NEW QUEST FOR MOBILISING FINANCING FOR INFRASTRUCTURE

AIIB Annual Meeting 2018

RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

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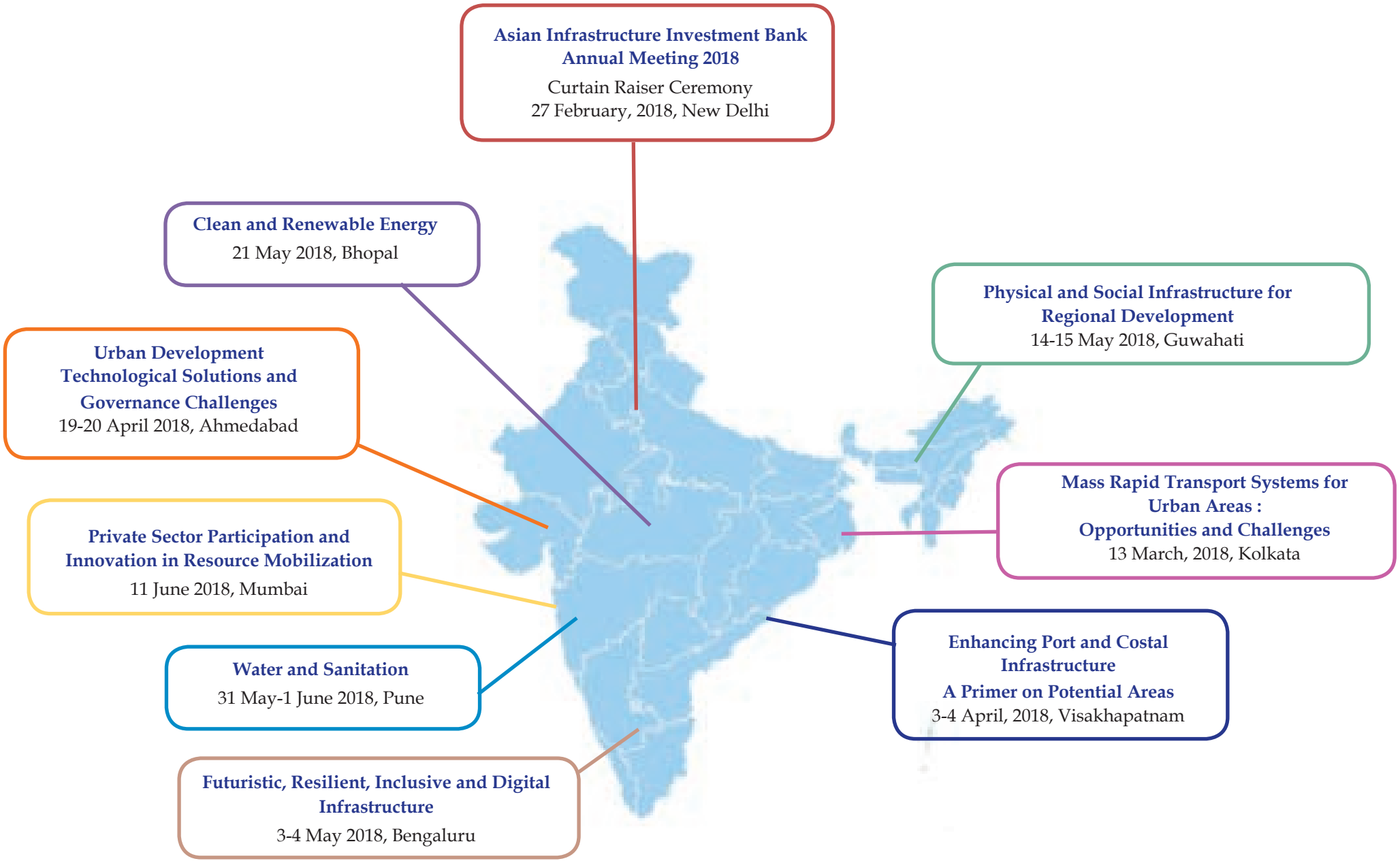
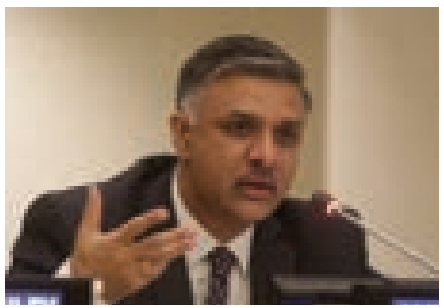

Asian Infrastructure Investment Bank Annual Meeting 2018
Curtain Raiser Ceremony
27 February, 2018, New Delhi
Clean and Renewable Energy
21 May 2018, Bhopal
Urban Development Technological Solutions and Governance Challenges
19-20 April 2018, Ahmedabad
Private Sector Participation and Innovation in Resource Mobilization
11 June 2018, Mumbai
Water and Sanitation
31 May-1 June 2018, Pune
Futuristic, Resilient, Inclusive and Digital Infrastructure
3-4 May 2018, Bengaluru
Physical and Social Infrastructure for Regional Development
14-15 May 2018, Guwahati
Mass Rapid Transport Systems for Urban Areas : Opportunities and Challenges
13 March, 2018, Kolkata
Enhancing Port and Costal Infrastructure
A Primer on Potential Areas
3-4 April, 2018, Visakhapatnam

Preface



Prof. Sachin Chaturvedi
Director General, RIS

With strong political leadership under Prime Minister Shri Narendra Modi, India is surging on a sustained path of economic growth and transformation. India is imminently poised to be one of the largest economies. Expanding horizons of economic development are critically dependent on robust funding of infrastructure at multiple levels spanning various sectors. Integrated infrastructure development would cater to interconnected needs of industrial revival and sustainable development. Emerging priorities of inclusive development would be anchored in partnerships and collaborations, innovative financing, entrepreneurship, and robust legal and institutional frameworks. Renewed focus on technology would provide additional impetus to the growth process.

The Government of India is hosting the Third Annual Meeting of the Asian Infrastructure Investment Bank (AIIB) at Mumbai on 25-26 June 2018. In this regard, RIS has worked closely with the Department of Economic Affairs (DEA), Ministry of Finance, as the Knowledge Partner with exemplary partnership of leading industry associations of India – FICCI, CII and ASSOCHAM. In the run-up to the Third Annual Meeting of the AIIB we have also collaborated with State Governments and the Civil Society Organisations in order to collectively pursue resource and institutional challenges and enhance gains from connectivity and infrastructure development.

Mr Arun Jaitley, Hon'ble Finance Minister, Government of India and Mr Jin Liqun, President, AIIB formally raised the curtains of the Third Annual Meeting of the AIIB at an impressive ceremony on 27 February 2018 at New Delhi. Mr Nitin Jairam Gadkari, Hon'ble Minister for Road Transport and Highways and Shipping and Mr Hardeep Singh Puri, Hon'ble Minister (Independent Charge), Ministry for Housing and Urban Affairs, Government of India had shared their perceptive insights with a large congregation of policy makers, diplomats, bankers, multilateral institutions, industry and other stakeholders.

RIS has actively supported the Ministry of Finance in organizing the Curtain Raiser Event in New Delhi on 27 February 2018 and eight thematic lead-up events during March-June 2018. The themes and cities of the lead-up conferences are as follows: Mass Rapid Transport Systems at Kolkata; Port and Coastal Infrastructure at Visakhapatnam; Urban Development at Ahmedabad; Futuristic, Resilient, and Digital Infrastructure at Bangalore; Regional Development at Guwahati; Clean and Renewable Energy at Bhopal; Water and Sanitation at Pune; and Private Sector Participation and Innovation in Resource Mobilization at Mumbai.

The cities for each of the lead-up events were chosen keeping in view their specific contribution and importance in the context of the respective themes of these events. For example, Guwahati reemphasizes the context in terms of specific infrastructure deficits in regions like India's North East

as well as across other aspirational areas. Similarly, Bengaluru has a special place in India's digital leadership and innovation led transformations and was rightly chosen for our thematic conference on Futuristic, Resilient and Digital Infrastructure.

Intensive efforts were made to come out with in-depth and comprehensive background papers on the respective themes of the lead-up events, for which eminent experts were invited to contribute. The papers are: Mass Rapid Transportation Systems by Mr Rakesh Ranjan; Port & Coastal Infrastructure by Mr Vishwapati Trivedi; Urban Development by Dr Om Prakash Mathur; Inclusive and Resilient Infrastructure by Prof. Partha Mukhopadhaya; Digital Infrastructure by Dr Rajat Kathuria; Regional Development by Prof. Sebastian Morris; Clean and Renewable Energy by Dr Arunava Ghosh and Dr Kanika Chawla; and Water and Sanitation by Mr Parmeswaran Iyer, Secretary, Ministry of Drinking Water and Sanitation, Govt. of Inda.

A panel of eminent experts also interacted with RIS Research Team from time to time. The panel included Dr Atul Sarma, Mr Rajat M. Nag, Dr Jagan Shah, Shri Kishore Arun Desai, Dr Kavita Iyengar, Mr S. K. Das, Mr Ashok Khosla, Dr Dipender Kapur, Dr Lalit Kumar, Mr Suresh Rohilia, Mr Ashok Khurana, Dr Indira Khurana, Ms Mamta Dash, Dr Om Prakash Mathur, Prof K. T. Ravindran, Dr Y. P. Anand, Mr Shivraj Gupta, Dr Milan Sharma, Mr Pravir Pandey, Mr A. Janardhana Rao, Mr Sameer Bhatnagar, Capt. Subedar, Commodore Sujeet Samaddar, Mr Saibal K. De and Mr R.V. Verma.

We are grateful to Mr Subhash Chandra Garg, Secretary, Department of Economic Affairs for his consistent guidance and academic insights. We are also grateful to Dr M.M. Kutty, Special Secretary; Shri Sameer Kumar Khare, Joint Secretary (Fund Bank and ADB); Dr Kumar Vinay Pratap, Joint Secretary (Infrastructure, Policy and Finance); Ms Bandana Preyashi, Director (MI/IF); Shri Rishikesh Singh, Director (MI); Department of Economic Affairs, Ministry of Finance, Government of India for their support. We would also like to acknowledge support received from various State Governments and Central Government agencies including NITI Aayog, Ministry of External Affairs and other departments. RIS is thankful to FICCI, CII and ASSOCHAM for their partnership in the lead-up events.

The present report is the outcome of extensive hard work of the RIS Research Team that has also contributed to the entire process of successful organization of the above events. The team worked under the overall guidance of RIS Chairman, Ambassador (Dr) Mohan Kumar and Chairman, Research Advisory Council of RIS, Ambassador Sudhir Devare. Dr Seshadri Chari Member, RIS Governing Council was a great support at the lead-up events. The members of the RIS Research Team included: Dr S.K. Mohanty, Professor; Prof. Amitabh Kundu, Distinguished Fellow; Dr Priyadarshi Dash, Assistant Professor; Dr Sabyasachi Saha, Assistant Professor; Mr Subhomoy Bhattacherjee, Consultant; Mr Arun S Nair, Visiting Fellow, Ms Garima Dhir, IBSA Fellow; Mr Syed Mohammad Ali, Research Associate; and Mr Vaibhav Kaushik, Research Assistant. I convey my special thanks to all of them. Thanks are also due to the administrative staff of RIS, led by Mr M.C. Arora, Director (Finance and Administration) for their contribution to this work programme. Publication team of RIS, led by Mr Tish Malhotra and comprising Mr Sachin Singhal and M/s Multiplexus (India) has worked overtime to get the publication well in time.

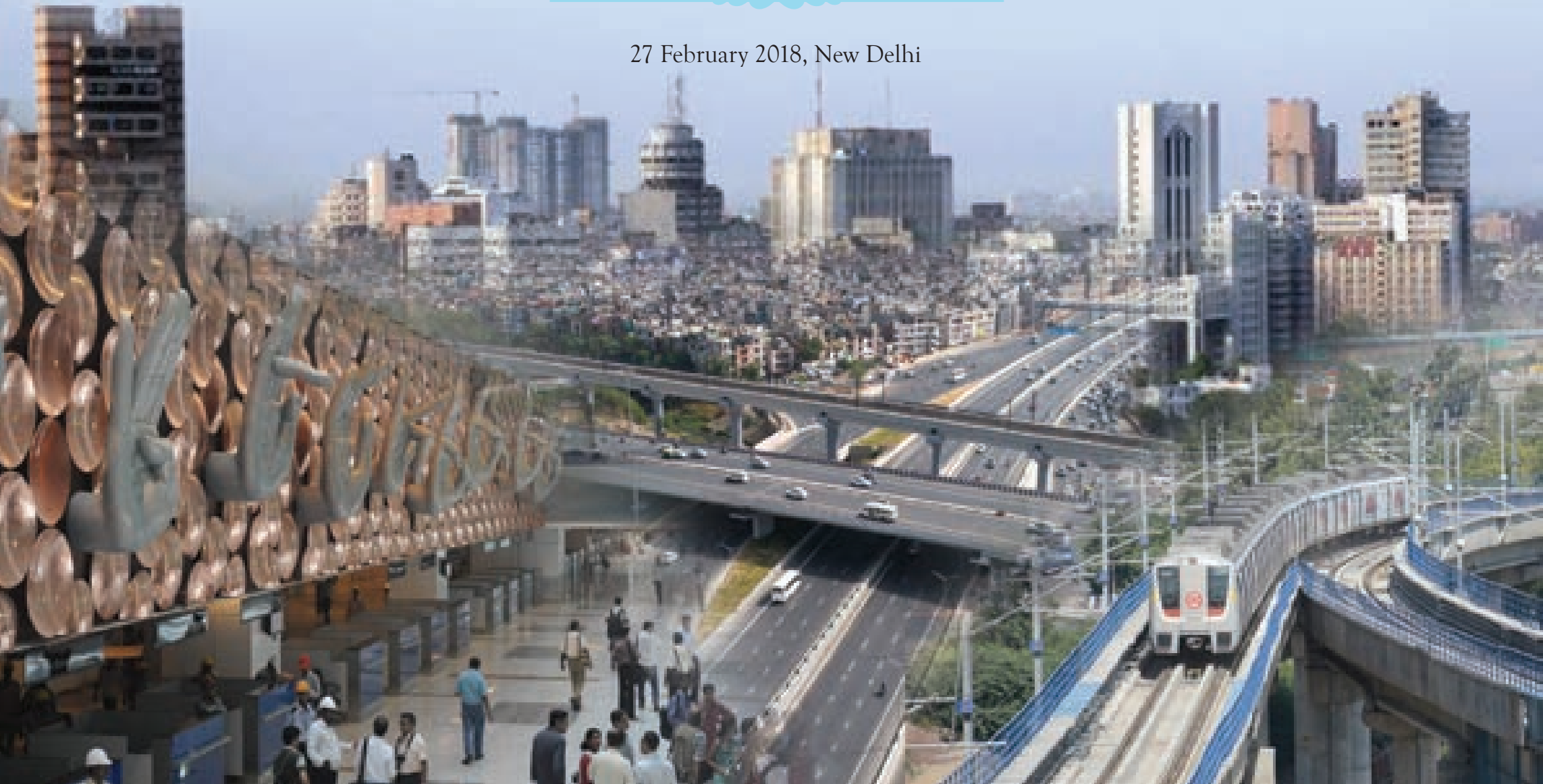
I am sure the present publication will be found useful by policy makers, academics, practitioners and stakeholders.

Sachin Chaturvedi

Asian Infrastructure Investment Bank
Annual Meeting 2018

Curtain Raiser Ceremony

27 February 2018, New Delhi



MR ARUN JAITLEY

**FINANCE MINISTER,
GOVERNMENT OF INDIA**

- Asia is the region which has conventionally suffered from an infrastructure deficit. Though growth in the last few decades has started picking up, it needs to narrow the infrastructure deficit that exists.
- Though there are areas such as highways, airports, ports and power generation, where India is doing well, there are sectors including railways, where the existing infrastructure needs to be modernized. In order to expedite progress, collaboration with institutional investors would be important.
- It is also important to discuss issues pertaining to legal, institutional and governance matters; emerging sectors of infrastructure investments including futuristic, resilient and digital infrastructure, gender infrastructure; new technology choices and alternatives; factors constraining flow of investment to different sectors; ways and means to overcome those constraints; and sensitizing government and other concerned agencies for ensuring enabling environment to promote investments in infrastructure sectors.

"Infrastructure creation has become the top priority for India also. Development of infrastructure impacts rural areas towards improving the quality of life of the inhabitants there."

"Rural infrastructure development is of utmost importance to India, and the country aims to achieve last mile connectivity, provide housing for all, ensure electrification of all households, and deliver access to sanitation."

- AIIB was created with a vision to be a strong partner to catalyse the investment needed to invest in Asian infrastructure. Particularly for India, AIIB will continue to be a reliable partner in supporting India's infrastructure priorities.
- With the aim of making sustainable and resilient infrastructure investment in Asia, AIIB has collaborated not only with other multinational development banks but also with pension funds, hedge funds, private financiers, private sector borrowers and the governments. AIIB aims to identify bankable projects, deal terms and financing structures to make infrastructure investment in Asia more attractive to institutional investors.
- In just two years of operation, AIIB has committed over $1 billion of financing in India. AIIB is also supporting India's priority of building sustainable infrastructure in the roadways and railways sector. AIIB's first major metro project is the Bengaluru Metro Rail project for which $335 million is being provided by the Bank.
- AIIB has also approved a loan of $329 million to finance the Gujarat rural roads project. This is the first standalone project of AIIB in India and is consistent with the bank's thematic priority of connectivity. The project will improve the accessibility of over 1,000 villages, improving farm to market roads for villagers and connecting them to hospitals and schools.

MR JIN LIQUN

PRESIDENT, AIIB

$3.3
TRILLION
is what the world needs to invest annually in infrastructure through 2030

From Left: Prof. Sachin Chaturvedi, DG, RIS; Dr M.M.Kutty, Additional Secretary (Economic Affairs), Ministry of Finance, Govt. of India; Mr Subhash Chandra Garg, Secretary (Economic Affairs), Ministry of Finance; Mr Arun Jaitley, Hon'ble Finance Minister, Govt. of India; Mr Jin Liqun, President, AIIB; Sir Danny Alexander, Vice President & Corporate Secretary, AIIB and Mr Vinod K. Jacob, Joint Secretary (Economic Diplomacy) Division, Ministry of External Affairs, Govt. of India.

- Indian government places highest priority on development of infrastructure, especially to boost agriculture and industry. For the agriculture sector to develop, it is important to have proper irrigation facilities and availability of power. Similarly, for industry to grow, adequate availability of water, power, transport and communication are required.
- Since infrastructure development in the area of transport is a crucial element, the government had decided in 2014, to increase the number of national highway from 96000 km to 2 lakh km; Currently, the government has achieved over 50per cent of its target.
- The Ministry of Road Transport and Highways has diligently reviewed the pace of road construction— for instance the Thane-Bhiwandi bypass in Maharashtra, the country's first BOT project sanctioned in 1998 has now reverted back to the ministry, and the road is being made eight lane.
- Currently, the ministry has 105 projects that require monetization to the tune of Rs. 1,25,000 crores, of which nearly Rs. 70,000 crore can be raised through bonds. Other financing options include not only PPP toll and EPC (Engineering, Procurement and Construction) but also Hybrid Annuity Model (HAM). As per this model, the government will contribute 40 per cent of the project cost in the first five years through annual payments. The remaining 60 per cent will be raised by the developer, of which 30 per cent will be his equity and the rest could be bank loan. Two water purification projects, one in Haridwar and another in Varanasi are based on HAM.
- Bharatmala, which is a flagship program of the government of India, focuses on optimizing efficiency of road traffic movement across the country by bridging critical infrastructure gaps. Phase I of Bharatmala will be implemented between 2017-18 and 2021-22. Development of around 24,800 kms of roads and highways are being considered in Phase I with an estimated cost of Rs. 5,35,000 crore
- Sagarmala project with a total outlay of Rs. 4 lakh crore covers four broad areas: port modernization and new port development, port connectivity enhancement, port-led industrialization and costal community development.
- There is huge potential for investors and bankers to invest in areas related to automobile sector, public transport, road sector, shipping, ports, inland waterways and urban transport. Specific projects where there is a massive possibility of collaboration are irrigation infrastructure, green and eco-friendly vehicles, provision of power in agriculture, public transport and parking spaces.
- Private players have an important role to play in operation and maintenance of projects. Private participation can support the government in accessing the actual progress and timely completion of projects.

MR NITIN JAIRAM GADKARI

MINISTER FOR ROAD TRANSPORT AND HIGHWAYS AND SHIPPING, GOVERNMENT OF INDIA

MR HARDEEP SINGH PURI

**MINISTER OF STATE (I/C),
HOUSING AND URBAN AFFAIRS,
GOVERNMENT OF INDIA**

- India's requirement of funds for infrastructural development, over the period of the next 20 years, is predicted to be around $ 4.5 trillion. Given that currently India is a $ 2.5 trillion economy, the government of India will be in position to finance most of these requirements. However, there will still be an investment gap that can be successfully met if there are bankable projects.
- Between now and 2030, the government targets to build around 700-900 million square meters of space every year, for both residential and commercial purposes. In other words, 70per cent of the India of 2030 has not even been built yet. This presents a huge opportunity for institutional investors to contribute.
- Pradhan Mantri Awas Yojana or the affordable housing scheme, stipulates that by the year 2022 every Indian will have a home which he or she can call their own. This project gives eight PPP options for private sector to invest in affordable housing segment, including six for promoting affordable housing with private investments using government lands.
- This policy seeks to assign risks among the government, developers and financial institutions, to those who can manage them the best besides leveraging underutilized and un-utilized private and public lands towards meeting the 'Housing for All' target by 2022.
- A very innovative and powerful decision taken towards gender empowerment, under this scheme, is that the title of the home will be in the name of the lady of the house. This gives a fillip to gender empowerment and also gives dignity to the girl child and a host of other attendant advantages.

Under-investment in critical infrastructure erodes future growth potential and productivity

Achievement of SDGs would require more investment in infrastructure

New financial instruments including blended finance have to be leveraged

MR SUBHASH CHANDRA GARG
Secretary (Economic Affairs),
Ministry of Finance, Govt. of India

- Asian countries need enormous amount of physical and digital infrastructure to connect all its people, villages and cities with each other.
- AIIB is the first multilateral financial institute floated by borrower countries, where major shareholders are themselves the borrowers. AIIB focuses mainly on infrastructure development. The bank has 84 members, covering almost the entire world, except the two major economies of US and Japan.
- India is the second largest shareholder of AIIB. India has tremendous stake both as the principal promoter and also as the principal borrower of the AIIB. In the Bank's first two years of operation, India has borrowed nearly 30-40 per cent of the Bank's lending capacity.

DR D. J. PANDIAN
Vice President and Chief
Investment Officer, AIIB

- It is important to innovate and collaborate with multilateral financial institutions. For instance, AIIB has done a project with the ADB in India in power transmission, and have approved a project in Bangalore Metro in collaboration with EIB.
- India can learn from the Chinese experience in its quest of providing housing for all. Consistent investment in infrastructure, for 30 continuous years, helped China to bring out 600 million people out of poverty line.
- AIIB has also started funding sub-nationally. For example, AIIB is funding the MMRDA. For this, the bank requires guarantee from the Maharashtra Government and not the Indian Government.
- It is important to ensure that the projects are bankable, commercially viable and have budgetary support to ensure that long terms risks like lack of demand and disruptive technology can be taken care of.

From left: Dr Junaid Kamal Ahmad, India Country Director, World Bank; Dr D. J. Pandian, Vice President & Chief Investment Officer, AIIB; Mr Nitin Jairam Gadkari, Hon'ble Minister for Road Transport and Highways & Shipping, Govt. of India; Mr Hardeep Singh Puri, Hon'ble Minister of State (I/C) for Housing and Urban Affairs, Govt. of India; Mr Kenichi Yokoyama, Country Director, India Resident Mission, Asian Development Bank; Dr Amar Bhattacharya, Former Director, G24 Secretariat on International Monetary Affairs and Development, Washington, D.C; Prof. Sachin Chaturvedi, DG, RIS and Prof. Amitabh Kundu, Distinguished Fellow, RIS.

India is on a high growth trajectory and would hasten the pace of development

Establishment of the AIIB and the NDB has expanded the corpus of infrastructure financing

AIIB annual meeting to look at private sector's vital role in bridging infrastructure gap

New DFIs reflect leadership of emerging markets like China, India and other Asian economies

Need to promote inclusive, resilient and sustainable infrastructure felt across developing nations

DR JUNAID KAMAL AHMAD
India Country Director, World Bank

- World Bank has been consistently involved in building India's infrastructure capacity. For example, World Bank has supported the emergence and capacity building of Mumbai Railway Vikas Corporation Ltd, in Mumbai Urban Transport Project (MUTP) I and II. World Bank will help in financing MUTP III as well.
- World Bank in collaboration with other MDBs, want to partner with India not just in financing infrastructure or just leveraging finance for infrastructure, but to create infrastructure institutions that will power India's growth and future.
- The big paradigm shift that India has to make in terms of infrastructure finance is to move from finance and bankable projects to creating bankable institutions. This will indeed trigger in the institutional investors into infrastructure and it will complement the money that government is putting on the table, and it will allow all of the multilateral bodies here to play a fundamentally different role in creating the institutions that will power India's growth from low middle income to high middle income economy, which is the trajectory this nation is on.
- To create sustainable infrastructure, a big element is getting the institutions to manage operations and maintenance. Good credit worthy infrastructure companies will inherently need to have that ability to do an O&M and that is important for sustainability.

MR KENICHI YOKOYAMA
Country Director, India Resident
Mission, Asian Development Bank.

- Estimates show that investment requirements will rise most significantly for urban infrastructure.
- To cover infrastructure financing gap, it is important to mobilise other private finances and municipal resources. Local and municipal bodies should be encouraged to float bonds to raise money, as done by other Asian economies. One successful example is Pune Municipal cooperation.
- India's municipal bond mobilisation as well as the other municipal revenue system is still under development and their share in GDP is 1 per cent as against 5 per cent in some other BRICS countries. India should focus more on property tax systems and land value capture to mobilize resources. Other financing instruments that should be explored are debt mobilisation for PPP, equity and bond issuance.
- ADB is closely working with India to enable it to achieve its infrastructure targets. For example, ABD is supporting Tamil Nadu, Andhra Pradesh and Orissa to prepare the economic corridor development strategies. This has the following elements, first, land use advance identification and detailed land use planning, second is identifying industrial clusters in urban areas and third, trunk network infrastructure like highways, state national highways as well as the transmission lines.

DR AMAR BHATTACHARYA
Former Director, G24 Secretariat on International Monetary Affairs and Development, Washington, D.C.

- There are infrastructure gaps that exist. Opportunities are not realized into demands often due to policy and institutional shortcomings. Second, while there are plentiful savings available, they are not being turned into the right kind of finance at the right time in order to make infrastructure viable.
- Infrastructure investments are bridled by a number of factors like uncertainty about demand, willingness to pay, and pricing. Though there are tremendous gains from spillovers, lack of good models to capture the revenue from spillover effects makes it difficult to access the viability of a project.
- A solution to these challenges is private finance, but it is important to address the issue of cost of capital and ways to bring in long term institutional investors
- In order to create infrastructure as an asset class is it essential to focus on risk mitigation in terms of instruments, structures, and standardization to be able to create better replicable models, data benchmarks and creation of platforms to share experiences and ideas.
- For multinational development banks to contribute in a meaningful way, they should scale up their models and work in collaboration with each other. For example, credit enhancement and guarantee instruments should be more aligned amongst MDBs, and MDBs should be supporting whole program and not just a project. For MDBs to support an entire program it would be important for these banks to ensure that the program is robust, identify the binding constraints, create platforms that can churn out projects and financing mechanisms available at scale and tap so that projects can be scaled up.

PROF. AMITABH KUNDU
Distinguished Fellow, RIS

- Developing Asia will need $ 1.7 trillion per year to maintain the growth momentum till 2030.
- Public sector can meet 40 per cent of the total; The remaining must come from the private sector
- The share of Asia in the global GDP would be up from 21per cent to something like 46per cent within a period of 25 years whereas the share of other regions would remain fairly constant or for some regions it will go down dramatically
- By 2030, Asians' share in the global middle-class consumption would be around 56 per centage, and it will go upto 62 per cent by 2050.
- In India, there is a competitive spirit among the states to go in for state level reforms. The success of each state in attracting investment on building investment possibilities will depend on to what extent they have succeeded in bringing out reforms.
- It is not just the total investment which would come in, but they have to be directed towards sustainability and the inclusivity issues, because there is a significant interstate variation in terms of infrastructural investment per capita and also the process of economic development.
- Private sector participation needs to be stepped up in housing sector.
- India needs to have slightly more strengthened data base to monitor reforms and progress of investment coming in at the state level and the city level.

Mass Rapid Transport Systems for Urban Areas : Opportunities and Challenges

13 March 2018, Kolkata

Inaugural Session

From left: Ms Perminder Jeet Kaur, Director (East and North East), ASSOCHAM; Dr Kumar V. Pratap, Joint Secretary (Infrastructure, Policy &Finance), Department of Economic Affairs, Ministry of Finance, Govt.of India; Prof. Sachin Chaturvedi, Director General, RIS; Dr Mangu Singh, Managing Director, Delhi Metro Rail Corporation Limited, New Delhi; Mr Sanjay Jhunjhunwala, Chairman (Eastern Region), ASSOCHAM; Mr Rakesh Ranjan, Adviser, NITI Aayog, New Delhi; and Mr Soon-sik Lee, Senior Investment Operations Specialist, AIIB, Beijing.

Dr Mangu Singh, Managing Director, Delhi Metro Rail Corporation Limited, New Delhi.

Dr Kumar V. Pratap, Joint Secretary (Infrastructure, Policy & Finance), Department of Economic Affairs, Ministry of Finance, Govt. of India.

₹ 25
LAKH CRORE
is investment requirement in urban transport in India in the next 20 years

Key Takeaways from Kolkata

- At present, there are 10 metro rail systems in India covering 425 kms of operational network. Around US$10 billion is already invested in metro systems in India. Out of which, 45per cent is financed by multilateral institutions. Among ongoing projects, 21 new projects are at different stages of planning which will require additional investments of US$70 billion.
- Delhi Metro Rail Corporation (DMRC) with 350 km network is the most successful metro system in the world with a social rate of return of 23 per cent.
- DMRC has undertaken measures to bring efficiency in fare and non-fare revenues. Although the share of non-fare box (NFB) revenues declined from 18 per cent in 2017-18 to 16 per cent in 2018-19, DMRC has successfully mobilized Rs.12,000 crores from consultancy services both in India and abroad including Indonesia and Bangladesh which would improve the resource positions of the corporation in future.
- DMRC is incorporating modern eco-friendly technologies in its expansion plans. For instance, Badarpur-Faidabad metro corridor is the 1st metro rail corridor in India that has incorporated solar panels, water harvesting and sewage treatment plants.
- Indigenisation initiatives have proven beneficial in terms of rolling stock manufacturing. Three metro coach manufacturing units such as Bombardier Transportation Unit in Savli, Bharat Earth Movers Limited unit in Bengaluru and Alstom unit near Sricity in Chennai are already established in India. As a result, 90 per cent of DMRC trains are manufactured in India.
- Other metro systems in India area catching up fast with equal focus on strengthening non-fare revenues, technological sophistication and future investment plans. For instance, Bangalore Metro is mobilizing resources through innovative means by selling station naming rights, commercial spaces and advertisement rights. It has also entered into understanding with airport authority to finance part of Airport metro line through user development fees. Likewise, Hyderabad Metro is the first metro corporation in the country which follows a PPP model.

TECHNOLOGY

- Each city has its own unique circumstances and requirements. Hence, technological options should not be duplicated. Instead, choice of technology should be based on specific needs of the city such as size and structure; socio economic profile; affordability of the system and issues of equity; environmental factors including GHG emissions; effectiveness of the system, financial viability of the system and the quality of life. Big Data, Artificial Intelligence and GIS information may be used to improve user experience, city planning and integrated urban mobility.
- Investment in metro is not an answer for all urban transport requirements of the city. A correct mix of mass transit is highly desirable. In some cases, BRTS could be more efficient than metro railways. For instance, in case of Indore, BRT carries more passengers per Kms than metros in cities like Jaipur with significantly less investment. BRTS in Indore is approximately 11.45 km long with ridership of 50,000 per day. On the other hand, average ridership in Jaipur metro has gone down from 49,774 in first month of operations (June 2015) to 17,649 in September 2017.
- Public transport system in Indian cities should be expanded as currently it covers only 14 per cent of total commuting where as it is more than 80 per cent in London. At present, train and bus together account for 78.1 per cent of public transport in Mumbai. Mumbai metropolitan region (MMR) is expected to witness vehicular population of 9 million by 2031; marking an increase of 4.5 times over 2005. In emerging cities, town planning should ensure Transit Oriented Development, because once a town is developed fully, it would become very difficult to provide mobility solutions. City planners should incorporate economic disincentives to discourage motorized vehicle ownership and encourage public transport usage.
- Light Rail Transport can be successfully deployed as a part of urban transport mix. Small cities may explore due diligence for evaluating light rail as a mode instead of metro systems as the latter is capital intensive.
- Given the capital intensive nature and long gestation period of mass transit systems, financial viability would always be a big challenge.

Therefore, Public Private Partnerships must be encouraged by unbundling components of the mass transit system.

FINANCING

- Among various models of ownership and financing that can be explored, Kochi Metro Rail Limited (KMRL) presents the case of a Special Purpose Vehicle (SPV) which was formed for the implementation of Kochi Metro Rail Project. KMRL is a joint venture company with equal equity contribution of Government of India and Government of Kerala.
- Metro corporations across globe raise, on an average, 35 per cent to 40 per cent of revenue from NFB sources. Innovative means of revenue mobilisation insulate corporations from increasing fares frequently and excluding economically weaker sections.
- Investment requirement in urban transport in India in the next 20 years is projected to be more than Rs. 25 lakh crore. Fare revenue may not be sufficient to cover capital investments especially in case long-term expansion projects.
- Radical policy changes are necessary to diversify and improve NFB revenue of Indian metro rail corporations as the scope for expansion is greater given the global trends such as Hong Kong MRT (40per cent age), Tokyo Metro (33per cent age) and Singapore MRT (25per cent age).
- Private sector in India could play a major role in NFB revenue mobilisation. However, the approach towards private sector to tap NFB revenue is biased as risk sharing framework is skewed towards metro operators.
- Innovative financing tools such as land value capture could enable Public-Private Partnership in urban rail projects to improve financial viability, but congestion in cities limits the scope for Transit Oriented Development and land value capture. For example, Hyderbad Metro Rail Project Concessionaire is allowed to develop 18.5 million square feet of project land for realty development, accounting for over 40 per cent of the projected revenue.
- Advertising contracts and train wrapping are also viewed as innovating financing instruments. Moreover, Urban Local Bodies can improve tax revenues from sources including property tax, employment tax and advertisement tax in order to contribute towards development of Mass Rapid Transit SysteMs

POLICY RECOMMENDATIONS

- Central and state governments need to extend support with an enabling framework supplemented with appropriate grants, concessions, opportunities, land rights, rebates and risk cover etc. Further, State governments need to come up with comprehensive integrated mobility plans. This would ensure adequate ridership to metro corporations, as improvement in first and last mile connectivity increases ridership.
- A dedicated urban transport fund should be created by the Urban Local Bodies (ULBs), with proceeds from innovative sources like land monetization, development rights, advertisement, betterment levy, land value tax, congestion charges, fuel surcharges, vehicle license duties and levy on private vehicles plying on corridors served well by MRTS.
- Sub-urban railways would remain underfunded unless its resource position is improved given the fact that it constitutes around 53per cent of total passenger traffic of Indian railways and accounts for only 7per cent of total earnings.
- Institutional reforms are required to adopt best practices followed across the globe. Appropriate lessons should be drawn from cities like London and Singapore, where single entity control regulates urban transport. To reduce delay in approvals there is a need to put in place an institutional mechanism including single window clearance mechanism
- Unified Metropolitan Transport Authority (UMTA) should be set up in all million plus cities to devise comprehensive integrated mobility plans.
- An Indian MRTS Corporation (IMC) under the Ministry of Urban Development may be constituted as Special Purpose Vehicle for careful appraisal of MRTS proposals, technical feasibility and funding.

Panel Discussion on Mass Rapid Transport Systems for Urban Areas : Investment Opportunities, Financial Sustainability & Regulatory Framework

From left: Mr Govindraj Ethiraj, Television and Print Journalist and Former Founder-Editor in Chief of Bloomberg TV India; Mr Kumar Keshav, Managing Director, Lucknow Metro Rail Corporation Ltd; Mr Parashuram Singh, Managing Director, Kolkata Metro Rail Corporation Ltd; Ms Deepa Kotnis, Executive Director, Bangalore Metro Rail Corporation Ltd; and Mr Soon-sik Lee, Senior Investment Operations Specialist, AIIB, Beijing.

Radical policy changes necessary to diversify & improve non fare based revenue of Indian metro rail corporations as the scope for expansion is greater given global experience

Private sector could play a major role in non-fare revenue mobilisation provided risk sharing framework is worked out well

Congestion in cities limits the scope for Transit Oriented Development and land value capture

Plenary: Financially Sustainable Operations of MRTS

From left: Ms Perminder Jeet Kaur, Director (East and North East), ASSOCHAM; Mr Mukund Kumar Sinha, OSD and Joint Secretary (Urban Transport), Ministry of Housing and Urban Affairs, Govt. of India; Prof. Sanjay Gupta, School of Planning and Architecture, Delhi; Mr Rajiv Datt, Sr. Advisor (RM & LVC), National Capital Region Transport Corporation, New Delhi; Mr T.B. Ramesh, Chief General Manager (Finance), Delhi Metro Rail Corporation Limited; and Mr Anjul Mehrotra, Associate Director-Strategy & Operations, KPMG Advisory Services Private Limited.

DMRC with 350 km network is the most successful metro system in the world with a social rate of return of 23 per cent

Mr Pradeep Singh Kharola, Chairman and Managing Director, Air India Limited delivering the Valedictory Address.

Mr Soon-sik Lee, Senior Investment Operations Specialist, Asian Infrastructure Investment Bank, Beijing.

Plenary: Investment Opportunities in MRTS for Urban Areas

From Left: Mrs Perminder Jeet Kaur Director (East and North East), ASSOCHAM; Mr Mukund Kumar Sinha, OSD and Joint Secretary (Urban Transport), Ministry of Housing and Urban Affairs, Govt. of India; Dr M. Ramachandran, Former Secretary, Urban Development, Govt. of India and Former Chief Secretary, Govt. of Uttarakhand; Prof. Subrata Kumar Paul, Indian Institute of Engineering Science and Technology, Shibpur; Mr P. R. K. Murthy, Director (Projects) Metro, Mumbai Metropolitan Region Development; Mr Rajiv Banga, Managing Director and Chief Executive Officer, IL&FS Rail Ltd; and Mr Sabyasachi Mitra, Deputy Country Director, Asian Development Bank, India.

Mr Mukund Kumar Sinha, OSD and Joint Secretary (Urban Transport), Ministry of Housing and Urban Affairs, Govt. of India.

In the 10 metro rail systems in India about $10 billion is invested

Big Data, Artificial Intelligence and GIS information may be used to improve user experience, city planning and integrated urban mobility

45 per cent of total investment in metros come from multilateral institutions

Unified Metropolitan Transport Authority should be set up in all million plus cities to devise comprehensive integrated mobility plans.

Plenary: Technological Options for Sustainable Future Urban Mobility

From left: Ms Perminder Jeet Kaur Director (East and North East); Mr Amit Bhatt, Director for Integrated Transport, World Resources Institute; Mr Suchhito Das, Additional General Manager, Eastern Railways ; Mr H. K. Sahu, Financial Adviser, South Eastern Railways; Prof. Sanjay Gupta, School of Planning and Architecture, Delhi; and Mr Smaran Kumar Das, Director of Planning (Retd.), Kolkata Metropolitan Development Authority, Kolkata.

Valedictory Session

From left: Ms Perminder Jeet Kaur Director (East and North East), ASSOCHAM; Mr Soon-sik Lee, Senior Investment Operations Specialist, AIIB, Beijing; Dr Kumar V. Pratap, Joint Secretary (Infrastructure, Policy & Finance), Ministry of Finance,Govt. of India; Mr Pradeep Singh Kharola, Chairman and Managing Director, Air India Limited; Ms Bandana Preyashi, Director (Multilateral Institutions), Ministry of Finance, Govt. of India; and Mr Subhomoy Bhattacharjee, Consultant, RIS.

Enhancing Port and Coastal Infrastructure
A Primer on Potential Areas

3-4 April 2018, Visakhapatnam

Inaugural Session

From left: Mr Yee Ean Pang, Director General of Investment Operations, AIIB making presentation on AIIB's Project Investment and Investment in India's Blue Economy; Mr G. S. Shivkumar, CII; Dr Vishwapati Trivedi, Former Secretary, Ministry of Shipping, Govt. of India; Mr Kailash Kumar Aggarwal, Joint Secretary (SAGARMALA), Ministry of Shipping, Govt. of India; Prof. Amitabh Kundu, Distinguished Fellow, RIS and Mr Shakil Alam, Director (Multilateral Institutions), Ministry of Finance, Govt. of India.

Dr Vishwapati Trivedi, Former Secretary, Ministry of Shipping, Govt. of India.

Mr Kailash Kumar Aggarwal, Joint Secretary (SAGARMALA), Ministry of Shipping, Govt. of India.

SAGARMALA
PORT-LED PROSPERITY

3.1
BILLION TONNES
India plans to enhance port tonnage capacity to 3.1 billion tonnes by 2020

Key Takeaways from Visakhapatnam

- Sagarmala is first of its kind programme for promoting port-led development in India. More than 500 projects have been identified under Sagarmala with more than Rs. 8 lakh crore of infrastructure investments allocated to them. It includes 241 projects for port modernisation, 223 projects for port connectivity, 57 projects for port-led industrialisation and 51 projects for coastal community development.
- Integrated development of coastal areas is necessary for promoting blue economy. Coastal Employment Zones (CEZs) which are envisaged in *Sagarmala* policy are unique and different from Special Economic Zones (SEZ) need to be integrated with ports.
- Port-led industrialisation schemes under Sagarmala include Special Economic Zone (SEZ) at JNPT, Smart Industrial Port Cities planned at Deendayal and Paradip Ports, Industrial Development planned at Tuticorin and Kamarajar ports, and Maritime Clusters planned in Gujarat and Tamil Nadu.
- In addition to national initiatives, India is working on coastal shipping agreements with neighbouring countries including ASEAN-India Maritime Transport Agreement (expected to be signed in 2018), BIMSTEC Coastal Shipping Agreement (under negotiation) and India-Bangladesh Coastal Shipping Agreement (Operational).
- Govt. of India has undertaken regulatory measures for promoting coastal shipping. These include 40per cent discount on Vessel Related Charges (VRC) and Cargo Related Charges (CRC) for coastal cargo, 80per cent discount on Ro-Ro services, GST reduction from 18per cent to 5per cent on Bunker Fuel, Cabotage Relaxation for special vessel such as Ro-Ro, RO-pax, ODC etc., and cabotage relaxation for 50per cent container transhipment at ports.

GLOBAL AND INDIAN EXPERIENCE

- Global experience suggests that ports have significant impact on economic activity (e.g. Port of Rotterdam, Colombo, Shenzhen, Singapore, Pohang, etc). China presents some outstanding examples of the success of port-led development process.
- Bulk carriers and tanker & containership dominate the world fleet with 77.3 per cent of gross tonnage.
- The global shipbuilding industry is dominated by Asian shipyards in South Korea, Japan and China due to their sheer size, and low interest rates that help them to keep working capital costs low.
- Coastal traffic is insignificant in India compared to the USA, the EU, Japan & China. Yet coastal shipping has the potential to lower logistics costs by 28.5 per cent by 2025. Coastal shipping can be a catalyst for coastal industrial clusters.
- There are 178 notified mainland major and minor ports in India over a peninsular coastline of 7500 km. There is substantial spare capacity available at major ports as the share of traffic of major ports has diminished. Interestingly, the share of non-major ports in cargo traffic increased from 26.8 per cent 2005-06 to 42.8 per cent in 2015-16.
- Easing of congestion in last mile connectivity in case of ports like Mumbai, JNPT, Chennai and Ennore is challenging since they are established around metropolitan regions.
- In addition, the distribution efficiency of short haul container movement is a major bottleneck in India, leading to increasing port congestion and is becoming a major choke point restricting the efficiency of logistics industry. Average numbers of container vessels per month at select ports are as follows: JNPT (160), Chennai (50), Shanghai (1500), Singapore (1500) and Port Klang (1000).
- India's major ports are strategically located and have large land pools. But they operate at high costs because of pension liabilities, a large labour force, frozen long term rentals, TAMP regulations, etc.
- Yet India plans to enhance port capacity to 3.13 billion tonnes by 2020.
- The capacity utilization at major ports is about 60 per cent . The average turnaround time has also improved for major ports to 3.44 days in 2017 from 5.29 days in 2011, releasing further capacity. On the other hand, cargo volume at non-major ports has grown by more than 10 per cent between 2008 and 2017.
- More than 90 per cent of India currently moves on land transport; not utilizing more than 7500 km of coast line and navigable rivers of 14,500 km.

- Waterways are cost-effective transportation modes. There are 111 National Waterways in India now.
- No dedicated yards in India are available for dredger building and repairs. Only few yards including Hindustan Shipyards Limited, Visakhapatnam; Cochin Shipyard Limited, Kochi and Colombo Dockyard PLC, Colombo are executing dry docks of DCI dredgers.

POLICY OPTIONS

- It may be better to focus on key large port operations than disperse activity along many small ports in order to ensure economies of scale.
- Modal shift can help reduce transport and logistics costs for domestic and trade freight. Costal shipping or inland waterways appear to be an efficient, environment-friendly and safer mode for cargo movements which would reduce carbon foot prints and logistics costs substantially.
- In view of ageing shipping fleets in the world, there exist huge opportunities for India to emerge as a global hub for ship repair and dry docks because it is situated along one of the world's busiest shipping routes. It may require India to follow the Chinese models of providing financial support to nurture ship building and repair industry.
- India already has the capacity to repair small and specialized vessels. In order to exploit demand in the global market, India needs to enhance its technological capability and human resources to repair bigger vessels.
- It is time to build third and fourth generation ports for value addition and raising global competitiveness. Ro-Ro services provide vast tourism potential globally as well in India.
- Allocating long-term PSU contracts of affreightment to domestic shipowners/operators to make modal shift of cargo viable, sustainable with extra benefits of lower fuel costs and carbon emission.
- To be a global player, competitive tax rate system is crucial which means taking advantage of the Goods and Services Tax (GST) regime.
- A specialized shipping finance agency may also be set up to cater to the need of shipping industry.
- Simultaneously appropriate models for waterways development and financing should be devised.
- Private sector participation in Indian ports has improved the quality and efficiency of major and minor ports.
- To attract modern technology and improve efficiency and profitability, the government started private sector participation in ports by awarding PPP contracts of development and operation of terminals at major ports. The first such PPP project was Nhava Sheva International Container Terminal at JNPT awarded in 2000 to P&O. Today it handles 0.7 TEUs of cargo.
- Among key private sector led non-major ports are Mundra Kakinada Deep Water Port, Krishnapatnam and Dhamra.
- Lowering lending rates would be helpful for the shipping sector in view of rates prevailing in Japan, South Korea and other countries.
- Cabotage laws should be made less restrictive. Without reforms in cabotage laws, ports might become inward-oriented.
- Success of a port depends on turnaround time for a ship; lesser is the turnaround time for a ship the more number of ships a port could cater. For instance, Colombo port has become one of the largest ports in Asia because of less turnaround time. The *Sagarmala* policy aims to address this issue through improvement in port infrastructure.
- India aims to ensure port development also responds to climate change concerns. MDBs can help in bringing in best international experiences.
- Delays in the registration process for foreign vessels should be eliminated, and clearances must be time-bound.
- Automatic short haul movement completes data linkage across the chain and can enable newer technologies like the Block chain across the entire process. Overhead container conveyance system can give quantifiable benefits.
- Timely supply of spares is important. India needs to develop local expertise and infrastructure for indigenization of dredger equipment manufacturing in India. FDI flow into dredger repair sector has been minimal.

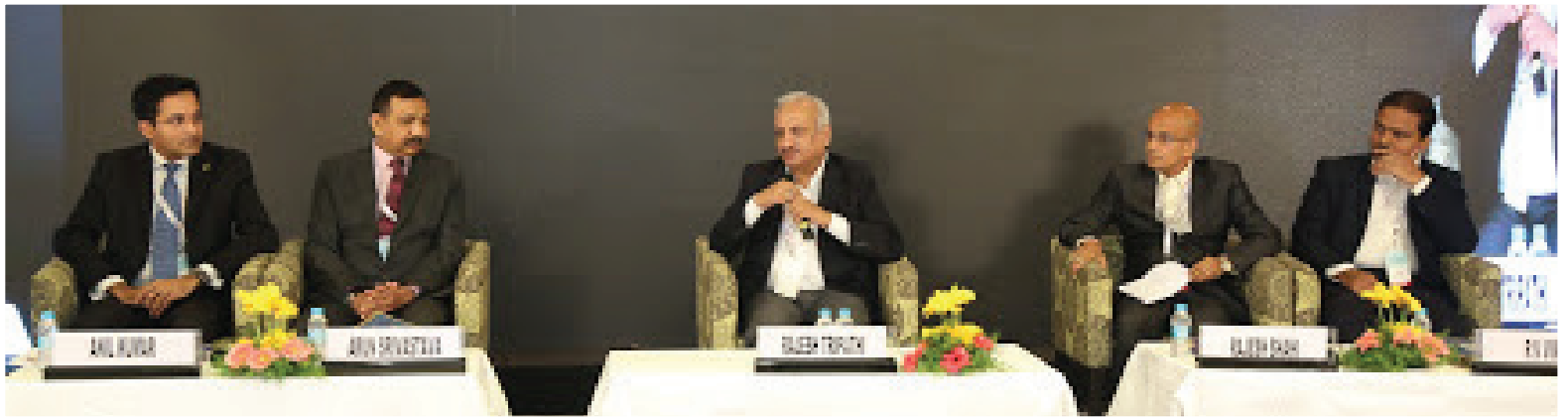
Panel Discussion: SAGARMALA, Trade, Infrastructure and Regulatory Issues

From left: Mr Julian Bevis, Senior Director (South Asia), Maersk Group; Dr Prabir De, Professor, RIS; Mr Kailash Kumar Aggarwal, Joint Secretary (SAGARMALA), Ministry of Shipping, Govt. of India; Dr Vishwapati Trivedi, Former Secretary, Ministry of Shipping, Govt. of India; Capt. S.V. Subhedar, CEO, Indian Coastal Conference; Dr Amitendu Palit, Senior Fellow, Institute of South Asian Studies, National University of Singapore; and Mr Manish Sharma, Partner and Transport & Logistics Leader, PwC

Plenary : Investment in Coastal Areas for Promoting Blue Economy

From left: Mr Malay Chaterjee, Chairman-cum-MD, KIOCL Ltd; Mr G.V. L Kumar, Executive Director (Strategic Planning), Railway Board; Mr Kenichi Yokoyama, Country Director, ADB; Dr Amitendu Palit, Senior Fellow, Institute of South Asian Studies, National University of Singapore; Mr Arnab Bandhopadhya, Lead Transport Specialist, World Bank; and Mr Yee Ean Pang, Director General of Investment Operations, AIIB.

Plenary: Developing the Shipping Ecosystem : Ship Repair and Dry Docks



From left: Mr Anil Kumar, Principal Surveyor, Llyods Register; Mr Arun Srivastava, Deputy Director General (Tech.), Indian Coast Guard; Mr Rajesh Tripathi, CMD, Dredging Corporation of India Ltd, Visakhapatnam; Mr Rajesh Shahi, Managing Director, Glory Ship management and Mr R.V. Vimal, Genral Manager, Chougule Group.

Cabotage laws should be made less restrictive. Without reforms in cabotage laws, ports might become inward-oriented

Plenary : Catalyzing the Modal Shift- Inland Waterways and Coastal Shipping

From left: Dr R.V. Rama Rao, Director, Institute for Development and Policy, Visakhaptnam; Capt. Philip Mathews, Managing Director, Lots Shipping and Shipping Yard; Mr P. L. Haranadh, Deputy Chairman, Visakhapatnam Port Trust; Vice Admiral S.K. Jha, Senior Advisor, Inland Waterways Authority of India and Capt. Inderveer Solanki, Vice President, Academics and Research, ARI, and Project Manager, The National Inland Navigation Institute.

Mr Kenichi Yokoyama, Country Director, ADB.

Plenary : Strengthening India's Maritime Support Infrastructure: Containerization, Bunkering, and Dredging

From left: Mr Rahil Sahu, Consultant, KPMG; Mr Arvind Kumar, Former Senior Advisor, Ministry of Shipping & Member, Tariff Setting Committee of Major Ports; Capt. S.V. Subhedar, CEO, Indian Coastal Conference; Mr P. L. Haranadh, Deputy Chairman, Visakhapatnam Port Trust; and Mr Sabyasachi Hajara, Director, Apeejay Shipping.

Creation of Society for Affordable Redressal of Disputes - Ports (SAROD-PORTS) as dispute resolution mechanism like provision available in Highway Sector

Project UNNATI benchmarks performance of 12 major ports with selected Indian private ports and best-in-class international ports

JNPT rolls out Direct Port Delivery to achieve seamless and faster movement of cargo from the port

Valedictory Session

From left: Dr Priyadarshi Dash, Assistant Professor, RIS; Dr Vishwapati Trivedi, Former Secretary, Ministry of Shipping, Govt. of India; Prof. Amitabh Kundu, Distinguished Fellow, RIS; Mr G. Murali Krishna, CII; Dr Shailesh Nayak, Former Secretary, Ministry of Earth Sciences, Govt. of India and Director, National Institute of Applied Sciences; and Mr Shakil Alam, Director (Multilateral Institutions), Ministry of Finance, Govt. of India.

Dr Shailesh Nayak, Former Secretary, Ministry of Earth Sciences, Govt. of India and Director, National Institute of Applied Sciences.

Inland Waterways Authority of India supports bank financing for private players in water transport sector

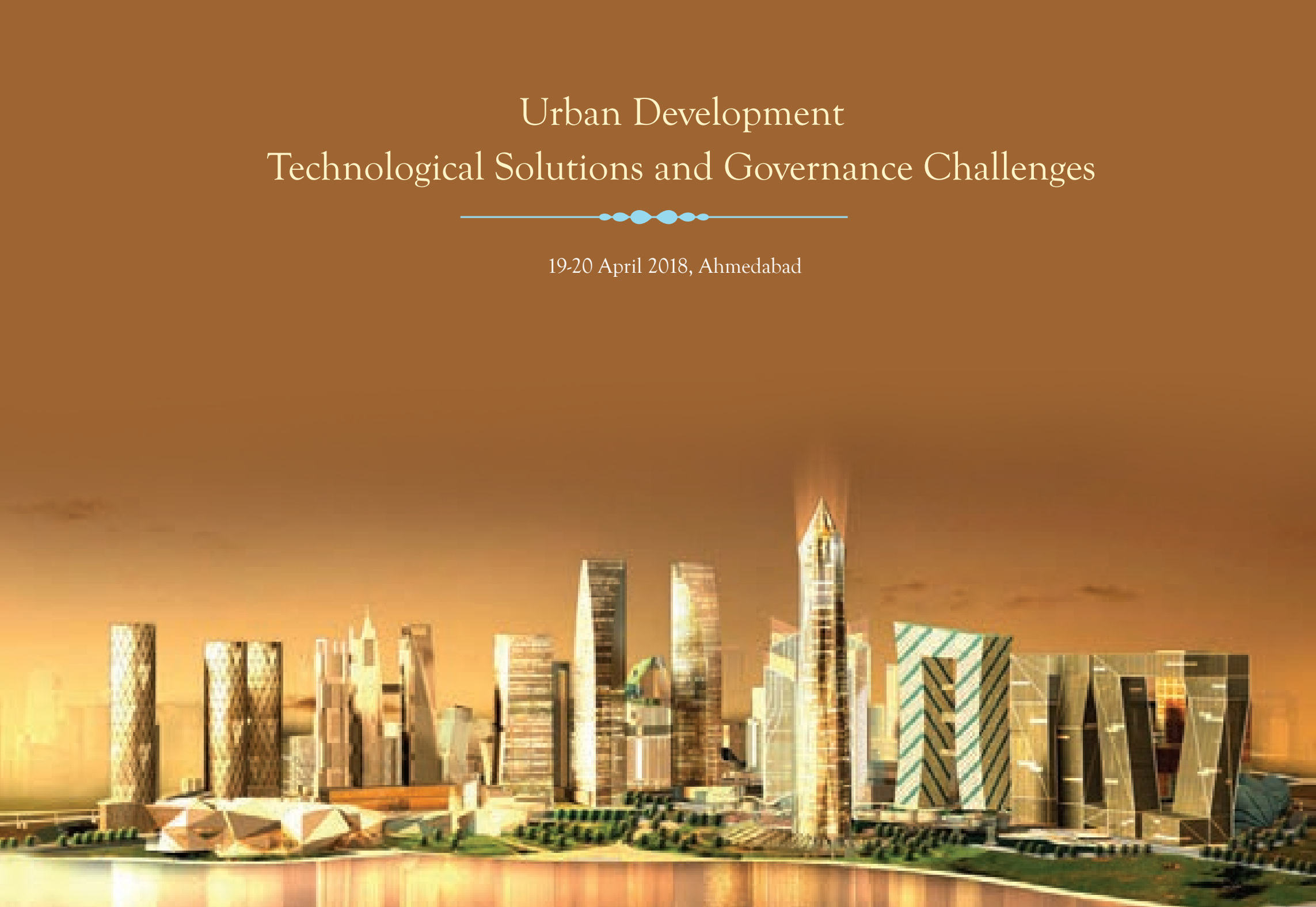
Coastal shipping or inland waterways is environment-friendly & and safer mode for cargo movements

More than 90 per cent of Indian transport is on land; not utilizing more than 7500 km of coast line and navigable rivers of 14,500 km

Sagarmala is first of its kind programme for promoting port-led development in India. More than 500 projects have been identified under it

Urban Development
Technological Solutions and Governance Challenges

19-20 April 2018, Ahmedabad



Inaugural Session

From left: Ms Bhagyesh Soneji, Chairperson, ASSOCHAM, Western Council; Mr Mukesh Puri, Principal Secretary, Department of Urban Development and Urban Housing, Govt. of Gujarat; Mr Kenichi Yokoyama, Country Director, Indian Resident Mission, Asian Development Bank; Prof. Amitabh Kundu, Distinguished Fellow, RIS; Prof. O. P. Mathur, Senior Fellow and Head, Urban Studies at the Institute of Social Sciences, New Delhi; Dr Kumar V. Pratap, Joint Secretary (Infrastructure, Policy & Finance), Department of Economic Affairs, Ministry of Finance, Govt. of India; Dr Ke Fang, Manager (Investment Operations), AIIB; and Mr Bharat Patel, Co-chairman, ASSOCHAM Western Council.

Smart City
MISSION TRANSFORM NATION

₹ 2.03
LAKH CRORE
Expected cost of development projects in smart cities benefitting 100 million Indians

- India's urban population is projected to touch around 598 million by 2030 from 377 million in 2011.
- By 2030, urban centres would be home to 40 per cent of the population of India and account for 75 per cent of its GDP (up from 63 per cent of the GDP in 2011).
- Resilient and Sustainable Infrastructure Development is a part of the triple mission of Smart Cities, Housing for All and Atal Mission for Rejuvenation and Urban Transformation (AMRUT).
- Ninty nine cities have been chosen so far as smart cities to ensure improved quality of living, sustainable urban planning and development.
- Various development projects in these smart cities will cost Rs 2.03 lakh crore and benefit 100 million Indians. Projects worth Rs. 98,989 crores under DPR stage.
- Also towards the aim of ensuring that every Indian should have his or her own home when India turns 75 in 2022, 1.2 crore houses are being built in urban areas and interest subsidy is being given for affordable houses. Towards this, approval has been given for creation of National Urban Housing Fund for Rs.60,000 crore.
- India will need to spend Rs 5.5 lakh crore between financial years 2018 to 2022 on urban infrastructure, and this huge investment requirement calls for revenue enhancement measures (through value capture financing and property tax), revival of interest in municipal bonds, and institutional strengthening.
- Around 37.45 lakh dwelling units with an investment of Rs 2.03 lakh crore involving Central assistance of Rs. 57,681 crore have been sanctioned under Pradhan Mantri Awas Yojana in the last 31 months.
- Out of this, 19.49 lakh houses have been grounded and 3.19 lakh houses have already been completed. A total of 2.78 lakh houses have been occupied.
- Pro-active steps are being taken to implement Online Building Plan Approval System (OBPAS) in all AMRUT cities. States like Andhra Pradesh and Telangana have already implemented OBPAS in all the urban local bodies. Besides these states, Madhya Pradesh, Chhattisgarh, Gujarat, Jharkhand, Maharashtra, Kerala and Rajasthan have also made considerable progress in implementing OBPAS. The remaining States are also in process of implementing the OBPAS.
- Most of the housing projects in the affordable segment in the country would now attract GST of only 8per cent (after deducting value of land).
- There is also a Rs 500 crore outlay for the National Heritage City Development and Augmentation Yojana (or the HRIDAY scheme, aiming to preserve the heritage character of each Heritage City), which is proposed to be merged with the tourism ministry's Pilgrimage Rejuvenation and Spirituality Augmentation Drive (PRASAD) scheme.
- Foreign direct investments in construction-townships, housing built up infrastructure (April 2000-December 2017) was Rs. 117,092 crore.
- FDI has been allowed in the real estate brokering service. This would further professionalise the real estate sector with more organised corporate entities getting into the sector.
- In Swachh Bharat Mission-Urban, as against the Mission period target of 66 lakh in Individual Household Latrine (IHHL), 80per cent toilets, i.e. nearly 52 lakh have been constructed and / or under construction. Balance of 13.4 lakh units of IHHL is expected to be completed by October 2018.
- It also targets to construct 5.02 lakh seats of community/public toilets, against which 3 lakh seats have been constructed or are under construction (i.e. 64 per cent). Construction of the balance 1.8 lakh seats of community / public toilets are expected to be completed before October 2018.

STATES ARE CREATING SOME MAJOR LEARNINGS

- Gujarat's urban-led initiatives include infrastructure planning, effective land pooling, institutionalised heritage conservation, setting up of Special Purpose Vehicles for urban development projects (eg, for the Sabarmati riverfront project and the GIFT city project).
- Karnataka and Rajasthan have developed partnerships with ADB for improved water supply and sanitation projects. These are 24X7 supply and performance-based management contracts. These initiatives started with large cities, and have since spread to smaller towns.

AREAS OF CONCERNS

- The major constraints at the state level include weak institutions, lack of a ready list of viable project proposals, fiscal constraints, low bankability for Public Private Partnerships (PPP) financing, as well as complexities involved in project development and implementation.
- Potential of PPP has not been tapped fully, especially in areas concerning water treatment, solid waste management, multi-level parking and urban transport.
- The advanced states have limited fiscal space to spend on urban infrastructure due to Fiscal Responsibility and Budget Management Act constraints, while the low income states have limited capacity to enhance their expenditure.
- Most small corporations are inefficient due to lack of capacity in collecting taxes and user charges.
- Urban Local Bodies (ULBs) tend to rely on grants. There is a low level of local resource mobilization (including through municipal bonds, property taxes and land-based charges). ULBs are troubled by a vicious cycle of under-investment, poor service delivery and weak revenue.
- Urban infrastructure is not considered by commercial banks as a priority area. Even the non-banking finance companies have limited their lending for core urban infrastructure including water, sanitation and drainage.

POLICY OPTIONS

- Municipalities must be fiscally empowered to accelerate investment in urban infrastructure.
- To instil confidence among investors in municipal bonds, alternatives to "escrowing" as collateral need to be considered.
- Initiate local resource mobilization through reforms for revenue augmentation and encourage issuance of municipal bonds.
- Provide greater Central government funds to states adding greater value in terms of efficient and sustainable urbanization. From largely grant funded cities, there needs to be a shift in approach to a combination of assured grants and more commercial sources of finance, and this means bringing in private players in urban infrastructure space.
- Push through PPPs with investment-light contracting structures and higher Viability Gap Funding. Also strengthen specialized/national/ state financial intermediaries.
- Innovative financing models should include greater private sector participation in operation and management of water supply and sewerage.
- Resource mobilization can be done through Land Value Capture, issuance of tax-free municipal bonds, land leasing, other land based instruments including development charges, betterment levies and land monetization, besides conversion of land rights into infrastructure assets and Ola-Uber type of financing, debt finance.
- Debt securities by municipalities should be listed—options are a) In China where city-level Urban Development and Investment Companies were set up for mobilizing finance for new infrastructure. Similar models should be considered. b) In EU, Municipal Development Banks have extended credit financing and linked services to municipalities for financing services.This can be adopted.
- Consider establishing Municipal Development Funds with initial capitalization from the Central government and supported by the international lending agencies.
- Explore the feasibility of risk insurance and harness technological tools like open data and Artificial Intelligence for continuous upgradation.
- Multilateral Financial Institutions (MFI) such as the AIIB, help narrow funding gaps through sovereign-backed loans, sub-sovereign-backed loans, non-sovereign-backed financing, equity investments, guarantees, joint or co-financing with other MFIs and DFIs, and with the help of financial intermediaries such as the India Infrastructure Fund.
- MFIs, while funding, should bring greater focus on sustainability of project through ensuring the 3R approach : (Recycle, Reuse, Reduce).
- Create the post of a Regional Municipality Commissioner who can then oversee and monitor performance of several municipalities. This will improve the efficiency of smaller municipal corporations.
- Bring out a Liveability Index and Sustainability Index to ensure a healthy competition between cities and to ensure that aspirational cities catch up with progressive cities through such dynamic ranking mechanisMs
- To consider linking urban centres with port-led development of infrastructure.
- Shift to vertical development of urban areas to improve service delivery and revenues, as well as greater efficiency and productivity.

Plenary : Hierarchical and Inter-Sectoral Coordination in Urban Governance for Facilitating Investment

From left: Prof. Sebastian Morris, Indian Institute of Management, Ahmedabad; Mr D.S. Mishra, Secretary, Ministry of Housing and Urban Affairs, Govt. of India; Dr Rajesh Tandon, Former President, Participatory Research in Asia (PRIA); and Dr P.S.N. Rao, Director, School of Planning and Architecture.

India needs to spend Rs 5.5 lakh crore between FY 2018 to 2022 on urban infrastructure; calls for revenue enhancement measures

Main constraints at state level include weak institutions, lack of a ready list of viable project proposals, & fiscal constraints

Urban infrastructure is not considered by commercial banks as a priority area even by non-banking finance companies

Plenary : Legal and Institutional Issues in Developing Sustainable and Inclusive Urban Infrastructure

From left: Dr Sheela Patel, Founding Director, Society for the Promotion of Area Resource Centers (SPARC); Dr Dinesh Awasthi, Director, Entrepreneurship Development Institute of India: Mr Gavin Mc Gilliveray, Head, DFID; and Mr Avinash Bhoi, Additional Commissioner, Raipur Municipal Corporation, and General Manager Raipur Smart City Ltd.

Professor Y.K. Alagh, former Minister of Power, Science and Technology, Govt. of India.

Mr D.S. Mishra, Secretary, Ministry of Housing and Urban Affairs, Govt. of India.

Dr Ke Fang, Manager (Investment Operations), Asian Infrastructure Investment Bank.

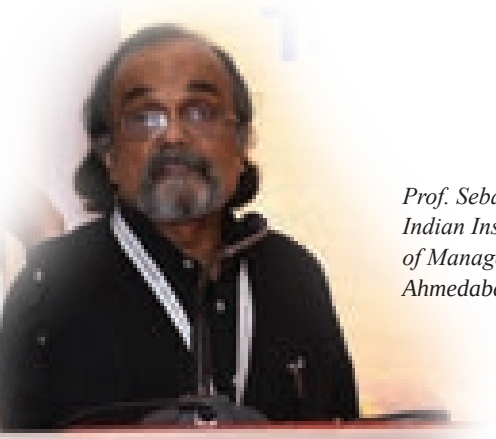
Plenary: Financing, Pricing and Loan Servicing in the Context of Infrastructural Investment from within and Outside the Country

From left: Mr Narendra Sharma, Superintendent Engineer, Ministry of Road Transport and Highway, Govt. of India; Mr Rajesh Aggarwal, Executive Director (Metropolitan Projects/Joint Venture), Railways Board; Ms Mona Kandhar, Commissioner of Rural Development and Principal Secretary, Govt. of India; Prof. Y.K. Alagh, former Minister of Power, Science and Technology, Govt. of India; Chancellor, Central University of Gujarat; and Shri A.B. Gor, Chief Executive Authority, Ahmedabad Urban Development Authority.

Indian urban population is projected to touch around 598 million by 2030 from 377 million in 2011

Valedictory Session

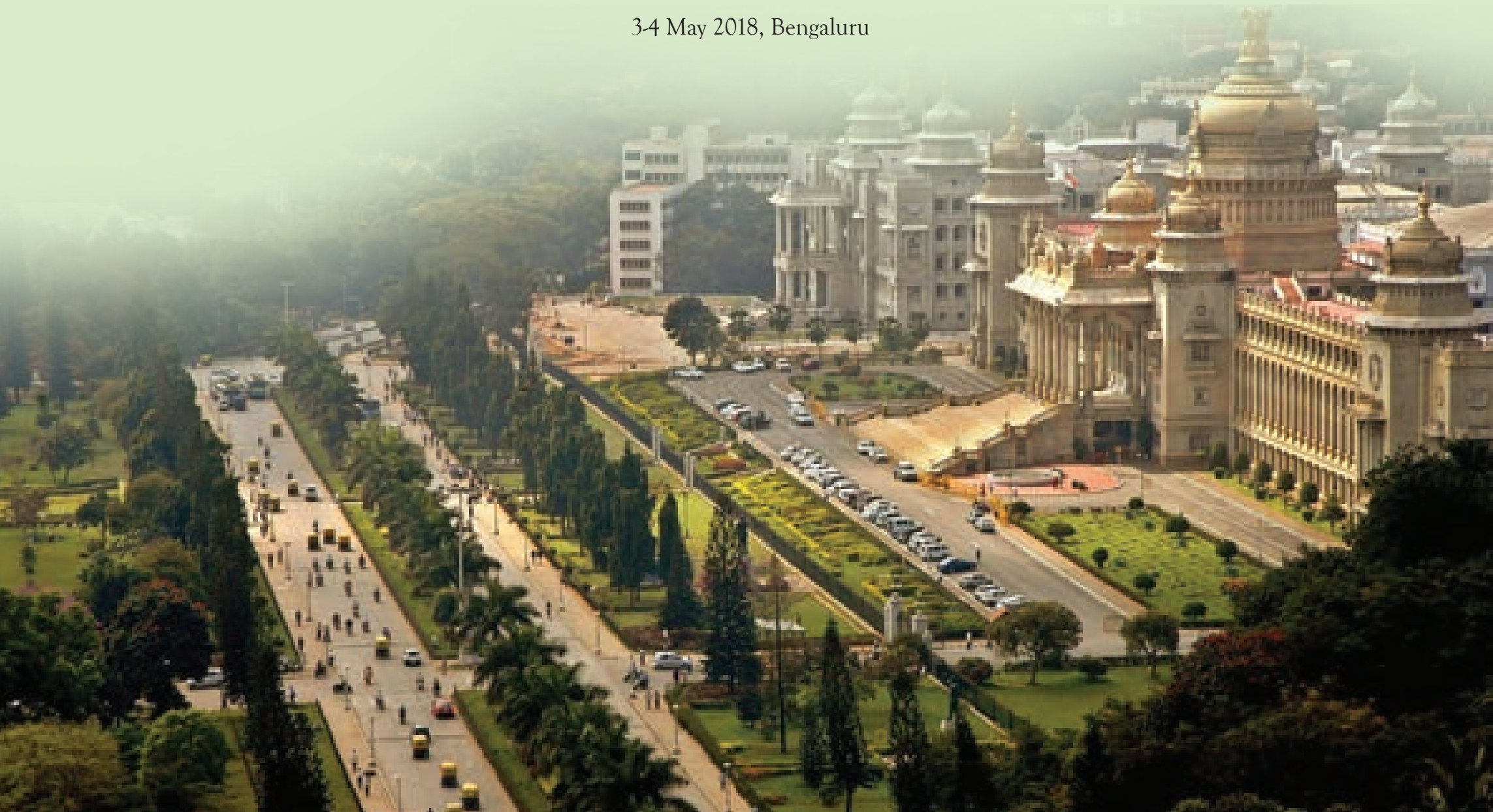
From left: Mr Bharat Patel, Co-chairman, ASSOCHAM Western Council; Prof. Amitabh Kundu, Distinguished Fellow, RIS; Prof. Y.K. Alagh, Former Minister of Power, Science and Technology, Govt. of India; Chancellor, Central University of Gujarat; Dr Ke Fang, Manager (Investment Operations), AIIB; and Mr Arun S. Nair, Visiting Fellow, RIS.



Prof. Sebastian Morris, Indian Institute of Management, Ahmedabad.

Futuristic, Resilient and Digital Infrastructure

3-4 May 2018, Bengaluru



Inaugural Session

From left: Mr Akira Matsunaga, Economist, Asian Development Bank; Dr Kirit Parikh, Chairman, Integrated Research and Action for Development, New Delhi and Former Member, Planning Commission; Mr S. Chandrasekhar, Past Chairman, CII Karnataka and Managing Director, Bhoruka Power Corporation Ltd; and Mr Neil Castelino, Director & Head, CII Karnataka State.

Digital India
Power To Empower

2.0

EXABYTES PER MONTH

willl be India's score in mobile data traffic by 2021, up from 266 Petabytes per month in 2016

Key Takeaways from Bengaluru

- At the fabled stroke of the midnight hour in August 1947, India had 100,000 fixed line phones for a population of 340 million. In December 2017, it had over a billion mobiles.
- In India, mobile data traffic will reach 2.0 Exabytes per month in 2021, up from 266 Petabytes per month in 2016 (CAGR: 49 per cent).
- The Government of India's Digital India programme has introduced comprehensive Digital Infrastructure in India.
- Aadhaar identity platform is one of the key pillars of 'Digital India', wherein every resident of the country is provided with a unique identity or Aadhaar number.
- Under National Optical Fiber Network (NOFN) initiative – *BharatNet*, a total of around 2,50,000 Gram Panchayats spread over 6,600 Blocks and 641 Districts are to be covered by laying incremental fiber.
- 2.5 lakh Common Service Centres have been established at Gram Panchayat (GP) level under Digital India and deliver various citizen centric services.
- The Centre of Excellence for IoT will jump start the IoT ecosystem taking advantage of India's IT strengths and help the country attain a leadership role in the convergent area of hardware and software.
- CERT-In was formed with an aim to secure Indian cyber space. CERT-In provides Incident Prevention and Response services as well as Security Quality Management Services.
- DigiLocker is the Indian Government's flagship program for providing citizens a shareable private space on a public cloud and making all documents/certificates available on this cloud, thus eliminating the use of physical documents.

TECHNOLOGY CHOICES

- Even though data usage currently is quite ubiquitous in urban India, it will pale in comparison when the IoT comes to life with the introduction of 5G.
- To cater to rising demand, airwaves must be made less congested, and data offloaded to optic fibre infrastructure. The cliché of data being the new oil will work only if there are physical pipes to carry the new oil.
- Therefore, choice of the technology has serious implications for infrastructure development and access. Much of India's expenditure on telecom infrastructure is in the domain of spectrum procurement for wireless connectivity driven by the private sector. However, the government has made tremendous progress in laying down country wide network of optical fibre in the form of Bharat Net.
- Rapid expansion of optical fibre cable (OFC) infrastructure is crucial to realising India's digital ambitions, both local and global. BharatNet infrastructure is expected to catalyse digital delivery of services for the rural poor – viz. health, education, livelihood, skills, e-agriculture and e-commerce.
- The fundamental issues around Industry 4.0 going ahead will be the capability to produce, ability to connect and capacity to use. Unfortunately, trade policy regimes like the Information Technology Agreement and TRIPS have created unequal gains across countries and have led to reduced production of ICT goods in many countries including India. China has benefitted most among developing countries.
- Security and privacy in the context of digital technologies also extend to upgrading, risk evaluation, monitoring, effective technologies and data analysis.

RESILIENT and FUTURISTIC INFRASTRUCTURE

- The futuristic vision on resilience should include focus on hazards, governance and institutions. The idea of creating utility maps for disaster preparedness would be futuristic and should be part of integrated planning. Community level partnerships and initiatives would be important in this regard.
- Rapid urbanization is taking shape through integration and agglomeration. Integrated city planning holds key to inclusive development and minimizing exclusions. Use of technologies, particularly digital technologies, would be critical for integration of multi-modal transportation.
- Urban planning must precede transport planning. In order to make future transportation projects viable medium capacity transit systems has to be adopted more widely. This also has implications for electrification of public transportation beyond current focus on private electric vehicles.
- Future of mobility would include high speed railway, metro railway, resource efficient public transportation, dedicated corridors etc.Apart from considerations like current versus future needs, such projects are assessed on parameters like energy consumption and emission. Such assessments help in planning and adoption of new modes of transportation.

FINANCING DIGITAL INFRASTRUCTURE

- India's telecom revolution was largely financed through private funds, raised from a variety of players in the market. There are various types of capital available including from the Multilateral Development Banks that vary in cost and tenor. Such financing relies on the capitalisation of user fees (even in relatively lower-income countries such as India), the collection of which is now increasingly less costly and more transparent as a result of digital technologies.
- The participation of insurance and pension funds helps to lengthen the tenor of financing, which allows for more projects to be financed based on the revenue stream from user fees.
- Availability of funds is not the binding constraint. Design of projects should be done in a manner that the risk and reward are balanced and financiers are insured from the realisation of uncontrollable risks. While in digital infrastructure user fee can ensure major cost recovery this may not be true for other futuristic projects like the high-speed railway.
- The tariff for BharatNet has been revised to attract more Telecom Service Providers (TSPs) to use the infrastructure to provide high-speed broadband services in the rural areas through Wi-Fi, FTTH, and for developing utilisation models by TSPs and Common Service Centres (CSC).
- Obsolescence risk in the digital space can slow down the adoption of socially beneficial technologies. This may require public action in terms of financing models and regulatory oversight.

Panel Discussion: State of Institutional Approaches for Futuristic, Resilient and Digital Infrastructure

From left: Prof. K.T. Ravindran, Dean Emeritus, RICS School of Built Environment, New Delhi; Dr Rajat Kathuria, Director and Chief Executive, Indian Council for Research on International Economic Relations (ICRIER), New Delhi; Dr Partha Mukhopadhyay, Senior Fellow, Centre for Policy Research, New Delhi; Prof. K. J. Joseph, Ministry of Commerce, Chair Professor, Centre for Development Studies, Trivandrum and President, GLOBELICS; Mr Akilur Rahman,Chief Technology Officer, ABB Limited; and Prof. Girish Agarwal, Shiv Nadar University, Greater Noida.

Under *BharatNet* a total of around 2,50,000 Gram Panchayats will be covered by laying fiber optic network

2.5 lakh Common Service Centres have been established at Gram Panchayat (GP) level under Digital India

Just like telecom revolution, digital revolution can be largely financed through private funds & those from Multilateral Development Banks

Plenary : Integrated City Planning and Inclusive Infrastructure

From Left: Prof. K.T. Ravindran, Dean Emeritus, RICS School of Built Environment, New Delhi; Prof. Debolina Kundu, HUDCO Chair Professor, National Institute of Urban Affairs (NIUA), New Delhi; Mr Akira Matsunaga, Economist, Asian Development Bank; Ms Deepa Kotnis, Executive Director (Finance), Bangalore Metro Rail Corporation Ltd (BMRCL); and Mr Syed Mohamed Beary, Chair, CII IGBC Bengaluru & Chairman & Managing Director, Bearys Group.

Mr Mahendra Jain, Managing Director, Bangalore Metro Rail Corporation Ltd. and Additional Chief Secretary to Govt. of Karnataka, Bengaluru, Delivering the Valedictory Address.

Plenary : Resilient Infrastructure and Disaster Preparedness

From left : Prof. Santosh Kumar, National Institute of Disaster Management (NIDM), Ministry of Home Affairs, Govt. of India; Prof. Kapil Gupta, Department of Civil Engineering, Indian Institute of Technology, Mumbai; Prof. Debolina Kundu, HUDCO Chair Professor, National Institute of Urban Affairs (NIUA), New Delhi; Mr R.K. Gautham, Director, Sustainability at Cushman & Wakefield, India; and Prof. Girish Agarwal, Shiv Nadar University, Greater Noida.

Choice of the technology has serious implications for infrastructure development and access

Plenary: Financing Digital India and Next Generation Digital Infrastructure: Role of the Public and Private Sectors

From left: Mr Rajendra Mishra, Commissioner Income Tax, Central Processing Centre, Bengaluru; Mr Saugat Biswas, IAS, Govt. of Jammu and Kashmir; Dr Partha Mukhopadhyay, Senior Fellow, Centre for Policy Research, New Delhi; Dr Lalit Chugh, Adviser and PPP Expert, Infrastructure Development Department, Govt. of Karnataka; Prof. V. Sridhar, International Institute of Information Technology, Bengaluru; and Ms Nandini Chami, Deputy Director, IT for Change, Bangalore.

Plenary: Technological Opportunities and Innovations for a Digital Future: Institutional Approaches on Resource Mobilisation and Collaboration

From left: Mr Parminder Jeet Singh, Executive Director, IT for Change; Dr R. Badri Narayan, ED/Computerisation and Information Systems, Railway Board, Govt. of India; Prof. A. Damodaran, IPR Chair on IP Management(MHRD), Indian Institute of Management, Bengaluru; Mr Mahesh Uppal, Director, ComFirst; Ms Ekta Arora, VP Digital Manufacturing, SAP Labs India Pvt. Ltd; and Mr Vivan Sharan, Partner, Koan Avisory.

Rapid expansion of optical fibre cable (OFC) infrastructure is crucial to realising India's digital ambitions, both local and global

Obsolescence risk in digital space can slow down adoption of socially beneficial technologies

Trade policy regimes like Information Technology Agreement & TRIPS have created unequal gains for countries and crimped production of ICT goods in countries like India

Security and privacy are key concerns in the context of digital technologies, extending to upgradation , risk evaluation, monitoring, effective technologies and data analysis

Mr Akira Matsunaga, Economist, Asian Development Bank.

Dr Kirit Parikh, Chairman, Integrated Research and Action for Development, New Delhi.

Valedictory Session

From left: Dr Chandrashekar Hariharan, Co-Chair, CII IGBC & Chairman & Managing Director, BCIL & Zed Homes; Mr Mahendra Jain, Managing Director, Bangalore Metro Rail Corporation Ltd. and Additional Chief Secretary to the Govt. of Karnataka, Bengaluru; Dr Partha Mukhopadhyay, Senior Fellow, Centre for Policy Research, New Delhi; and Dr Sabyasachi Saha, Assistant Professor, RIS.

Physical and Social Infrastructure for Regional Development

14-15 May 2018, Guwahati

Inaugural Session

From left: Ms Laurel Ostfield, Head of Communications, AIIB; Dr Seshadri Chari, Member, Governing Council, RIS; Prof Jagdish Mukhi, Hon'ble Governor of Assam; Mr P. D. Sona, Hon'ble Parliamentary Secretary (Tourism), Govt.of Arunachal Pradesh; Mr Ravi Capoor, Additional Chief Secretary, Department of Industries and Commerce, Govt .of Assam; and Prof. Amitabh Kundu, Distinguished Fellow, RIS.

9.15

KM LONG

Dola Sadiya bridge built over the Brahmaputra river in Assam

Prof Jagdish Mukhi, Hon'ble Governor of Assam delivering the Inaugural address.

- Flagship infrastructure initiatives such as 'Bharatmala' (development through highways), 'Sagarmala' (port-led development), 'Sagar' (security and growth for all in the region) – 'Sagar1' (blue economy) and 'Sagar 2' (space technology) and strategies such as 'HIRA' (highway, internet way, roadways and airways) - are being integrated with Sustainable Development Goals (SDGs).
- Massive scaling-up of infrastructure in aspirational regions is required to achieve the SDGs.
- South Asia is the least integrated region in the world. Road transport is the dominant mode (65–70 per cent of movement), but there are substantial missing links across national boundaries.
- North East India - which is strategically important and home to many natural resources - acts as a land bridge between South Asia and South East Asia, and shares borders with countries including Bangladesh, Bhutan, Myanmar, Nepal and China. So development of India's North East region is crucial as gateway to South East Asia, important from India's Act East policy perspective.
- While most of the regions in India have deficit of skilled & semi- skilled workers, interestingly, the North East region has surplus in this regard.
- In ecologically and ethnically sensitive regions such as the North East, expansion of infrastructure requires attention to environmental and social sensitivities.
- Biggest challenges in the North East are in establishing connectivity, including internet connectivity, due to the difficult terrain and climatic conditions.
- Central government to spend Rs.14.34 lakh crore in 2018-19 alone for creation of livelihood and infrastructure in rural areas.

INITIATED AND IMPLEMENTED INTERVENTIONS

(i) Highways

- Major projects to improve connectivity between North East India and neighbouring regions include the India-Myanmar-Thailand Trilateral Highway Project, Kaladan Multi-modal Transit Transport Project, Bangladesh-China-India-Myanmar Economic Corridor, East West Corridor that is part of the Golden Quadrilateral, Border Haats and Rhi-Tiddim Road Project.
- Key part of this outreach is India's longest river bridge, the 9.15 km long Dola Sadiya bridge over the Brahmaputra river in Assam.

(ii) Waterways

- There is immense economic potential to be realised through the 'Indo-Bangladesh Protocol on Inland Water Transit and Trade'.
- National Waterways-2 (Brahmaputra River) provides access to Bhutan; NW-16 (Barak River) can provide alternative route to the North East states.
- Bond issuance can help Inland Waterways Transit projects mop up financial resources from the market.

(iii) Aviation

- The Ude Desh Ka Aam Nagrik (UDAN) Scheme - or India's regional airport development and regional connectivity scheme - has brought affordable air travel to the common man. UDAN has added 25 airports to the 75 operational airports since independence.
- Connectivity to neighbouring countries is proposed under UDAN-2. Also; route dispersal guidelines under UDAN-2 covers 19 aviation destinations in the North East. 56 unserved airports and 31 helipads would be covered under the UDAN scheme.
- In North East, the proposed Guwahati Aerotropolis could be hub station and main MRO base for small turboprop aircraft as well as making it a base for small size but quick turnaround export items mainly pharma and food processing items to South East Asia, especialy Myanmar.
- Silchar Airport to be developed as a parallel hub.
- Boost people-to-people ties between India and South East Asia through enhanced air connectivity as well as greater interactions of cultural and academic institutions.

(iv) Railways

- North East is being fully integrated with the rest of India with the entire rail network converted in broad-gauge. Meghalaya, Mizoram and Tripura have become part of India's rail map for the first time.
- All North East state capitals would be connected by double gauge line by 2020.

- Plans are underway to improve connectivity - including through Trans-Asian Railways (TAR) network- both within the North East and with bordering countries like Bangladesh, Nepal and Myanmar.
- Indian Railways plans to link Myanmar's railway network (Mandalay) via Moreh in Manipur as part of the 81,000 km-long TAR Network
- 15 km-broad gauge link (part of the TAR Network) to connect Indo-Bangladesh rail networks and facilitate trade between Bangladesh and the landlocked North East.
- The first ever bullet train project in India connecting Mumbai and Ahmedabad will generate employment for 20,000 workers in the construction phase alone. The high speed of the train will reduce travel time from eight hours to two hours.

POLICY SUGGESTIONS

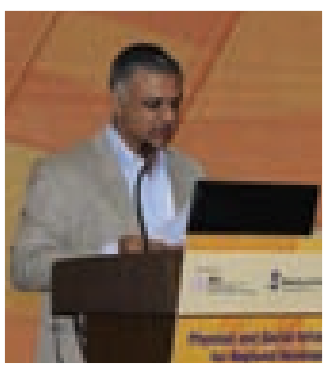
- Embrace a geo-philosophical approach for regional development by identifying common aspirations, cultivating like-minded stakeholders and ensuring irreversible conditions that ensure peace and security. A new vision should include the 5-T approach – Technologies, Tradition, Transport, Trade and Trust.
- Develop cities/urban centers in remote and less-developed areas in the framework of corridors. Transport corridors should lead to logistics corridors and ultimately to economic corridors.
- Infrastructure deficits should be addressed as per the local demand.
- Micro-interventions like storage facilities could help optimize utilization of local resources to promote entrepreneurship, job creation and regional development.
- Pursue sustainability models for regional development. These include Thailand's 'Sufficiency Economic Philosophy' (moderation and reasonableness), Japan's 3R initiative (reduce, reuse, recycle), China's 'Circular Economy Concept' (improving efficiency in use of resources throughout their lifecycle to address environmental degradation) and Bhutan's Gross National Happiness.
- Environmental and social concerns have to be addressed through targets to achieve carbon neutrality by 2030, strict compliance with environmental and social laws and regulations to be ensured while implementing infrastructure projects.
- The "Act East policy" should facilitate creation of Regional Value Chains from the North East region in products including ginger, pineapple, kiwi fruit, bamboo, handloom and processed live stock products with supporting R&D facilities.
- Approach for skilling should include realization of low-hanging fruits and awareness/aspiration building (for example job fairs) in the short-term; value-addition and supplementing other programmes and schemes in the intermediate-term; and scalability and sustainability through integration in mainstream in the long-term.
- There is a need to bridge the regional development gap in skilling. For example, there is one seat in the Industrial Training Institutes (ITIs) for 4310 people in the North East as against the national average of 986 persons per seat.

BOOSTING TIES WITH SOUTH & SOUTH EAST ASIA

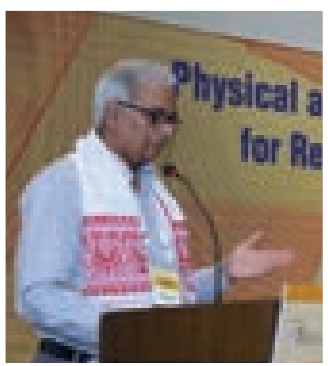
- South Asia Sub-regional Economic Cooperation Programme or SASEC, that brings together Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, and Sri Lanka, can power Asia by generating synergies through sub-regional cooperation.
- Develop SASEC trade gateways and hubs to readily access regional and global markets.
- Mechanisms such as BBIN can provide linkages for land locked Nepal and Bhutan to gain access to the larger theatres offered by BIMSTEC and ASEAN.
- Transit through Bangladesh has considerably shortened distances to the Bay of Bengal Rim as well as to the Indo-Pacific region.
- Significant partnership strategies include an India-Bangladesh pipeline corridor for crude oil import and product supply as well as an LPG trans-shipment and storage hub in Sri Lanka.
- Encourage Multilateral Development Banks to support projects in states like Arunachal Pradesh and Sikkim that need vast resources for infrastructure development.
- Some of these could include innovative projects like laying of optic fibre laying as well as in clean and green energy.

Plenary: Infrastructure Needs in Aspirational Areas

From left: Dr Kavita Iyengar, Economist, Asian Development Bank; Prof. Sebastian Morris, Indian Institute of Management, Ahmedabad, Mr Alok Ranjan, Member Finance, Inland Waterways Authority of India; Smt Usha Padhee, Joint Secretary, Ministry of Civil Aviation, Govt. of India; Dr Seshadri Chari, Member, Governing Council, RIS; Mr Niraj Verma, Member-Public Private Partnership, National Highways Authority of India; and Prof. Chandan Mahanta, Head of Department of Civil Engineering, Indian Institute of Technology, Guwahati.



Prof. Sachin Chaturvedi, Director General, RIS.



Dr Seshadri Chari, Member, Governing Council, RIS.

Ms Laurel Ostfield, Head of Communications, AIIB.

Plenary : Industrial Development and Exports

From left : Mr Rajaji Meshram, Partner, Ernst & Young LLP; Mr V K Rajawat, Director (Technical), National Highways and Infrastructure Development Corporation Limited; Mr Amit Kumar Ghosh, Joint Secretary (Highways), Ministry of Road Transport & Highways, Govt. of India; and Mr Shyamkanu Mahanta, Managing Director, MMS Advisory and Chief Executive, Trend MMS.

Indian Railways plans to link Myanmar's railway network (Mandalay) via Moreh in Manipur as part of the 81,000 km-long Trans Asian Railway Network

Plenary : Value Chain, Networking and Marketing

From left: Dr Jayanta Choudhury, Coordinator, Centre for Rural Studies, Department of Rural; Prof. Milindo Chakrabarti, Visiting Fellow, RIS; Dr Shiladitya Chatterjee, Coordinator, Centre for Rural Studies, Department of Rural Management & Development, Tripura University; and Mr Pratim Ranjan Bose, Deputy Editor and Chief of Bureau, The Hindu Business Line.

Ms Halla Maher Qaddumi, Senior Water Economist, The World Bank .

Plenary : Creating Social Infrastructure for Inclusive Growth

From left : Dr Otojit Kshetrimayum, Associate Fellow and Coordinator, Centre for North East India, V.V. Giri National Labour Institute; Mr A K Yadav, Chief Administrative Officer (Construction), Northeast Frontier Railway; Mr Dinesh Sharma, Former Special Secretary, Department of Economic Affairs, Govt. of India and Former Director on the AIIB Board; Mr Shyam Jagannathan, Commissioner & Secretary, Finance Department, Govt. of Assam; Ms Halla Maher Qaddumi, Senior Water Economist, The World Bank; and Mr Sabyasachi Dutta, Executive Director, Asian Confluence.

All North East state capitals would be connected by double gauge line by 2020

While most of the regions in India have deficit of skilled & semi skilled workers, interestingly, the North East region has surplus in this regard

Indo-Bangladesh Protocol on Inland Water Transit and Trade opens up connection to North East through National Waterways-2 (Brahmaputra River) & National Waterways-16 (Barak River)

Valedictory Session

From left: Prof. Bhupen Sarmah, Director, Omeo Kumar Das Institute of Social Change and Development; Mr Manab Majumdar, Deputy Secretary General, FICCI; Prof. Sachin Chaturvedi, Director General, RIS ;and Mr P R Jaishankar, Chief General Manager, Indian Infrastructure Finance Company Limited.

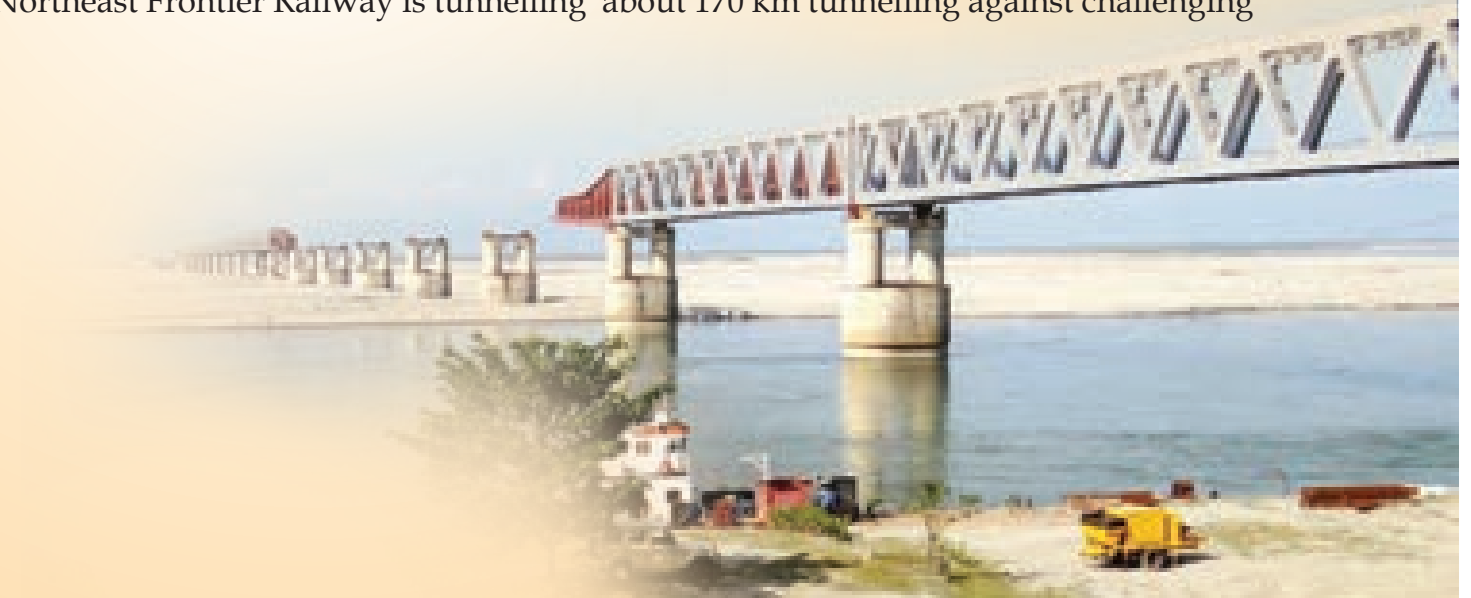

The “Act East policy” should facilitate creation of Regional Value Chains from the North East in products including ginger, pineapple, kiwi fruit, bamboo, handloom and processed live stock products with supporting R&D facilities
Develop cities/urban centers in the remote and less-developed areas in the framework of corridors. Transport corridors should lead to logistics corridors and ultimately to economic corridors
There is a need to bridge the regional development gap in skilling. For example, there is one seat in the Industrial Training Institutes (ITIs) for 4310 people in the North East as against the national average of 986 persons per seat.
Encourage Multilateral Development Banks to support projects in states like Arunachal Pradesh and Sikkim that need vast resources for infrastructure development

Railways Transforming Connectivity in North-Eastern Region of India

Railways network in the North-Eastern Region (NER) of Indian is witnessing dramatic changes reflected in technological sophistication and speed of project implementation. The entire metre gauge network in the NER – built way back in the late 19th Century – has been converted into broad gauge, with spectacular addition of 1000 km in the last four years alone. Now, barring Sikkim, all the states of the NER have been brought on the broad gauge network of the Indian Railways.

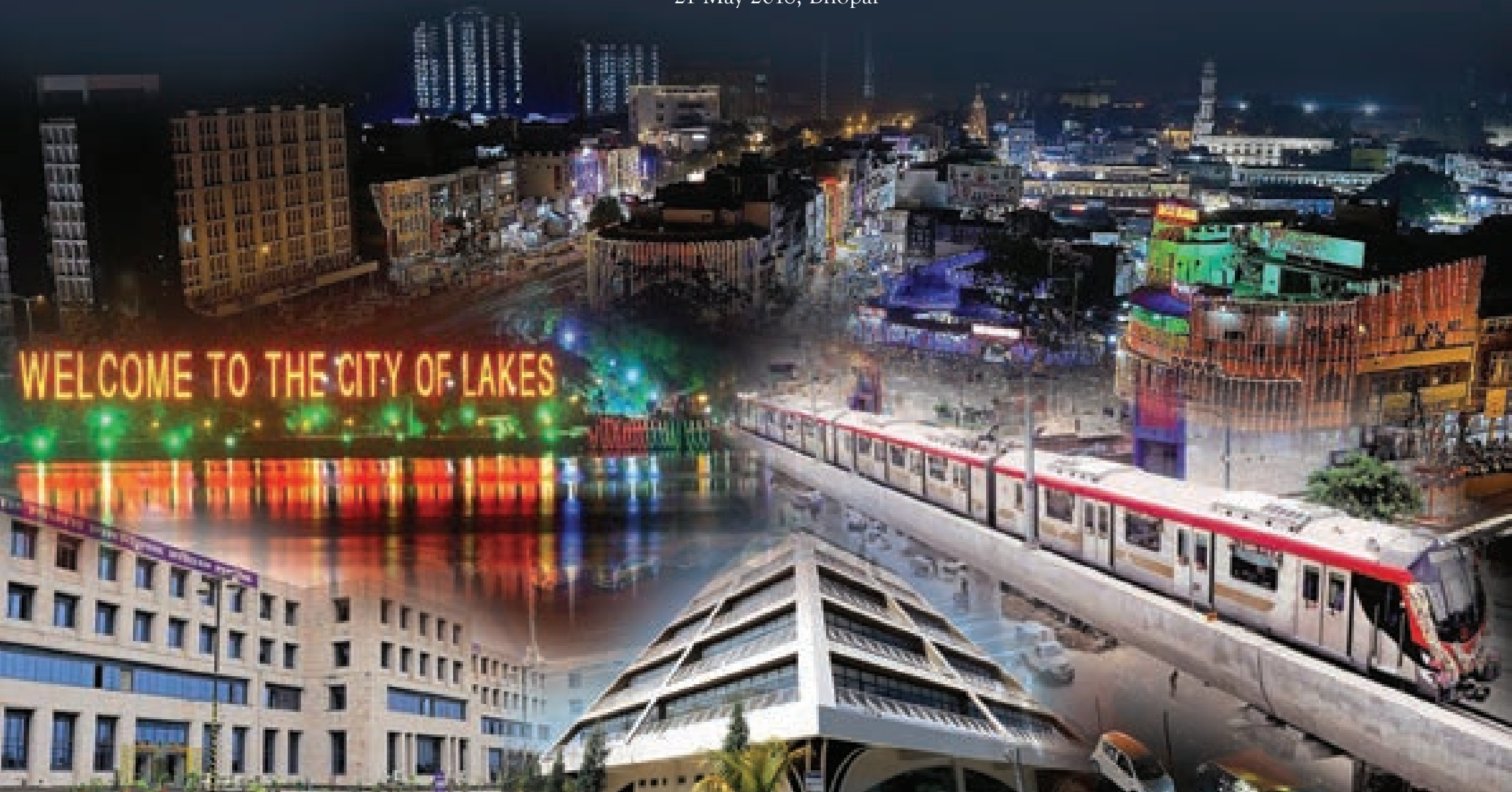
In the last four years, the average annual commissioning of the broad gauge line in the NER was 3.2 times that of the previous four years. In addition, the average annual expenditure of the last four years was 2.2 times that of the previous four years. In this period, about 65 km of tunnelling was completed in capital connectivity/gauge conversion projects. Also, Assam's Barak Valley has been connected to major cities of the country through the broad gauge. On the lane doubling, as on March 2016, double line existed on 166 km on busy section of New Jalpaiguri to Lumding. At present, work on 469 km is progressing well and is planned for commissioning in phases. In 2017-18, close to 48 km was commissioned.

The landmark new projects that were launched in the last four years include air-conditioned express train from Naharlagun (Arunachal Pradesh) to New Delhi, the first passenger train from Silchar (Assam) to Bhairabi (Mizoram) and the first broad gauge train connecting New Delhi to Agartala (capital of Tripura). Other major project that has seen substantial progress in the recent years include Bogibeel (Assam) rail-cum-road-bridge which is the longest (4,940 metres) such bridge in India. The unique thing about this project is the use of all welded steel girders with no riveting, the first in Indian railways' history. Moreover, this is maintenance-free, with overall weight reduced by a fifth. Another project in the region that stands out is the Jiribam-Tupul-Imphal (Manipur) line, where the Northeast Frontier Railway is tunnelling about 170 km tunnelling against challenging geological conditions of the NER.



Clean and Renewable Energy

21 May 2018, Bhopal



Inaugural Session

From left : Ms Rita Roy Choudhury, Assistant Secretary General, FICCI; Mr Akhilesh Rathi, Joint President, Federation of Madhya Pradesh Chambers of Commerce and Industry; Mr Manu Srivastava, Principal Secretary, New & Renewable Energy Department, Madhya Pradesh; Mr Narayan Singh Kushwah, Hon'ble Minister of New & Renewable Energy, Govt. of Madhya Pradesh; Mr A. K. Verma, Joint Secretary, Ministry of Power, Govt. of India; and Mr K. K. Sharma, IAS (Retired), Advisor, ISA.

970 GWH

India's cumulative EV battery requirements between 2021 and 2025, about 40per cent of global needs

Key Takeaways from Bhopal

- Indian plans for energy security envisages secure source of supply for traditional fuels including coal, oil and gas plus a goal to decarbonise growth as per the commitments made at the COP 21 in Paris 2015. The commitment envisage reduction of carbon emissions by 35 per cent by 2030.
- Key element of the energy strategy is therefore self-sufficiency. This meshes well with the centrality of energy-related investments in the AIIB's overall portfolio made evident through the existence of the Sustainable Energy for Asia Strategy, a dedicated sectoral strategy to guide the Bank's investments.
- As a part of the strategy, India has begun measures to make adequate supply of electricity available for all citizens. Total energy supply in the country is expected to go up by a multiple of around three times over 2012 to 1055-1184 Kilograms of oil equivalent (kgoe) per capita energy consumption by 2030. An emphasis on energy efficiency means this itself, while lower than EU at 3.2 tonne of oil equivalent (toe) per capita (2015), can however fulfil all our energy needs.
- This involves both powering household and industrial needs for energy through committed and stable supply of electricity, (this will also include a shift away from imported LPG and kerosene) and also weaning away the mobile energy needs—the transportation sector with both private and commercial automobiles as well as public transport to also shift gradually towards electricity as a fuel. Share of electricity in total energy demand as per National Energy Policy will rise to 26.1 per cent from 17 per cent now through policy action.
- The projections sit well with the installed capacity of 344 GW of power generation capacity, as on March 31, 2018. Current level of utilisation of this capacity is in the range of 160-170 GW, expected to soar. The National Energy Policy estimates that India's energy demand will increase by 2.7-3.2 times between years 2012 and 2040. It would be broadly consistent with an electricity elasticity of GDP growth of 1.
- Renewable energy could meet significant per cent of rising energy demand and draw in climate relief measures necessary for the well-being of the society. Already in 2017, India's net capacity addition in renewables has exceeded traditional fuel for the first time.

CONSTRAINTS

- Innovative financing mechanisms targeted at improving the financial health of electricity distribution companies (discoms) would be crucial. Payment delays by discoms create an additional source of risk for the energy sector. To reduce this problem requires a rational view of the markets, or pricing signals for the sector which emerge from the markets and are to be respected. The Government of India's Uday scheme through universal metering and reduction of AT&T losses to 15 per cent by FY19 is the way to go forward.
- Only then can effective instruments for de-risking of generation projects through an amalgam of innovative instruments be made available. The consequent lower costs would in turn make the downstream discoms buy more power and therefore ensure the necessary end goal of providing larger access of electricity to all. At one level this would enhance the bankability of the projects and on the other level it would reduce the need to create special purpose vehicles like payment security mechanisms for discoms that distort the market for power. It is in this context that proposals for socialising the cost of renewable power must be evaluated, before committing on them.
- The power sector (3.52 per cent) ranks second after the construction development sector (6.71 per cent) among infrastructure sectors in terms of Foreign Direct Investments (FDI) received in the form of equity since 2000. Sceptics might dismiss this as "normal" in the growth of a large developing economy such as India. But why has it not happened in other large developing economies such as Malaysia and Brazil? And within power, it is renewable energy that has come up to 3 per cent .

- Yet is the decline in renewable energy tariffs witnessed in India merely a reflection of the declines witnessed globally or are there additional factors at play? Meanwhile the tripartite guaranteer NTPC's debt has risen at CAGR 12.3 per cent hurting capex growth which has risen by CAGR of 7.48 per cent in five years.
- So thermal generation, which currently accounts for nearly two-thirds of India's installed capacity, is exposed to risks seeded in fuel pricing, sourcing, availability, and import dependency. Renewable energy could trigger the much-needed deflationary forces in retail electricity tariffs. Coal consumption is expected to double by 2040 but in relative terms, its contribution in energy mix slashes from 58 per cent in 2015 to less than 50 per cent in 2040. The overall share of fossil fuels would have come down from 81 per cent in 2012 to 78 per cent in ambitious pathway in 2040.

POLICY OPTIONS

- Lower cost of generation would help migration to renewable fuel. These innovative streams could include mechanisms like bridge equity and patient capital. It would also need changes in the banking sector. While renewable energy was included in the priority sector lending targets of scheduled commercial banks in 2015 by the banking regulator, RBI, a corresponding limitation has hampered its growth. The priority sector targets restrict lending up to a limit of INR 150 million for commercial and industrial RE projects borrowers and INR 1 million per borrower for individual household. This needs to be eased.
- Instead of project-based bonds, innovative instruments like bridge equity, patient capital, green bonds may be explored.
- De-risking of projects is necessary. But does that mean continuing with "must run status" for RE generation by state governments that hurt their fisc. Also does concentration of RE projects in some states necessitates copy cat RE policy in other states.
- Better options to finance all energy projects may be to depend on corporate debt market—masala bonds and InvITs are way out.
- Smart solutions should encourage integration (both forward and backward) for energy producers (coal, oil and gas) to tap the power market and become generators. Consolidation and emergence of large integrated energy players will reap economies of scale afforded by the growing Indian energy market.
- Also deployment of IT can play important role in smart grid management. Likewise, government programmes like Make-in India and skill development can be crucial for exploiting of renewable energy .
- Happily despite sharp dip in solar and wind prices, investments in the sector have not fallen off. It is estimated that the sector may utilize` the $3 trillion potential investment in the sector provided that the projects are bankable. India led International Solar Alliance helps to transfer technology froms Indian firms to abroad, partially underwriting their R&D efforts. It also sets standards globally even as there are massive deployment of technology shaping the future energy mix.
- India expects to see about 35 per cent share of renewable energy in electricity mix by 2040, implying a different kind of infrastructure — distributed and decentralized — than the capital intensive and centralized ones that exist in the West.
- This pushes both roof-top solar and support to EV battery manufacturing. It creates an economic opportunity value of about 3 lakh crore by the year 2025.
- Positive sign of AIIB total portfolio (end February 2018) energy projects is that they account for around $2 billion, or close to half.

OVERALL PERSPECTIVE:

- Regulatory structure for increased penetration of Renewable energy -Governance, predictability and rate of return will be three pillars to determine the flow of capital to the renewable energy sector.
- So only a stable policy regime could provide reliable estimate for future demand potential of electricity, & then further estimate ability of bulk electricity buyers as well as ability of retail consumers to pay for electricity.

Plenary : Flow of Capital to Energy Sector

From left : Dr Vivek Sharma, Director, Energy & Natural Resources, CRISIL; Dr Rahul Tongia, Senior Fellow, Brookings; Dr Gireesh Shrimali, Director, CPI India; Mr Subhomoy Bhattacharjee, Consultant, RIS; Dr Pradeep Perera, Energy Head, India, South Asia Department, ADB; Dr Kaushik Deb, BP Group, Economics Team; and Mr Vinod Kala, CEO and Founder, Emergent Ventures.

Plenary: Lessons from Indian States

From left: Dr Anil Kurchania, Director, Centre for Renewable Energy Rabindranath Tagore University; Dr Saon Ray, Senior Fellow, ICRIER; Dr Kaushik Bandyopadhyay, Professor, IIM Lucknow; Mr H. S. Puri, General Manager (Finance), NHPC Limited; and Mr Ashok Kumar Rajput, Chief Engineer, Central Electricity Authority.

Plenary : Regulatory Challenges

From left: Mr Rishabh Jain, Senior Manager, Corporate Affairs, Vikram Solar; Mr Manu Srivastava, Principal Secretary, New & Renewable Energy Department, Govt. of Madhya Pradesh; Mr Arvind Singhatiya, Executive Vice President, Public Policy and Legal; Ms Kanika Chawla, Policy Specialist, CEEW; Mr Jatindra Nath Swain, Managing Director, SECI; Dr Usha Ramachandra, Professor, Energy Area Chairperson, ASCI; and Dr David Morgado, Senior Energy Policy Specialist, AIIB.

Consolidation and emergence of large integrated energy players will reap economies of scale afforded by the growing Indian energy market

Mr Narayan Singh Kushwah, Hon'ble Minister of New & Renewable Energy, Govt. of Madhya Pradesh.

Plenary :New Opportunities for Innovative Finance

From left: Dr David Morgado, Senior Energy Policy Specialist, AIIB; Mr Manu Srivastava, Principal Secretary, New & Renewable Energy Department, Govt. of Madhya Pradesh.; Dr Pryadarshi Dash, Assistant Professor, RIS; Mr Ashwini Kumar, Head, Credit, Tata Cleantech Capital Limited; and Mr Somit Dasgupta, Member (Economic and Commercial), Central Electricity Authority.

Coal consumption is expected to double by 2040 but in relative terms, its contribution in energy mix slashes from 58 per cent in 2015 to less than 50 per cent in 2040

35 per cent share of RE in electricity by 2040; decentralized infrastructure than the capital intensive models of developed countries

Despite sharp dip in solar and wind prices, investments in the sector have not fallen

Mr Manu Srivastava, Principal Secretary, New & Renewable Energy Department, Govt. of Madhya Pradesh.

Total energy supply in the country is expected to go up by a multiple of around 3 times over 2012 to 1055-1184 kgoe per capita energy consumption by 2030

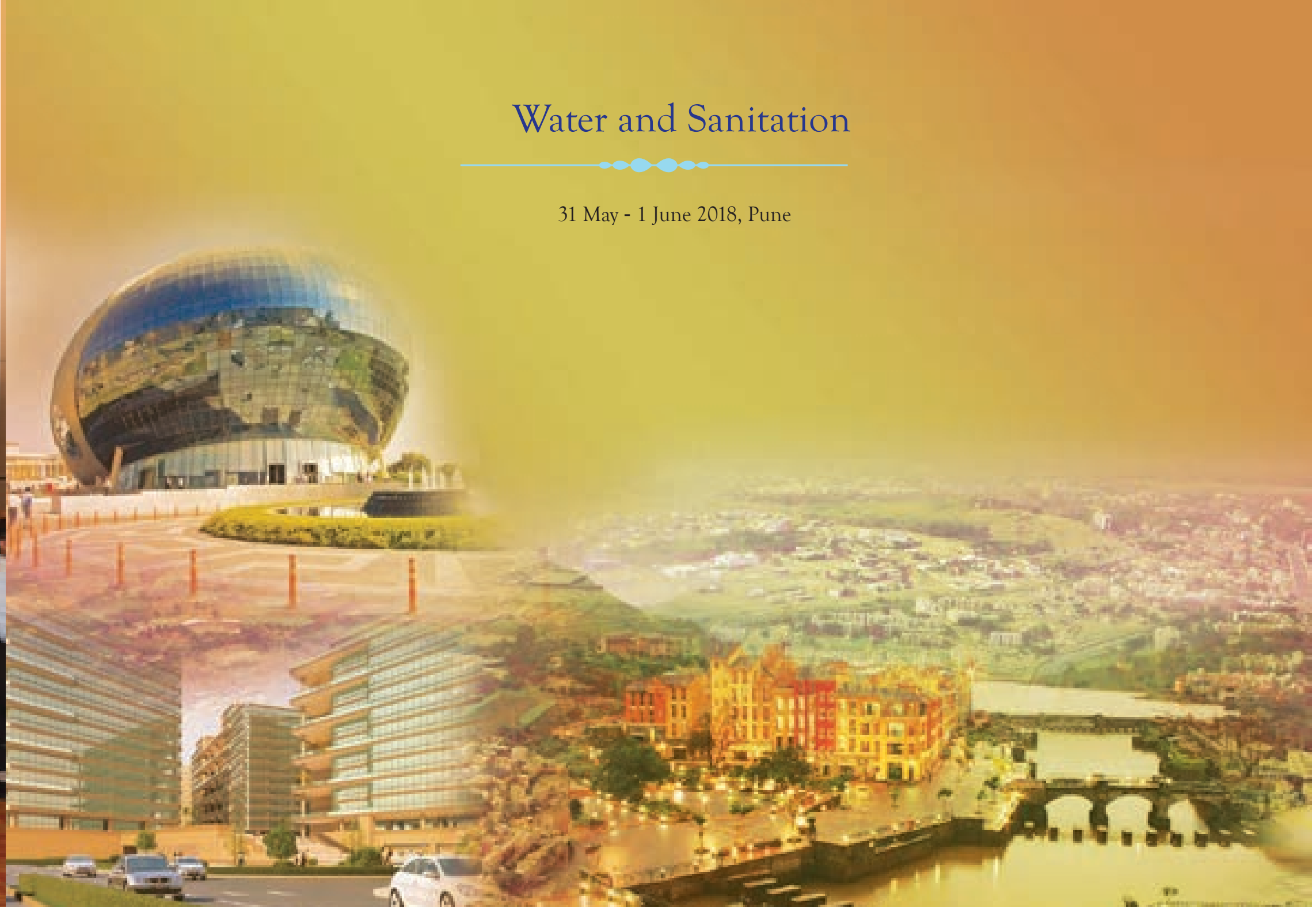
Share of Electricity in total energy demand as per National Energy Policy will rise to 26.1 per cent from 17 per cent now through policy action

National Energy Policy estimates that India's energy demand will increase by 2.7-3.2 times between years 2012 and 2040

Already in 2017, India's net capacity addition in renewables has exceeded traditional fuel for the first time

Water and Sanitation

31 May - 1 June 2018, Pune



Inaugural Session

From left: Ms Jyoti Vij, Deputy Secretary General, FICCI; Mr Parameswaran Iyer, Secretary, Ministry of Drinking Water and Sanitation, Govt. of India; Professor Amitabh Kundu, Distinguished Fellow, RIS, Dr Seshadri Chari; Member, Governing Council, RIS; Dr Kumar V. Pratap, Joint Secretary (IPF), Ministry of Finance, Govt. of India; and Mr Mukund Vasudevan, Managing Director, Ecolab, Co-Chair of FICCI Water Mission.

83%

is the extend of rural sanitation coverage, up from 39% at the time of inception of Swachh Bharat Mission

Key Takeaways from Pune

- With the vision of ensuring universal sanitation coverage, and providing every person in rural India with adequate safe water for drinking, cooking and other domestic basic needs on a sustainable basis, the government launched the Swachh Bharat Mission (SBM) and National Rural Drinking Water Program (NRDWP).
- Swachh Bharat Mission, launched on 2nd October 2014 aims to make India Open Defecation Free (ODF) by 2nd October 2019. Under this program, the rural sanitation coverage has increased from 39 per cent at the time of its inception to 83 per centcurrently. As of May 2018, over half of the country, including 3.7 lakh villages, 387 districts and 17 States/Union Territories of the country have declared themselves free from open defecation.
- Under NRDWP, the coverage of habitations with over 40 litres per person per day rural water supply has increased to 78 per cent. Of these, 57 per cent of the population is also covered by piped water supply through public standposts.
- As a remedy to ground water depletion, NRDWP also provides grants for construction of rural water supply schemes with special focus on water-stressed and water quality affected areas, rainwater harvesting and groundwater recharge measures, and for its operation and maintenance.
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT) promises 1.39 crore water connections ensuring water supply in every household by March 2020. Only 50per cent of rural households had piped water supply in 2017 and the Government of India aims to increase it to 90per cent by 2022.
- Aimed at providing sustainable and adequate drinking water in an integrated manner to the rural masses, 'Swajal' - community-led drinking water project was launched on March 22, 2018 (World Water Day). This program primarily aims at the empowering the village community, while focusing on the inclusion of women. Swajal will be rolled out in 115 Aspirational Districts identified by the government.
- At the state level, various schemes are adopted for better water management such as, dobha or farm ponds construction scheme for water conservation in Jharkhand, Mission Kakatiya for restoring all the minor irrigation tanks and development of irrigation infrastructure in Telangana, Mission Neeru Chettu for water conservation in Andhra Pardesh, Kapildhara scheme in Madhya Pradesh, Ushar Mukti to bring positive changes in the water situation in rain-fed areas in West Bengal & borewell recharge in Karnataka, etc among others.

EMERGING ISSUES

- India has only 4per cent of world's renewable water resources of which 80per cent are already used for agriculture. Nearly 2/3rd of land under cultivation in India relies on rain and underground water sources for irrigation, which makes India the highest consumer of groundwater. Additionally, 80per cent of India's surface is polluted which results in India losing 6 billion USD every year due to water related diseases.
- Waste generation, which is currently about 7 crore tons is expected to reach 37 crore tons by 2030. Further, there is almost no segregation of garbage at source which leads to various environmental probleMs
- Despite the remarkable performance of the initiatives undertaken by the government, some states like Odisha, Bihar, Puducherry and Uttar Pradesh are lacking in terms of provision of individual household latrines.

POLICY OPTIONS:

- Increasing demand for water has lead to severe deficit in river basins. In order to keep the water basins recharged and free from contamination, industrial waste management and reduction of fertilizer use have to be used. To optimize water use in irrigation, micro-irrigation and drip-irrigation for sustainable water management should be encouraged.

- Private sector can also play a role for better water management. In this regard, water footprint assessment of the private industry should be adopted. User charges for water should also be applied to control water use and water pollution. Out of the 3Ts – tax, tariff and (budgetary) transfers, tariffs are the most sustainable option.
- At least 67per cent of the wastewater generated from Class I cities and more than 90per cent of wastewater generated from Class II cities in India is not treated. Thus, private sector can be leveraged as a source of innovation and solutions. There are successful cases of Public Private Participation models such as that of Nagpur. In Nagpur, sewage water is being recycled for non-potable use in the industry.
- Right incentives for recycling and waste segregation have to be provided to tackle the challenges of landfill. Decentralized solutions and use of technology for water supply as well as sanitation should be implemented.
- Innovations in technology can play a major role in assisting the government to reach the set targets. For example, spatial data can be generated and used for effective planning and monitoring of water levels and sanitation coverage.
- Use of bio-toilets by the Indian Railway is a successful model of timelines and coverage. Another case in point is the Twin-pit Toilet which is most well-suited toilet technology for large parts of rural India and is recommended by the government of India and WHO. These best practices should be further scaled up and adopted across the country.
- To meet the increasing demand for water supply, an additional investment of about $29,100 crore would be required by 2030. However, the resources available are not sufficient to meet the entire demand. One way out is for the government to collaborate with other institutional investors and development banks like AIIB, ADB, World Bank etc.
- Across the globe, private sector finds it difficult to invest in water and sanitation. The range of issues includes tendering process, sustainable revenue/tariff risk, bankability of projects and lack of focus on issues of water quality beyond flow and supply. Credit enhancement is an innovative financial tool that can be used to address risks and boost access to affordable finance.
- To mobilize finance in the sanitation sector, the government has set up an arrangement of pooled funds called the Swachh Bharat Kosh in order to enable companies to contribute towards the programme. Local funds are being used for capex and opex for water supply scheme, rainwater harvesting, water treatment, retrofitting etc.
- Investment should be made in areas like scenario building software to inform policymakers and citizens of the implications of different patterns of water use should be made.
- Institutional issues that need attention include cost sharing and cost recovery procedures; regulatory issues around cost effectiveness, transparency, predictability, design, and capacity building; Monitoring, accountability and project evaluation; shift from output based to outcome based assessment; coordination, governance and social conditions

Plenary : Efficient Water Management and Building Resilient Infrastructure

From Left : Mr Arunavo Mukerjee, Vice President, Advisory Tata Cleantech Capital Limited; Mr Arun Lakhani, CMD, Vishvaraj Infrastructure Ltd.; Mr Sonmoni Borah, Secretary, Water Resources Department, Govt .of Chhattisgarh; Prof. Amitabh Kundu, Distinguished Fellow, RIS; Professor Ganesh Kawadia, Professor, School of Economics, Devi Ahilya University, Indore; Ms Jingmin Huang, Principal Urban Development Specialist, Urban Development; and Water Division, ADB; and Dr Riddhi Singh, Assistant Professor, Department of Civil Engineering, IIT Bombay.

From 50per cent of rural households that had piped water supply in 2017 the government aims to increase it to 90per cent by 2022

In 115 Aspirational Districts 'Swajal' - community-led drinking water project aims at the empowerment of the village community with focus on women

Atal Mission for Rejuvenation and Urban Transformation (AMRUT) promises 1.39 crore water connections ensuring water supply in every household by March 2020

Plenary: Drinking Water

From Left : Mr V.K. Madhavan, Chief Executive, WaterAid India; Mr Rajeev Kumar Vasudeva, Chief Engineer, Technical Cell Urban Development and Housing Department, Govt of Jharkhand; Dr Seshadri Chari, Member, Governing Council, RIS; Mr Romit Sen, Associate Director, WWF-India; and Mr Pinaki Bhadury, Business Head, Wipro Water.

India has only 4 per cent of world's renewable water resources of which 80 per cent are already used for agriculture

Plenary: Sanitation Infrastructure and Waste Management

From Left : Professor Amita Bhide, Tata Institute of Social Sciences; Ms Pratima Joshi, Executive Director and Founding Member, Shelter Associates; Dr Bindeshwar Pathak, Founder, Sulabh International Social Service Organisation; Mr Arun Baroka, Joint Secretary, Ministry of Drinking Water and Sanitation, Govt. of India, Mr A.K. Tiwari, Principal Executive Director/ Environment & Housekeeping Management, Railway Board, Ministry of Railway, Govt. of India; Prof. Sharad P. Kale, Head, Symbiosis Centre for Waste Resource Management, Pune; and Mr Hrishit Shroff, Executive Director, Excel Industries.

Plenary : Financing and Regulatory Issues in Water and Sanitation

From left : Mr Raghava Neti, Senior Water and Sanitation Specialist; The World Bank, Professor M.G. Chandrakanth, Director, Institute for Social and Economic Change; Amb. S.T. Devare, Chairman, Research Advisory Council, RIS; Ms Jingmin Huang, Principal Urban Development Specialist, Urban Development and Water Division, ADB and Ms Namita Vikas, Group President & Global Head- Climate Strategy& Responsible Banking, Yes Bank.

Mr Parameswaran Iyer, Secretary, Ministry of Drinking Water and Sanitation, Govt. of India.

Ms Jingmin Huang, Principal Urban Development Specialist, Urban Development and Water Division, ADB.

Dr Bindeshwar Pathak, Founder, Sulabh International Social Service Organisation.

Valedictory Session

From Left: Mr Deepak Mukhi, Head, FICCI Maharashtra State Council; Dr Bindeshwar Pathak, Founder, Sulabh International Social Service Organisation; Amb. S.T. Devare, Chairman, Research Advisory Council, RIS; and Dr Sabyasachi Saha, Assistant Professor, RIS.

7.5 crores household toilets built since 2nd October 2014 under Swachh Bharat Mission

Use of bio-toilets by the Indian Railway is a successful model of timelines and coverage

Water footprint assessment of the private industry should be adopted. User charges for water should also be applied to control water use and water pollution

Private sector can be leveraged as a source of innovation & solutions for water management as in Nagpur

Private Sector Participation and Innovation in Resource Mobilization

11 June 2018, Mumbai

Inaugural Session

From left : Mr Subhomoy Bhattacharjee, Consultant, RIS; Mr Deepak Mukhi, FICCI; Mr Sujoy Bose, CEO, National Investment and Infrastructure Fund; Dr Kumar V. Pratap, Joint Secretary (IPF), Department of Economic Affairs, Ministry of Finance, Govt. of India; Mr Shailesh Pathak, CEO, L&T Infrastructure Development Projects Limited; and Mr Jaspal Bindra, Chairman, FICCI Maharashtra State Council and Executive Chairman, Centrum Capital Ltd.

स्वच्छ भारत
एक कदम स्वच्छता की ओर

$ 526
BILLION
will be India's infrastructure investment gap by 2040, according to Economic Survey 2017-18

Key Takeaways from Mumbai

- The interest of private sector and that of government has moved in tandem to finance infrastructure in India. Innovations are happening in the realm of brownfield instead of greenfield investments.
- This means financing vehicles can be passive, mostly focussed on tenor and with very low risk appetite. This makes the pool very wide.
- Risk has migrated to the government books. These are the risks of delays in acquisition of land, risks of technology to be deployed and the risks of construction of the project.
- The change over has altered the format of classical private public partnership (PPP). While in the former the governments often offered land as equity to the private sector to construct the facility, the new model is more sophisticated.
- One of the first example of such project has been the successful Toll Operate Transfer bid for nine national highways completed in March this year. Macquarie group of Australis placed a successful bid of Rs 9,681 crore (approx $1.3 billion) against the government's expectations of Rs 6,258 crore. "This is the first such asset recycling process that has been undertaken by the government", reported The Economic Times newspaper. There were four bidders for the project.
- These projects are a part of the new approach of build-monetise-expand chain adopted by the Government of India to address the nation's infrastructure deficit. India possesses the largest infrastructure market outside the OECD in the world today and innovations are to be expected from among the bidders.
- Thus the government is interested to attract long term global capital through innovative instruments like Infrastructure Investment Trusts or InvITs. Envisaged as replicas of mutual funds, InvITs pool in money from investors for investment in a single asset that would yield cash flow over a long time stretch. The advantage of InvITs are they build in passive capital, through tax efficient structures. If a dividend stream is built into the returns that can be split into another monetised channel.
- While the first set of success of these models has been from sectors with established models of returns, the government has decided to expand the same into virgin sectors like the plans to clean the Ganga like a hybrid annuity model. An InvIT model can decouple the risk for investors to invest in projects meant to clean up segments of the river. Or freight terminals of railways can be offered for maintenance to the private sector.
- Another element in the measures undertaken to push infrastructure investment is the plan to launch a credit enhancement fund, within 2018. It is meant to raise the credit rating of bonds issued by companies that are invested in the infrastructure sector. The company would be set up as an NBFC for which AIIB has already promised a line of support.
- The underlying strategy for these interventions is that the government will not de-risk private sector participation in the infrastructure sector even as it goes about creating an environment where the risk reward ratio for the sector is balanced. It is also distinct from privatisation as the asset reverts to the government at the end of the term of the award.
- Government departments have become more efficient in seeking out bidders for these built projects. NHAI has used drones to map its assets and cut pits on roads to generate data on quality of roads built for investors to bid for asset maintenance programmes. The size of the initial offerings are small compared with mature markets, but is going in the right direction.

CONSTRAINTS

- Risks despite being cut down are germane to the projects. Those risks can emerge through aggressive bidding. In solar projects, where off take prices are guaranteed by states, this has been quite evident.
- Other risks are the fear of failure of any projects. Indian infrastructure projects showed a less than world average of 5per cent failure rate, that was compensated through re-negotiations of contract. The failure rate has now climbed to the world average.
- Risks are conveyed through pricing risks. The bidders need to buy insurance to cover for these risks but still the market is nascent. The other risks often mistreated are those of geography made more acute in the era of climate risks.
- And there are of course the fear of unknown like the fear of inflation that can upend any project calculation. Or risks like the political ones, but fund managers remarked those risk do not keep them awake at night.
- The risks can be solved if the companies recognise they are carrying too much assets on their books. So a recourse to the market could cut down risks. One of the ways those can be potentially solved is the household investment cocooned in government bonds are opened to investment in infrastructure papers. These offer long term windows but obviously cannot take on the risks well unless shepherded by the government as a money manager.

POLICY OPTIONS

- While the government would perceive the combination of its taking on the EPC risks with that of private sector management of asset maintenance as a fail safe mechanism to finance infra projects, for investors abroad the risks of exchange rate often do not get compensated. These are extended even more when Government of India uses its fiscal space for capital investment, as that puts pressure on the Indian rupee. A robust INR to other key currency pair could correct this risk.
- There is also the possibility of "deal hungry" multilateral institutions signing on to projects they have not done due diligence on. Yet it is possible to do hand holding of projects by such institutions to create bankable projects.
- Credit enhancement plans are useful interventions being planned by the Indian government. It takes a project a little more away from risk of default and thus increases their bankability. Some of the hygiene factors that should be built in are provisions for penalty, if there is a delay in project execution, even for government agencies.
- To get over the problem of missing middle in the market, there is no getting away from the need for an aggressive bond market. Such a market acts as a pricing signal that allows project risks to be priced properly. One of the factors that need to be considered is whether there should be fixed interest regime for projects that are especially very long term.
- For getting all these elements together it is important to appoint regulators from the private sector. The person must have skin in the game and be willing to allow pricing to move dynamically.
- This is particularly significant to cut into the risk of renegotiation of contracts. So regulators need to ensure that the rules of the sector are fungible across the border. Else the projects build in costs to make up for the so called country risks. Those create room for dissonance.
- It has to be however accepted that renegotiation has to be accepted, especially in countries like India where the volume of infrastructure projects is going to be in multiples of those contracted so far. Companies, even with triple A rating do ask for such renegotiation but the room for those has to be created only after empowering the regulators and ensuring that the rules are kept simple.
- This is particularly so as the flow of funds from outside India is expected to be enormous. Since most of the projects will be steered by state governments the need to ensure that regulatory risks and contract risks are minimised becomes significant.

Plenary: Key Risks for Infra Spending

From Left: Mr Sajjid Chinoy, India Economist, JP Morgan; Mr Sudip Sural, Senior Director, Infra and Public Finance, CRISIL Infrastructure Advisory; Mr Praveen Gupta, Managing Director & Chief Executive Officer, Raheja QBE General Insurance;Mr Subhomoy Bhattacharjee, Consultant, RIS; Mr Suneet Maheshwari, Founder & Managing Partner, Udvik Infrastructure Advisory; Mr Raghwendra Pande, Head Infrastructure & Real Estate Sector,Investment Banking, ICICI Securities Limited; and Mr Soumyajit Neogi, Associate Director, India Ratings.

Plenary : Bringing Sovereign Funds & Multilateral Institutions into the Game

From left: Prof. V. Ravi Anshuman, IIM Bangalore; Mr R Venkatraman, Head- Infrastructure & Project Finance, India Ratings and Research; Mr Saugata Bhattacharya, Senior Vice President, Axis Bank ; Mr Gavin McGillivray, Head, Department for International Development (DFID), UK Govt; Mr Pushkar Kulkarni, Principal – Infrastructure Private Investment, CPP Investment Board; Mr Suvek Nambiar, Managing Director, India Infradebt Limited; Mr Donald Lambert, Principal Finance Specialist, SAPF, ADB and Mr B. Mehrotra, Investment Officer, International Finance Corporation.

Plenary : Regulatory Challenges for Domestic and Cross border Projects

From Left: Dr Amir Ullah Khan, Director Research, Aequitas; Mr N. K. Chand, Commissioner, Transfer Pricing; Mr Shiva Rajaraman, National Head-Strategic Initiatives & Chief Executive Officer, L&T Infra Debt Fund Limited; Mr Sanjay Chadha, Additional Secretary, Ministry of Commerce, Govt .of India; Mr V.S. Chauhan; Mr David Rasquinha, Managing Director, Export-Import Bankof India; Mr Shiva Rajaraman, National Head- Strategic Initiatives & Chief Executive Officer, L&T Infra Debt Fund Limited; and Mr Pankaj Kalani, SVP Finance, KEC International Limited.

Innovations are happening in the realm of brownfield instead of greenfield investments. Toll Operate Transfer bid for nine national highways completed in March this year

Credit Enhancement Fund to be launched by Govt. of India within 2018 to raise credit rating of bonds

Innovative instruments like Infrastructure Investment Trusts or InvITs gaining ground as pools of passive capital through tax efficient structures

The Final Word: Risk-reward Ratio for Private Sector

(From Left : Mr Agris Preimanis, Director, European Bank for Reconstruction and Development (EBRD), Kazakhsta office; Dr Rathin Roy, Member, PM's Economic Advisory Council; Mr Amitabh Jain, Principal Secretary at Govt. of Chhattisgarh; Dr Kumar V. Pratap, Joint Secretary (IPF), Department of Economic Affairs, Ministry of Finance, Govt. of India and Mr Najeeb Haider, Principal Strategy Officer, AIIB.

Mr Shailesh Pathak, CEO, L&T Infrastructure Development Projects Limited.

Plans by Govt to launch a credit enhancement fund, within 2018. It is meant to raise the credit rating of bonds issued by companies that are invested in the infrastructure sector

Dr Rathin Roy, Member, PM's Economic Advisory Council.

Of the $4.5 trillion needed infrastructure investment, as per current trends India can meet around $3.9 trillion

Role of responsible regulators is important. This is particularly significant to cut into the risk of too many renegotiation of contracts

One of the ways those can be potentially solved if domestic household investment cocooned in government bonds are opened to investment in infrastructure papers

Multilateral institutions play the role of setting hygiene factors in making infra investments respond to social concerns. These need them to be less deal hungry at times


Futuristic, Resilient and Digital Infrastr
Financing Digital India and Next Generation Dig
Infrastructure: Role of the Public and Private Sec
Physical and Social Infrastructure
for Regional Development
Drive to promote use of twin pit toilets in rural areas
TOILET
INDIAN EXPRESS
Asian Infrastructure Investment
Bank plans to invest $200 million in
India's National Investment and
Infrastructure Fund
Asian Infrastructure Investment Bank
Annual Meeting 2016
Curtain Raiser Ceremony
The Telegraph
24x7 water supply will need metres,
citizens to pay, says ADB specialist

NOTES

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For more information about RIS and its work programme, please visit its website: www.ris.org.in

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