

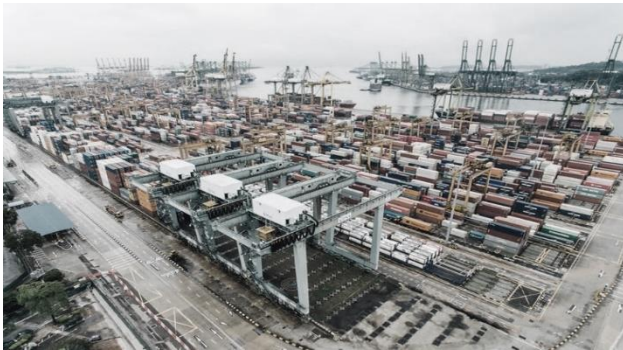
*Update from the Institute*  
LIM renamed as AMPI  
Digital Life Index of Indian Cities

*Case in Focus*  
The Rise and Fall of SunEdison Inc.  
DND Flyway – Contracts, Concessions &  
Consequences

*Projects Now*  
Infrastructure  
Projects Launched /  
Completed

# INFRA NOW

A Quarterly Newsletter by Punj Lloyd Institute of Infrastructure Management, ISB



## Preface

The fifth edition of "INFRA NOW" provides an update on the second batch of Institute's flagship program "Advanced Management Program in Infrastructure". The institute recently completed a research study digital dimensions of cities. The excerpts from the study has been highlighted in this edition. The Institute is currently working on writing two cases : 1)The Concession Agreement of DND Flyway and 2) The Rise and Fall of SunEdison.

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### Highlight

Digital Life Index  
Case in Focus  
Action Learning Project

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## Update from the Institute

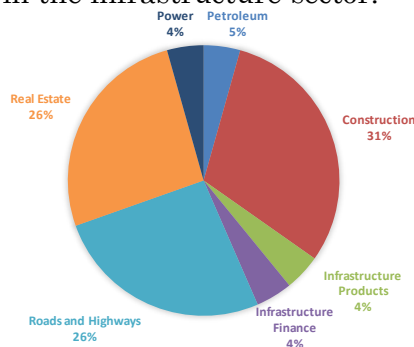
### EDUCATION

#### Advanced Management Programme in Infrastructure

(February 2017 – January 2018)

The ‘Leadership Programme in Infrastructure Management’ (LIM) has been renamed as Advanced Management Programme in Infrastructure. The content and quality of the course was enriched and designed to provide a good understanding of various management areas such as economics, finance, statistics, law, public relations, human relations, social issues, etc., which assists in career advancement, entrepreneurship development and development of human capital in the infrastructure sector.

The second batch of AMPI commenced in February 2017, and has 23 students. This batch has students from leading public and private enterprises, and is a unique mix of different sectoral exposure.



The batch has already completed three residencies and the final residency is scheduled from 20<sup>th</sup> to 28<sup>th</sup> January, 2018 at the Mohali Campus. The students are currently working on their Action Learning Projects. They will be presenting their work and submitting project report in the final residency.

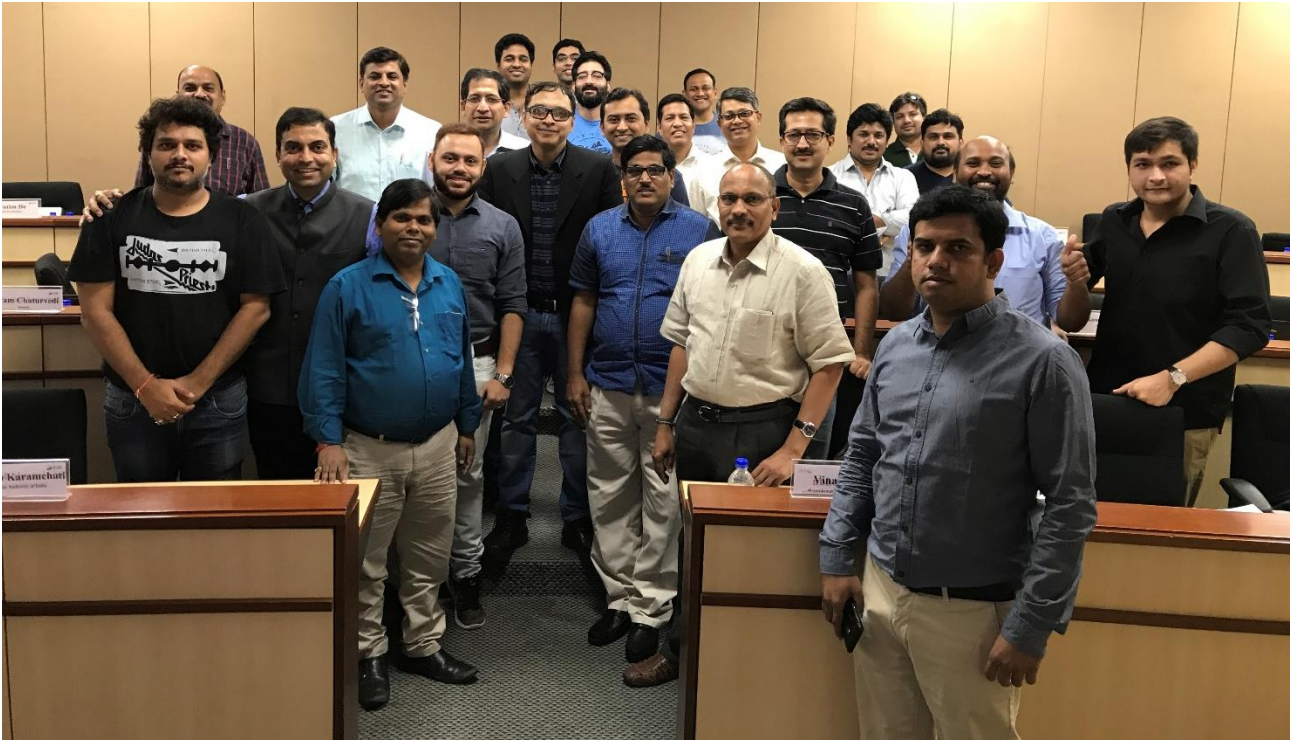
The were series of guest lectures organized for the students in Term 3. Professor Richard de Neufville, from MIT Institute of Data, Systems and Society gave a lecture on “Real Options” to the students. NVS Reddy, Managing Director of Hyderabad Metro Rail Limited delivered lecture on PPP model for Hyderabad Metro Project. Mr. Radhe Shyam Julaniya, Principal Secretary of Madhya Pradesh Government addressed the students and highlighted on the key factors on success of Infrastructure projects in Madhya Pradesh.



Kinshuk Saurabh, PhD

Academic Director  
Advanced Management  
Programme in Infrastructure  
Indian School of Business,  
Mohali Campus

*“...rather the cost of  
not building  
infrastructure is  
massive. Infrastructure  
is what all of our  
efforts to pull citizens  
out of poverty depends  
upon...It is  
the highway to growth”*



**AMPI Students with Professor Vaidya Nathan, Infrastructure Finance Class, Term 3, Hyderabad**

## Research

### **DIGITAL LIFE INDEX OF INDIAN CITIES – EXECUTIVE SUMMARY**

Tryambakesh Shukla, Analyst, Punj Lloyd Institute of Infrastructure Management

A study on the Digital Life Index of Indian Cities shows a huge gap in the demand and supply of services on an internet platform in Indian Cities.

Internet and digital accessibility in India, currently in its primary stage, continues to pick up pace. A study by Internet and Mobile Association of India and IMRB International (market research firm) reveals around 432 million internet users in India as on December 2016. This number is likely to increase by 4 – 8 % in 2017. China, on the other hand has around 731 million internet users with 53.1% of the population online.

The Digital India Program was launched by the Government aimed to digitally transform the cities and leverage technology to connect with the citizens with information and services. This idea of digital services provided the base for the study of the existing digital infrastructure in Indian cities. The study on ‘Digital Life Index of Indian Cities’ undertaken at the Indian School of Business provides a quantitative measurement of demand and supply for services across seven sectors – transport, finance, retail, healthcare, media, education and administration for 15 (top most populous) cities in India. These cities were: Delhi, Mumbai, Bangalore, Hyderabad, Ahmedabad, Chennai, Kolkata, Surat, Pune, Jaipur, Lucknow, Kanpur, Nagpur, Indore and Bhopal.

The demand was analysed using the Google Trends data (how often a search-term is entered relative to the total search-volume across various cities/states) to find out a popularity by region of a pre-determined list of key search words for the seven sectors. The demand side data was collected for 2015 and 2016. The supply side examined the factors indicating the presence and scale of digital infrastructure development in 15 cities.

The results from the study shows that the demand for the digital services outstrips the available supply. For instance, in the administration sector, only a few municipal corporations offer services like payment of bills and taxes, online registration of births and deaths, land registration and land use services, municipal schools and hospitals information etc through their portals/ websites. Delhi, Nagpur, Surat etc provides most of the municipal services on internet. Similarly, in the healthcare sector, the demand for online information on availability of doctors and hospitals, appointments, OPD services etc., as measured on internet searches analysis was immense. The healthcare start-ups like Practo, Lybrate, Zoctr are helping in meeting this demand in most of the cities.

Likewise, the demand for online banking and loan services have increased with the recent move to push digital and phone banking. five major banks were considered in the finance segment – State Bank of India, ICICI Bank, Punjab National Bank, Bank of Baroda and HDFC Bank — based on their total number of branches and their online digital banking system. Though, Delhi and Mumbai had most of the branches, the number of branches per 1000 population was highest in Pune. In the education sector, the demand for online courses offered by universities has picked up. The universities with better online infrastructure offered many courses through internet. Some of the top-ranking cities included Kanpur (246 courses), New Delhi (167 courses) and Chennai (363 courses). Online platforms such as Coursera, Udemy, edX etc and the Government of India initiatives like UGCs E-Pathshala and SWAYAM are also helping in the Digital India Program.

The retail sector has taken to the online platform in a significant way. The four major e-commerce entities- Amazon, Flipkart, Myntra and Snapdeal were considered for assessment. Cities like Delhi, Mumbai, Kolkata and Hyderabad exhibit a strong demand for online shopping. In the transport sector, the arrival of cab aggregators such as Uber and Ola have pushed digital penetration and resulted in a paradigm shift towards on-demand mobility.

The cities were ranked and clubbed together in four categories based on their performance: Leaders, Stable, Picking Up Pace and Lagggers. The leaders included Mumbai, Kolkata and Pune. These cities have high supply and demand for services on digital platform. The Stable cities included New Delhi, Bangalore, Chennai, Hyderabad and Lucknow. They had relatively a low increase and slight decline in the demand for services. The Picking Up Pace included Ahmedabad, Surat, Jaipur and Nagpur. These cities had high demand for services in 2016 compared to 2015. The Lagggers were Indore, Bhopal and Kanpur. They had a decline in demand for services in 2016 compared to 2015.

## Case in Focus

### THE RISE AND FALL OF 'SUN' EDISON INC.

Suprotim De, Analyst, Punj Lloyd Institute of Infrastructure Management

The solar power industry globally saw increased augmentation over the last decade. It also underwent key shift in the mix of capacity addition and falling generation prices, backed by host of government policies and incentives. At the same time, there has been rise of personal solar power use and emergence of off the grid electricity consumption. SunEdison also developed the solar PPA which revolutionized the industry apart from developing, financing, building, operating, and monitoring large-scale photovoltaic plants for commercial customers, including many national retail outlets, government agencies, and utilities.

SunEdison created a set of yieldco's to draw in dividend-oriented stock investors and help fund its growing pipeline of solar developments, similar to how MLPs financed the shale drilling boom. Yieldcos were designed to lower SunEdison's cost of capital and they gave the company the ability to retain economic exposure to its solar developments, instead of dishing them off to utilities. It relied on financial engineering to satisfy shareholders desperate for two items scarce in the weak economy: growth offered and income supplied by SunEdison's so-called yieldcos. SunEdison made its business model complicated with three inter tied up companies and many SPV's including special project financing "warehouses" all this had confused the investors before the debt keep raising as they were busy understanding the structure and identifying where the risk were. TerraForm Power the first YieldCo floated had promised 2.7% dividend and 15% average growth in cash available for distribution.

SunEdison's financing was aggressive but also their disclosures were not as good as they could have been," says Michael Morosi, an analyst with Avondale Partners. Although Morosi blames some of SunEdison's troubles on its financial engineering, he said that the company simply moved too quickly and left itself little financial cushion. Investors became bewildered as SunEdison's top management was taking drastic decisions, it appeared like it was doing too many things at a time and also in a short time.

With time it was appearing that SunEdison was heading towards a downturn. There were a host of reasons behind that some important ones being too aggressive business plan, huge debt pileup, financial engineering and leadership in doldrums. Moreover, in May 2013, MEMC changed its name to SunEdison, Inc. along with change in the stock name from WRF to SUNE.

Further MEMC undertook a series of acquisitions including the infamous First Wind for \$2.4 billion and failed acquisition attempt of Vivinit Solar. This eventually brought the company to its knees by filing for chapter 11 of bankruptcy protection even though it was once rated as one of the greatest solar company in the world and ranked #6 among "50 Smartest Companies" list by MIT Technology Review in 2015.

## **DND FLYWAY – CONCESSIONS, CONTRACTS & CONSEQUENCES**

Vignesh M, Analyst, Punj Lloyd Institute of Infrastructure Management

Infrastructure projects around the world have gone through trials and tribulations in the form of many hurdles, risks and challenges in every phase of its development cycle (Conception – Execution and Operations). PPP projects face more challenges/ risks than projects based on traditional government procurement as it involves devolution of project financing and development to the private sector while still dependent on the public (authority) to provide necessary support systems and good regulatory practices to be successful. Typical characteristics of infrastructure projects like Natural Monopoly, High sunk/ retrospective costs, Non-tradability of output, Non-rivalry (up to congestion limits) and Possibility of price exclusion (enjoyment of benefits is contingent on payment of user charges) make it a hotspot for tensions, contention, and politics.

Infrastructure projects implemented through the PPP route in developed and developing countries have undergone much iteration and their management subject to a lot of experimentation before landing on established models and processes agreeable to developers, regulators and governments. India has been no exception to this as ever since it removed barriers for private investments in infrastructure the country has had a mixed success in PPP projects usually due of the lack of: a. clear understanding of proposed asset, b. thorough preparation and evaluation of bidding/ contractual documents, c. prudent sharing of risks and rewards associated with the asset and d. adequate plans for mitigation measures.

A great example of such a project which had a smooth ride till completion and was for a while celebrated as a successful model of a PPP initiative, The Delhi-Noida-Direct Flyway – India's first PPP Toll bridge project, soon turned sour as deep-rooted problems in its contracts, finances and a general lack of a process in its development led to criticisms from various quarters including an overzealous media, ill-informed civil society groups, opportunist political outfits, unresponsive/ indifferent government which finally led to the turn of the populist-tending judiciary to turn the heat on the project.

The project was conceived by the NOIDA and Delhi Government in joint venture with IL&FS as a transformational project for Noida residents who had to depend on more cumbersome bridges with poor infrastructure to access Delhi metropolitan area. While the 8-lane 9.5km long flyway was instrumental in the development of Noida into the booming town as we know today, with this development and integration into NCR came its problems. PPP toll roads was never envisaged as a solution for urban settings, rather was designed as a popular model for highways. A typical PPP BOT project involved the private company creating, operating and maintaining the project assets for a concession period as specified in a concession contract with the Government before transferring the built assets.

The DND Flyway, executed through Noida Toll Bridge Company Ltd (NTBCL), a Special Purpose Vehicle dedicated to the project, was built at the cost of Rupees 408 million in the year 2001.

The concession period allowed for a period till 2031 to help NTBCL recover the costs. However, with the project seeing the Operations & Maintenance stage, the inherent deficiencies in the processes of development, terms of contracting and absent regulation came to the fore through Planning Commission's report by Sheoli Pargal. This report noted that the concession contract had structural flaws with its vagueness in defining the 'guaranteed returns' and a possible 'conflict of interest' with the fact that the developer played multiple roles in project development and financing where it could have designed procurement terms and conditions to favor its interests. It went on calculate that under the said terms of an assured extension of concession period till recovery of 20% returns on project IRR with shortfalls added back and undefined inordinate expenditures would result in the developer never claiming profits enough to warrant handover as it had no incentive to reduce costs. This prospect of a perpetual contract fueled public dissent and agitations against toll collection while an exorbitant termination payment made the Government a mute spectator which eventually culminated in a PIL (Public Interest Litigation) in 2012.

By October 2016, a decisive verdict was spelt by the Allahabad High Court which was held binding at the Supreme Court early this year axing the collection of user fee by the concessionaire while still tasked of maintaining the asset till handover in 2031. The verdict, regulatory in nature, touched upon key areas of project development that were blatantly violated through this project including Article 14 of the Constitution of India where the contract was awarded through direct negotiations rather than a transparent open bidding/selection process and the case of 'Excessive Delegation' where the project authority – NOIDA went out of the way to ask the private developer (NTBCL) to collect user fee when its powers were limited at the time of contract award. An amendment in law bestowing NOIDA with legal rights before signing the concession agreement could have spared the criticism in this regard but it merely served its case to the lack of process and institutional capability.

While the project had its own financial troubles with initial traffic projections going haywire resulting in loss of revenue before undergoing Corporate Debt Restructuring (CDR) program in 2006 to revive profits, with this verdict 80% of project revenue of NTBCL coming from toll collection would be cutoff while its O&M obligations are intact till 2031. This invited some cautious criticism from developers and project backers who claim that the verdict would serve no good to either the developer or the public with undesirable low-quality maintenance and asset deterioration being a ripe possibility as a result.

The timing of the verdict is noteworthy when nationalist expressions and economic downturns due to lack of interest among private players to risk investing in infrastructure projects have threatened to play spoilsport with the Government's plan to rope in the private sector with about 50% the planned investments in the infrastructure space in the coming years. Despite being rated as a 'mature player in Operational PPPs' by the Economists Intelligence Unit among countries invested in PPP for infrastructure development as recent as 2015, this project is a vindication of the fact that the sheer of lack of experience in handling and renegotiating skewed contract terms without avoiding media glare and public/legal scrutiny is something Indian regulators and contractors need to learn quickly to avoid embarrassment and loss of investment opportunities with the private sector.

## Student's Corner – Action Learning Project

### MICRO IRRIGATION : LEAK DETECTION – EXECUTIVE SUMMARY

Ashwin Raju Mantena, Rajiv Sushanth Sambarapu, Satyanaryana Varma Vegesna – AMPI  
2017-18

India being one of the fastest growing economies in the world and the economy is mostly an agrarian economy. The Government of India is laying emphasis on development of the nation's infrastructure in order to sustain the growth of the economy and many projects are being planned and executed by the Indian Government in collaboration with private sector. The impacts of agricultural revenue, due to loss of rains and bad management of available water sources on the economy lead to decline in economic growth. In India, since independence the importance to increase food grain production has been part of the government's 5-year plans and they have been successful in increasing it significantly over the years. But with a steady rise in the estimate of 1.6 billion of the population by 2050 (according to the World Bank estimates) the need for the production to increase even further to meet the demand is essential. The Government has always put faith in traditional systems of irrigation to meet the agricultural requirements but with the rapid increase in the requirements and ever growing demand of the economic growth, the need to look for new solutions that use technological innovations while being economically viable and efficient is indispensable.

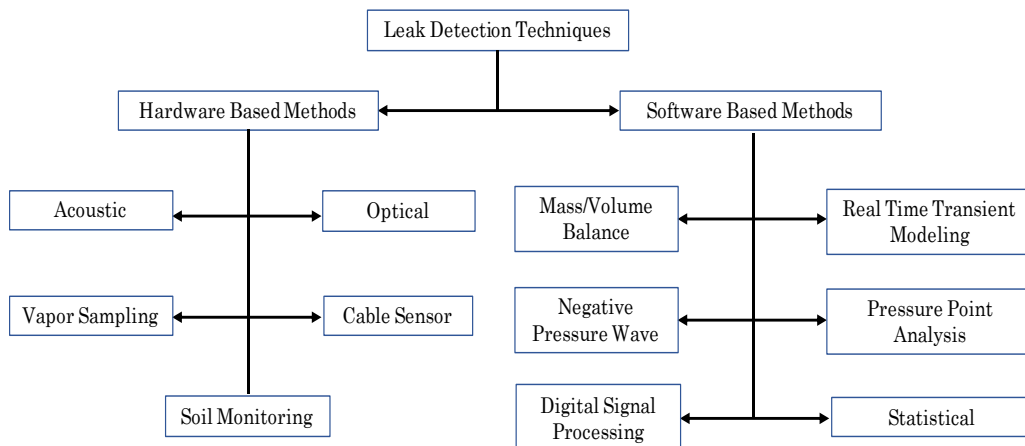
As part of this, the transition of traditional methods of irrigation to Micro-Irrigation has started. Micro-irrigation systems offer a good practical solution by increasing productivity and also saving water which is a scarce resource. Micro-irrigation has good number of advantages and it is win-win for the government, the contractor and the local farmers. The land acquisition problem is well addressed through this system as most of the pipelines are underground and therefore making it more viable for the local farmers as well as the government. The project durations are also significantly crashed and the distribution of water happens till the last mile. Micro-Irrigation systems (MIS) not only address the problem of water scarcity but also effectively save fertiliser consumption per unit of land. This is because in MIS, nutrients are released through the system, instead of their application on top of the soil leading to wastage during the periodic flooding of fields. The government of India had launched a subsidy scheme for micro-irrigation called National Mission on Micro Irrigation (NMMI) in 2006. Pradhan Mantri Krishi Sinchayee Yojna (PMKSY) was launched in 2015, integrating micro irrigation in the flagship scheme as an integral component. The scheme focuses on providing an end-to-end solution to the irrigation supply chain.

Micro-Irrigation systems show great prospects and have numerous advantages and at the same time there are certain issues that have to be addressed. The most important one being Water Pilferage which happens through leaks which are either manmade or natural. There is every necessity to minimize the water pilferage to ensure that the system acts to the benefit of all the farmers. This is done through integration of the systems to SCADA (Supervisory Control and Data Acquisition). The following are the objectives of SCADA system in water distribution network.



- Monitor the system, diagnose the fault/leak and thereby stop the flow in that particular path automatically.
- Obtain control over the system and ensure that required performance is always achieved
- Reduce operational pain through automation or by operating a system from a single central location
- Store data on the behaviour of a system and therefore achieve full compliance with mandatory reporting requirements.
- Provide information on the performance of the system.
- Establish efficient operation of the system and potentially reduce power consumption during pumping operations through operational optimization
- Provide a control system that will enable operating objectives to be set and achieved
- Provide an alarm system that will allow faults to be diagnosed from a central point.

The leak detection techniques in the SCADA system play a major role in restricting the water pilferage. There are two general ways to classify leak detection: hardware based methods and software based methods. These two groups are also named as external and internal based leak detection systems respectively. The following figure shows the classification



Hardware based methods for leak detection and localization detect the presence of leaks from outside the pipeline by visual observation or by using appropriate equipment. These kinds of techniques are featured by a very good sensitivity to leaks and are very precise in finding the leak location. However, they are expensive and installation of the equipment is a complex task. The internal method is based on the monitoring of internal pipeline parameters (pressure, flow and temperature). Generally, the effectiveness of the internal based methods depends on the uncertainties associated with the system's characteristics, operating conditions and collected data. These tend to be comparatively less expensive as the requirement of complex equipment is on the lower side. Therefore, based on the requirement and economic feasibility the suitable SCADA system along with Leak Detection techniques can be chosen.

## Projects Now

### ENERGY, OIL AND POWER

#### **THDC's Thermal Power Project in UP gets EC nod**

Ministry of Environment and Forest (MoEF) has accorded environment clearance (EC) to THDC's Thermal Power project at Khurja in Bulandshahr district of Uttar Pradesh (UP).

The Rs.104 billion project was announced in December 2010. The proposal was to set up two units of 660 mw each. Around 1,200 acres of land was required for the facility. For which, a Memorandum of Understanding (MoU) was signed between UP State Industrial Development Corporation (UPSIDC) and THDC for transfer of land in December 2013. Another 200 acres is currently under acquisition for railway and raw water corridors.

#### **BBRCL's Unit-2 Thermal Power project in Bihar commissioned**

Bhartiya Rail Bijlee Company Ltd (BRBCL) has commissioned Unit-2 of its Coal-based Thermal Power project at Nabinagar in Aurangabad district of Bihar.

The project proposed over four units of 250 mw each is spread across 1,500 acres. Of these, Unit-1 commenced commercial production in January 2017. The Rs.81 billion project is being funded through a debt-equity ratio of 70:30. Water requirements for the facility is being sourced from Sone river in the state. Coal is sourced from Central Coalfields Ltd's Pachra coal block at Ranchi district of Jharkhand.

#### **ONGC invites EOI for KG-DWN-98/2 Oil Exploration Project in AP with Investment outlay of Rs.215 billion**

Oil & Natural Gas Corporation (ONGC) has invited Expression of Interest (EOI) for KG-DWN-98/2 (SDA Cluster-III) Oil Exploration Project at Krishna Godavari basin in Andhra Pradesh (AP). The tenders have been issued for appointing international consultants and service providers for offering solutions to drill wells having water depths of 2,400-3,200 metres.

The 7,294.6 sq km deepwater block KG-DWN-98/2 (KG-D5) in the Bay of Bengal has been broadly categorised into Northern Discovery Area (NDA -3,800.6 sq km) and Southern Discovery Area (SDA-3,494 sq km). NDA has 11 oil and gas discoveries while SDA has the nation's only ultra-deepsea find (UD-1). The SDA block is further divided into cluster I, II & III.

## ENERGY, OIL AND POWER

### **HPCL's Refinery Expansion Project in AP bagged by Honeywell**

Hindustan Petroleum Corporation Ltd (HPCL) has awarded a contract to Honeywell Technologies India for its Refinery Expansion/Modernization Project at Malkapuram in Visakhapatnam district, Andhra Pradesh. The contractor is a subsidiary of New Jersey-based Honeywell International Incorporation.

Scope of work includes licensing, basic engineering design and other associated services for a Penex isomerisation unit which helps make cleaner burning high-octane gasoline and a Unicracking hydrocracking unit to produce cleaner burning diesel fuel.

### **Tripartite MoU signed for NRL's Refinery Expansion project in Assam with Paradip Port Trust and IOCL**

Numaligarh Refinery Ltd (NRL) has signed a Memorandum of Understanding (MoU) with Paradip Port Trust (PPT) and Indian Oil Corporation of India (IOCL) for Refinery Expansion project at Numaligarh in Golaghat district of Assam. The agreement has been signed for transporting imported crude oil from Paradip port in Odisha to the refinery in Numaligarh. The pact also allows utilising IOCL's spare capacity of existing Single Point Mooring (SPM) at the port.

The project was announced in April 2012. NRL had proposed to expand the capacity of its refinery from 3 million tonnes per annum (MTPA) to 9 mtpa. Investment outlay in the expansion is Rs.89.5 billion.

### **Rajasthan Govt signs MoU with HPCL for Refinery Project**

The Government of Rajasthan has signed a revised Memorandum of Understanding (MoU) with Hindustan Petroleum Corporation (HPCL) for the Petroleum Refinery project at Pachpadra in Barmer district. Under the new terms, the state government will provide a interest free loan of Rs.168 billion over 15 years.

HPCL Rajasthan Refinery Ltd, the implementation agency, is a joint venture between the state government and HPCL. 74% stake in the refinery is held by the HPCL while the state government holds the remaining shareholding.

## ENERGY, OIL AND POWER

### **ONGC increased rig strength in Tripura to 7**

ONGC increased total drilling strength in Tripura to seven from just three in September 2016. ONGC's average sales in Tripura increased from 1.7 mmscmd in 2012-13 to 3.92 mmscmd in 2016-17. It supplies gas to Palatana thermal power plant in Gomati district and to Tripura State Electrical Corporation and Tripura Natural Gas Corporation. ONGC had drilled 225 wells so far over there and found gas in 116. At present, 76 wells produce 4.3-4.5 mmscmd in Tripura.

### **ONGC plans to increase oil production by 4 million tonnes by 2020**

According to ONGC chairman Shashi Shanker, the company plans to raise crude oil production by four million tonnes and almost double the natural gas output by 2020. This will reduce dependence of the country on crude oil imports. The company will raise crude oil production from 22.6 million tonnes in 2017-18 to 26.4 million tonnes in 2021-22. Natural gas production will be raised from the current 60 million standard cubic meters per day (mmscmd) to 110 mmscmd.

### **TSGENCO places order for Yadadri power plant with BHEL**

Telangana State Power Generation Corporation (TSGENCO) has given the contract for Yadadri thermal power plant, comprising five units of 800 megawatt (mw) supercritical sets, to Bharat Heavy Electricals (BHEL). The order worth Rs.204 billion is the highest value order ever placed in the Indian power sector. BHEL will set up the project on engineering, procurement and construction (EPC) basis at Damaracherla in Nalgonda district of Telangana.

### **Power Grid aims for more state projects**

Power Grid Corporation of India plans to invest heavily in local power transmission infrastructure of states. In order to achieve this, the company is exploring joint ventures with state utilities. Further, Power Grid will directly participate in state government auctions of intra-state transmission projects. The company's aggressive diversification into intra-state projects is following government's move to address the gaps in its rural electrification programme.

## ENERGY, OIL AND POWER

### **PGCIL forms JV with Bihar, to take up projects worth Rs.163 billion**

Power Grid Corporation of India (PGCIL) in joint venture (JV) with Bihar State Power Holding Company (BSPHCL) would invest Rs.163 billion to ramp up the electricity grid system of the state. The project will be carried out in two phases of Rs.63 billion and Rs.100 billion each. PGCIL and BSPHCL would have equal stake in the joint venture called Bihar Power Grid Company. Power availability in Bihar is projected to rise to 6,000 megawatt (mw) by March 2017. This will require expansion and upgradation of the state grid and substations.

### **Centre to auction 4,500 mw of wind power projects by March 2018**

The Centre is planning to auction 4,500 megawatt (mw) of wind power projects in the current fiscal. Solar Energy Corporation of India (SECI) will roll out project tenders for 1,500 mw each in October 2017, December 2017 and February 2018. The government also enhanced the bid size for the project developers to 400 mw in the upcoming wind power auctions. These auctions will help government to augment capacity additions in the wind power segment.

## ROADS AND HIGHWAYS

### **JICA signs loan agreement for Trans Harbour Link project in Mumbai**

The Japan International Cooperation Agency (JICA) has signed a loan agreement of around Rs.86 billion (144,795 million yen) for the the Mumbai Trans Harbour Link (MTHL) project in Maharashtra. The agreement was signed for disbursement of the first tranche of Rs.79 billion which is about 45% of the Rs.178 billion project.

The project proposes to lay a 22km bridge from Sewri in South Mumbai to Chirle in Navi Mumbai. Of which, 16.5 km will be developed as a sea-link and the remaining stretch will be on the coasts. The six-laned route will provide direct access to the international airport at Navi Mumbai and a gateway to Pune Expressway and Southern India. The project was announced in November 1996.

### **Kerala to complete construction of hill and coastal highways by 2020**

On 10 October 2017, Kerala Chief Minister (CM) Pinarayi Vijayan announced that the construction of hill and coastal highways in the state will be completed by December 2020. The projects entail a cost of Rs. 100 billion and envisage the development of 1,251 kms of hill highways and 623 kms of coastal highways.

## RAILS AND METROS

### **Haryana Govt approval for Phase-I of Gurgaon-Neemrana MRTS project, outlay Rs 200 bln**

Haryana Government has accorded approval for the Phase-I of Mass Rapid Transit System (MRTS) Project connecting Gurgaon in Haryana to Neemrana in Alwar district of Rajasthan. The project announced in July 2005 spans across 108 kms and will be set up in multiple phases. In the first phase, the network will be laid from HUDA City Centre in Gurgaon district upto Panchgaon Chowk in Manesar, Gurgaon district through an elevated line. The Phase-I section will run along the Southern Peripheral Road and Global City Project in Gurgaon. Under Phase-II, the metro line will connect Panchgaon Chowk to Bawal Industrial Area in Haryana. While the third phase, which is yet to be finalised, is expected to connect Bawal Industrial Area to Neemrana in Rajasthan.

### **GDA and RITES sign MoU for Gorakhpur Metro Rail project in UP**

A Memorandum of Understanding (MoU) has been signed between Gorakhpur Development Authority (GDA) and Rail India Technical and Economic Services (RITES) for the Metro Rail project in Gorakhpur district of Uttar Pradesh (UP). The agreement is for preparation of the Detailed Project Report (DPR) and the Comprehensive Mobility Plan (CMP).

The project was announced in August 2016. The metro rail line is expected to span across 30 kms. About 30 stations are expected to set up along the entrie route. Work on the line is estimated to come up at an investment of Rs.120 billion.

### **Ministry of Railways gives in-principle approval for capacity augmentation of Konkan Railway**

The Ministry of Railways has given in-principle approval for major capacity augmentation of Konkan Railway at an approximate cost of Rs.49.8 billion. Currently, the proposal is in the process of sanction. The various capital expenditure projects to be undertaken include doubling of tracks between Roha and Veer, route electrification, doubling of traffic capacity, construction of new crossing stations and additional loop lines. These projects are expected to be completed in a phased manner in the next five years.

### **PM Narendra Modi inaugurates first phase of Hyderabad Metro**

Prime Minister (PM) Narendra Modi along with Telangana Chief Minister (CM) K Chandrasekhar Rao inaugurated the first phase of the Hyderabad Metro rail project at Miyapur railway station today. The first phase of the project, a 30-km stretch between Miyapur and Nagole will cover 24 stations including Ameerpet and Secunderabad. To be thrown open to the public from 6 am on 29 November, the train will initially run between 6 am to 10 pm, and is likely to be rescheduled to 5.30 am to 11 pm, depending on the requirement. Fares for the ride will vary between Rs. 10 and Rs. 60, and passengers can also avail smart card facility.

## AVIATION

### **Jet Airways to acquire 75 Boeing 737 Max 10 aircrafts**

Jet Airways agreed to buy 75 Boeing 737 Max 10 aircraft in order to expand in the booming Indian market. The airline also has the option to purchase another 75 Boeing 737 Max 10 aircrafts. According to Jet Airways, deliveries of the single aisle Boeing 737 Max 10 planes are expected to start from mid-2018.

### **Air India plans to raise USD 555 million bridge loan to purchase 3 Boeing aircrafts**

Air India is planning to raise USD 555 million through bridge loans for the purchase of three Boeing aircraft. Airline had placed an order to buy 15 B777-300 ER aircraft of which it has already taken delivery of 12 aircrafts. Of the remaining three aircrafts, two aircrafts are expected to be delivered in January 2018 and the remaining one in February 2018. Government of India said that they would issue its guarantee for the bridge financing for a period of 12 months or till the date the loan is refinanced.

### **Maharashtra govt fastracks work on 11 new airports, likely to attract investments of over Rs. 200 bln**

According to an article written by Sanjay Jog and published in the DNA, the Maharashtra government has fastracked work on the Multi-modal International Cargo Hub and Airport (MIHAN) and 10 other airports. MIHAN is the airport project for Dr. Babasaheb Ambedkar International Airport at Nagpur, and is part of the Centre's Regional Connectivity Scheme (RCS) under the National Civil Aviation Policy, 2010. The state government has set up an 11-member Project Monitoring & Implementation Committee (PMIC) for facilitating early clearances and to award contracts for the same. The project cost has been pegged at Rs. 25.8 billion and is expected to attract investments of over Rs. 200 billion.

## IRRIGATION

### **Telangana Irrigation Dept invites bids for 4 Irrigation projects**

Telangana Irrigation & Command Area Development Department has invited bids to appoint consultants for 4 Irrigation projects in the state. Scope of work is for preparing Environment Impact Assessment Study, Environment Management Plan and obtaining Environmental Clearance. The projects are:

- Kaleshwaram Irrigation Project Corpn Ltd's Kaleshwaram Irrigation Project - Rs.805 billion
- Government Of Telangana's Kurumurthy (Palamuru-Ranga Reddy) Lift Irrigation Project - Rs.520 billion
- Government Of Telangana's Nakkalagandi (Dindi) Lift Irrigation Project -Rs.62 billion
- Government Of Telangana's PV Narasimha Rao Kanthanapally Sujala Sravanthi Irrigation Project - Rs.21 billion

## IRRIGATION

### **Maharashtra seeks central assistance to the tune of Rs. 72 bln for irrigation projects**

Maharashtra Governor C.V. Rao has sought a financial assistance of around Rs. 72 billion from the Centre to complete 114 irrigation projects in 14 districts prone to farmer suicides. He urged the Centre to consider it as a 'special case' and help in resolving the agrarian crisis in those worst-affected districts. Further, he also appealed for devolution of all powers to the grassroot-level of panchayats and municipalities, to achieve the development goals of New India 2022.

### **Centre to provide funding for 107 irrigation projects in Maharashtra**

The Centre has given in-principle approval to fund Rs. 100 billion for 107 irrigation projects in the drought-hit regions of Vidarbha and Marathwada in Maharashtra. According to Chief Minister Devendra Fadnavis, the completion of these projects will create large-scale irrigation facilities in the two regions.

### **WAPCOS to submit DPR for Eastern Rajasthan Canal Project**

As per an article written by Yuvraj Shrimal and published in the DNA, WAPCOS, a central government undertaking under ministry of water resources, has been urged to submit a detailed project report (DPR) for the Eastern Rajasthan Canal Project (ERCP), which aims to provide water to 13 districts in Rajasthan. The cost of the project has been pegged at Rs. 400 billion. The state government is likely to demand 60 per cent financial assistance for the project, in order to give it a status of a National Project.

## URBAN DEVELOPMENT

### **Foundation stone laid for Redevelopment of BDD Chawl project in Mumbai**

Maharashtra Chief Minister has laid the foundation stone for the Redevelopment of British-era Bombay Development Directorate (BDD) chawls project in South Mumbai. Around 207 chawls are spread across 37 hectares at Worli (22.14 hectares), NM Joshi Marg (5.46 hectares), Sewri (2.32 hectares) and Naigon (6.45 hectares).

All chawls are ground-plus-three storey structures housing a total of 16,557 flats of 160 sqft each. The chawls will be redeveloped with 18-23 storey structures having 2 BHK flats of 500 sqft each. The state government had allocated a floor space index (FSI) of 4 for the chawls. Non-residential structures and religious structures will get the same existing carpet area or as decided by the government.



## URBAN DEVELOPMENT AND HOUSING

### **RMZ Corp to invest USD 1 billion on commercial space development in Hyderabad**

RMZ Corp is planning to invest USD 1 billion on developing around 10 million square feet of office space in Hyderabad over the next three to four years. This is in line with the company's plans to build an additional 40 million square feet of commercial space across the country by 2020. The company would develop its own projects or by buying ready assets to take the total assets under its management to 60 million square feet.

### **Maharashtra govt approves 60 projects under PMAY**

According to an article written by Sagar Pillai and published in The Free Press Journal, the Maharashtra government has approved the development of nearly 60 projects under the Pradhan Mantri Awas Yojana (PMAY). Under the scheme, the state government plans to construct around 182,000 affordable houses, of which 121,000 will be reserved for the economically weaker section. According to officials, the number of these units is likely to escalate to 250,000 by 2018. As many as 46 of these projects will be looked after by six divisions of the Maharashtra Housing and Area Development Authority (MHADA) namely Nashik, Konkan, Pune, Amravati, Aurangabad and Nagpur boards.

## MINING

### **EAC grants environment clearance to SECL's mine project, company to invest Rs.118.2 billion**

Expert Advisory Committee (EAC) recommended the Centre to grant environment clearance to the expansion project by South Eastern Coalfields (SECL) in Korba district of Chhattisgarh. The company plans to invest Rs.118.2 billion to expand the mining capacity of its Gevra opencast coal mine from 41 million tonnes per annum (MTPA) to 49 MTPA. The EAC, after deliberations, recommended the project for grant of environment clearance till March 2019 subject to compliance of certain conditions. SECL has obtained first stage forest clearance for 1,016 hectare of forest land involved in the mining lease area of 4,184.48 hectare. The company has coal linkage with NTPC and various thermal power plants for coal produced from this mine.

### *About the Punj Lloyd Institute of Infrastructure Management*

The Punj Lloyd Institute of Infrastructure Management is established within Indian School of Business as a specialist Institute to Support the Infrastructure Industry. Its objective is to create top quality management capacity; to undertake research that would find solutions to the problems industry faces and to become a one-stop source for data and information on the industry. The Institute seeks to be the 'Go to place' for knowledge and solutions within the infrastructure industry.

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*INFRA NOW Team*

Dr. Chandan Chowdhury, Executive Director, Punj Lloyd Institute of Infrastructure Management  
Kinsuk Saurabh, Associate Director, Punj Lloyd Institute of Infrastructure Management  
Ashish Mohan, Analyst, Punj Lloyd Institute of Infrastructure Management  
Tryambakesh Shukla, Analyst, Punj Lloyd Institute of Infrastructure Management  
Vignesh Maninathan, Analyst, Punj Lloyd Institute of Infrastructure Management  
Suprotim De, Analyst, Punj Lloyd Institute of Infrastructure Management  
Asis Sidhu, Manager, Punj Lloyd Institute of Infrastructure Management