive sectors such as roads, railways and MRTS together account for 28% of infrastructure investments, they contribute nearly 42% to the total EPC opportunity. On the other hand, the telecom sector, which has the third-largest investment in infrastructure, accounts for only 3.5% of the total EPC opportunity¹¹.

Planned infrastructure investments

The GoI has been strengthening its focus on infrastructure development to drive the growth of the economy at a sustainable pace. It has increased its infrastructure spend as a percentage of the country's GDP from 5.2% during the Tenth Five Year Plan 2002-07 (Tenth FYP) to 7.6% during the Eleventh Five Year Plan 2007-12 (Eleventh FYP). This infrastructure spend is expected to increase to more than 9% of the GDP during the Twelfth FYP 2012-17¹².

Since the beginning of the Twelfth FYP, the Central and state governments have been particularly pushing the mega infrastructure and industrial projects (exceeding investments of INR10 billion), through several legislative and regulatory measures. Such projects are broken down into various phases into smaller projects to simplify the planning and execution,

10 "Report of the working group on construction for the Eleventh five year plan(2007-2012)," *Planning Commission website*, http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_constrn.pdf, accessed on 04 November 2013.

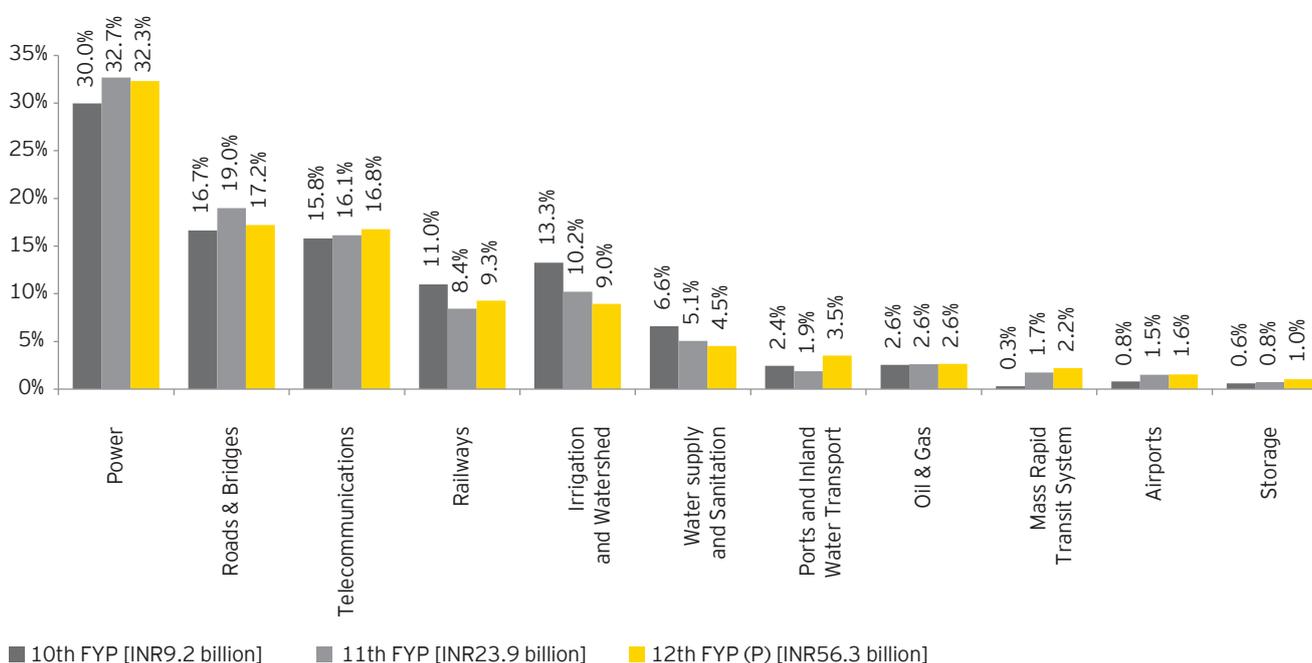
11 "Report of the working group on construction for the Eleventh five year plan(2007-2012)," *Planning Commission website*, http://planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_constrn.pdf, accessed on 04 November 2013; EY research

12 "Mid-Term Appraisal-Eleventh Five Year Plan 2007-2012," *Planning Commission website*, <http://planningcommission.nic.in/>, accessed 25 October 2013, p.293-295; "Column: Target 9% growth. Riders aplenty," *Financial Express*, 9 September 2011, via Factiva, © 2013 Indian Express Online Media Pvt. Ltd.

thereby, increasing the number of opportunities for companies to grab¹³. As of 31 May 2013, approximately 207 such projects, amounting to INR7,815.0 billion, identified by the GoI were in progress in the country¹⁴.

The GoI has more than doubled its investment in infrastructure to INR56.3 trillion during the Twelfth FYP from INR20.6 trillion during the Eleventh FYP period, and more than six times the planned infrastructure investments of INR8.7 trillion during the Tenth FYP period¹⁵. In both Tenth and Eleventh FYP, the actual investments had exceeded the planned investments¹⁶.

Comparison of segment-wise composition of infrastructure expenditure



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission
(P) - planned figures for the Twelfth FYP

The telecom sector has been witnessing increasing investment over the past 10 years. During the Twelfth FYP period, almost 17% of investments, expected to be invested in this sector, is estimated to witness a CAGR of ~10% from 2012 to 2017. Another sector, which has gained increasing prominence is the MRTS segment – with the GoI’s spend on the sector expected to increase from 0.3% of its total infrastructure spend during the Tenth FYP to 2.2% in the Twelfth FYP¹⁷.

13 “Panel to fast-track mega projects gets Govt’s nod,” Political and Business Daily, 13 December 2012, via Factiva © 2012 pbd.in; “Steel import norms eased for mega projects,” *Business Standard*, 9 August 2013, via Factiva © 2013 via Factiva © 2013 Business Standard Ltd.

14 “48th Flash Report on Mega Projects,” Ministry of Statistics and Programme Implementation, May 2013, http://www.cspm.gov.in/english/mp/MP_MAY_2013.pdf, accessed 25 October 2013.

15 “Twelfth Five Year Plan 2012-2017 - Faster, More Inclusive and Sustainable Growth (Volume I),” *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_1.pdf, accessed 25 October 2013.

16 “Twelfth Five Year Plan 2012-2017 - Faster, More Inclusive and Sustainable Growth (Volume I),” *Planning Commission*; “Eleventh Five Year Plan 2007-2012,” Planning Commission.

17 EY research; “Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II),” *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

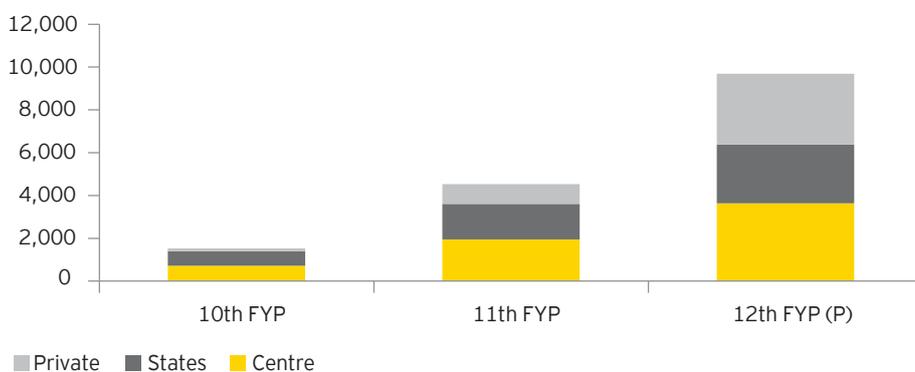


2.2 Key infrastructure sectors: investment scenario

Roads and bridges

India's road network spans 4.7 million km and is the second largest in the world, behind the US, and accounts for approximately 65% of freight and 80% passenger traffic in the country. The sector witnessed investment of INR4.5 trillion in the Eleventh FYP, which was approximately thrice the investment made in the Tenth FYP¹⁸.

Investments in roads and bridges (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission (P) - Planned

With a planned investment of INR9.7 trillion and construction intensity of 65%, the sector offers construction opportunities worth INR6.3 trillion in the Twelfth FYP. During the Twelfth FYP period, around INR3.3 trillion of investments are expected from the private sector, out of which INR2.4 trillion is planned to be awarded through National Highway Development Programme (NHDP) projects and the balance through state project awards¹⁹.

The GoI has continued with NHDP with a planned expenditure of INR2.4 trillion. It seeks to award 29,000 km of national highways during FY12-15, including 8,800 km in FY13 (actual awarded 20% or 1,760 km) and 9,000 km in FY14²⁰.

18 Ministry of Road Transport and Highways (MORTH) 2013 annual report; "India Road Network," *NHAI website*, <http://www.nhai.org/roadnetwork.htm>, accessed 20 November 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013

19 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

20 "Road ministry fixes 9,000 Km national highway target for this fiscal," *The Economic Times*, 17 April 2013, via Factiva © 2013 The Times of India Group; EPC: Driving growth efficiently, EY, 2011

Physical progress of NHDP, in kms., at the end of October 2013

Particulars	Completed till 31 October 2013	In progress	To be awarded	Total
Golden Quadrilateral	5,846	0	0	5,846
Phase I, II	6,177	646	372	7,195
Phase III	5,750	4,762	1,685	12,197
Phase IV	324	4,268	10,242	14,834
Phase V	1,653	2,456	2,419	6,528
Phase VII	21	22	659	702
Port connectivity	374	8	0	382
Total	20,145	12,162	15,377	47,684

Source: National Highway Authority of India

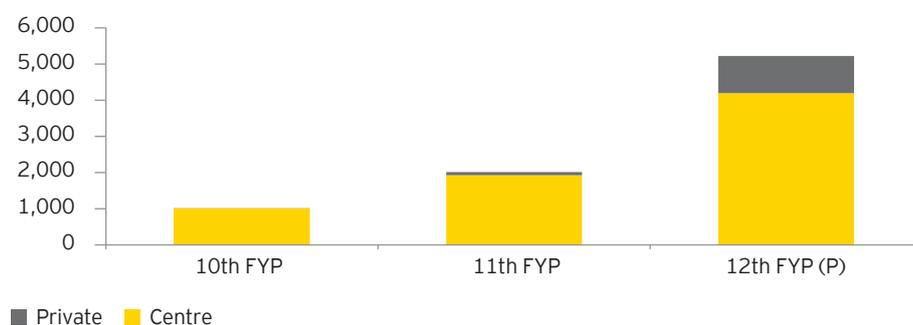
At the end of October 2013, approximately 42% of the total 47,684 km of NHDP roads was completed, while another 26% was in progress²¹.

In order to develop the north-eastern states, the GoI has proposed construction of 6,418 km of highways with an investment of INR336.9 billion under the Special Accelerated Road Programme for North East (SARDP-NE) during the Twelfth FYP. Under the Pradhan Mantri Gram Sadak Yojana, an expenditure of INR915 billion has been incurred till FY12, out of a total of INR1,277.9 billion sanctioned²².

Railways

Indian Railways network spans more than 64,600 km, making it the world's fourth-largest rail network in terms of size. In addition it is the largest passenger carrier and the fourth-largest rail freight carrier globally. In the Twelfth FYP, the total investment for railways is estimated to be INR5.2 trillion. Construction intensity in railways is around 78%, which will result in opportunities worth INR4.1 trillion during the Twelfth FYP²³.

Investments in railways (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

21 "National Highway Development Project (NHDP)," *NHAI website*, <http://www.nhai.org/WHATITIS.asp>, accessed 20 November 2013.

22 "Northeast witnesses spate of highway construction," *Indian Business Insight*, 30 September 2013, via Factiva © 2013 Informatics (India) Ltd.; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

23 "Indian Railways: Statistical Summary," *Indian Railways website*, http://www.indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/pdf/Summary%20Sheet_Eng.pdf, accessed 17 October 2013

In the Eleventh FYP, INR2.0 trillion was invested in railways as compared to a target of INR2.5 trillion. Rail projects in India have been typically the domain of the public sector. However, based on the success of PPP in other infrastructure sectors, the Indian Railways has just begun to take steps to explore the PPP route, and aims to award INR1.0 trillion through the PPP route in the Twelfth FYP²⁴.

Physical progress, (in kms.), during the Tenth FYP and Eleventh FYP

	Tenth FYP (actual)	Eleventh FYP (estimated)	Eleventh FYP (actual)
New lines	920	2,000	2,205
Gauge conversion	4,289	10,000	5,290
Doubling	1,300	6,000	2,756
Railway electrification	1,810	3,500	4,501

Source: Twelfth Five Year Plan document, Planning Commission

The Ministry of Railways (MoR) and the Department of Industrial Policy and Promotion (DIPP) has proposed 100% FDI in rail infrastructure projects, such as the INR215 billion Mumbai elevated rail corridor and the dedicated freight corridors²⁵. The Indian Railways has also identified 22 stations across the country that will be modernized into world-class facilities²⁶.

The MoR launched the High Speed Rail Corporation of India Ltd. (HSRC), a subsidiary of Rail Vikas Nigam Ltd. (RVNL), in order to consider high-speed rail projects as a vital part of the upcoming rail infrastructure projects. The trains on these projects will be able to achieve speeds of 160 to 200 kmph, thereby, making it feasible to increase the frequency of trains and consequently the capacity of railways. A preliminary study of the Mumbai-Ahmedabad high-speed rail route has estimated its cost to be around INR650 billion²⁷.

Mass Rapid Transit System (MRTS)

The GoI has been focussing on developing MRTS over the last decade. As of June 2013, three metro rail projects and four bus rapid transit (BRT) projects are operational. During the Twelfth FYP period, private sector spending is expected in MRTS systems in cities such as Ahmedabad, Bengaluru, Hyderabad, Chandigarh, Chennai, Delhi, Jaipur, Kochi, Kolkata, Mumbai, Patna, Pune and Surat²⁸. MRTS projects, such as metro rail are usually deployed in cities with population of more than 1 million. The number of such million-plus cities increased from 35 in 2001 to 53 in 2011, and is expected to go up to 85 by 2051²⁹.

24 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013; "Railway Ministry wants changes in DIPP's FDI plan," *The Economic Times*, 18 October 2013, via Factiva © 2013 The Times of India Group.

25 "DIPP proposes 100% FDI in railway projects," *The Economic Times*, 26 September 2013, via Factiva © 2013 The Times of India Group; "Railways seeks FDI in rail infrastructure projects," *The Economic Times*, 3 October 2013, via Factiva © 2013 The Times of India Group.

26 *EPC: Driving Growth Efficiently*, EY, 2011; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

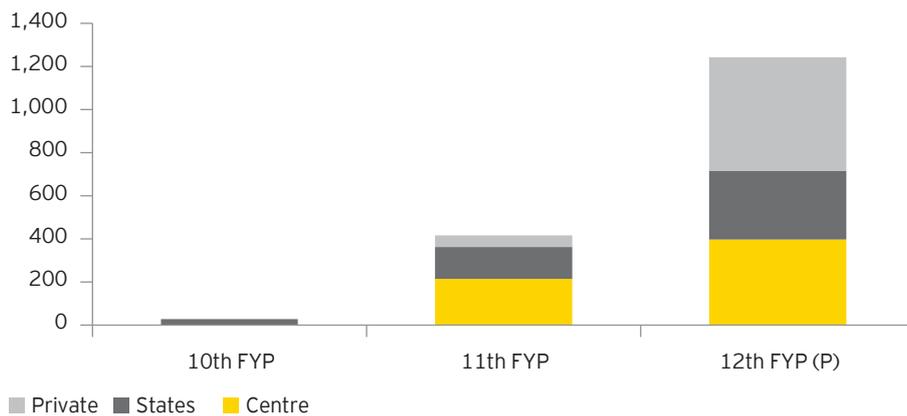
27 "Railway Minister Launches High Speed Rail Corporation of India Limited (HSRC)," *Press Information Bureau website*, <http://pib.nic.in/newsite/erelease.aspx?relid=100308>, accessed 31 October 2013.

28 "Metro systems in India: Case study DMRC," *United Nations Environment Programme website*, http://www.unep.org/transport/lowcarbon/Stakeholders_2011_NewDehli/Oct%202020/Session%20V/Metro%20Systems%20in%20India_Case%20Study%20DMRC_Tiwari.pdf, accessed 29 October 2013; "BRT projects in Indian cities as inclusive transport systems?," *United Nations Environment Programme website*, http://www.unep.org/transport/lowcarbon/Stakeholders_2011_NewDehli/Oct%202020/Session%20V/BRT%20Projects%20in%20Indian%20Cities%20as%20Inclusive%20Transport%20Systems_Darshini_Joshi.pdf, accessed 29 October 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

29 "Model Guidelines for Urban Land Policy," Ministry of Urban Development website, http://tcpomud.gov.in/Divisions/MUTP/MODEL_GUIDELINES_FOR_URBAN_LAND_POLICY.pdf, accessed 29 October 2013; "FDI in retail to touch only 13.3% of population," *The Times of India - Mumbai Edition*, 23 February 2013, via Factiva © 2013 The Times of India Group.



Investments in MRTS (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

Investment in MRTS has increased from INR27.4 billion in the Tenth FYP to an estimated INR1,241.6 billion in the Twelfth FYP, with the private sector contributing 42%. With a construction intensity of 78%, the sector provides INR1.0 trillion of EPC opportunity. Apart from the seven operational MRTSs, seven more are likely to commence operations by 2017, while 15 more projects have been planned, which include metro rail, monorail, BRT and light rail transit (LRT)³⁰. The Ministry of Urban Development (MoUD) estimated a total expenditure of INR2.0 trillion for developing urban public transport by 2031.

The MoUD is working on the standardization of metro rail projects in the country, and has formed six sub-committees looking after different aspects of the metro. Although the MRTS projects are largely EPC contracts, the GoI has also begun to consider the PPP model. However, PPP projects have been hit by more roadblocks and delays. India's first PPP-based rapid metro rail in Gurgaon has been delayed by more than 10 months³¹.

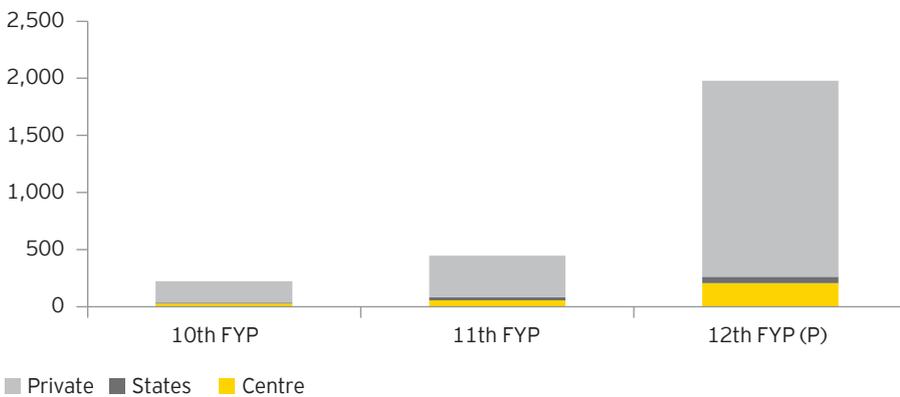
30 "Report on urban infrastructure and services by the high powered expert committee," *National Institute of Urban Affairs website*, <http://www.niua.org/projects/hpec/finalreport-hpec.pdf>, accessed 29 October 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013

31 "Gurgaon Rapid Metro misses deadline again," *The Indian Express*, 7 October 2013, via Factiva; "Government to set standardised norms for Metro Rail projects," *The Economic Times*, 3 September 2013, via Factiva © 2013 The Times of India Group

Ports and inland water transport (IWT)

India has an extensive coastline of more than 7,515 km and 14,500 km of navigable waterways, with an infrastructure of 13 major ports (all administered by the Ministry of Shipping, 12 governed by Major Port Trusts Act, 1963 and one governed by the Companies Act, 1956), 199 minor ports, and 6 national waterways situated along its length. Merchandize trade contributes more than 50% of the country's real GDP and 95% of this merchandize trade (by volume) is transported through maritime transport³².

Investments in ports and IWT (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

The planned investment of INR2.0 trillion in the Twelfth FYP is approximately three times the actual investment in the sector in the Tenth FYP and Eleventh FYP combined. The private sector is expected to contribute 87% to the Twelfth FYP investments. The sector is expected to result in a construction opportunity worth INR1.0 trillion, given the construction intensity of 50%³³.



³² *India Maritime 2012: Building a global maritime sector*, EY, 2012

³³ "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

The cargo traffic handled at major and minor ports increased at a CAGR of 5.2% during FY08-FY13 to 934 million metric tonnes (MMT), while the cargo traffic handled in the national waterways doubled during FY08-FY12 to 7.1 MMT. It is expected that the capacity and traffic at the ports will increase to 3,130 MMT and 2,495 MMT, respectively by 2020³⁴.

Development projects for major ports, Maritime Agenda 2010-2020

Category	No. of projects	Internal funding (INR billion)	Private sector funding (INR billion)
Construction/reconstruction of berths and jetties	115	117.5	429.6
Equipment procurement	72	32.1	17.3
Deepening of channels and berths	40	85.9	0.0
Rail-road connectivity	26	31.8	17.9
Other works	99	98.3	264.0
Total	352	355.6	728.8

Source: Maritime Agenda 2010-2020

A total of 352 projects have been identified for implementation at major ports under the Maritime Agenda 2010-2020. Approximately 31% of the total projects are largely construction or reconstruction of berths and jetties. Key projects include the fourth container terminal and 330 meter extension of the container berth at Jawaharlal Nehru port terminal, the iron ore terminal at Mormugao port, the coal-handling facility and container terminal at New Mangalore port, and the mega container terminal, dry port and multi-modal logistics hub at Chennai port³⁵.

The GoI has also decided to develop two new major ports in West Bengal and Andhra Pradesh at an estimated cost of INR160 billion, as well as IWT projects worth INR105 billion³⁶.



34 "Update on Indian port sector (31.03.2013)," Transport Research Wing, Ministry of Shipping, Road Transport and Highways, June 2012; Inland Waterways Authority of India 2013 annual report; "Maritime agenda: 2010 - 2020, Ministry of Shipping, January 2011.

35 "Update on Indian port sector (31.03.2013)," Transport Research Wing, Ministry of Shipping, Road Transport and Highways, June 2012; "Basic port statistics of India 2010-11," Transport Research Wing, Ministry of Shipping, Road Transport and Highways, April 2012; "Maritime agenda: 2010 - 2020, Ministry of Shipping, January 2011.

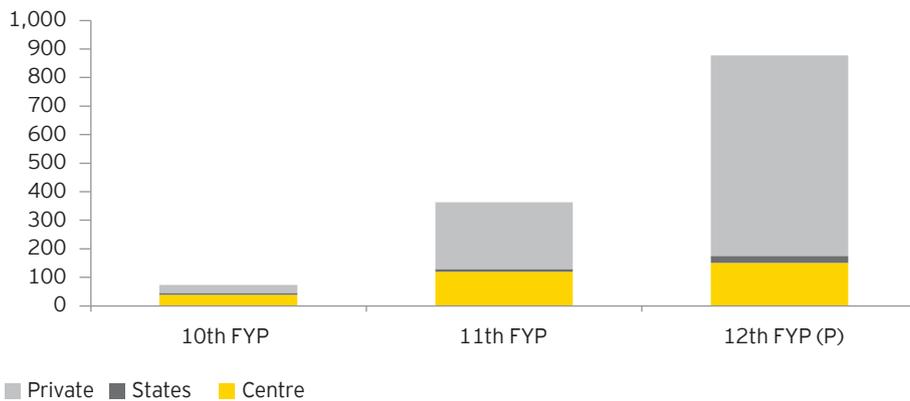
36 "India to set up two more major ports," National Turk, 5 August 2013, <http://www.nationalturk.com/en/india-to-set-up-two-more-major-ports-41268>; "Govt exploring ways to increase inland waterways," *The Economic Times*, 15 February 2013, via Factiva © 2013 The Times of India Group; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.



Airports

The Airport Authority of India (AAI) manages 125 airports, including 11 international, 81 domestic, 8 customs airports and 27 civil enclaves. During FY08-FY13, total passenger and cargo traffic through Indian airports increased at a CAGR of 6.4% and 5% to 159.3 million and 2.2 MMT, respectively³⁷. The passenger traffic is expected to touch 300 million by 2020³⁸.

Investments in airports (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

Total investment is estimated to be INR877 billion in the Twelfth FYP (80% by the private sector). Construction intensity in airports is around 42%, which is expected to result in construction opportunity worth INR368 billion.

The GoI has proposed to build 17 new airports in 11 states, including under-penetrated states such as Arunachal Pradesh, Jharkhand and Rajasthan, as well as 100 airports in smaller cities³⁹. The Ministry of Civil Aviation (MoCA) has approved new greenfield airports at a total investment of INR320 billion⁴⁰. The passenger terminal capacity in all airports put together is expected to be 370 million by 2017 from 230-240 million in 2012. Private players are now allowed to acquire 100% equity stake at the six airports developed on PPP mode⁴¹.

Power

EPC in the power sector is broadly divided in two parts – power generation and transmission and distribution (T&D). Power generation is further divided into boiler, turbine, generator (BTG) and balance of plant (BoP). Contractors specializing in the BTG works usually take up supply, erection and commissioning of the BTG as well as related civil works. The BoP contracts include construction and commissioning of coal handling, ash handling and water treatment systems, as well as related civil works. A majority of Indian BTG manufacturers have forayed into the EPC segment as a forward integration of their capabilities, particularly in the boilers segment. Most Indian BoP players have evolved from general civil contractors, leveraging their expertise in civil works. Foreign players, especially Chinese and Korean, have adopted the JV route to bid for super critical boilers in the Indian power EPC market⁴².

37 "Organization," *Airport Authority of India website*, http://www.aai.aero/public_notices/aaisite_test/orign.jsp, accessed 29 October 2013; "Traffic summary," *Airport Authority of India website*, http://www.aai.aero/traffic_news/mar2k8annex1.pdf, accessed 29 October 2013; "Traffic summary," *Airport Authority of India website*, http://www.aai.aero/traffic_news/mar2k13annex1.pdf, accessed 29 October 2013

38 "Govt unveils 100 airports in smaller cities," NBM & CW, 24 September 2013, via Factiva © 2013 NBM Media.

39 "Govt unveils 100 airports in smaller cities," NBM & CW, 24 September 2013, via Factiva © 2013 NBM Media.

40 "Government proposes to build 17 new airports in 11 states," *The Times of India*, 8 August 2013, via Factiva © 2013 The Times of India Group.

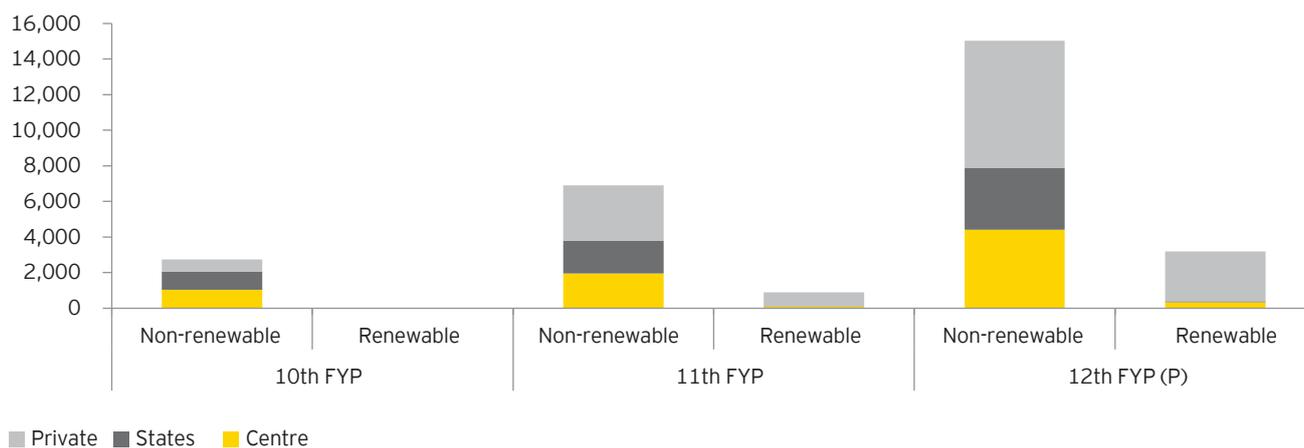
41 "Govt open to offering 100 % stake to private parties at six airports," *The Hindu*, 30 August 2013, via Factiva.

42 *Indian EPC Market: consolidation on horizon*, EY, 2012; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning*



India's total installed power generation capacity stood at 228.7 GW as of September 2013. Robust economic growth and enhanced industrial activity has significantly increased the demand for power in the country, leading to as much as 12% peak hour power shortages. This makes a compelling case for further large scale investments in the sector⁴³.

Investments in power (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission
 Note: investments by the centre, states and private sectors for renewable energy segment are not given separately in the Tenth plan. During the period, the total expenditure incurred by the public sector in renewable energy was INR40 billion.

⁴³ Commission website, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.
 "Monthly All India installed generation capacity report," Central Electricity Authority, http://cea.nic.in/reports/monthly/inst_capacity/sep13.pdf, accessed 17 October 2013; Sector focus: power," Indian Infrastructure, August 2011; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," Planning Commission website, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013; EPC: Driving growth efficiently, EY, 2011



The power generation capacity increased by 54,964 MW during the Eleventh FYP. In the Twelfth FYP, total investment in the power sector is estimated to be INR18,202 billion, with a planned non-renewable generation capacity addition of 88,537 MW and renewable generation capacity addition of 30,000 MW. Construction intensity in the power sector is around 38% currently and is expected to result in construction opportunity worth INR6,917 billion⁴⁴. The GoI's increased focus on renewable energy sources is expected to raise the share of renewables in power generation from around 6% in 2012 to 9% in 2017 and 16% in 2030. The planned renewable energy capacity addition comprises 15,000 MW in wind energy, 10,000 MW in solar energy, 2,100 MW in small hydro energy, while the balance is primarily planned from biomass⁴⁵. Around 13,000 MW of captive power capacity is planned to be added during the Twelfth FYP, from which surplus power, if any, is fed into the grid. In addition, the Twelfth FYP also provides for 110,340 ckm of transmission lines and 270,000 MVA of substations⁴⁶.

Power generation capacity addition during Eleventh FYP and Twelfth FYP, in MW

Type	Eleventh FYP actual					Twelfth FYP target			
	Central	State	Private	Total	% of target achieved	Central	State	Private	Total
Hydro	1,550	2,702	1,292	5,544	35%	6,004	1,608	3,285	10,897
Thermal	12,790	14,030	21,720	48,540	81%	14,878	13,922	43,540	72,340
Nuclear	880	0	0	880	26%	5,300	0	0	5,300
Total	15,220	16,732	23,012	54,964	70%	26,182	15,530	46,825	88,537

Source: Twelfth Five Year Plan document, Planning Commission

The private sector participation is expected to be 47.5% and 88% for non-renewable and renewable sectors, respectively in the Twelfth FYP⁴⁷. Private sector investment is expected to increase with the announcement of 14 ultra-mega power projects (UMPPs). Out of these, four UMPPs (Sasan, Mundra, Krishna Patnam and Tilaiya) have already been awarded to private players⁴⁸. However, the hydro-electric power generation potential from the north-eastern region still remains untapped, with only 7% of the potential capacity developed⁴⁹.

44 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

45 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

46 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

47 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

48 *EPC: Driving growth efficiently*, EY, 2011.

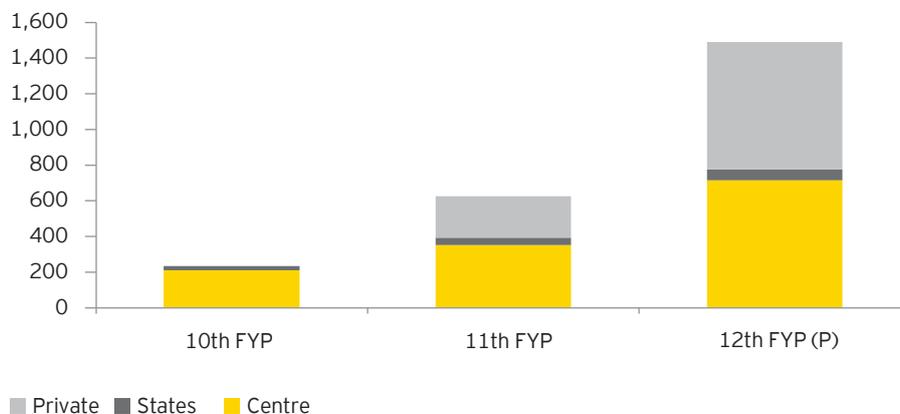
49 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

The Jawaharlal Nehru National Solar Mission (JNNSM) launched by the GoI in 2010 plans to deploy 10,000 MW of grid-connected solar power by 2017 and 20,000 MW by 2022. The Indo-German “green energy” corridors involves an investment of INR430 billion to add 30,000 MW to the national grid by 2020⁵⁰.

Oil & Gas

The Oil & Gas sector is divided into three major components – upstream (exploration and production (E&P)), midstream (transportation, by pipeline, rail or truck, and storage) and downstream (refining and processing). India’s Oil & Gas industry continues to grow steadily, boosted by enhanced investments, increased production and an increase in private participation.

Investments in oil and gas (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

Total investment is estimated to be INR1,489 billion in the Twelfth FYP. Construction intensity in oil and gas is around 25%, which is expected to result in construction opportunities worth INR372 billion. Crude oil production was 177 MMT and gas production was 213 BCM in the Eleventh FYP, which are expected to rise to 216 MMT and 341 billion cubic metres (BCM) in the Twelfth FYP⁵¹.

50 “MNRE sets target of 10,000 mw of solar power by 2017,” *The Economic Times*, 25 September 2013, via Factiva © 2013 The Times of India Group; “Green corridor to see wind and solar farms in Rajasthan, Tamil Nadu,” *The Economic Times*, 9 October 2013, via Factiva © 2013 The Times of India Group; “Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II),” *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

51 “Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II),” *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.





Crude oil and gas production during Eleventh FYP and Twelfth FYP, and refining capacity at the end of Eleventh FYP and Twelfth FYP

Type	Eleventh FYP actual					Twelfth FYP target			
	ONGC	OIL	Private	Total	% of target achieved	ONGC	OIL	Private	Total
Crude oil production (MMT)	124	18	35	177	86%	133	20	63	216
Gas production (BCM)	114	12	86	213	83%	144	20	177	341
Refining capacity (MMTPA)	-	-	-	213	88%	-	-	-	314

Source: Twelfth Five Year Plan document, Planning Commission

Major downstream projects in the oil and gas segment include a 9 million metric tonnes per annum (MMTPA) refinery by Hindustan Petroleum Corporation Limited (HPCL) in Rajasthan worth INR373 billion, a 15 MMTPA refinery being set up by the Indian Oil Corporation Limited (IOCL) in Orissa worth INR298 billion, and a 12 MMTPA refinery by Nagarjuna Oil Corporation Limited (NOCL) worth INR250 billion. Mid-stream projects include LNG regasification projects with a total capacity of 52 MMTPA and estimated cost of INR470 billion and pipeline-laying projects of approximately 10,000 km worth INR386 billion⁵².

In the upstream segment, the GoI cleared 25 exploration and production blocks out of the 31 blocks where work had been stalled on account of security restrictions imposed by the Ministry of Defence. This was worth approximately INR250 billion investments. The New Exploration Licensing Policy (NELP) is another major initiative aimed at attracting private investment into oil and natural gas. There have been nine rounds of bidding, entailing a total investment of IN722 billion, made by various operators in E&P till FY11. Out of 235 production sharing contracts (PSCs), 73 were signed during the Eleventh FYP. Oil PSUs (OVL, OIL, GAIL, IOCL, BPCL and HPCL) had invested INR591 billion till FY11. Overseas oil and gas blocks account for approximately 10% of India's domestic production. There are nine major production assets in Russia, Sudan, Brazil, Syria, Vietnam, Venezuela and Colombia. During the Twelfth FYP, ONGC, OIL and private/JV companies are expected to shoot 2D seismic surveys covering 138,974 km (75% by private sector) and 3D surveys covering 82,488 sq. km. of land. Furthermore, 1,310 exploratory wells are likely to be drilled during the Twelfth Plan period⁵³.

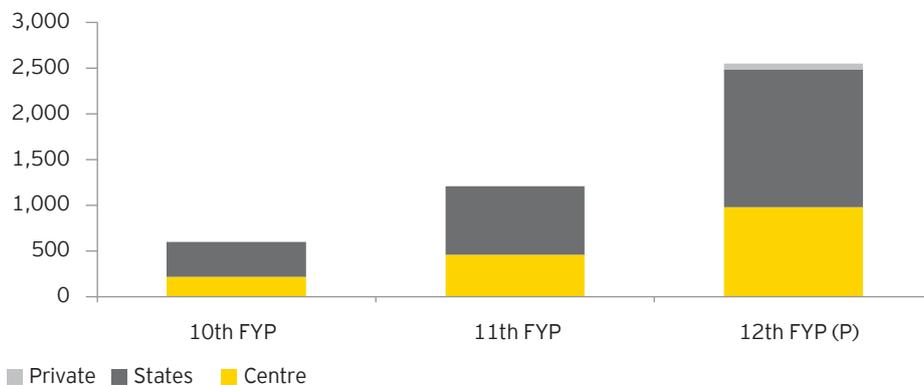
52 GSPL 2012 annual report; Mitul Thakkar, "Gujarat State Petronet Ltd signs agreement for Rs 5,080 crore finance with consortium of 14 banks," *The Economic Times*, 30 June 2012, via Factiva, © 2012 The Times of India Group; "Jagdishpur-Haldia pipeline work to begin next October," *Financial Chronicle*, 27 September 2011, via Factiva © 2011 Deccan Chronicle Holdings Ltd.; "Bihar to sign MoU with GAIL for Jagdishpur-Haldia gas pipeline," *Metis Energy Insider*, 29 January 2013, via Factiva © 2013 Metis Business Solutions Pvt. Ltd.; "Kochi-Mangalore gas pipeline turning into mirage," *Metis Energy Insider*, 29 March 2013, via Factiva © 2013 Metis Business Solutions Pvt. Ltd.; "OMCs, EIL wish to join GAIL's Surat-Odisha pipeline," *Metis Energy Insider*, 18 March 2013, via Factiva © 2013 Metis Business Solutions Pvt. Ltd.; "Projects under Implementation," *Indian Oil website*, <http://www.iocl.com/Aboutus/ProjectsunderImplementation.aspx>, accessed 15 October 2013; "IOC invites bids for construction of LNG import terminal," *The Hindu Business Line website*, 29 March 2013, via Factiva © 2013; "RIL gets licence to lay pipeline to transport CBM gas from Shogapur," *The Hindu*, 15 July 2013, via Factiva.

53 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission*

Water supply and sanitation

The water supply situation in India is marked by inadequate coverage (64% of the urban population is covered by individual connections and standposts), intermittent supply (national average duration of water supply ranges from 1 hour to 6 hours, with per capita water supply in cities ranging from 37 lpcd to 298 lpcd for a limited duration), low output pressure, and poor service quality (water leakages are 70%, non-revenue water (NRW) accounts for 50% of water production)⁵⁴.

Investments in water supply and sanitation (INR billion)



Source: Twelfth Five Year Plan and Eleventh Five Year Plan, Planning Commission

Till now, the services provided for by the private sector have been contractual in nature and were confined to one or two segments of the service delivery value chains.

Total investment is estimated to be INR2,550 billion in the Twelfth FYP, approximately 111% more than the actual amount invested in the Eleventh FYP. The construction intensity in water supply and sanitation is around 66%, which is expected to result in construction opportunity worth INR1,683 billion⁵⁵.

Private sector participation is currently very low in these sectors. However, it is expected to increase from 0.1% in the Eleventh FYP to 2.5% in the Twelfth FYP. The GoI has periodically introduced various policies such as JNNURM to enable city-wide planning for water and waste management and enhance private participation⁵⁶.

website, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013; "CCI nod to 13 power projects, 25 oil blocks," *The Indian Express*, 23 April 2013, via Factiva © 2013 Indian Express Online Media Pvt. Ltd.; 1US\$ = INR46.47

54 "Report on urban infrastructure and services by the high powered expert committee," *National Institute of Urban Affairs website*, <http://www.niua.org/projects/hpec/finalreport-hpec.pdf>, accessed 29 October 2013

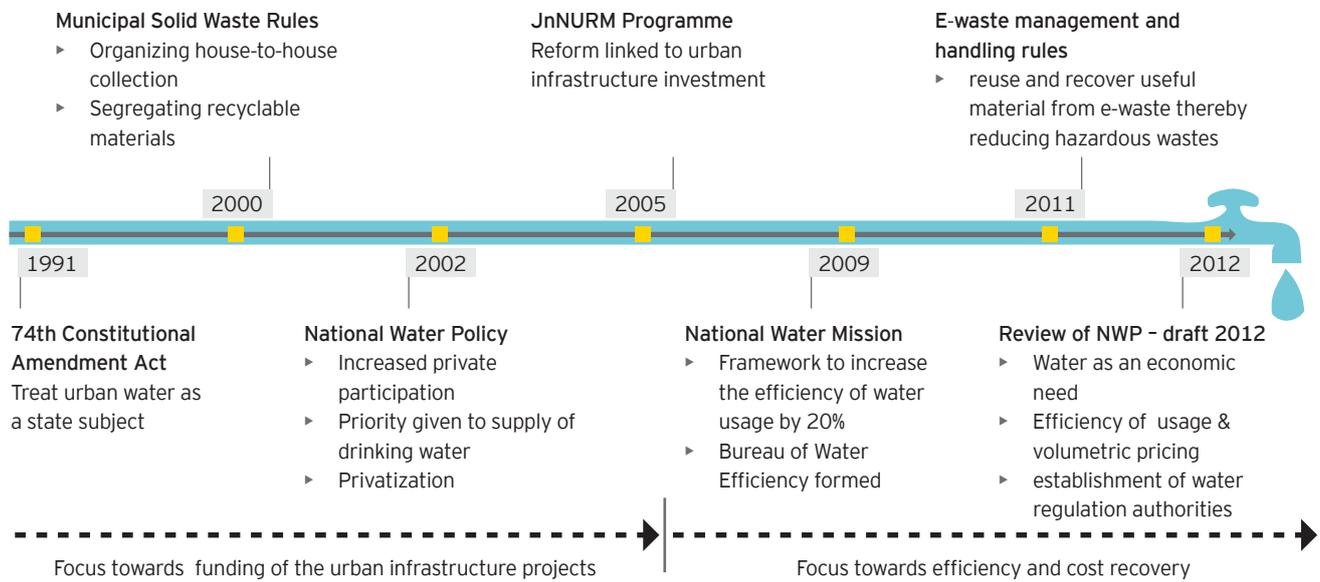
55 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/Twelfthplan/pdf/vol_2.pdf, accessed 25 October 2013.

56 "Report on urban infrastructure and services by the high powered expert committee," *National Institute of Urban Affairs website*, <http://www.niua.org/projects/hpec/finalreport-hpec.pdf>, accessed 29 October 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013





Timeline of government policies introduced/amended for water supply and sanitation



Source: Planning Commission, Ministry of Urban Development, JNNURM

JNNURM-I was the first major initiative, which encouraged PPP in the urban sector. Under the PPP framework, 49 projects involving total project cost of around INR5.5 billion were initiated in sectors such as solid waste, water supply, sewage and urban transport in which private concessionaires brought in investment of INR1.1 billion. Private investment in the sector are expected to grow with large upcoming projects such as PPP-based, ewaste processing unit in Mumbai and the India's first waste recycling zone in Gujarat to be developed jointly by the Japan Development Institute (JDI), and the Government of Gujarat⁵⁷.

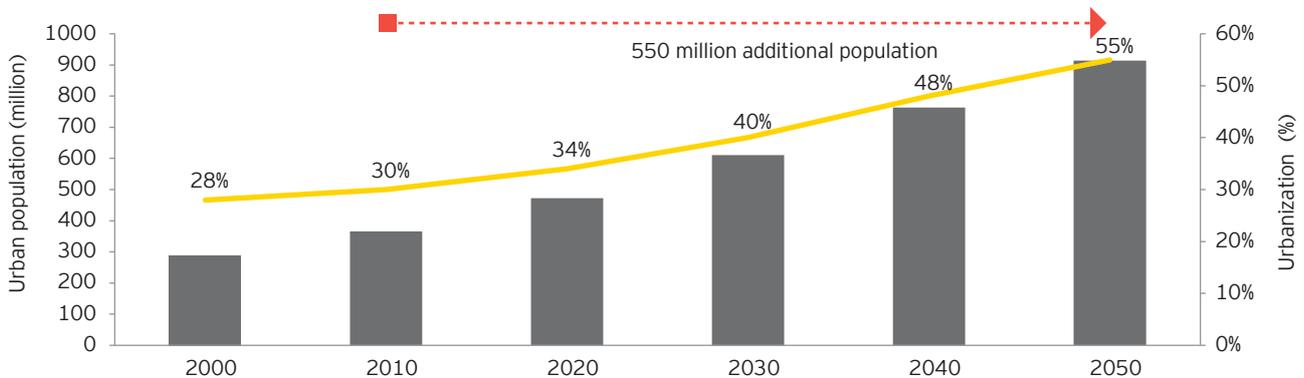
57 "India's urban awakening," *Urban India website*, http://urbanindia.nic.in/programme/uwss/MGI_india_urbanization_fullreport.pdf, accessed 31 October 2013.



Buildings

India is witnessing a sharp change in its demographic composition. There is a significant growth in urbanization levels due to factors including rapid economic growth and migration of the rural population to urban areas. Both government and independent analyses estimate significant urbanization figures for the next decade. Urbanization is also expected to lead to a structural shift in the Indian economy. Increased urbanization is expected to lead to emergence of more megacities and increased population clusters, which is likely to have a positive impact on the number of EPC projects being awarded. The top 20-30 cities are projected to attract a significant portion of the rural population, who migrate in search of job opportunities⁵⁸.

Urban population and urbanization projection up to 2050, in million



Source: United Nations Population Division, 2007, EY research

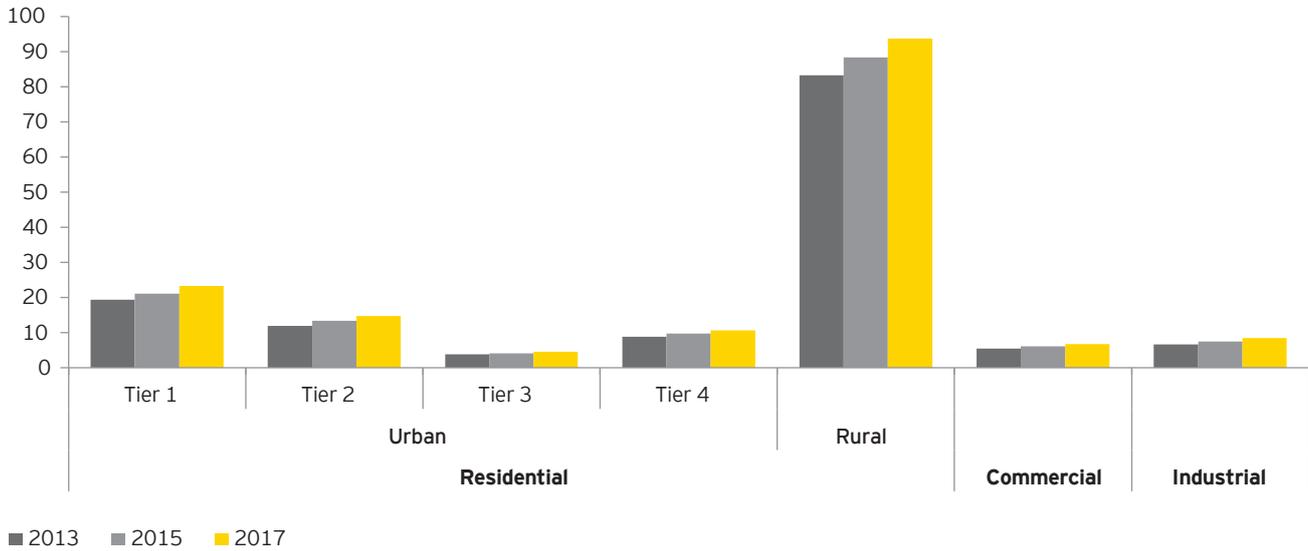
The urbanization trends suggest that approximately 550 million people will need to be accommodated in urban centers over the next 40 years. It is estimated that by 2017, the urban population is expected to increase to more than 440 million and the urban floor space per capita will increase to 120.7 sq. ft., while the rural population will increase to more than 870 million and the rural floor space per capita will increase to 107.2 sq. ft.⁵⁹

These areas are already facing severe infrastructure constraints and the situation will only get worse if remedial action is not taken. The total housing shortage for the Twelfth FYP (2012-17) in the urban area has been estimated at 18.8 million units and for rural areas at 43.7 million units.

58 "Urban Agglomerations/Cities having population 1 lakh and above," *Census India website*, http://www.censusindia.gov.in/2011-prov-results/paper2-vol2/data_files/India2/Table_3_PR_UA_Cities_1Lakh_and_Above.pdf, accessed 20 November, 2013

59 "Report on urban infrastructure and services by the high powered expert committee," *National Institute of Urban Affairs website*, <http://www.niua.org/projects/hpec/finalreport-hpec.pdf>, accessed 29 October 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013; Report of the Technical Group on Population Projections Constituted by the National Commission on Population, May 2006; Census of India 2011, Urban agglomerations/Cities having population 1 lakh and above; National Sample Survey Report No. 535: Housing Condition and Amenities in India: July, 2008-June, 2009; EY research

Tier-wise* construction area requirement for residential, commercial and industrial buildings (billion sq. ft.)



Source: NSS Report No. 535: Housing Condition and Amenities in India: July, 2008-June, 2009; United Nations; Department of Economic and Social Affairs; "Report on Urban Infrastructure and Services," High Powered Expert Committee for estimating investment requirements for urban infrastructure services, MoUD, March 2011; EY research
 *Tiers are areas defined according to population (P): Tier 1: P>5 million, Tier 2: 1 million<P<5 million, Tier 3: 0.5million<P<1 million, Tier 4: P<0.5 million

In 2017, it is expected that the total demand for residential, commercial and industrial stock will be more than 150 billion sq. ft., assuming commercial and industrial construction to grow proportionately to the residential segment (assumed to be ranging from 10%-20% of the residential construction demand).

The opportunity lies in the fact that the construction stock requirement for residential, commercial and industrial buildings will increase due to rapid increase in urban population and migration of people to upper tier cities (than the ones they live in). The commercial space will grow in future due to economic growth and favorable demographics of a large earning population. The industrial growth will be boosted by the construction of industry-centred cities on the industrial corridors, including seven new cities along the Delhi Mumbai Industrial Corridor (DMIC) as well as the cities planned on the Chennai- Bengaluru and Bengaluru-Mumbai industrial corridors⁶⁰.

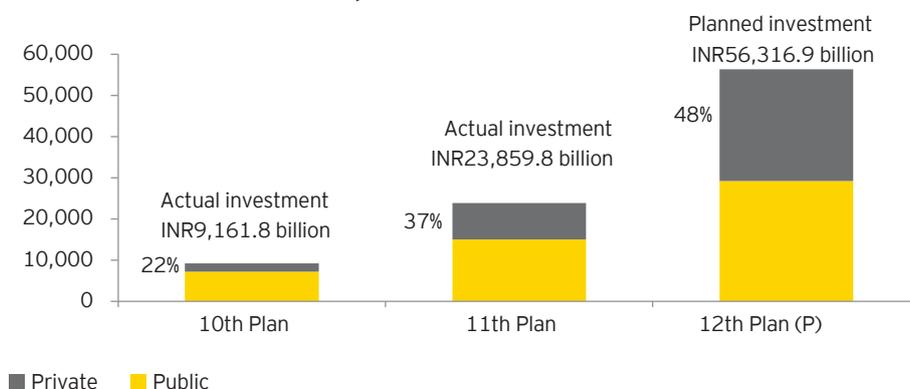
60 EPC: Driving Growth Efficiently, EY, 2011; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," Planning Commission website, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.

2.3 EPC players to be the biggest beneficiaries

Opportunities for EPC players

Private sector participation in Indian infrastructure projects was around 22% in the Tenth FYP, which increased to 37% in the Eleventh FYP and is expected to increase further to around 48% in the Twelfth FYP. This translates into an increase from INR2.0 trillion in the Tenth FYP to INR27.1 trillion in the Twelfth FYP. With such rapidly growing opportunities, there has been a substantial rise in the number of new entrants in the sector.

Investment in infrastructure, % private of total investment



Source: Twelfth FYP and Eleventh FYP, Planning Commission

Furthermore, the increasing number of private sector clients has resulted in negotiated contracts as compared to the traditional competitive bidding format. The rise in number of such clients is expected to improve payment mechanisms and the working capital cycles of EPC contractors⁶¹.

Model shift for private players

However, private sector participation, via the PPP mode, has been on the decline in some sectors, in spite of the Govt's efforts in pushing PPP projects in various sectors due to increase in the number of large and complex projects, which call for significant investments. Large projects are usually investment-intensive and critical in nature, while BOT projects tend to be prone to time and cost overruns. Subsequently, with delays and liabilities, came increased risks, and the EPC companies became debt-heavy in their pursuit to become BOT developers. This situation has forced private players to pull out of large projects. Gradually, the bidding response to new projects became weak and many private players announced reduction of their BOT project exposure, and follow an asset-light approach, primarily to reduce the debt burden on financial statements.

⁶¹ EPC: *Driving Growth Efficiently*, EY, 2011; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013.



Modes of project award

Criteria	EPC	PPP
	<pre> graph TD Gov[Government] -- "EPC contract award" --> EPC[EPC contractor] EPC --> Exec[Contract execution] </pre>	<pre> graph TD Gov[Government] -- "PPP contract award" --> EPC[EPC contractor (owns asset)] EPC -- "EPC contract award" --> SPV[SPV (operates and maintains asset)] EPC --> Exec[Contract execution] SPV --> Exec </pre>
Ownership	Government	Private
Model	Contract	Concession
Time and cost efficiency	Inefficient in reducing time & cost overrun - especially due to external risks such as land acquisition, regulatory approvals	Accumulating interest costs, stringent contractual penalties, delay in revenue generation force a private operator under a PPP contract to complete project development within schedule and budget.
Efficiency of the facility	Contractor job stops after construction and handover of the facility	Private party has to run the facility and inefficient facility may dent its revenue, hence the facility is made more efficient.
Returns	Based on project margins	Returns on equity investments
Upsides	None	Project may deliver upsides
Project risk	Only execution risk	On the private player
Market risk	Contractor's revenue is dependent only on the construction of the facility	The revenue of the private player is generally dependent on the smooth running of the project
Operation and Maintenance	Contractor is only responsible for constructing the facility	Private partner is responsible for operation and maintenance of the facility

Source: EY research

For the worst-affected road sector, the Gol decided to review the feasibility of a project to be executed on a PPP basis, and adopted the EPC mode for national highways, which are not viable on a PPP basis. The EPC mode will not only minimize time and cost overruns but will also result in increased bidding by developers. The Gol released the draft of a model EPC agreement, which will contain detailed designs, estimates of quantities for different items of work (Bill of Quantities), sound contractual framework specifying the allocation of risks and rewards and the equity of obligations between the government authorities and contractors⁶².

Since the beginning of FY14, projects have begun to attract more bidders and regained pace of execution. Up to May 2013, six tenders have been released by the NHAI, out of which five have been on the EPC mode. The number of bidders has ranged between 10 and 30 in all of them. Around 20,000 km of new two-lane national highway projects, to be developed under NHDP Phase-IV, have been brought under the EPC mode.

In other sectors, where the PPP mode is still dominant, project owners or developers ultimately award work as EPC (or other type of) contracts to either their own contracting entities on an arms-length basis or to third-party contractors. The private sector is driving this growth opportunity by investing equity in such PPP infrastructure projects. An EPC contractor is therefore, expected to benefit either through contracts awarded by government clients or private developers.

62 EPC: Driving Growth Efficiently, EY, 2011



Sectors with high EPC dependency

Sectors such as roads, railways, and irrigation have comparatively more construction opportunities, since these segments have reached a relatively mature stage. On the other hand, sectors such as renewable power, water supply, waste management, MRTS and storage are gradually gathering steam.

Client mix and models adopted by EPC-dependent sectors

EPC market dependency	EPC market dependency sub-sector	Clientele base* (government-private ratio)	Order of models adopted by Government
Infrastructure construction	Roads	50:50	PPP->Annuity->EPC
	Railways	80:20	EPC->PPP
	Ports	50:50	PPP->EPC
	Airports	50:50	EPC->PPP
	Urban infrastructure	80:20	EPC->limited PPP
Building construction	Building construction	20:80	Cash contracts->EPC
Oil & Gas EPC	Oil & gas	80:20	EPC
Power EPC	Power	20:80	EPC
Specialized EPC	Marine	20:80	EPC
	Hydro	80:20	EPC
	Industrial	20:80	EPC

Source: EY research * assumed

However, apart from the maturity of a sector and level of investment in it, the construction opportunities are also affected by the dependency of the sector on the intensity of EPC in various projects in the sector, the kind of projects planned and their quantities. While roads, railways, MRTS, irrigation and water supply and sanitation have construction intensity of more than 50%, sectors such as power, oil and gas, storage and telecom have low construction intensities.

The EPC dependency of a sector is also affected by the prevailing scenario in the sector. The construction industry, which has been earlier in a space dominated by large EPC players and a few infrastructure developers, is now witnessing multiple participants, each set on carving out a piece of the EPC pie⁶³.

63 EPC: Driving Growth Efficiently, EY, 2011

Prevailing conditions in various sectors

EPC Market	Sub-sector	Competition	Complexity	Government role (facilitator)	Entry barriers	Opportunity size	Foreign players interest
Infrastructure EPC	Roads	√	X	±	X	√	√
	Railways	X	X	√	X	X	X
	Ports	±	√	√	√	±	√
	Airports	X	√	±	√	±	√
	Urban infrastructure	√	√	√	√	±	±
Building EPC	Building	√	X	X	X	√	±
Oil & Gas EPC	Oil & Gas	X	√	√	±	±	√
Power EPC	Power	√	±	X	X	√	√
Specialized EPC	Marine	X	√	√	±	±	±
	Hydro	X	√	√	±	±	±
	Industrial	±	±	X	X	√	±

High	Medium	Low
√	±	X

Source: EY research

Sectors such as roads, airport, power and urban infrastructure have become very attractive for both domestic and foreign investors. This may be due to relatively low entry barriers in these markets, a strong project pipeline and a considerable opportunity size. On the other hand, sectors such as the railways and buildings are relatively low on the attractiveness scale – the railways await unbundling and buildings the recovery of the real estate sector. As a result, the market as a whole has become a mixed bag of opportunities in which different types of players are participating.





3

Sector trends



3.1 Investment in niche areas on the rise

Five Year Plans (FYPs) have witnessed significant changes in scope over time. For instance, budget allocation for some sectors have declined (the share of irrigation, water supply and sanitation has decreased from 20% in the Tenth FYP to 13.5% in the Twelfth FYP). On the other hand, some infrastructure segments such as renewable energy, storage infrastructure and transit-oriented development have come to the fore in the last decade, creating opportunities for EPC players⁶⁴.

Renewable energy: Investment in renewable energy (RE) sources has increased from INR892 billion in the Eleventh FYP (11% of the total power sector investment) to the planned INR3,186 billion in the Twelfth FYP (18% of the total power sector investment). This indicates the Gol's increased focus on developing and using the abundant and under-tapped RE resources. The RE sector provides construction opportunity worth INR1.2 trillion in the Twelfth FYP. Approximately 88% of the total investment in the Twelfth FYP is expected to come from private players. In addition, several government schemes and initiatives facilitate the entry of large independent power producers and encourage FDI in the sector. As a result, the sector provides a lucrative opportunity for EPC companies. The share of RE in the nation's total installed power generation capacity went up from 1% at the beginning of the Tenth FYP to 12% at the beginning of the Twelfth FYP (exceeding Eleventh FYP targets). Furthermore, the share is estimated to increase to 19% at the end of the Twelfth FYP. The Ministry of New and Renewable Energy (MNRE) targets an addition of 30 GW RE capacity through solar, wind, biomass, small hydro and bagasse cogeneration power plants. Capital costs for RE have reduced over time (solar module prices declined by 80% while wind turbine prices declined by 25% since 2008) along with increase in efficiency. This is expected to drive investment plans through the Twelfth FYP⁶⁵.

64 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013

65 "Generation Based Incentive (GBI)," *Indian Power Sector website*, <http://indianpowersector.com/home/tag/gbi/>, accessed 2 November 2013, "Huge potential to tap renewable energy: Official," *Economic Times website*, http://articles.economicstimes.indiatimes.com/2013-04-03/news/38248618_1_renewable-power-power-generation-capacity-bagasse-cogeneration, accessed 6 November 2013, "Generation Based Incentive Scheme," *Press Information Bureau website*, <http://www.pib.nic.in/newsite/erelease.aspx?relid=78829>, accessed 6 November 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013



Transit-oriented development: Another emerging area of investment is transit-oriented development (TOD), such as industrial corridors, townships and cities (built around major expressways, rail corridors, airports, ports and transit hubs). The GoI has planned industrial corridors, including the 1,483-km Delhi Mumbai Industrial corridor (DMIC) and the Peninsular Region Industrial Development Corridor (PRIDe) with its two major legs – the 1,000-km Mumbai-Bangalore Industrial Corridor (MBIC) and the Chennai-Bangalore Industrial Corridor (CBIC). These projects are expected to bring about real estate development and infrastructure across 150km to 200km on both sides of the alignment of the corridors, including integrated industrial townships⁶⁶. The INR6,200 billion DMIC comprises 24 nodes, 11 investment regions and 13 industrial areas in DMIC, and its construction is expected to be completed by 2025. The GoI has also been pushing to develop airport cities (aka aerotropolis) in Ludhiana, Mumbai, Delhi, Hyderabad, Bengaluru and Kochi, spread across more than 7,500 acres.

Railways: Investments in the Indian Railways (IR) is expected to increase to INR5.2 trillion in the Twelfth FYP, which is approximately five times the investment in the Tenth FYP. This provides a construction opportunity of approximately INR4.1 trillion. In order to attract private investment in the sector, the GoI has liberalized its FDI policies for railway infrastructure projects, by bringing in the participatory policy for domestic and global players to invest in the projects. Under this policy, 100% FDI has been permitted through the approval (from the Foreign Investment Promotion Board) route for specific projects such as elevated rail corridors, high speed rail networks and dedicated freight corridors, using participative models in rail connectivity and capacity augmentation projects. In case of component manufacturing, the 100% FDI is allowed under the automatic route. In the Twelfth FYP, IR seeks to achieve investment of INR1.0 trillion through the PPP mode, including freight terminals, port connectivity and redevelopment of stations. The GoI is expediting the INR630 billion hi-speed rail corridor between Mumbai and Ahmedabad and has also approved an investment of INR200 billion for development of rail transport in the North-East⁶⁷.

Special Manufacturing Zones: The GoI has approved nine National Investment and Manufacturing Zones (NIMZs) under the National Manufacturing Policy 2011. The policy embodies single-window clearance and an easy exit policy for construction of the NIMZs. The Government of Karnataka plans to set up an NIMZ at Tumkur, which includes an integrated industrial township spread across 12,000 hectares at an estimated cost of INR300 billion, and has proposed two more NIMZs in the state. Furthermore, there are plans to set up four NIMZs in Kerala and two in Andhra Pradesh at an estimated cost of INR488 billion and INR600 billion, respectively. These manufacturing zones are expected to significantly increase demand for all the core real estate asset classes such as residential, commercial, hotel and infrastructure⁶⁸.

66 "Two corridors will be a boon for Bangalore," *The Times of India* - Bangalore Edition, 2 March 2013, via Factiva © 2013 Bennett, Coleman & Co., Ltd.; "Centre seeks concept note on Peninsular project," *The Hindu*, 24 July 2010, via Factiva © 2010 Kasturi & Sons Ltd.; "Develop Chennai-Bangalore industrial corridor, says Karunanidhi," *The Hindu*, 1 November 2007, via Factiva © 2007 Kasturi & Sons Ltd.; "Chennai-Bangalore industrial corridor to boost growth," Indo-Asian News Service, 2 November 2007, via Factiva © 2007 HT Media Limited.; "Blueprint for Mumbai-Bangalore industrial corridor to take a year," *The Times of India* - Pune Edition, 25 June 2013, via Factiva © 2013 Bennett, Coleman & Co., Ltd.; "In-principle nod for study on Mumbai-Bangalore corridor," *The Statesman*, 17 March 2013, via Factiva © 2013 The Statesman Ltd.; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013; "\$3.24 bn for DMIC project approved by govt," *Hindustan Times website*, <http://www.hindustantimes.com/business-news/3-24-bn-for-dmic-project-approved-by-govt/article1-1056883.aspx>, accessed 25 October 2013

67 "Railways seeks FDI in infra projects," *Financial Express*, 4 October 2013, via Factiva © 2013 Indian Express Online Media Pvt. Ltd.; "Railways seeks Rs1,00,000-cr private investment in PPP projects," *Domain-B*, 4 October 2013, via Factiva © 2013 The Information Company Pvt. Ltd.; "Feasibility Study for Hi-speed Train," *NBM & CW*, 25 October 2013, via Factiva © 2013 NBM Media.; "North-East gets Rs. 20,000cr rail network," *NBM & CW*, 3 November 2013, via Factiva © 2013 NBM Media.

68 "Karnataka to set up 3 manufacturing zones for new industries," *Sarkaritel*, 6 July 2013, via Factiva © 2013 Sarkaritel; "25,000 acres for two NIMZ projects," *The Hindu*, 11 May 2013, via Factiva © 2013 Kasturi & Sons Ltd.; "Karnataka submits plan for industrial zone



Storage: Investment in storage infrastructure has increased by more than 10 times to INR584.4 billion in the Twelfth FYP from the Tenth FYP, indicating improved investment focus in supply chain infrastructure to boost industrial growth. The storage industry consists of warehousing, cold storage and other types of storage, including crude oil. The warehousing segment is dominated by public sector bodies such as Central Warehousing Corporation (CWC), state warehousing corporations (SWC) and Food Corporation of India (FCI). Warehousing capacity of around 108.75 MMT was available in India as of FY12. An additional 35 MMT is estimated to be required during the Twelfth FYP. Under the Private Entrepreneurs Godown (PEG), 2008 Scheme, the GoI has planned the creation of 15.3 MMT storage capacity in 19 states through private sector participation and CWC/SWCs. The capacity utilization of CWC has been increased from 73% in 2008 to 90.4% in 2012, indicating considerable scope for capacity addition. The GoI is also creating strategic crude oil storage capacity for 15 days in Vishakhapatnam (1.33 MMT), Mangalore (1.50 MMT) and Padur (2.5 MMT). An estimated addition of 12.5 MMT has been planned at other suitable locations during the Twelfth FYP⁶⁹.

Specialized construction: Specialized EPC segments are also witnessing growth, such as the LNG and shale gas exploration, refinery construction and pipeline transportation. India's dependence on imported LNG is increasing (up from 8.2 MMTPA in FY08 to 10.9 MMTPA in FY13)⁷⁰. Therefore, the GoI has planned to increase the LNG re-gasification capacity to approximately 50 MMTPA in FY17, with greenfield LNG terminals proposed to be set up by private and public sector companies⁷¹. The GoI had also approved the long-awaited shale gas and oil exploration policy in September 2013, which will enable it to offer shale oil and gas blocks to other companies; however, the decision is pending cabinet approval⁷². In the pipeline EPC segment, the GoI has planned an investment of INR1.5 trillion for the Twelfth FYP. It is estimated that a length of 15,928 km of pipeline will be added in the Twelfth FYP⁷³. The refining capacity is estimated to increase by approximately 47% to 314 MMTPA by the end of Twelfth FYP⁷⁴. IOCL plans to invest INR500 billion to expand its refining capacity and setting up a new refinery on the west coast of India⁷⁵.

near Bangalore," Mint, 18 October 2012, via Factiva © 2012 HT Media Limited. "KERALA PLANS MEGA MANUFACTURING ZONES WITH Rs48,825-CRORE OUTLAY," Indian Business Insight, 9 October 2013 via Factiva ©2013 Informatics (India) Ltd.

69 "Report of Working Group on Warehousing Development and Regulation," *Planning Commission website*, http://planningcommission.nic.in/aboutus/committee/wrkgpr12/pp/wg_ware.pdf, accessed 6 November 2013; "Capacity and Utilisation of Warehouses (Owned/Hired Covered) under Central Warehousing Corporation in India (1997-1998 to 2011-2012)," *IndiaStat website*, <http://www.indiastat.com/table/agriculture/2/centralwarehousingcorporationstatewarehousingcorporation/32725/394668/data.aspx>, accessed 6 November 2013; "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013

70 "Import of LNG," *PPAC website*, <http://ppac.org.in/>, accessed 5 October 2013

71 "Draft Report of the Working Group on Petroleum & Natural Gas Sector for the XIIth Plan (2012-17)," *Infraline Energy database*, www.infraline.com/, accessed 5 October 2013

72 "Exploration and exploitation of Shale Gas and Oil by National Oil Companies under nomination regime," *Press information bureau website*, <http://pib.nic.in/newsite/PrintRelease.aspx?relid=99635>, 24 September 2013; "India Clears Shale-Gas, Coal-Block-Auction Policies," *The Wall Street Journal*, <http://online.wsj.com/article/SB10001424052702304213904579094334209358964.html>, 24 September 2013

73 "Vision 2030 Natural Gas Infrastructure in India," *Petroleum & Natural Gas Regulatory Board website*, <http://www.pngrb.gov.in/newsite/pdf/vision/vision-NGPV-2030-06092013.pdf>, accessed 21 November 2013

74 "Twelfth Five Year Plan 2012-2017 - Economic Sectors (Volume II)," *Planning Commission website*, http://planningcommission.nic.in/plans/planrel/12thplan/pdf/vol_2.pdf, accessed 25 October 2013

75 "IndianOil to invest Rs 50,000 crore in refining expansion," *Business Standard*, 5 September 2012, via Factiva © 2012 Business Standard Ltd.

3.2 Entry of global players/globalization

Several international EPC contractors have entered India to tap the considerable potential opportunities for investment in infrastructure projects. Players such as Samsung of Korea, Leighton of Australia, Bechtel of the US, UEM and IJM of Malaysia have already established their presence in India through some landmark projects.

The benefits of the presence of global players in the Indian industry are:

- ▶ Access to latest technology and equipment
- ▶ Access to global project management and risk management capabilities
- ▶ Elimination of outdated practices; improved quality and work practices due to increased competition
- ▶ Opportunity for Indian players to diversify into new sectors by partnering with foreign players, who have relevant sector expertise

Players have adopted different methods to enter and establish themselves in India. While a few global construction giants from France, Germany, the Middle-East have chosen the acquisition route through 100% buy-outs of existing India companies, some have considered forming joint ventures on a sector-specific or project-specific basis. Inorganic growth strategies such as acquisitions have been perceived to be successful in global markets and hence, have been replicated in the Indian market as well. Acquisition of NAPC by a France-based group is a classic example in the Indian EPC sector⁷⁶. Moreover, the market witnessed a strategic acquisition of a minority stake by a Middle East-based Group in IL&FS Engineering⁷⁷.

Few project-specific joint ventures have been formed by Middle-East companies, particularly in the building construction segment in India. For example, the project named "World One" in Mumbai, being constructed by Simplex Infra in JV with a Middle-East-based construction giant⁷⁸.

Furthermore, there are a large number of global companies that have set up their own subsidiaries in India and are bidding directly for projects in India. Few such players are Samsung (Korea), Leighton (Australia), Bechtel Corporation (US), Uhde (Germany), Tecnimonte (Italy), Marti Group (Switzerland), CECI (Taiwan). One interesting precedent is Leighton India that has not only grown and established business but also divested a strategic stake to Welspun Group⁷⁹. This was an entry strategy by a large Indian business group through association with a foreign entity having a pedigree presence in the country.

Another remarkable trend witnessed in the sector is the expansion of Indian companies in overseas markets through acquisitions and joint ventures. This has helped the Indian players in securing specialized mega projects and venture into new areas and segments. The classic example is Afcons Infrastructure Ltd., a premier EPC company of Shapoorji Pallonji Group, has entered strategic alliances/partnerships with various global players including Strabag, Bechtel, Gunanusa and Ballast Nedam⁸⁰.

76 "French company Vinci buys NAPC," *The Hindu*, 12 January 2012, via Factiva, © 2012 Kasturi & Sons Ltd.

77 "Maytas Infra hopes for revival via Jeddah JV," *The Economic Times*, 1 July 2010, via Factiva, © 2010 The Times of India Group.

78 "Simplex Infra JV to build tallest residential building," *Project Monitor*, 24 January 2011, via Factiva © 2011 Economic Research India Pvt. Ltd.

79 "Welspun Infra Projects acquires 35% stake in Leighton Contractors (India)," *Datamonitor's Financial Deals Tracker*, 29 April 2011, © 2011 Datamonitor Ltd.

80 "Partners in Success," *Afcons company website*, http://www.afcons.com/033_partners.html, accessed 01 December 2013

3.3 Private equity (PE) in pure-play EPC companies

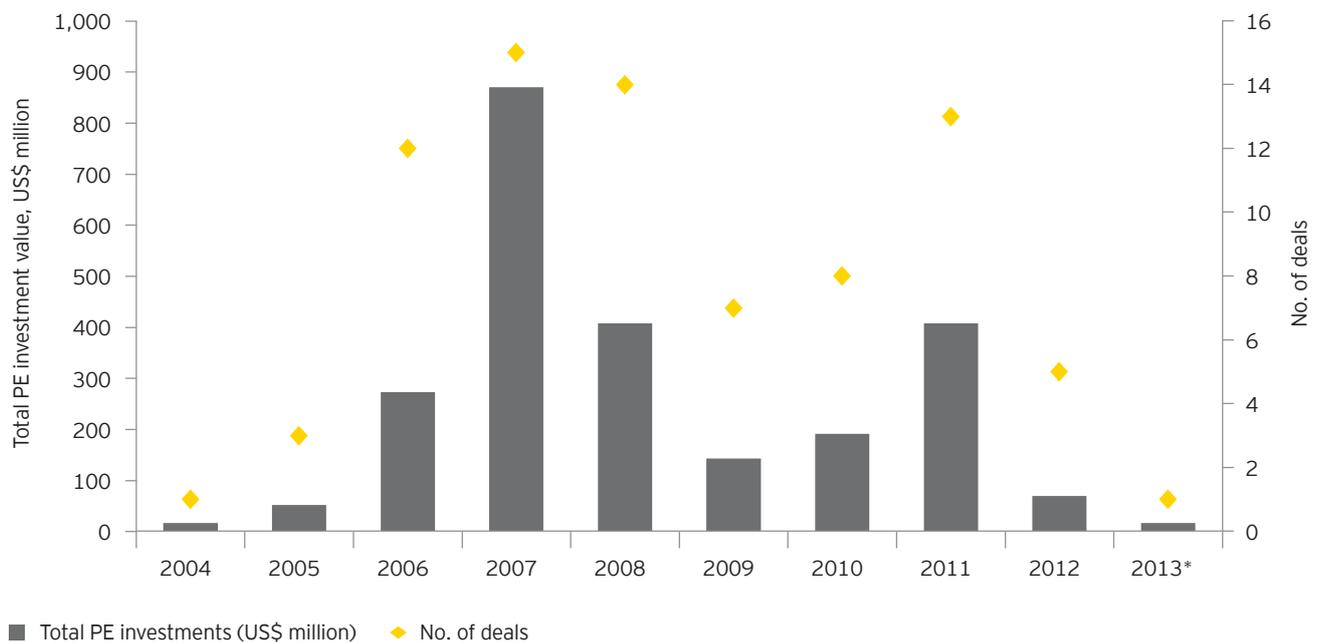
An analysis of PE investment deals from 2004 to October 2013 indicates that there has been a significant slowdown in PE activity in the sector during the recent years. The number of PE deals has declined from the 8-year high of 15 in 2007 to only 5 in 2012. Deal value has also declined from US\$870 million in 2007 to US\$69 million in 2012. The average deal size has also declined (deals valued at more than US\$100 million reduced to nil in 2012 from four in 2007), though infrastructure projects have grown bigger in size and more complex in nature.

Year-wise quantum of PE deals

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
No. of deals	1	3	12	15	14	7	8	13	5	1	79
Value (US\$ million)	16	51	272	870	407	143	191	407	69	16	2,441
Average deal size (US\$ million)	16	17	23	58	29	20	24	31	14	16	31

Source: EY research and Asian Venture Capital Journal (AVCJ)

Year-wise quantum of PE deals



Source: EY research and Asian Venture Capital Journal (AVCJ)
*As of September 2013

PE transactions: key trends

Year	Highlights
2004-05: first movers – funds chasing large players	PE invested in the largest construction groups of the country, IVRCL, Punj Lloyd Ltd. and Gammon India Ltd.; the majority of deals were in the nature of private placements. This period marked the beginning of euphoria in the sector.
2006-09: perfect competition – high capital infusion into the sector	Considerable PE activity in mid-sized companies; focus diversified from infrastructure civil contracting to niche and specialized sectors. Few examples are Shriram EPC, Gayatri Projects, Ashoka Buildcon, Coastal Projects and Ramky Infra.
2010 onward: slowdown in PE activity	Select deals, with investors focusing on PIPE deals as stocks began trading at reduced valuations. EPC companies resorted to forming infrastructure/asset holding companies to seek platform level funding (detailed in next section).

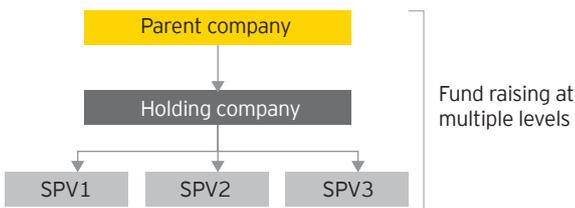
3.4 Formation of infrastructure holding companies by EPC players

EPC companies face the challenge of raising funds to meet equity commitments given the large funding requirements of infrastructure projects.

Hence, the companies began to consider alternate modes of financing in order to restrict equity dilution at the parent level. The concept involved bundling of infrastructure assets and transferring them to a wholly owned subsidiary of the parent EPC company. Since the infrastructure assets are self-sustained in terms of long-term cash generation, the concept was accepted well by the investor community, particularly infrastructure-focused funds. Such investments were primarily witnessed in highway sectors that were quite prevalent until recent times.

The industry also witnessed various project (BOT) level investments leading to cash generation for EPC companies.

Fund raising at multiple levels



However, several foreign investors are wary of investing in India given the recent volatility in exchange rates. Furthermore, many PE funds have not been able to exit their portfolios due to weak financial conditions and, hence, funds for new investments may be limited in future. The exit challenges in current investments poses considerable challenge for future investments.



Key PE investments in infrastructure holding companies formed by EPC players

Target	Year
Infrastructure holding company of L&T ⁸¹	2006
Gayatri Infra Ventures, subsidiary of Gayatri Projects ⁸²	2008
Sadbhav Infrastructure Project, subsidiary of Sadbhav Engineering ⁸³	2010
HCC Concessions Ltd., subsidiary of HCC Infrastructure Co Ltd. ⁸⁴	2011
KMC Infrastructure Ltd., subsidiary of KMC Construction ⁸⁵	2011
Highway holding company of Soma Enterprise Limited ⁸⁶	2011
Highway holding company of Supreme Infrastructure ⁸⁷	2012
Highway holding company of Ashoka Buildcon ⁸⁸	2012
Navayuga Road Projects Pvt. Ltd., subsidiary of Navayuga Engineering Company Limited ⁸⁹	2013

81 "VC, private equity firms seal deals worth \$1.6 bn," *The Economic Times*, 26 May 2006, via Factiva © The Times of India Group.

82 "Gayatri Projects Limited - History," MarketLine (a Datamonitor Company), 25 September 2013, via Factiva © 2013 MarketLine - an Informa plc business.

83 "Rs 400 crore investment boost for Sadbhav Infra," Realty Plus, 26 September 2010, via Factiva, © 2010 Adsert Web Solutions Pvt. Ltd.

84 "HCC Concessions concludes equity transaction with The Xander Group," HCC press release, http://www.hccindia.com/hcc_admin/data_content/pdf_files/29thSeptember11.pdf, 29 September 2011.

85 "3i-KMC seals Rs. 500cr infra deal," NBM & CW, 4 April 2011, via Factiva © 2011 NBM Media

86 "J.P. Morgan infuses \$110 mln to buy minority stake in India's Soma Enterprise," India Investment News, 8 September 2011, via Factiva © 2011 Contify.com.

87 "3i invests Rs 310 cr in Supreme Infra road portfolio," *Hindu Business Line*, 30 January 2012, via Factiva.

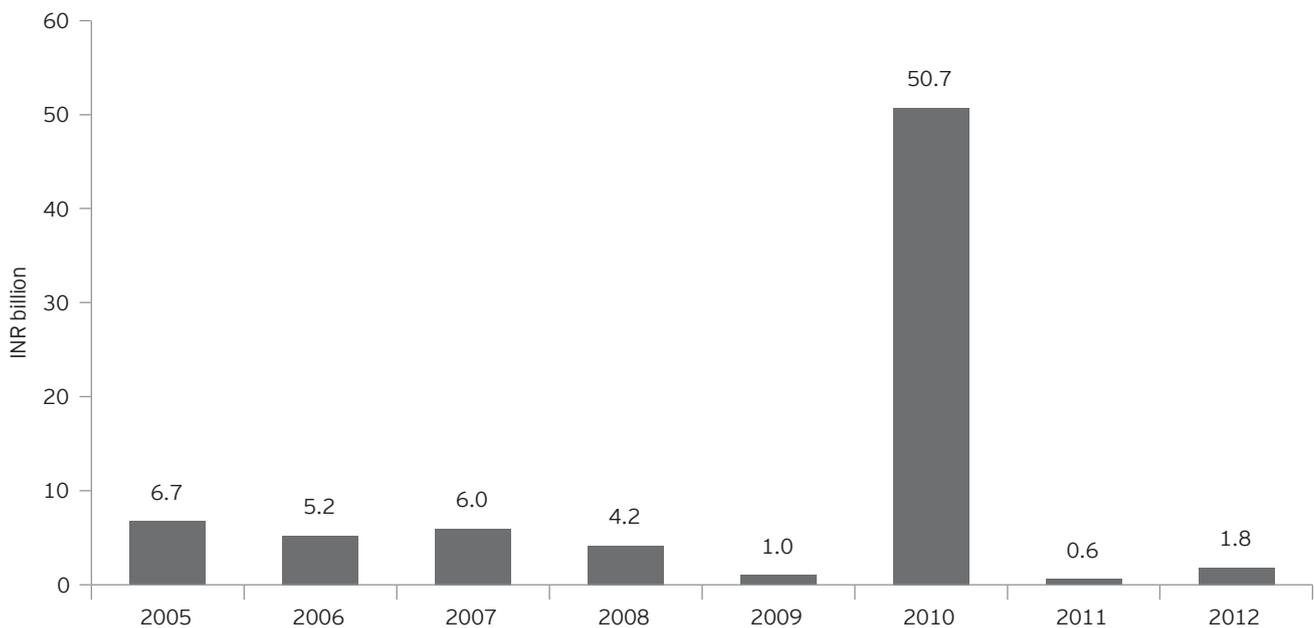
88 "Ashoka Buildcon subsidiary raises \$150m from SBI Macquarie Joint Venture," *The Times of India*, 13 August 2012.

89 "NRPL GETS RS550 CRORE FUNDING FROM PIRAMAL ENTERPRISES (via debentures)," Indian Business Insight, 14 April 2013, via Factiva ©2013 Informatics (India) Ltd.

Capital markets

EPC companies have typically accessed capital markets to raise funds for their projects and to meet their working capital requirements. The year 2010 witnessed the maximum activity in the sector, with funds to the tune of INR50.7 billion flowing into the sector⁹⁰.

Funds raised through IPOs of construction companies



Source: Dealogic

While there are many companies that would have considered an IPO to provide exit to PE investor, the current stock market is not conducive enough, with stocks tanking to all-time lows. Hence, we see a significant slowdown in the IPO activity during 2011 and 2012 with no IPO till date in 2013. There would be a host of EPC companies listing on the stock market if the stock markets have been favourable, since all the PE investments that took place during 2006-09 are due for an exit. Finally how many of these will take the IPO route is yet to be witnessed.

⁹⁰ Industry IPO data, via Dealogic

3.5 Evolution of the market landscape

For the purpose of our analysis, we have considered select listed EPC companies, according to the categorization mentioned below:

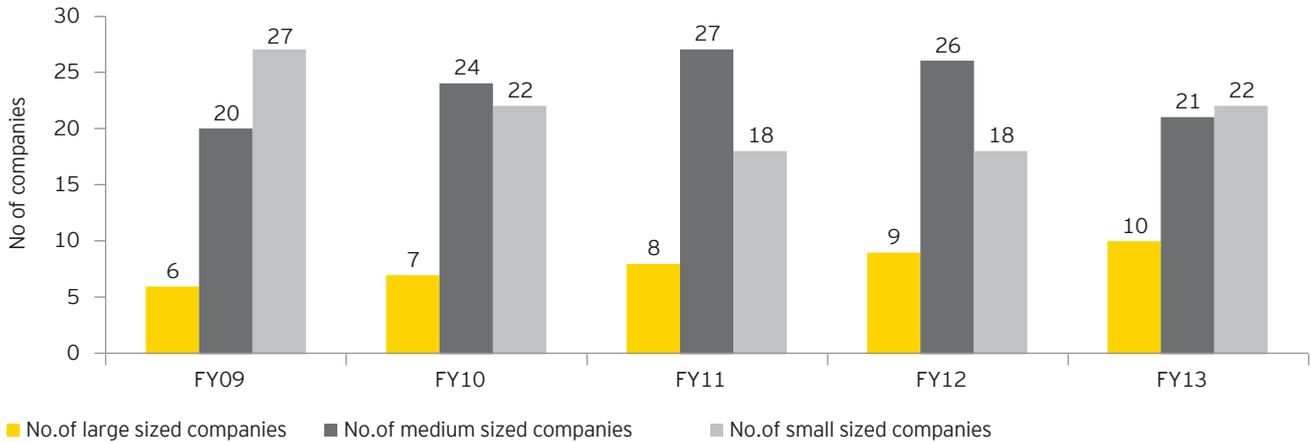
- ▶ Large-sized companies: FY13 revenue of more than INR40.0 billion
- ▶ Mid-sized companies: FY13 revenue between INR10.0 billion and INR40.0 billion.
- ▶ Small-sized companies: FY13 revenue less than INR10.0 billion.

Category	No of companies	Total revenue FY13 (INR billion)
Large-sized companies	10	1,341
Medium-sized companies	21	444
Small-sized companies	22	127
Total	53	1,912

List of large-sized, mid-sized and small-sized (by revenue) companies

Large-sized players	Mid-sized players	Small-sized players
Larsen & Toubro Ltd.	Ramky Infrastructure Ltd.	Hindustan Dorr-Oliver Ltd.
Punj Lloyd Ltd.	National Building Construction Ltd.	J Kumar Infracore Ltd.
Hindustan Construction Company Ltd.	Jyoti Structures Ltd.	A2Z Maintenance & Engineering Services Ltd.
Gammon India Ltd.	McNally Bharat Engineering Company Ltd.	Madhucon Projects Ltd.
NCC Ltd.	JMC Projects (India) Ltd.	ARSS Infrastructure Projects Ltd.
Kalpataru Power Transmission Ltd.	Engineers India Ltd.	KNR Constructions Ltd.
Simplex Infrastructure Ltd.	Unity Infrastructures Ltd.	Valecha Engineering Ltd.
Era Infra Engineering Ltd.	Supreme Infrastructure India Limited	Vascon Engineering Ltd.
IVRCL Ltd.	IL&FS Engineering & Construction Company Ltd.	Techno Electric & Engineering Company Ltd.
Patel Engineering Ltd.	Sadbhav Engineering Ltd.	Tantia Construction Ltd.
	Consolidated Construction Consortium Ltd.	Jaihind Projects Ltd.
	Gayatri Projects Ltd.	UB Engineering Ltd.
	Shriram EPC Ltd.	Petron Engineering Construction Ltd.
	Ashoka Buildcon Ltd.	Simplex Projects Ltd.
	Pratibha Industries Ltd.	Man Infracore Ltd.
	ITD Cementation India Ltd.	Welspun Projects Ltd.
	B L Kashyap & Sons Ltd.	PBA Infrastructure Ltd.
	Ahluwalia Contracts (India) Ltd.	Kalindee Rail Nirman (Engineers) Ltd.
	MBL Infrastructures Ltd.	Tarmat Ltd.
	C&C Constructions Co. Ltd.	Coromandel Engineering Company Ltd.
	SPML Infra Ltd.	Atlanta Ltd.
		Marg Ltd.

Market evolution



Note: The above graph reflects the shift in the revenue profile of companies over the years (considered for the purpose of our analysis)

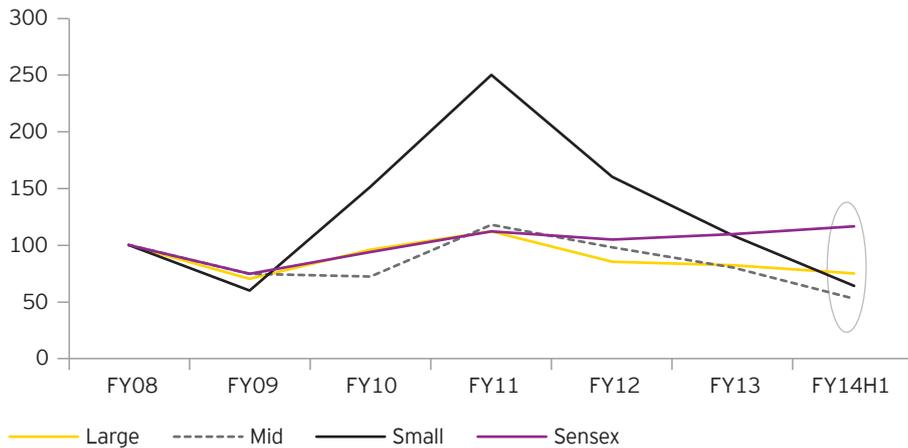
Market size and profitability

Particulars	FY 09	FY 10	FY 11	FY 12	FY 13
Revenue (INR billion)					
Large-sized companies	835	922	1,054	1,243	1,341
Mid-sized companies	254	307	376	454	444
Small-sized companies	82	132	146	139	127
Total	1,172	1,360	1,576	1,836	1,913
PAT (INR billion)					
Large-sized companies	40	45	50	45	36
Mid-sized companies	9	13	18	16	11
Small-sized companies	5	9	7	(2)	(4)
Total	54	68	75	59	43

Source: Company annual reports and Capitaline, EY research based on companies mentioned in list of large-sized, mid-sized and small-sized (by revenue) companies

Total revenues have grown at a CAGR of 13.0% during FY09-FY13; however, total PAT decreased at a CAGR of -5.4%. This indicates that revenues have multiplied at the cost of ultimate profitability. Many companies have reported negative PAT during FY13, thereby distorting market economics. This trend reflects irrational bidding to secure order book, delay/non-recovery of receivables, leading to increased working capital. This will result in increase in debt requirements, as well as a delay in the execution of projects, rendering the bid price invalid.

Market capitalization performance



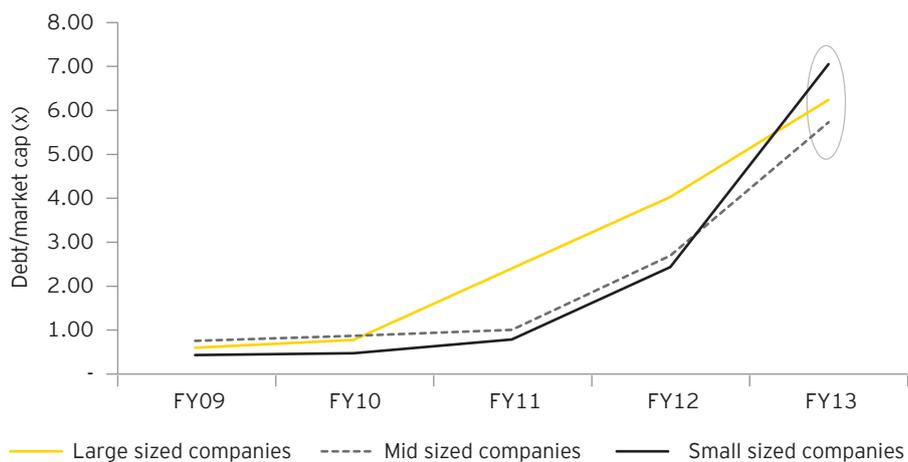
Source: company annual reports & Capitaline, EY research based on companies mentioned in list of large-sized, mid-sized and small-sized (by revenue) companies

During FY08-FY12, most of the EPC stocks, particularly the large- and mid-sized ones, moved in tandem with the Sensex. However, after FY12, the correlation reversed, and EPC stocks have been witnessing a negative trend since then. The stocks have actually touched all-time lows during FY13-14.

While the Sensex has yielded a positive movement of around 17% during 1HFY14 from FY08, EPC companies' market cap has reduced by 25%-50%.

We see the market capitalization of small-sized stocks rising during FY11; this is due to the impact of fresh listing of small cap companies on the stock market.

Debt/market capitalization⁹¹

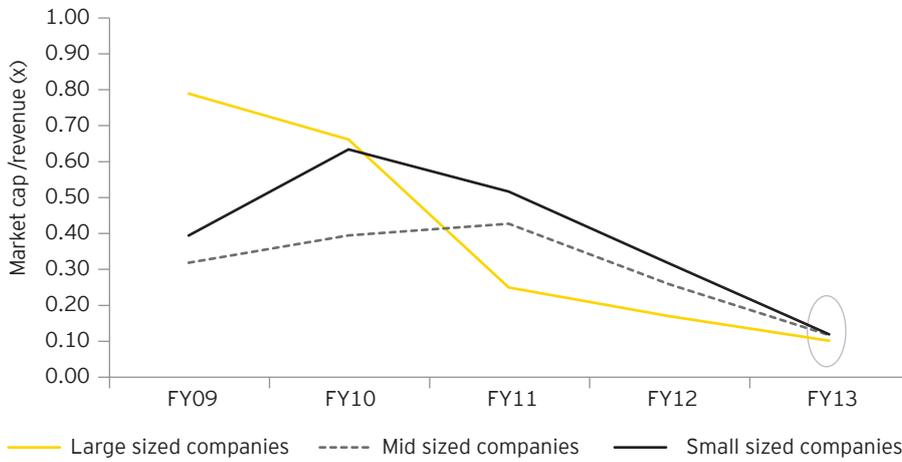


Source: company annual reports & Capitaline, EY research based on companies mentioned in list of large-sized, mid-sized and small-sized (by revenue) companies

91 The calculation is based on the total debt/market cap ratio and considers median number for the purpose of analysis and comparison. For example, FY09 numbers are calculated as total debt as on 31 March 2009/average market cap during FY10.

The above graph, highlighting the ratio of total debt/market capitalization, indicates the deteriorating financial health of companies. Debt pressures have been increasing, adversely impacting companies' profitability. It is remarkable to note that the debt component, which was just a fraction of the market capitalization during FY09, has now become a multiple of ~ 6-7 times the market capitalization.

Market capitalization/revenue⁹²



Source: Company Annual Reports & Capitaline, EY research based on companies mentioned in list of large-sized, mid-sized and small-sized (by revenue) companies

The trend as indicated in the graph above indicates the extent to which the trading market cap of the companies is reflecting their revenues. When compared with FY09, we see a clearly decreasing trend. This is due to the hit on profitability (highlighted in table on market size and profitability) even though revenues have increased substantially.

⁹² The calculation is based on Market Cap/Revenue ratio. For example, FY09 numbers are calculated as market cap during FY10/Revenue as on 31 March 2009.







4

Key challenges



4.1 Is the project bid viable?

Project selection becomes the key to maintaining profitability when opportunities are a plenty and competition is significant. If projects are not selected judiciously, they may drain resources without providing commensurate returns. Therefore, not only does improper project selection affect the financial health of a company, but it also negatively impacts its goodwill. While some delays are due to regulatory hurdles, others are caused by force majeure factors.

A careful examination of a project, prior to bidding, is essential to mitigate any unexpected future developments. Many contractors faced the brunt of aggressive bidding when their companies incurred losses. It is therefore pertinent to take into consideration ground realities and uncertainties such as currency depreciation while costing for the project. Factors such as currency fluctuations have adversely impacted the construction sector in the past. During January-October 2013, currency exchange rate reached as high as INR52.9/US\$ to as low as INR67.77/US\$. The cost of import of equipment increased multiple times, putting initial cost estimates of contractors in jeopardy. The impact was more severe on sectors such as power, where EPC contractors usually import boilers, turbine etc. Furthermore, foreign debt service obligations, in terms of rupee, increased significantly eroding the benefit of low LIBOR⁹³.

A well-informed project selection team with adequate market intelligence to scrutinize every project before employing resources on detailed investigations is crucial. Moreover, it is important for companies to ensure the quality of projects, while focusing on creating healthy order books.

93 "RUPEE FALL PUSHES PROJECT COSTS BY UP TO 15%," Construction Sphere, 31 August 2013, <http://www.constructionsphere.com/index.php/component/k2/item/1130-rupee-fall-pushes-project-costs-by-up-to-15>, accessed on 12 October 2013. ; "Impact of Foreign Currency on Project Debt," India Ratings & Research, 12 June 2013.

	Stage of EPC contract 		
	Pre-tender stage	Post-tender stage	Execution stage
Political risks	Political stability of the country; change in governments	Delay in approvals and land acquisition	-
Environmental risks	-	Environmental approvals	Unfavorable climatic condition and topography
Technical risks	Insufficient preliminary research on scope, resource availability, technology requirement leading to inaccurate time and cost estimations	Design changes/ inadequacies; resource availability; site conditions	Unfamiliarity with topography/ terrain; resettlement and rehabilitation; utility shifting
Financial risks	Cost estimates and financing assumptions	Liquidity and credit shortage	Foreign exchange and interest rate fluctuation
Market risks	-	Economic downturn	Delay in payments from client; unavailability of resources
Contractual/ legal risks	Unfamiliarity with the local laws and regulations	Unfamiliarity with the local laws and regulations; limited say in contract negotiations	unfamiliarity with the local laws, tax and regulations
Force majeure risks	-	-	Risk associated with external hazards, including storms, floods, earthquakes, vandalism, sabotage and terrorism; civil unrest

4.2 Where is the cash?

EPC projects have become large, complex and as a result cost intensive. Therefore, in the backdrop of market turmoil, fears of a slowdown and a credit crunch, one of the key challenges for the sector is the ability to raise adequate financing required to fund the execution of existing order books and achieve sustainability for future. Currently, majority of EPC companies are leveraged to such an extent that their cash flows do not permit additional borrowing support. In addition to this, project delays, cost overruns, delayed payment mechanisms and litigations add to an increased requirement for working capital. The only financial respite they get is the mobilization advance that bridges short-term hurdles; however, it elongates the problem further in the long term.

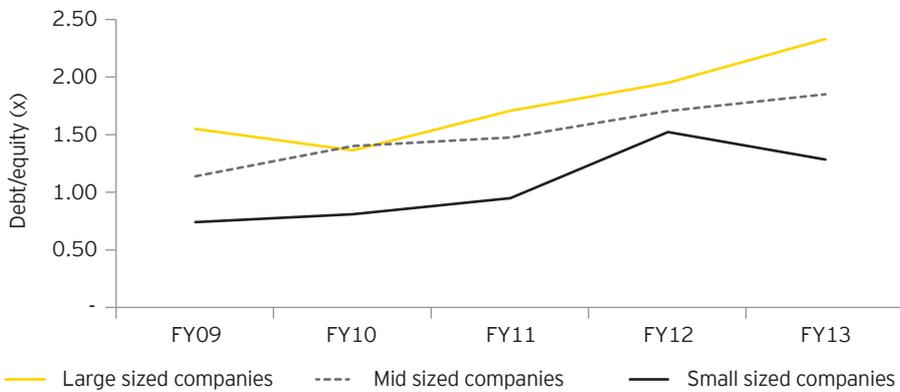
Capital constraints

Promoters of large construction companies do not own stakes of more than 50%-60% in their companies, thereby restricting their ability to raise further funds through equity dilution, without loss of control. In order to release their blocked capital and then redeploy it for new projects, many construction companies have resorted to equity dilution in public markets, private equity and other global as well as domestic funds in the recent past.

Majority of large-sized companies (FY13 revenue > INR40 billion) have a promoter stake of less than 50%. Out of 10 large sized companies considered for analysis, 5 companies have promoter stakes of less than 51%. Similarly, for mid and small sized categories (that have been considered for analysis), more than half of companies are exhibiting such trend. Hence, there is no scope for fund raise through further equity dilution at the parent level.

4.3 Debt to equity equation has reversed. How will debt be serviced?

Total debt to book equity ratio

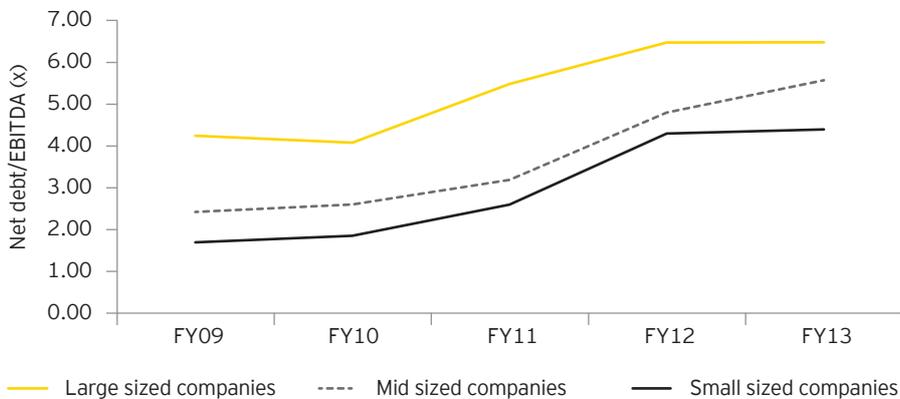


Source: Company annual reports & Capitaline

Note: The above graph reflects median number for the purpose of analysis and comparison

The above analysis clearly indicates the burgeoning debt pressures on the books of the company. When compared with FY09, the FY13 debt to equity ratio has increased significantly. The increase in debt for large-sized companies can be attributed due to its exposure to BOT business.

Net debt/EBITDA



Source: Company Annual Reports & Capitaline

Note: The above graph reflects median number for the purpose of analysis and comparison

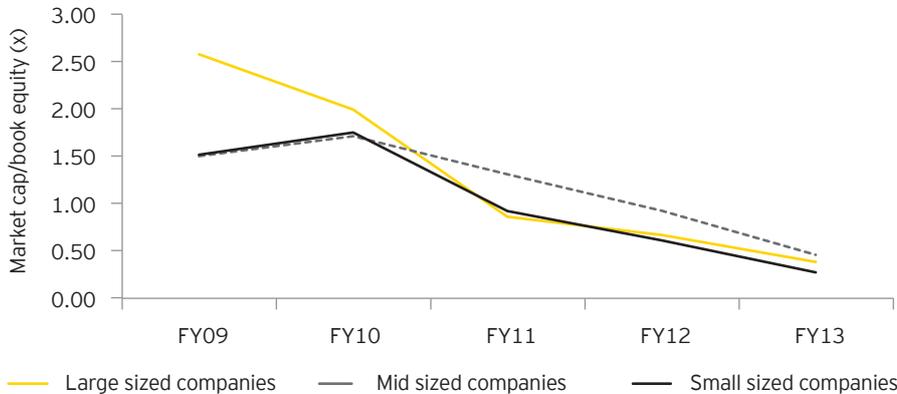
The above graph of Net Debt/EBITDA indicates the adequacy of EBITDA, which is the operating cash flow available for servicing debt. If we observe the above trend, the multiple has been increasing consistently, highlighting the increase in debt without any corresponding increase in profitability or operational cash flow. This clearly reflects the issues that the sector is currently facing.

The increasing interest rates have also posed a challenge for EPC players. The interest coverage ratio of many large infrastructure construction players has declined to less than 1.8 times, which indicates that they will find it difficult to meet interest costs and service debt. For small-sized companies, this ratio has further declined to 1.0. Many companies have begun to offload assets (especially non-core assets), despite the fact that asset valuations are not high. This is done purely to restructure the capital and reduce the debt-burden off the balance sheets⁹⁴.

The lenders have also been keen on financing infrastructure projects despite the fact that NPAs and restructured assets in this space have increased quite substantially lately. The infrastructure has been a priority sector for the lenders, as the commercial bank infrastructure lending increased from INR72.43 billion in FY00 to INR7860.45 billion in FY13. As of FY13, infrastructure accounts for more than one-third of the total bank credit to the industrial sector. However, gross NPAs have increased considerably, from INR16 billion in FY09 to INR114.1 billion in FY13. This has been largely on account of poor project appraisal techniques, lack of accountability, post-disbursal supervision, and external factors such as clearance delays⁹⁵.

High erosion of book value

Market capitalization to book equity⁹⁶



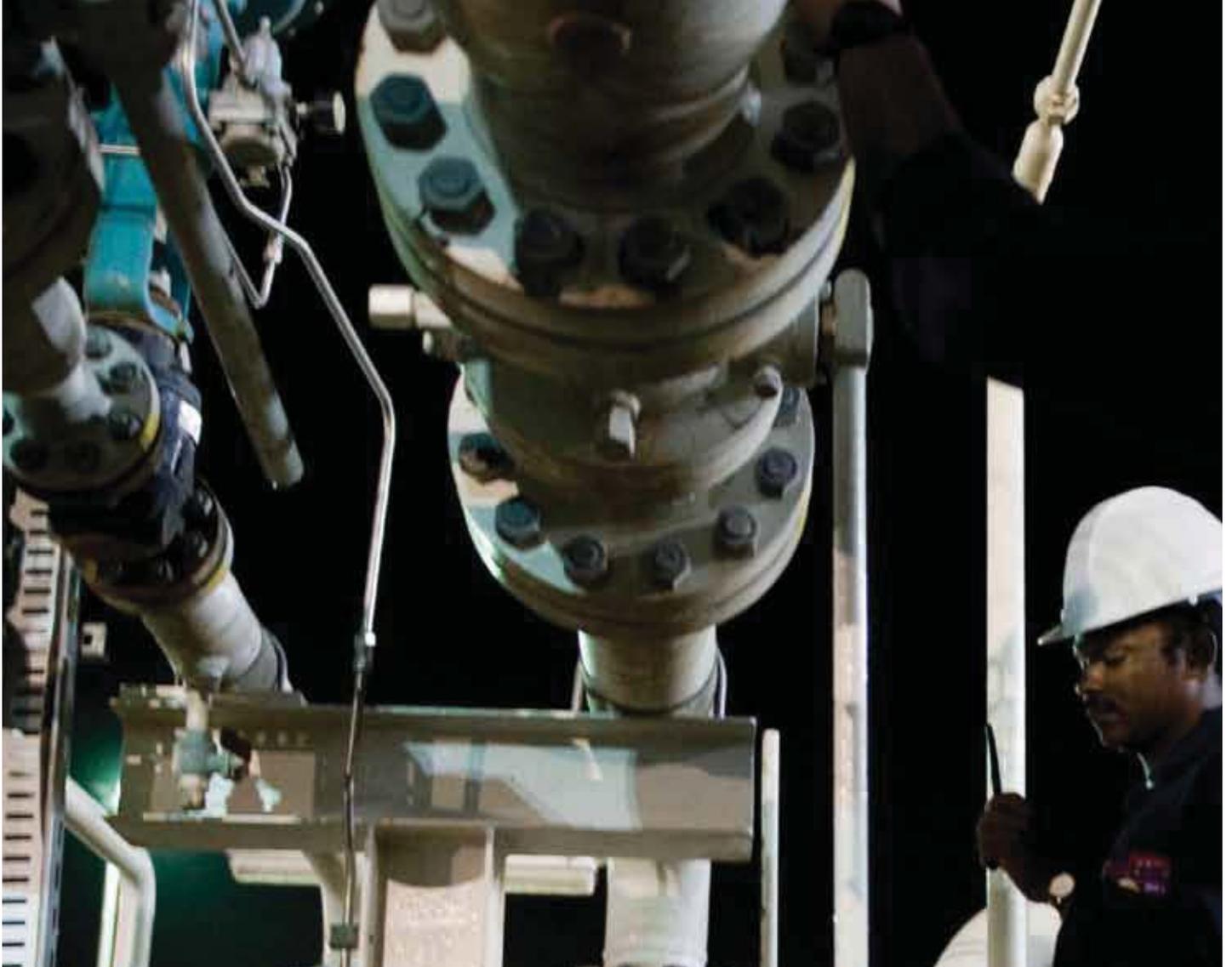
Source: Company Annual Reports & Capitaline

The above analysis indicates that there is a clear deterioration in the valuation ascribed by the market. The stocks are trading not even at book value of equity, but at a rather significant discount to book value. However, in comparison, during FY09-FY10, the stocks were trading at a premium to their book equity. In particular, large-sized companies commanded significant premium.

94 "Infrastructure firms sell assets to reduce debt," MintAsia, 11 October 2013, via Factiva © 2013 HT Media Ltd.

95 "Infrastructure Financing By Banks In India: Myths and Realities," *RBI website*, http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=831#T1, accessed 11 November 2013; "The ugly story of infrastructure companies, banks, indiscriminate lending and crippling bad debts," *Fortune India*, October 2013, vol. 4, issue 1, p. 70; "RBI relaxes prudential norms for infrastructure," *The Economic Times*, 18 March 2013, via Factiva © 2013 The Times of India Group.

96 The calculation is based on Average Market Cap/ Book Equity ratio. For example, FY09 numbers are calculated as Average Market Cap during FY10/Total Book Equity as on 31 March 2009.



Financial snapshot of EPC companies

Particulars	FY 09	FY 10	FY 11	FY 12	FY 13
Large-sized companies					
EBIDTA %	9.4%	11.2%	10.8%	8.6%	8.1%
PAT %	3.6%	3.5%	3.0%	1.1%	0.8%
Interest/Revenue	4.8%	4.7%	5.8%	9.0%	9.6%
Working Capital/Revenue	40.8%	41.1%	38.5%	34.2%	37.6%
Mid-sized companies					
EBIDTA %	10.0%	9.8%	11.9%	9.8%	10.8%
PAT %	4.6%	4.0%	3.9%	2.3%	1.3%
Interest/Revenue	4.2%	4.1%	4.5%	5.4%	7.5%
Working Capital/Revenue	29.5%	40.3%	35.4%	39.0%	45.0%
Small-sized companies					
EBIDTA %	9.9%	11.6%	9.9%	9.3%	12.2%
PAT %	4.5%	5.9%	4.3%	0.4%	0.1%
Interest/Revenue	4.2%	3.6%	4.4%	6.5%	8.6%
Working Capital/Revenue	33.0%	30.3%	28.6%	47.6%	42.7%

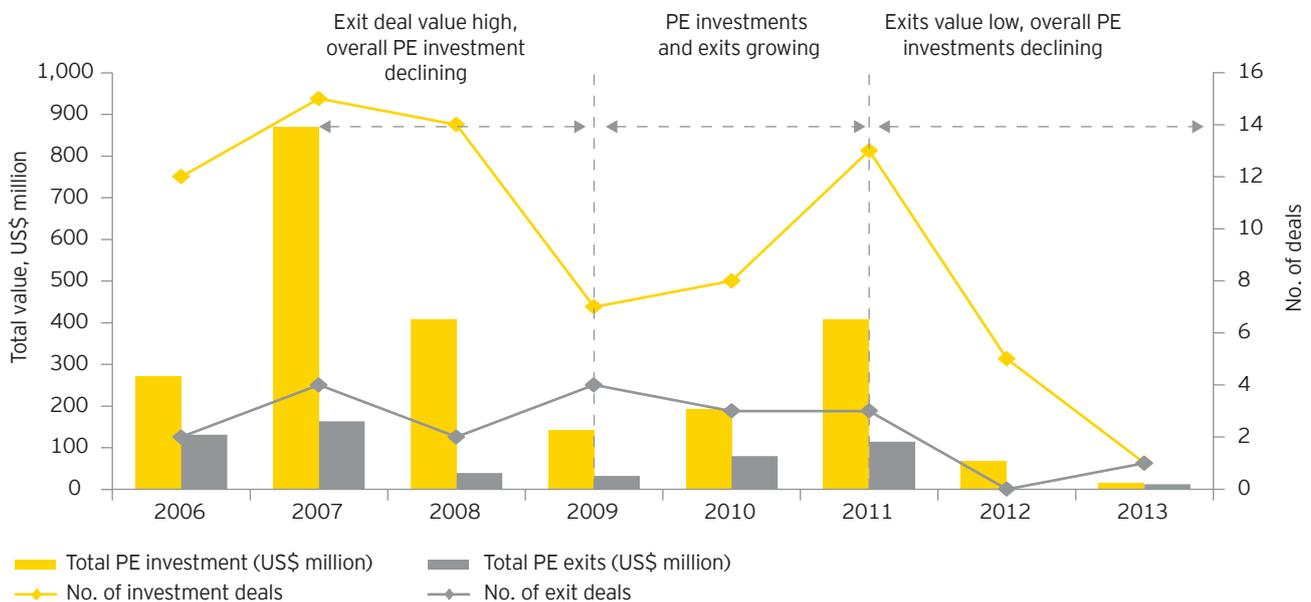
Note: The above table indicates the median number of the companies considered for analysis

4.4 How will PE investors exit?

Most mid-sized unlisted companies have private equity investors who had invested capital during 2006-2011. However, due to an adverse capital market situation, companies have not been able to resort to the exit strategy/IPO route.

The sector did witness few successful exits historically in large companies, such as Gammon India Ltd., Punj Lloyd Ltd. and Shriram EPC Ltd. However, the trend did not continue for an extended period.

PE investments and exits, 2006-2013



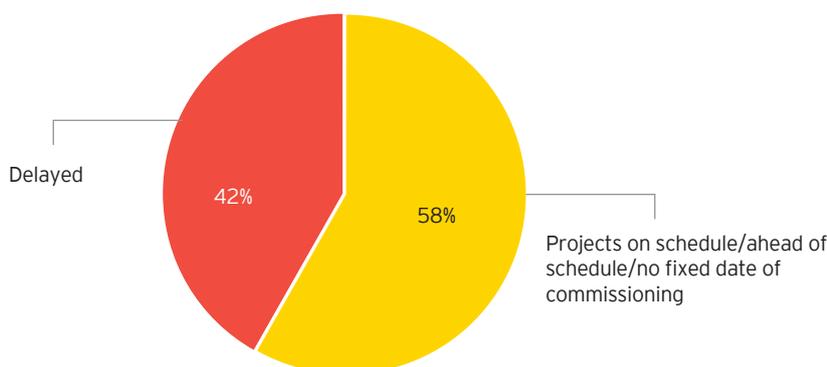
Source: EY research

After 2011, the industry witnessed a decline in the number of exits. Stock markets crashed after 2010, and so did the valuations. Although companies were keen to provide an exit option to such investors, existing capital markets have not been conducive for an initial public offering (IPO). Few companies did list on the stock markets at attractive valuations during 2007-10 thus creating an exit opportunity for the investors. However, few investors chose not to exit with a view to realise higher returns later. Unfortunately, the markets have assumed a continuously downward trend with no correction so far.

4.5 Attention to alleviating time and cost overruns

It is a well-established fact that most construction projects have to face the risk of time and cost overruns – statistics re-enforce this fact. As of July 2013, out of a total of 694 ongoing infrastructure projects awarded by Central Government authorities (INR1.5 billion and above), 290 such projects were delayed.

Status of infrastructure projects



Source: Flash report on central sector projects (INR150 crore and above), Ministry of Statistics and Programme Implementation, July 2013

With inflationary pressures plaguing the Indian economy, such delays in project completions lead to an effective cost escalation. The 290 delayed projects have an incremental cost of INR1.68 trillion, or a 19% cost escalation. The highway sector has seen the maximum number of delayed projects, predominantly due to land acquisition and Right of Way issues. Other key sectors plagued by cost overruns are power and the railways.

Cost overrun in various segments⁹⁷

Sector	Number of projects delayed	Delay period (months)	Cost overrun (INR billion)
Roads and transport	91	2-108	19.4 (1.9%)
Power	50	1-102	183.9 (7.3%)
Railways	35	3-240	1,053.9 (86.4%)
Urban infrastructure	1	8	52.7 (11.9%)
Coal	28	12-72	30.9 (8.1%)
Other	85	-	335.7 (10.4%)

⁹⁷ "293 delayed projects led to cost overrun of Rs 68K crore," *Realty Plus*, 23 February 2011, via Factiva, © 2011 Adsert Web Solutions Pvt. Ltd.

Some key issues and their impact of delay in time and cost overruns

Issue	Impact on time	Impact on cost
Land acquisition challenges	Delay in project completion	Exposes project to inflationary cost escalations
Ambiguity in design and engineering specifications	Delay in arrival of detailed drawings by consultant	–
Delay in procurement and delivery of critical equipment	Impacts several activities, depending on the need for equipment in the critical path	Overall increase in project cost due to idle time of several resources
Shortage of construction materials	Delay in dependent activities impacting subsequent activities as well	Overall increase in project cost due to idle time of several resources
Change of scope	Impacts overall project time line and resource utilization	Impacts cost and working capital cycles due to the extra work
Lack of coordination between various participants (vendors, sub-contractors, etc.)	Idle time of several resources	Extra cost incurred due to reduced productivity and increased idleness
Delay in regulatory clearance	Derail projects indefinitely	Exposes project to inflationary cost escalations – especially fixed costs of equipment and labor
Inefficient project budgeting and lack of contingency funds	Delay due to arrangement of bridge financing	Cost of project significantly deviates from budget
Rise in the cost of raw materials	–	Impacts margins as cost escalation clause may only cover some of the costs
Delay in payments by the owner	Likely to delay the project if unable to fill the gap created by the delay in payments	Contractor may have to raise funds through additional equity or debt to fund working capital







5

Overcoming challenges

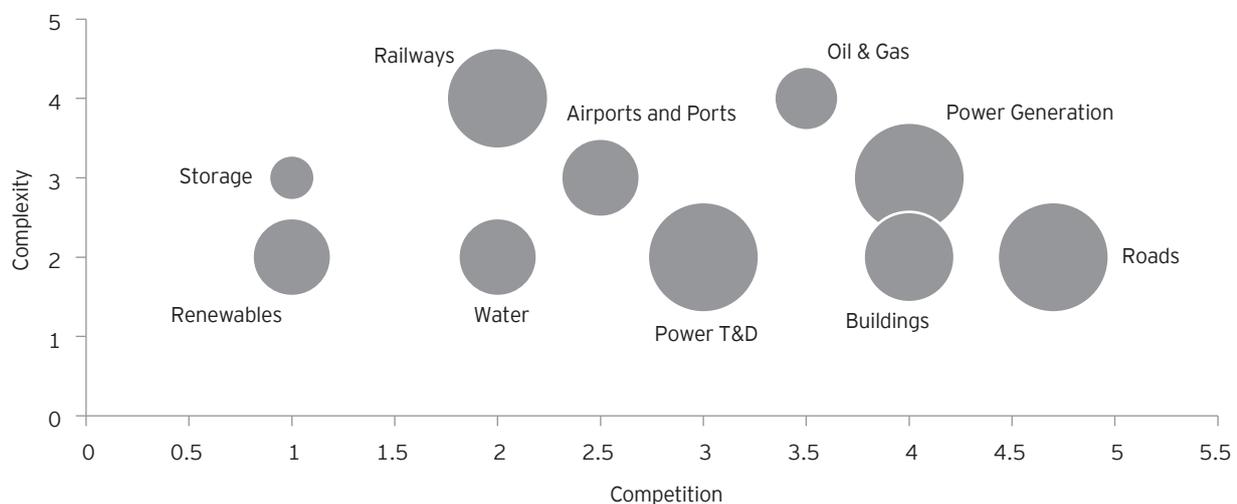


5.1 Sector and role diversification

Traditionally, EPC players have developed skill sets in the core sub-sectors of transport, energy, buildings and urban infrastructure. Building a niche in a particular sub-sector could pose challenges to growth of organizations in future as competition in any particular segment is likely to increase, impacting margins. Therefore, it is equally necessary to have competence in other sub-sectors.

Large global companies have diversified their operations with reference to sectors they serve as well as the services they offer. Although Indian companies have started moving toward new avenues, the pace of diversification and the coverage is still low as compared to their global peers, who cater to a wide choice of sectors. Although sub-sectors such as oil & gas, mining and energy (including renewable and nuclear) have witnessed significant investments recently, there are still some segments, which are less explored including steel and metals, communications, defense and aerospace.

Sector reference: size, complexity and competition



Source: EY research

Diversification is legitimate if it de-risks the business, provides synergy to current operations and results in a positive cost-benefit analysis. Every sector has its own issues, investments, profit margins and gestation periods. However, a clear strategy and effective implementation will help mitigate risks associated with a particular sector.

EPC companies have expanded their role from being a basic EPC contractor into consultants (for design and project management), developers and suppliers. However, many global construction and engineering players also provide

- ▶ Consultancy in pre-project activities, sustainability, environmental impact assessment, supply-chain management and operations and maintenance
- ▶ Financial assistance in the form of credit support, risk allocation, project financing and asset management
- ▶ Specialized services such as weather forecasting, radiation detection, emergency management and personnel training at various levels

Inter-changing roles



The construction industry has witnessed many EPC players shifting into PPP projects over the last decade. However, lately various players have been selling stakes or completely exiting in their BOT assets to shed the debt off their balance sheets, especially in roads. Therefore, while diversifying the offerings keeps the companies in pace with global players and makes them eligible for large contracts, they have to be prudent in balancing their service portfolio ahead of any debt-ridden situation where it may have to go for corporate debt-restructuring.

Most global EPC players give project management utmost importance and demonstrate their capabilities through superior project designing and effective project management. The resources deployed on a project can be outsourced, but to have an overall control through an experienced project management team is considered to be key to mitigating time and cost overrun risks. While Indian companies have been traditionally outsourcing such services, many are now moving toward owning such capabilities in-house.

Highlights

- ▶ Irrigation companies are diversifying into other sectors as the Govt's focus on irrigation has declined over the years.
- ▶ There is considerable competition in the highway space leading to reluctance among the players to participate. Hence, players are considering diversification into new sectors such as transmission etc.
- ▶ Few boiler manufacturing companies such as BGR Energy Systems Limited, and Cethar Ltd., have forayed into the power EPC space.
- ▶ Many civil contracting companies are entering sectors such as power transmission & distribution, oil & gas, industrial etc., and undertaking the civil component of these contracts.
- ▶ Large construction companies and developers are moving along the value chain and creating in-house PMC and high value engineering divisions.
- ▶ New sectors such as renewable energy, solid waste management, water have emerged in urban infrastructure.

5.2 Globalization

The Govt's approval for 100% FDI investment in infrastructure projects through the automatic route has encouraged several international players to establish their presence in India. These global giants provide the latest technology and quality to domestic contractors through strategic alliances, joint ventures and partnerships.

However, the FDI inflow in the construction sector (township, housing and infrastructure) in India reduced by more than half to US\$1.3 billion⁹⁸ in FY13 from US\$3.1 billion in FY12, indicating that the global construction players are exercising caution in entering the industry. Though, the holdings of foreign portfolio investors, or FIIs, have been rising consistently in Indian companies and were at an all-time high in the beginning of FY14, on the back of a positive long-term outlook.

Strategic alliances and technical partnerships with global and domestic players in the EPC industry provide the following value additions:

- ▶ In case of Indian companies entering partnerships with global companies, it gives the domestic players access to
 - ▶ Latest global technology and equipment
 - ▶ Global project management and risk management capabilities
- ▶ Elimination of out-dated practices and improved quality and work-practices due to increased competition
- ▶ Companies planning to diversify into new sectors without any prior experience in them have the opportunity to move up the value chain by partnering with project-specific or field-specific specialists.

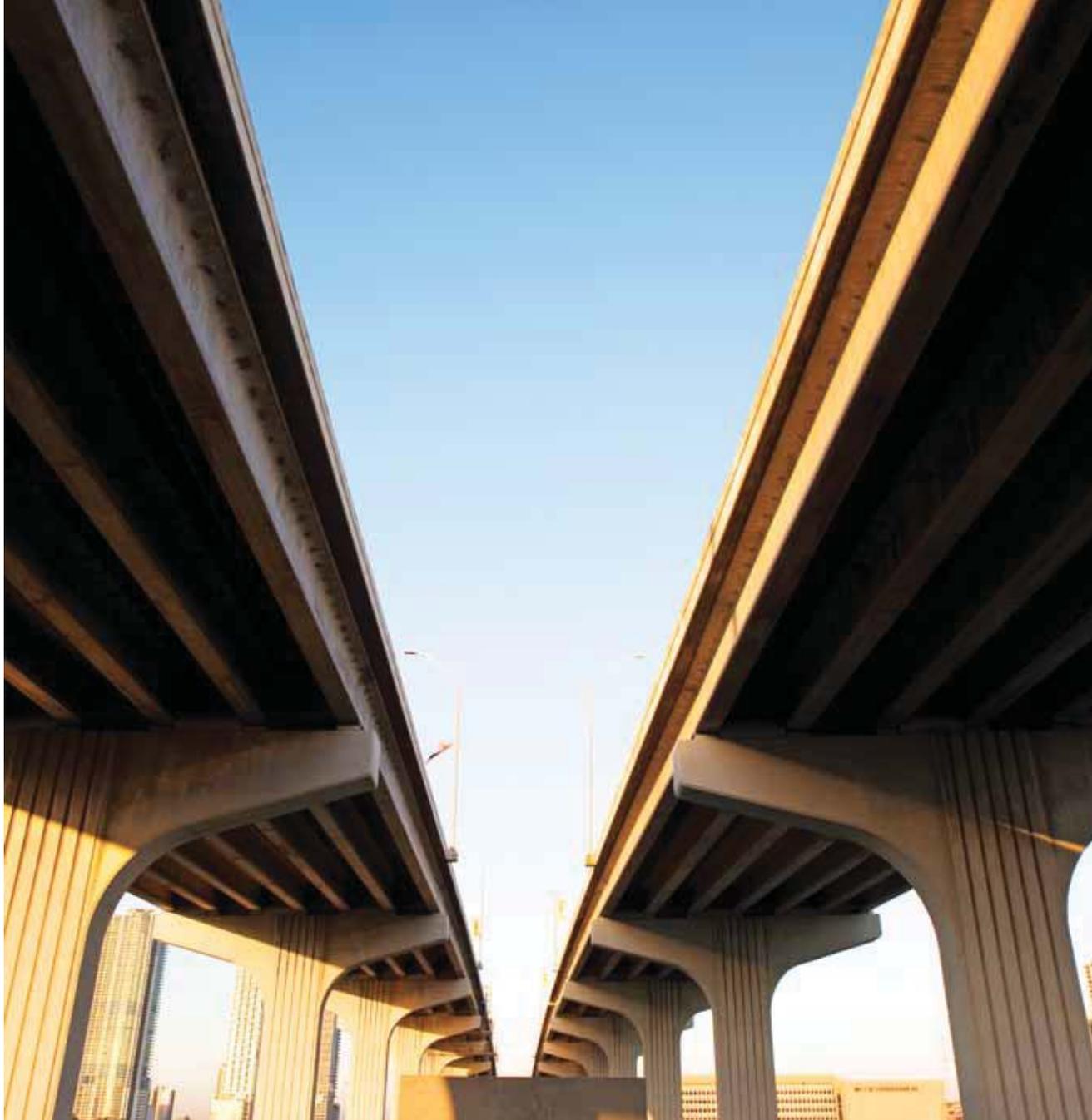
As a future strategy, large sized players may explore new opportunities by targeting similar market segments outside India, particularly emerging markets. Mid-sized players may continue to scale up in the domestic markets but may explore niche and specialized segments in middle-east, CII and SAARC countries

Highlights:

- ▶ Several Indian power sector players such as Larsen & Toubro, Bharat Forge Ltd., BGR Energy Systems Ltd. have formed JVs with foreign players to bid for super critical plants with their own equipment.
- ▶ Indian companies have also undertaken foreign acquisitions in the past and also continue to consider the inorganic approach to foray abroad.



98 "FDI statistics," *DIPP website*, http://dipp.nic.in/English/Publications/FDI_Statistics/FDI_Statistics.aspx, accessed on 14 November 2013; "FII holding in some infra companies at all-time highs while stocks at all-time lows," *The Economic Times*, 19 April 2013, via Factiva © 2013 The Times of India Group; "Foreign construction cos hit the highway to India," *The Times of India*, 19 May 2005, via Factiva © 2013 The Times of India Group.



Key acquisitions by Indian companies

Acquirer	Target	Details
Gammon India	Franco Tosi Meccanica (75.1%), Sadelmi (50% stake) and Sofinter s.p.a (holding company of Ansaldo Caldaie, 50% stake)	In 2008, Gammon acquired a stake in three Italian companies – Franco Tosi Meccanica for INR2.5 billion, Sadelmi for INR0.5 billion and Sofinter for INR3.25 billion ⁹⁹ .
Hindustan Construction Company	Karl Steiner (66% stake)	In 2010, this was HCC's first international acquisition as is in line with HCC's strategy to equip HCC with a "total solutions capability" for a facility at a single source ¹⁰⁰ .
Simplex Infrastructure Ltd.	A small mining company (100% stake)	In 2012, Simplex Infrastructure Ltd. acquired a subsidiary of US-based Joy Global, Inc., engaged in the business of underground coal mining services in India in 2012 ¹⁰¹ .

⁹⁹ "Gammon buys 50% stake in Italian co Sofinter," *Business Line (The Hindu)*, 11 September 2008, via Factiva © 2008 The Hindu Business Line.

¹⁰⁰ "Steiner AG," *HCC website*, http://www.hccindia.com/karl_steinerag.php, accessed 20 November 2013

¹⁰¹ "Simplex Infrastructures: Outcome of Board Meeting," *Indian Company News Bites - Stock Report*, 15 May 2012, via Factiva, © 2012 News Bites Pty Ltd

Indian companies have also forayed into overseas markets and are bidding for projects there.

Key recent overseas project bids by Indian companies

Indian company	Country/region	Project	EPC sector	Project/ bid/ contract amount (US\$ million)	Details
Larsen & Toubro ¹⁰²	Middle-East and Malaysia	Hydrocarbon	Oil & Gas	3,000	Larsen & Toubro seeks to increase its portfolio in overseas projects due to slowdown in the domestic infrastructure sector and intense competition from peers. It has set up a separate subsidiary, L&T Hydrocarbon Engineering, for its hydrocarbon business.
Afcons Infrastructure Limited ¹⁰³	Jordan	4-MTPA New Rock phosphate terminal, Aqaba	Ports	200	The project provides a platform for Afcons to further bid for port projects in all the Gulf countries.
Essar Projects ¹⁰⁴	Abu Dhabi	3.6 cubic metre per hour-Spent Caustic Treatment Plant,	Industrial	80	Essar Projects has bid for these projects in line with their strategy to reinforce their global footprint, especially in key markets of the Middle East, South East Asia, India, Africa, and the US.
	Korea	Carbon Black & Delayed Coker (CBDC) Project for the Ruwais refinery			
	Korea	Twin inter refinery pipelines (IRP)			
Shriram EPC ¹⁰⁵	Iraq	Primary sanitary, storm and trunk sewer systems	Water supply and sanitation	230	Shriram EPC forayed into the Middle East through this contract, and look for sustained revenues from the region for 3 years as well as further opportunities in Iraq.

102 "Larsen & Toubro to bid for overseas hydrocarbon projects worth \$3 billion," *The Economic Times*, 6 June 2013, via Factiva © 2013 The Times of India Group.

103 "AFCONS WINS FIRST PROJECT IN JORDAN (the \$200 million contract is for building the new rock phosphate terminal at Aqaba)," *Indian Business Insight*, 16 May 2010, via Factiva, © 2010 Informatics (India) Ltd.

104 "Essar Projects bags USD 80 million worth contracts in Abu Dhabi," *The Economic Times*, 23 May 2013, via Factiva © 2013 The Times of India Group

105 "Shriram EPC bags \$230 m Iraq order," *Business Line (The Hindu)*, 6 December 2012, via Factiva, © 2012 The Hindu Business Line

5.3 Thrust from the government in driving EPC sector, infrastructure as a whole

As part of its five year plans and policy reforms, the Gol has been continuously attempting to simplify the approval processes, standardizing repetitive tasks (such as model agreements) to eliminate redundancies in efforts and expedite execution, easing out credit generation for the infrastructure sector and setting up agencies to expedite growth through a planned release of projects. Government authorities have also made changes to sector-specific regulations governing various infrastructure projects not only to provide a level-playing field to domestic players but also to encourage global firms to invest in projects.

The transformation in the road sector from PPP-dominated to EPC-centric model has been a key development in boosting the EPC sector outlook. Around 2,500 km of roads to be awarded in FY14 may come under the EPC route, to enable the cash-strapped road sector meet its current year and five-year plan targets¹⁰⁶.

The Gol established the India Infrastructure Finance Company Ltd. (IIFCL) in 2006 to provide long-term finance to viable infrastructure projects¹⁰⁷. Subsequently, the Gol proposed infrastructure debt funds (IDFs) to be set up either structured as a Non-banking Financial Company (NBFC) or as a mutual fund. IDFs have been envisaged to raise resources and through take-out finance, credit enhancement and other innovative means, provide long-term, low-cost debt for infrastructure projects. This has to be achieved by undertaking investment in debt securities of infrastructure companies, infrastructure finance companies (IFCs) or infrastructure projects and SPVs.

In addition to the above, restructuring the tariff framework for ports, seeking international cooperation from other countries for technical support in renewable energy to meet the power generation targets, allowing 100% private sector stake in the development of 17 airports in 11 states, MoUs between state governments and private players for setting up natural gas infrastructure, and allowing FDI of up to 100% under the automatic route in townships, housing, built-up infrastructure and construction development projects are some of the examples of the measures taken by the Gol in the recent years, which will continue to boost the EPC industry¹⁰⁸. Although these key measures and initiatives taken by the Gol in the recent past is quite promising for the EPC market, it should consider taking some more measures looking at the headwinds faced by the sector.

- ▶ Government authorities should devise more tax benefits for EPC players to increase their participation in infrastructure building.
- ▶ Long-term innovative vehicles should be launched to provide easy finance to EPC players.
- ▶ Debt restructuring by bankers to the ailing EPC players to continue under specific norms and guidelines.
- ▶ Land acquisition procedures should be simplified to ease the entire process.
- ▶ Grievance redressal mechanism should be more active.

106 "Cash contracts may replace PPP model in road building," *Deccan Herald*, 11 November 2013, via Factiva © 2013 The Printers (Mysore) Private Ltd.

107 "Profile-IIFCL," *IIFCL website*, <http://www.iifcl.org/Content/profile.aspx>, accessed 30 September 2013.

108 "Govt unveils 100 airports in smaller cities," *NBM & CW*, 24 September 2013, via Factiva © 2013 NBM Media.

5.4 Merger and acquisitions: consolidation is on the horizon

Several pure-play infrastructure developers, who did not have a construction presence, are now seeking to secure their profitability in the construction business in addition to their own segment and have been exploring possibilities to develop the necessary expertise either organically or inorganically. The sector has witnessed plethora of private equity transaction, particularly during 2006-2011 when around 69 deals got consummated. However, similar track record for the PE exits is yet to be seen.

Either the investor exits are held up with dipping stocks or investors chose not to exit at the time of IPO with a view to register improved returns in future. However, the markets have not turned up well in their favor. Furthermore, the real financial position of the companies has also deteriorated in the recent past.

On this deadlock situation created due to deteriorating balance sheets, the sector is bound to witness “consolidation” and foreign companies targeting Indian EPC companies as inbound transaction opportunities may emerge. Acquisitions will be on the radar to enable exit to private equity players invested in the sector and relieve the cash stress situation of the companies. Dipping valuations on stock markets will not help correct the situation in some time to come. In such circumstances, not many promoters will have the ability to offer buy-back option to PE investors. On the contrary, such promoters holding minority stakes due to multiple rounds of dilution may also consider exiting the business during these tough times, particularly in situations where succession planning by the promoters as the owners of the companies is not yet clear.

The current scenario offers an opportunity to cash-rich industrial groups, both domestic and international, who will be keen on majority/complete buyouts to achieve further scale of existing operations or to gain entry into the sector. This may also enable transforming the current “fragmented” state of industry into an “organized” one.





6

Conclusion



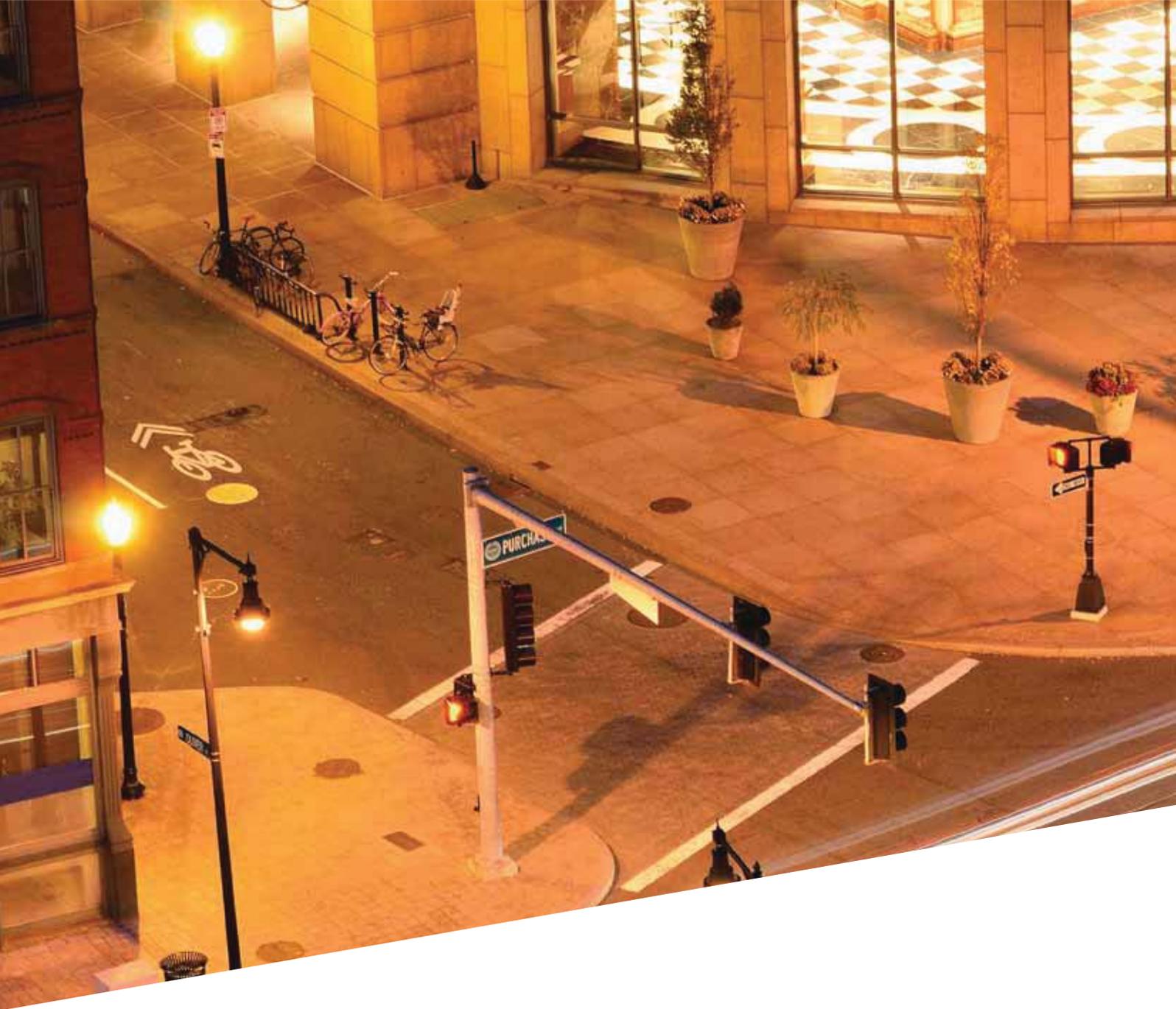
The nation-building initiative of the GoI, the Twelfth FYP, promises a number of opportunities. The indication that 50% of the investments during this period will be contributed by private sector players has further bolstered demand for work to be executed by EPC contractors. However, along with opportunities, the initiative also brings also certain risk and challenges are inevitable, as is evident from the current market situation. The wide range of risks that EPC contractors face during the developmental phase of a project, operational risks of raising finances, working capital management, fighting the inflationary pressure and delays in getting approvals from the counter party, i.e, the government, are further threatening the efficiency of these contractors' contract management capabilities.

In such a scenario, EPC contractors need to focus on sustaining margins by executing quality orders. This would result in a robust bottom line and would make for more efficient growth strategy. It is high time that EPC contractors take a pause and design a growth strategy that has appropriate risk mitigation mechanisms in place to play a long haul in this highly energized infrastructure sector-led EPC market.

EPC contractors riding the wave of considerable order books may have to fix a few things. New projects should be targeted as long-term commitments to counterparty for on-time delivery and well within the budgeted costs with minimal escalations and claims. Competition can be beaten down by technical innovation, value engineering and, if required, strategic tie ups. EPC contractors cannot limit themselves to the singular role of planning, executing and delivery. They have to move from EPC to EPCM and engage in activities across the value chain.

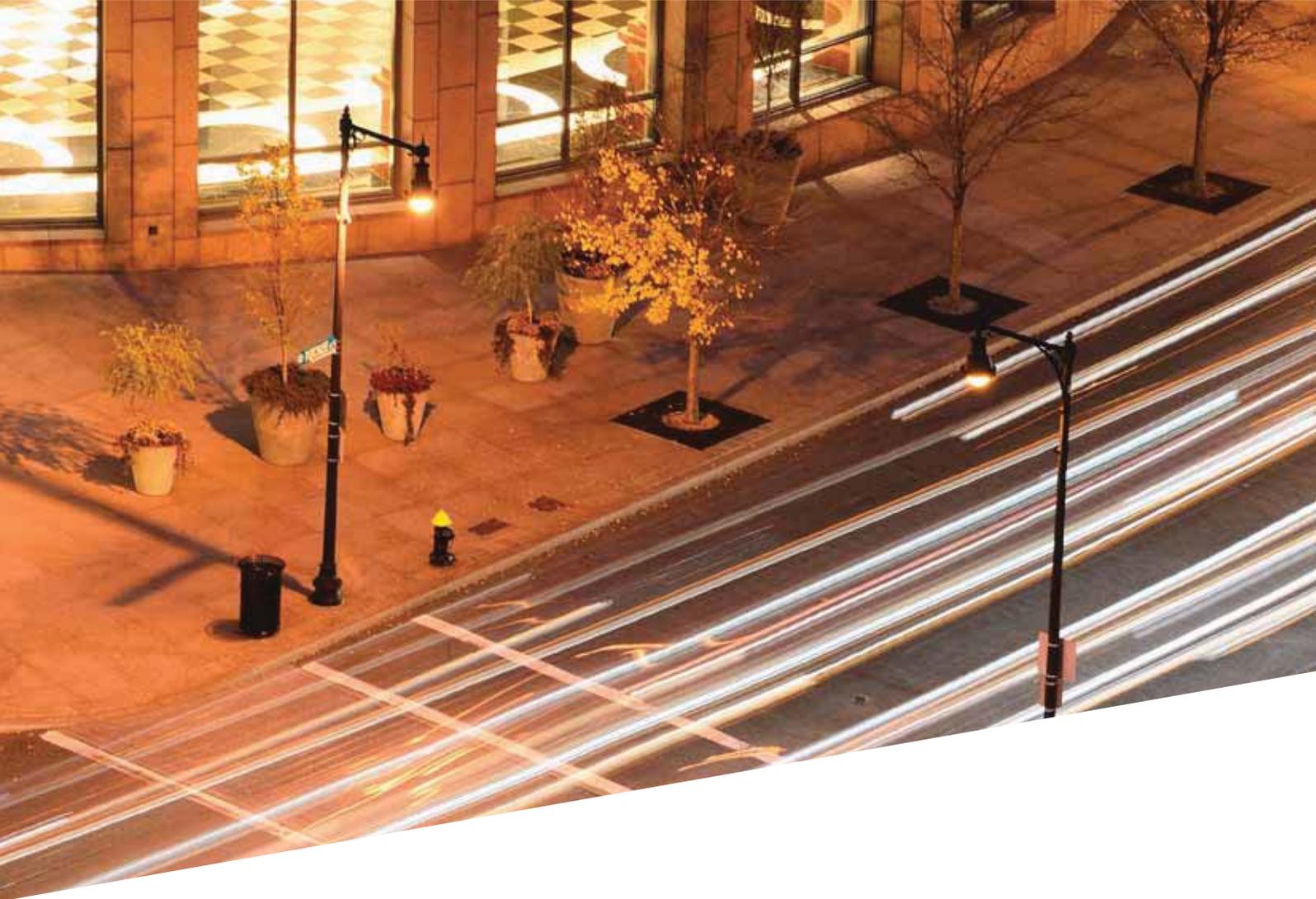
Rationalization in the bidding process for EPC contracts is a must for each of the counterparties – the government and the private sector. As a result of this deadlock situation, created due to deteriorating balance sheets, the sector is witnessing "consolidation" and emergence of foreign companies interested in acquiring Indian EPC companies. This is because inbound transaction opportunities may well be the way out, especially for businesses that may want to move on. For some, this may even be an opportunity to create further size and scale. Mergers and acquisitions may also translate into exit opportunities for private equity players that are invested in the EPC sector and are seeking exit options.

To conclude, the sector needs to undergo a high level of transformation to ensure sustainability. The sector, strongly upheld by the infrastructure story, has great potential to grow further, with the Twelfth FYP targeting infrastructure spend of INR56.3 trillion. However, "projects" and "profits" need to be managed well – actual cash realization from projects is to be reckoned.



7

Supplemental



Know your tax

A clear and efficient taxation regime is a must for attracting foreign investments in the country. Although the GoI has been trying to provide clarity, the issues seem far from being settled. Taxability of EPC contracts in India has always had an array of tax issues.

In India, taxation of EPC contracts revolves around the nature of activities of each contract. Generally, the EPC contract is bifurcated into supply, construction, engineering services, installation /supervisory services and commissioning services. In case of overseas EPC contractor, the contract is broken down to – offshore portion (i.e., offshore supply and offshore services) and onshore portion (i.e., onshore supply and onshore services).

Direct-tax controversies under EPC contract are in the like of taxability of offshore supply, payments for engineering designs, consortiums v. Association of Persons (AOP), permanent establishment and withholding tax obligations etc.

Direct taxes

Taxing offshore supply (relevant in case of foreign EPC contractor)

In EPC contracts, the key component will be procurement of equipment/machinery to be installed in the project. Predominantly, it is the foreign party of the consortium, who would be responsible for such procurement from outside India (with exception of few major Indian players such as BHEL, L&T etc.). Moreover, the offshore supply comprises a major component of the total contract value. In the idealistic scenario, parties would want offshore supply being not taxed in India since the same carry an increased margin as compared to other components of EPC contract. Usually, supply of such equipment will not be taxable in India provided all the components of sale of such equipment take place outside India and the contract for supply is on a principal-to-principal basis.

However, even with availability of judicial precedence favoring the non-taxability of offshore supply, the issue of its taxability has been a matter of litigation for several companies. Accordingly, many foreign companies are applying to the Authority of Advance Ruling for certainty and clarity on tax implication on offshore supply.

Offshore services and Royalty

The taxability of the offshore services has been a debate on account of judicial pronouncement denying the position adopted by the Indian Revenue Authorities (IRA) to tax such income in India. With an amendment in the domestic law, the Gol has intended to clarify that the offshore services will be taxable in India.

As regards the provision of engineering designs and drawings there has been ambiguity with regard to whether the same should be taxable as royalty should be regarded as service. Furthermore, by way of a recent amendment, the withholding tax rate on payments for royalty and fees for technical services has been increased to 25%.

Having said so, one would need to evaluate the taxability of such services in light of the treaty protection available in the relevant DTAA.

Permanent Establishment (PE)

Another dimension of the provision of services under the EPC contract would be providing supervisory and monitoring services during the installation and erection phase. This will definitely require presence of experienced and skilled employees of the foreign party in India. This could often result in continuous taxable presence in India, i.e., a permanent establishment (PE). A constitution of PE for a foreign party in India will then open host of tax issues such as attribution of income to such PE, compliance requirements etc. Hence, it would be advisable to carefully evaluate the need for a presence in India keeping in mind the availability of any treaty protection.

Taxing a consortium

Typically, foreign companies bid for EPC contracts in India by forming joint venture or consortium with other foreign or Indian companies. A lead member of the consortium is chosen who normally drives the awarded contract. However, the members to the consortium may or may not be jointly and severally liable. This being the commercial understanding, inter se the consortium parties, the challenge comes while interpretation of the EPC contract between consortium and the project owner.

More often than not, the EPC contract contains ambiguous terms with regard to scope of work, responsibility and fees toward each party of the consortium. Furthermore, the project owners would like to make all the members of the consortium jointly and severally liable for the performance under the EPC contract.

In view of the same, the taxability of the EPC contract has been subject matter of litigation. Numerous rulings have set out various principles to determine the taxability of the consortium. However, after the Vodafone case, the Indian Revenue Authorities (IRA) have been insisting on adopting "look at" approach for the EPC contract rather than a "look-through" approach. It suggests that the consortium contract should be read as a whole and construe all the clauses set forth in the context of the object and purpose sought to be achieved by the contract.

In absence of clear demarcation of responsibilities under the EPC contract, the consortium results in taxing the same as an AOP, rather than taxing the members independently, for their restricted scope. As a consequence, the income of the independent member, even from offshore portion, which otherwise should not be chargeable to tax could be subjected to tax in India.

Therefore, depending upon the commercial feasibility, the consortium members will have to strike a balance between segregating the scope to be undertaken by each member vis-à-vis the comfort required by the project owner vis-à-vis joint and several liabilities.

Indirect taxes

The EPC sector is subject to multiple indirect taxes, both at the Central and state levels. The cumulative impact of all such levies comprises a substantial percentage of the total contract value and hence, it is important for companies executing EPC contract to structure their contracts in a tax-efficient manner in advance. A gist of key Indirect taxes applicable to the EPC industry is as under:

Tax/duty	Governing authority	Nature of levy
Customs Duty	Central Government	Duty on import of goods into India (general effective rate 28.85%)
Excise Duty	Central Government	Duty on manufacture of goods in India (general effective rate 12.36%)
Service Tax	Central Government	Tax on provision of services (general effective rate 12.36%)
Central Sales Tax (CST)	Central Government	Tax on sale of goods between two states at concessional rate of 2% (subject to specified conditions)
Value Added Tax (VAT)	State Government	Tax on sale of goods within the same Indian state (rates specific to state and commodity): typically VAT rates vary from 5% to 15%
Entry tax / Octroi / Local body tax	State Government / Local municipal authorities	Levy on entry of specified goods into a particular state or local area (rates vary from state to state)

Typical indirect tax implications in respect of various components of the EPC contract are outlined below:

Offshore equipment supply

Import or procurement of equipment from outside India attracts levy of customs duty, the rate of which depends on tariff classification. The contractor can explore "Project Import Scheme" where goods approved for importation in connection with specified projects eligible for concessional BCD rate of 5%, due to which effective customs duty rate comes down to 22.85% as compared to, say, standard customs duty rate of 28.85%, result in to benefit of 6%. It is actually more beneficial since CENVAT credit of BCD is not available. Furthermore, import of goods and subsequent sale in India attracts VAT/CST. Importers may explore possibility of effecting high sea sales or sales in course of import to mitigate VAT/CST exposure.

Offshore service

Provision of offshore services may attract levy of service tax in India under reverse charge mechanism as import of services where liability to pay service tax is of the recipient of service. Generally, EPC contractors providing construction or works contract services should be eligible to avail CENVAT credit of capital goods and input services used by them. However, the eligibility of project owners to claim credit of Service tax levied on EPC contracts needs to be evaluated on a case-to-case basis since there are some restrictions based on the nature of activity or services undertaken by the EPC contractor.

Onshore equipment supply

Procurement of equipment/goods in India from manufacturers could attract levy of Excise duty. Typically, credit of excise duty could be passed on by the EPC contractors to the project owner if the goods are directly delivered by the manufacturer to buyer's site and appropriate documentation is prepared/ issued. Furthermore, supply of locally procured equipment to a customer will attract VAT/CST. EPC contractors may explore the option of executing an "in transit sale" (only in case of inter-state purchases) to mitigate VAT/ CST costs.

CST paid on purchases will not be available as input credit and accordingly, this is a cost to the project owners.

Most states' VAT legislations provide multiple options for discharge of VAT on works contracts (i.e., a lump sum contract involving supply of both goods and services) by EPC contractors such as general scheme, ad hoc deduction scheme and composition scheme; contractors should select the most appropriate option after undertaking an analysis of VAT costs under the different options.

According to requirements of respective State VAT legislations, the project owners may deduct VAT at source (WCT TDS) from payments made toward works contracts.

Onshore services

Service tax will be levied on provision of specified services within India. EPC contractor providing construction or works contract service should typically be eligible to avail CENVAT credit of capital goods and input services, which could reduce the indirect tax costs of the project.

The negative list-based taxation regime effective from 1 July 2012 provides for Service tax exemption to specified works contracts such as construction of ports, airports, dams, tunnels, railways including monorail or metro and such exemption also extends to sub-contractors for such projects. Furthermore, the valuation rules and composition schemes for works contracts have been amended, according to which contractors have an option to pay Service tax at rates ranging from 4.94% to 8.65%, depending on the nature of works contract, though pure services would continue to attract service tax at 12.36%. The revised valuation rules have also created ambiguities on aspects such as treatment of free issue material by project owners.

Scoping of EPC contracts: some tax considerations

EPC contractors may enter into single consolidated contract for a lump sum price or may split this between civil works, supply and services components.

A single consolidated EPC contract for supply of goods and services could lead to various direct and indirect tax inefficiencies and risks such as:

- ▶ Lack of clear segregation of price between goods and services could lead to double taxation.
- ▶ Where the contractor opts for discharging tax on value of contract, such as composition schemes under VAT and Service tax, the entire contract may be considered as one works contract and will attract tax on full contract value (including offshore and onshore equipment).
- ▶ WCT TDS provisions may become applicable on full contract value, which could lead to cash flow inefficiencies for EPC contractors.

The contractors may not be permitted to apply for certain specified schemes such as composition scheme under VAT and Service tax only on part of the contract, unlike a split contract, in the absence of specific price for that portion of the contract.

Accordingly, it is necessary to identify appropriate nature of a contract, i.e., whether it is a split or consolidated contract to evaluate the direct and indirect tax implications thereon, and appropriately structure the same in order to address current as well as possible future tax risks.

Conclusion

Estimating the tax cost for EPC contract, therefore, involves understanding and analyses of complex tax laws of India and has to be appropriately planned well in advance to avoid unexpected results in the form of adverse tax assessments. The prolonged litigation process and uncertainty of taxation is likely to increase the implementation cost of infrastructure projects, which could act as a deterrent to foreign EPC contractors. However, to increase foreign participation, a degree of certainty in tax laws and efficiency in its implementation is absolutely essential.



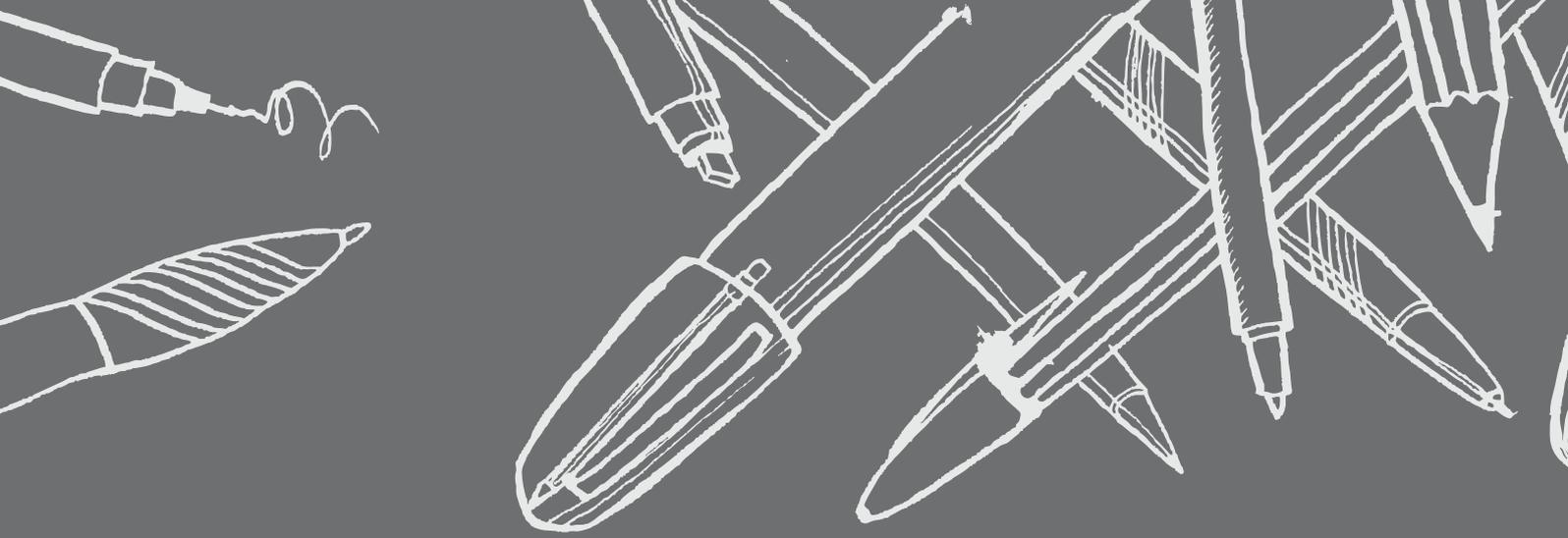
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Abbreviations



AAI	Airport Authority of India
BTG	Boiler, turbine, generator
BoP	Balance of plant
BCM	Billion cubic metres
BRT	Bus Rapid Transit
BOT	Build-Operate-Transfer
CAGR	Compounded annual growth rate
CWC	Central Warehousing Corporation
CST	Central sales tax
CBIC	Chennai-Bangalore Industrial Corridor
DMIC	Delhi Mumbai Industrial Corridor
EPC	Engineering procurement and construction
EPCM	Engineering, procurement and construction management
FCI	Food Corporation of India
FYP	Five year plan
FDI	Foreign direct investment
GoI	Government of India
HSRC	High Speed Rail Corporation of India Ltd.
IWT	Inland water transport
IIFCL	India Infrastructure Finance Company Ltd.
IRA	Indian Revenue Authorities
IPO	Initial public offering
IDFs	Infrastructure debt funds

JV	Joint venture
JNNSM	Jawaharlal Nehru National Solar Mission
JNNURM	Jawaharlal Nehru Urban Renewal Mission
MMT	Million metric tonnes
MMTPA	Million metric tonnes per annum
MRTS	Mass Rapid Transit System
MoUD	The Ministry of Urban Development
MW	Megawatt
MBIC	Mumbai-Bangalore Industrial Corridor
NHDP	National Highway Development Programme
NELP	New Exploration Licensing Policy
NBFC	Non-banking financial company
PAT	Profit after tax
PPP	Public-Private-Partnership
QIP	Qualified institutional placements
RE	Renewable Energy
RVNL	Rail Vikas Nigam Ltd
SARDP-NE	Special Accelerated Road Programme for North East
SWC	State Warehousing Corporations
TDS	Tax deducted at source
UMPP	Ultra-mega power projects
VAT	Value added tax



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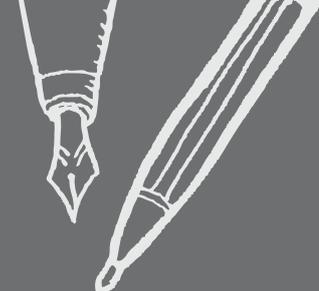
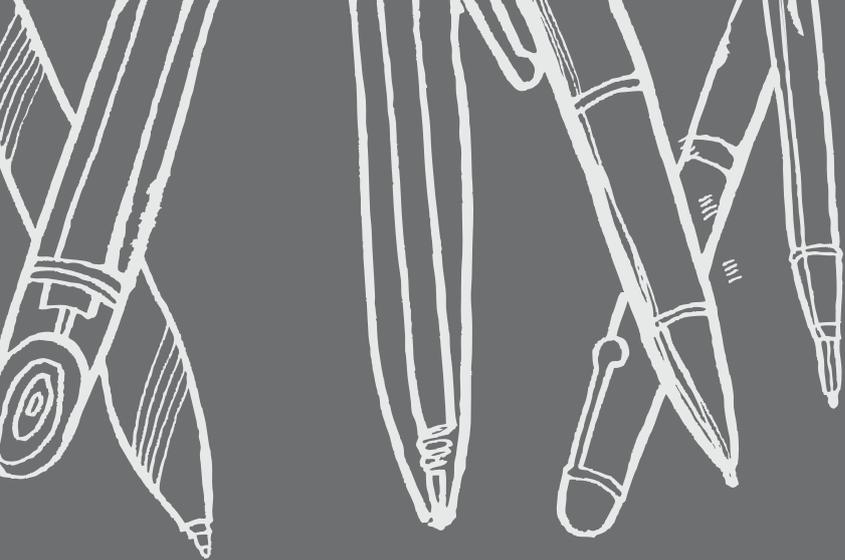
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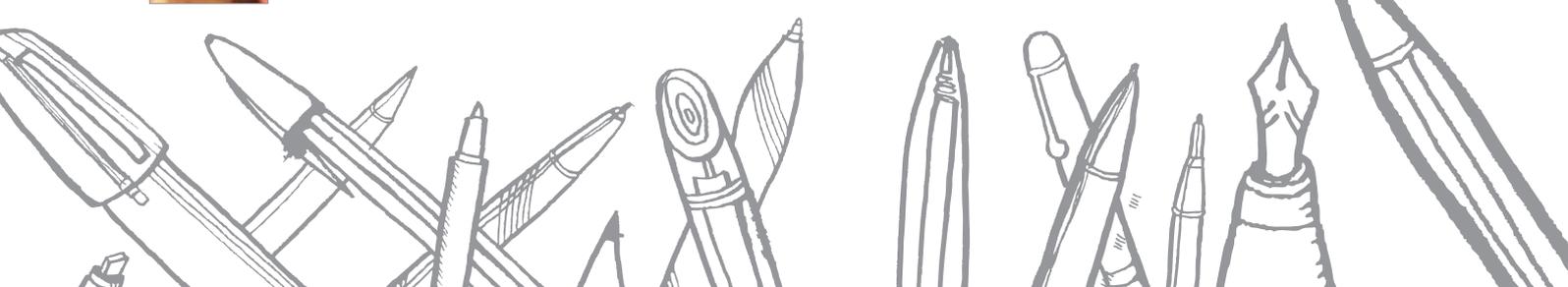
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Goregaon (E)
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NCR

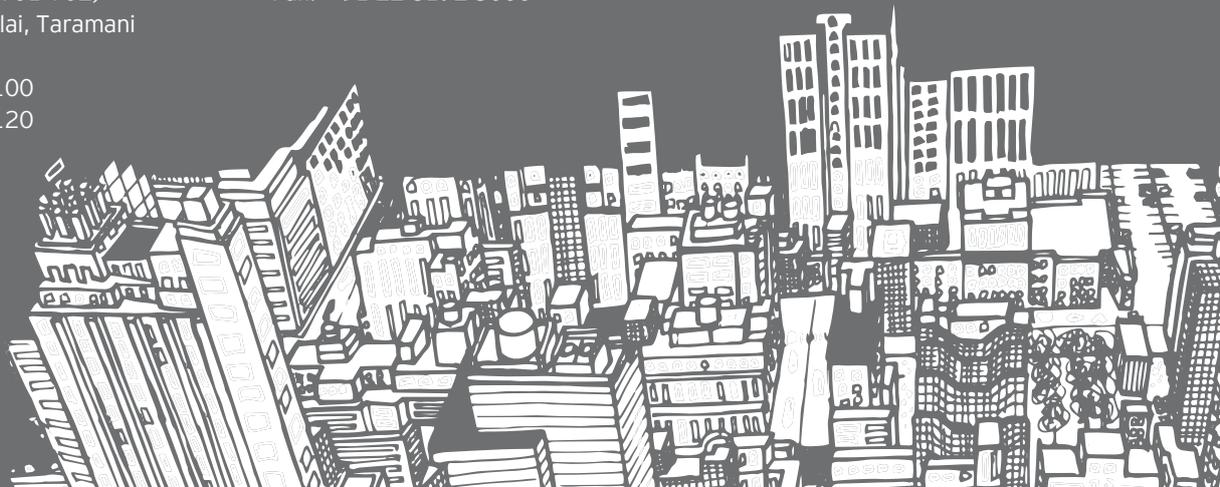
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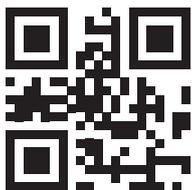
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