China plans tunnel from Brahmaputra

Chinese engineers are testing techniques that could be used to build a 1,000-km-long tunnel, the world's longest, to divert water from the Brahmaputra river in Tibet, close to Arunachal Pradesh, to the parched Xinjiang region, a media report said on Monday.

The move, that is expected to "turn Xinjiang into California", has raised concerns among environmentalists about its likely impact on the Himalayan region, Hong Kong-based *South China Morning Post* reported.

Water would be diverted from the Yarlung Tsangpo river in southern Tibet, which turns into the Brahmaputra once it enters India. The proposed tunnel would provide water to China's largest administrative division, comprising vast swathes of deserts and dry grasslands.

END

Why does the Indian State have a stepmotherly attitude towards migrants?

A report released by the World Economic Forum (WEF) ---- Migration and Its Impact on Cities ---- has estimated at least 5-6 million migrants are on the move every year in India. Citing a recent study undertaken as part of Economic Survey 2017, the WEF report said, the rate of inter-state migration has doubled between 2001 and 2011. This is not surprising: Despite years of the economic boom, inequities still persist between states, and rural and urban areas. For example, Bihar has a per capita income roughly equivalent to Somalia (approximately $520) and a birth rate of 3.4 children per woman. On the other hand, Kerala has a per capita income that is four times more (approximately $2,350) and a birth rate of 1.6 children per woman. This puts the state on a par with Denmark. Economic well-being, however, is not the only reason for mobility. People move to escape caste oppression or civil unrest. Marriage is also another common driver for migration.

Even though migrants add substantially to the economy, they are always not seen favourably by the recipient states/cities. They are considered a burden, often accused of indulging in criminal activities, and exploited for political gains. While such an attitude is wrong and unfair, it creates roadblocks for the migrants. Among these are lack of formal residency rights, lack of identity proof; lack of political representation, inadequate housing, low-paid, insecure or hazardous work and extreme vulnerability of women and children to trafficking and sex exploitation. Then there is exclusion from State-provided services such as health and education and discrimination based on ethnicity, religion, class or gender.

These problems arise because social and political rights in this country are based on the assumption that people are sedentary. Under the public distribution system, for example, people's ration cards are invalid in their destinations of work. These migrants depend either on their employer or labour contractor for food provisions or purchase food in the open market. The Aadhaar project seeks to remedy this basic problem of establishing identity and ensuring portability of entitlements.

While the socio-economic factors associated with international (cross-border) migration dynamics have been well documented, processes of internal migration, within developing countries in particular, are not as understood enough. In India, internal migration has been accorded very low priority by the government, partly due to a serious knowledge gap on its extent, nature and magnitude. This must change. National and state governments have a clear role and responsibility t not only in protecting and promoting migrants' access to social services, but also in enabling migrants to become socially and politically active citizens.

END

EESL launches $454 million 'Creating and Sustaining Markets for Energy Efficiency' project in partnership with the GEF

EESL's projects, under one of the largest funding by GEF till date, will mitigate 60 million tonnes of CO_2 eq

UN Environment's 'District Energy in Cities' Initiative already identified $600 million of Energy Efficiency projects across 5 cities in India

Recognizing India's efforts towards a low emission-economy and focusing on energy efficiency programmes, the Global Environment Facility (GEF) has now partnered with Energy Efficiency Services Limited (EESL), under Ministry of Power, for the project 'Creating and Sustaining Markets for Energy Efficiency', here today. The project will receive a composite funding of $454 million comprised of the GEF grant of $20 million and co-financing of $434 million in the form of loans and equity, including a $200 million loan from the Asian Development Bank (ADB). EESL further proposes **Energy Efficiency Revolving Fund (EERF)** for sustainable funding mechanism of energy efficiency projects in the country.

The EERF mechanism will support the **'proof of concept' investments** for the new technologies of super-efficient ceiling fans, tri-generation technologies & smart grid-applications and ultimately scaling up energy efficiency financing and programme development to help cover initial investment costs of identified energy efficiency programmes like street lighting, domestic lighting, five-star rated ceiling fans and agricultural pumps, in the country. This unique model will help in addressing the upfront risks of new technologies. Further, the accrued savings from these technologies can then be used to finance additional projects, which would allow capital to revolve as a sustainable funding mechanism.

The GEF project further brings together many technical and financing partners including United Nations Environment (UN Environment), Asian Development Bank (ADB) and *Kreditanstalt für Wiederaufbau* (KfW) which aims to mitigate 60 million tons of CO_2 eq *(carbon dioxide equivalent)*, that will enable a total direct energy savings of 38.3 million GJ by 2022 and 137.5 million GJ by 2032. (1 GJ = 277.778 kWh)

Addressing the gathering, Shri Ajay Kumar Bhalla, Secretary, Ministry of Power, said that currently around two-thirds of total power generation capacity in India is based on fossil fuels. By 2030, India is committed to achieve 40% of the installed capacity based on clean energy sources. To achieve this target, it is imperative to create awareness in the citizens, especially among youth, to

encourage energy efficiency measures like use of electric vehicles, energy efficient building codes etc., he added.

Speaking on the occasion, Shri Anil Kumar Jain, Additional Secretary Ministry of Environment, Forests and Climate Change, said that the overall size of energy efficiency market in India is estimated to be $23 billion. Initiatives like these seek to tap that market by implementing an innovative business model that is scalable, flexible, embraces different and emerging technologies and has incentives for all stakeholders.

Ms Naoko Ishii, Chairperson and CEO, GEF said that with the strong leadership of EESL and the Government of India, the penetration of these clean energy technologies will help India leapfrog to a more sustainable future while helping reduce local and global emissions.

Kenichi Yokoyama, Country Director of India Resident Mission of ADB, said that ADB will partner EESL to implement energy efficiency projects in India to facilitate sustainable growth by addressing climate change issues, boosting the economy and generating greater employment in the country.

Mr. Geordie Codville of the UN Environment said that the project is aimed at scaling up energy efficiency efforts to achieve India's Intended Nationally Determined Contribution (INDC) goals and ultimately the UN Sustainable Development Goals (SDGs).

EESL also has its sights set on district cooling systems which can reduce energy demand for cooling by up to 50 percent. EESL has partnered with **UN Environment's District Energy in Cities Initiative**, which has already identified $600 million of projects across five cities in India.

GEF is an international partnership of 183 countries, international institutions, civil society organizations and the private sector that addresses global environmental issues. The funding announcement was made at the launch of the **GEF-6 fund** which supports two projects – 'Creating Markets for Energy Efficiency' and 'District Energy in Cities'.

Other dignitaries present on the occasion were Shri Raj Pal, Economic Advisor, Ministry of Power, Shri Saurabh Kumar, MD, EESL and other senior officers of the Ministry and PSUs under it.

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RM/VM/AS

END

ISA, EBRD ink pact on solar energy

The International Solar Alliance (ISA) and the European Bank for Reconstruction and Development (EBRD) on Thursday signed a Joint Financial Partnership Declaration for the promotion of solar energy.

"India has been in the forefront of the 42-nation International Solar Alliance," Finance Minister Arun Jaitley said while speaking on the occasion. "Our energy requirements are huge and [we] want to make optimal use of our new and renewable sources of energy."

Earlier, interim Director General of the ISA Upendra Tripathy said that the collaboration between the ISA and the EBRD would also help funding of solar projects both in African and other countries.

END

FM: India has pledged unequivocal commitment for furthering the cause of New and Renewable Energy;

International Solar Alliance (ISA) and the European Bank for Reconstruction and Development (EBRD) sign Joint Financial Partnership Declaration to deepen the cooperation in support of Renewable Energy.

The International Solar Alliance (ISA) and the European Bank for Reconstruction and Development (EBRD) signed here today the Joint Financial Partnership Declaration in the august presence of the Union Minister of Finance and Corporate Affairs, Shri Arun Jaitley with an objective to deepen the cooperation in support of Renewable Energy.

ISA and EBRD have joined hands for promotion of Solar Energy. From ISA's side, Shri Upendra Tripathy, the Interim Director General ISA and on behalf of EBRD Ms. Nandita Parshad, Managing Director EBRD for Energy and Natural Resources signed the declaration. During the signing ceremony Shri Anand Kumar Secretary, Ministry of New & Renewable Energy, Government of India, H.E. Mr Alexandre Ziegler, Ambassador of France to India and Sir Suma Chakrabarti, EBRD President were also present.

Speaking on the occasion, the Union Finance Minister, Shri Arun Jaitley said that India has been in the forefront of the 42 nation International Solar Alliance. He said that India under the leadership of Prime Minister Shri Narendra Modi has pledged unequivocal commitment for furthering the cause of New and Renewable Energy since the Paris COP21 UN Climate Change Conference. Shri Jaitley said that our energy requirements are huge and want to make optimal use of our New and Renewable Sources of energy. The Finance Minister congratulated both ISA and EBRD for partnering with an objective to deepen cooperation in support of renewable energy. Shri Jaitley said that ISA has taken a giant leap forward to mobilise international support for investment in Solar Sector. He added that ISA need to firm-up such financial partnership deals with more Multilateral and Bilateral Donor Agencies in order to meet its stated objectives of getting better Technology; aiding easier costing to improve affordability of Solar Energy. The Finance Minister Shri Jaitley urged both the signing parties to go in for innovation of New and Dynamic Mechanism for credit enhancement and risk mitigation in solar sector. Citing the first Financial Partnership collaboration of ISA with the World Bank, Shri Jaitley urged that more and more multilateral and development banks should come forward and join hands with ISA in help fulfilling the objectives of massive and affordable deployment of solar among 121 ISA member countries.

Earlier, Shri Upendra Tripathy, the Interim Director General ISA informed that the ISA and EBRD have agreed to strengthen cooperation in pursuit of their shared goals of mobilising green energy financing. The collaboration will provide an opportunity to EBRD to support solar energy investment in the least developed countries especially in Africa. This will also help funding of solar projects both in African and other countries. He also stated that more such financial partnership deals shall be signed by the ISA in near future to achieve its mandate in a proper and effective manner.

Speaking on the occasion, Sir Suma Chakrabarti, EBRD President stated that this is a very important agreement for the EBRD, which has always been eager to share its expertise with new partners and also to learn from them. He said that with the ISA, we share the vision of sustainable development and of green energy, which ultimately benefits the global economy.

ISA is working for deployment of over 1000 GW of solar energy and mobilising more than US$ 1000 billion into solar energy by the year 2030. Similarly the European Bank for Reconstruction and Development (EBRD) is keenly interested to increase its green financing portfolio to 40% of its annual business. To this effect the EBRD launched Green Economy Transition Approach in 2015. Till date, the EBRD has invested more than €4 billion directly in renewable energy, supporting projects in over 20 countries and funding more than 6.5 GW of capacity.

The International Solar Alliance is an initiative jointly launched by the Prime Minister Shri Narendra Modi and the President of France on 30th November 2015 at Paris, in the presence of the Secretary General of the UN, on the side lines of COP21 UN Climate Change Conference. The main objective of ISA is to undertake joint efforts required to reduce the cost of finance and the cost of technology, mobilize more than US $ 1000 billion of investments needed by 2030 for massive deployment of solar energy, and pave the way for future technologies adapted to the needs of 121 countries lying fully or partially between the Tropics. So far 43 countries have signed the Framework Agreement of the ISA, and out of which 14 have also submitted the Instrument of ratification to the depository i.e. Ministry of External Affairs, Government of India. ISA will be the first international inter-governmental treaty based organization to be headquartered in India.

DSM/SBS/KA

END

Financial Assistance of Rs 2,302.05 Crore for Projects under Coastal Berth Scheme of Sagarmala

Scope of Coastal Berth Scheme expanded to cover DPR preparation

The Ministry of Shipping has taken up projects worth Rs 2,302 crore for financial assistance under the Coastal Berth Scheme of the flagship Sagarmala Programme. The Ministry, after due appraisal in consultation with NITI Aayog and Department of Expenditure, has extended the period of the scheme for three years, upto 31st March, 2020 and expanded its scope to cover capital dredging at Major Ports and preparation of DPR for coastal berth project, in Oct 2017.

The projects under Coastal Berth Scheme of the flagship Sagarmala Programme are distributed over eight states with the highest number of projects in Maharashtra (12 projects), Andhra Pradesh & Goa (10 projects), Karnataka (6 projects), Kerala and Tamil Nadu (3 projects), Gujarat (2 projects) and West Bengal (1 project). Out of the 47 projects, 23 projects worth Rs 1075.61 crore have been sanctioned for total financial assistance of Rs 390.42 crore and Rs 230.01 crore has been released to Major Ports, State Maritime Boards and State Governments. The remaining 24 projects are under various stages of development and process of approval.

The most recent beneficiaries of the scheme were Jawahar Lal Nehru Port Trust (JNPT) and Karnataka Government respectively for developing coastal infrastructure at Jawahar Lal Nehru Port, Karwar Port and Old Manglore Port. Rs 25 crore were sanctioned for construction of coastal berth (270m x 30m) at JNPT . Rs 114.4 crore were sanctioned for Karnataka Government for extension of the existing Southern breakwater by 145 metres, construction of a new North breakwater of 1160 metres, construction of coastal berths at Karwar port and construction of coastal berth an capital dredging at Old Manglore port .

The Coastal Berth Scheme aims to provide financial support to ports or state governments for creation of infrastructure for movement of cargo and passenger by sea or national waterways. The admissible financial assistance from Central Government is 50% of the total cost of the project subject to: (i) a maximum of Rs 25 crore for projects relating to construction/up-gradation of coastal berths by Major/Non-Major Ports, (ii) a maximum of Rs 10 crore for construction of platforms/jetties for hovercrafts & seaplanes by Ports/State Governments & passenger jetties in National Waterways and islands by

State Governments, (iii) a maximum of Rs 15 crore for mechanization of berths by Major/Non-Major Ports (iv) a maximum of Rs 50 crore for capital dredging of Major Ports/operational Non-Major Ports ; and (v) a maximum of Rs 50 crore for construction of breakwater for existing and Greenfield Ports. The financial assistance will also be provided for the preparation of DPRs for the projects to be considered under this scheme. The construction of passenger jetties also includes construction of terminal building and allied infrastructure. The balance expenditure has to be incurred by the respective Ports/ concerned State Governments (including State Maritime Boards) from their own resources.

Once completed, the projects will help to promote coastal shipping and increase its share in domestic cargo movement in India. Better infrastructure for coastal shipping will decongest rail and road network besides ensuring cost competitive and effective multi-modal transportation solution. The country has high potential to use coastal shipping for its internal cargo movement given its 7500 kms long coastline.

NP/MS

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Shri Nitin Gadkari says government is committed to providing world class transport and logistics infrastructure in the country within two years

Work has begun for setting up Logistics Parks at Chennai, Bangalore, Hyderabad, Vijayawada, Surat and Guwahati

Shri Nitin Gadkari, Union Minister of Road Transport & Highways, Shipping, Water Resources, River Development and Ganga Rejuvenation, has reiterated the Government's commitment for providing world class transport and logistics infrastructure in the country within to support the growth of economic activity. He was addressing a session on **Opportunity in Infrastructure, Logistics Technology and Equipment** in the World Food India 2017 conference in New Delhi today.

Shri Gadkari informed that the rate of construction of National Highways has gathered considerable momentum. The country had just 96,000 km of NH three years back, but this has grown to nearly 1.7 lakh km, and will soon reach a length of 2 lakh km. This will provide more farmers in remote areas with access to markets for their produce .

The Minister further said that 44 Economic Corridors and 24 Multi Modal Logistics Parks have been planned under the Government's flagship programme Bharatmala. These are being planned on the hub and spoke model to facilitate efficient movement of freight along routes of economic importance. The Multi Modal Logistics Parks are being planned as centres of freight aggregation with warehousing, cold storage and other such facilities. These parks will be built on NH outside cities, so they will help reduce traffic congestion and also reduce pollution. Shri Gadkari informed that work has already begun for setting up Logistics Parks at Chennai, Bangalore, Hyderabad, Vijaywada, Surat and Guwahati. The Economic Corridors and Multi Modal Logistics Parks will facilitate faster movement of farm produce to food processing centres and to markets. This will raise the income of farmers, give a boost to the food processing industry and create a large number of jobs.

Shri Gadkari also said that the Sagarmala Programme of the Shipping Ministry will also be contributing to the growth of the country's food economy in a big way. 14 Coastal Economic Zones have been planned under this programme. Two mega food processing parks are being planned at Kakinada and Satara and a cost of Rs 140 Crores. Support is being given to fishermen under the programme to develop their skills and raise their productivity. Facility for processing, grading and packaging of fish will be developed at

Paradeep Port. In addition to this, 111 waterways are being developed as National Waterways. River Ganga, Brahmaputra, Barak are already under development. Water transport will reduce logistics costs, which in turn will benefit the food processing industry. The development of River Ganga and Brahmaputra for transport will also make it easier to move our produce to Bangladesh. Further, the efficiency of the 12 major ports has been growing rapidly, and they have been making profits consistenty over the last three years. Dry ports are being developed at Jalna, Vidarbha and Nasik to begin with. The availability of ports will give a boost to movement of goods.

In addition to developing the road and water transport infrastructure, Shri Gadkari informed that the government is also giving priority to developing micro or drip irrigation in the water deficient regions of the country. 13 river linking projects are also on the anvil of which three will be done within three months. All these projects will improve the availability and utilization of water and raise agricultural productivity.

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NP/ MS

Need to focus on planning and design for sustainable and clean urban mobility: Vice President

Inaugurates 10th Urban Mobility India Conference and Exhibition, 2017 & CODATU XVII Conference

The Vice President of India, Shri M. Venkaiah Naidu has said that there has to be an increased focus on planning and design for sustainable and clean urban mobility. He was addressing the Inaugural Session of 10th Urban Mobility India Conference & Exhibition, 2017 and CODATU XVII Conference, in Hyderabad today. The Minister of State for Housing and Urban Affairs (I/C), Shri Hardeep Singh Puri, the Deputy Chief Minister of Telangana, Shri Shri Mohammad Mahmood Ali, the President CODATU, France, Mr. Dominique BUSSEREAU, the Ambassador of France to India, Mr. Alexandre Ziegler and other dignitaries were present on the occasion.

The Vice President said that urbanisation is one of the realities of the 21st Century, which is called as urban century. He further said that the 2011 Census has clearly shown that urbanization in India is gaining momentum where every third person is living in urban areas. The current urbanization patterns are causing unprecedented challenges to urban mobility systems, he added.

The Vice President said that urban transport accounts for about 25% of the greenhouse gases worldwide. He further said that it is also the major cause of local air and noise pollution in cities which cause ill health. The traffic congestion created by the transportation systems is responsible for significant economic and productivity costs for commuters and transporters, he added.

The Vice President said that increased motorisation in the Indian cities have caused an ever increasing trend of congestion, pollution, increased travel time, thus producing negative externalities. He quoted Lewis Mamfort, the great American urban architect and historian, as saying, "Building more roads to prevent congestion is like a fat man loosening his belt to prevent obesity."

The Vice President said that India has made huge strides in provision of public transport systems in many cities. He further said that Metro rail has seen a rapid growth in many cities with Delhi taking the lead and Bus Rapid Transit System (BRTS) has also seen a phenomenal growth with around 250 kms operational and around 250 kilometers under construction in various cities. He quoted Mr. Enrique Penelosa, the present mayor of Bogota, as saying, "A developed country is not where the poor use cars but where the rich use public transport."

The Vice President said that promoting Non-Motorized Transport infrastructure for walking and bicycle not only acts as last mile connectivity for well-established public transport systems but also has a positive impact on health. He further said that in the pursuit of sustainable mobility, promoting walking and cycling is very important. Need for more pedestrian paths and bicycle

tracks to promote healthy lifestyle, combat diabetes & obesity and reduction pollution, he added.

The Vice President congratulated the Government of Telangana for the implementation of the Hyderabad Metro Rail Project which, on completion, will become the World's largest Metro Rail Project to be implemented in Public Private Partnership mode. He conveyed his best wishes to all in their efforts to create better mobility systems for better quality of life in urban centres.

Following is the text of Vice President's address:

"I am delighted to be with you today at the inaugural session of the 10th Urban Mobility India Conference and Exhibition. It is heartening to know that this event is being organized by the Ministry of Housing and Urban Affairs, Government of India in partnership with the Government of Telangana. CODATU, an organization based in Paris, France, and involved in urban mobility, is also holding its 17th conference in conjunction with this conference.

This is a flagship annual event of the Ministry of Housing & Urban Affairs, Government of India and has played a significant role in churning of ideas and exchange of knowledge in the field of urban mobility over the years.

Urbanisation is one of the realities of the 21st Century, which is called as urban century. The 2011 Census has clearly shown that urbanization in India is gaining momentum where every third person is living in urban areas. Urban sector's share of country's GDP is expected to increase from its current 66 percent to 75 percent by 2031. The current urbanization patterns are causing unprecedented challenges to urban mobility systems.

Despite the increasing level of urban mobility infrastructure worldwide, access to places/activities and services has become increasingly difficult in the urban areas. For decades, most of the countries have experienced rapid urban growth coupled with increase in use of motor vehicles. Unplanned urbanization has, in many cases, led to urban sprawl and thus generating even higher demand for motorized travel. This has resulted in a range of economic, social and environmental challenges.

Urban transport accounts for about 25% of the greenhouse gases worldwide. It is also the major cause of local air and noise pollution in cities which cause ill health. The traffic congestion created by the transportation systems is responsible for significant economic and productivity costs for commuters and transporters. These challenges are more pronounced in cities of developing countries. These get further compounded by the fact that in the coming decades 90 % of the global population growth will take place in the cities of these countries. These cities are already struggling to meet the increasing demand for investment in transport systems.

In many cities of the world, the mistake of drawing a similarity between mobility and transportation has fostered a tendency towards increasing motorization and a propensity to extend the network of urban roads.

India has also seen a similar situation. Increased motorisation in the cities have caused an ever increasing trend of congestion, pollution, increased travel time, thus producing negative externalities. With regard to increasing the road length, I am reminded of a famous quote by Lewis Mamfort, the great American urban architect and historian, who said, "***Building more roads to prevent congestion is like a fat man loosening his belt to prevent obesity***."

Needless to say, there has to be an increased focus on planning and design for sustainable and clean urban mobility. Mobility is not only a matter of developing transport infrastructure and services. It is also about overcoming the social, economic, political and physical constraints of movements. Recognizing mobility as an entitlement implies a focus on people, and removing the obstacles preventing people from reaching destinations.

Public Transport: While private motorisation cannot be wished away completely, providing an affordable, comfortable, reliable and safe public transport can reduce the demand of private motorised vehicles. Global statistics demonstrate that the trips to work made in the world are around 30% on public transport. In India, the average share of public transport in 2011 was 30%. This will probably reduce to 22% by 2021. The lack of affordable and accessible public transport systems has led to the proliferation of informal operators, such as private minibus and microbus services. In some cities, informal carriers are the only forms of public transport available.

High capacity public transport systems are needed to reduce the negative externalities like air and noise pollution, accidents and greenhouse gas emissions. They also provide inclusive access to low income groups.

It is heartening to note that India has made huge strides in provision of public transport systems in many cities. Metro rail has seen a rapid growth in many cities with Delhi taking the lead. Bus Rapid Transit System (BRTS) has also seen a phenomenal growth with around 250 kms operational and around 250 kilometers under construction in various cities. I would like to share with you a quote by Mr. Enrique Penelosa, the present mayor of Bogota, who said that *"A developed country is not where the poor use cars but where the rich use public transport."*

Last Mile Connectivity: For high capacity public transport to become popular, it is important to provide the last mile connectivity. If the commuter does not get comfortable mode for reaching the metro station or the bus stop, he is likely to use his personal vehicle.

Non-Motorised Transport: Promoting Non- Motorized Transport infrastructure for walking and bicycle not only acts as last mile connectivity for well-established public transport systems but also has a positive impact on health. In the pursuit of sustainable mobility, promoting walking and cycling is very important. Development of pedestrian pathways and dedicated cycle tracks will go a long way in not only promoting sustainable urban transport but also improving the overall ecosystem of the public transport in the city. Need for more pedestrian paths and bicycle tracks to promote healthy lifestyle, combat diabetes & obesity and reduction pollution.

Intermodal Integration: Integration between various modes of transport provides seamless connectivity for the commuters. This may include joint (transfer) stations, coordinated scheduling, joint fares, single ticket or common mobility card and combined public information activities. Basically integration can occur at three levels namely physical, operational and fare integration. Physical integration allows for close proximity of stations facilitating direct connection from one mode to another usually including transfer facility at stations. Cities in Western Europe have taken the lead in facilitating inter modal integration especially between public and non-motorised transport. Kochi metro has introduced a common mobility card which can be used in the metro, bus as well as in the water transport system. Other metro systems like Bangalore metro, Nagpur Metro &Lucknow metro are also adopting similar common mobility card.

Integration of Land Use and Transport Planning: Development of a sustainable transportation system starts with the organization of the urban space with the main objective of reducing the need for travel and the length of travel distance. Neglecting the connection between land use and mobility has created the urban sprawl as can be seen in many cities. An integrated planning approach will yield positive results. One strategy for achieving this can be through Transit Oriented Development (TOD).

Transit Oriented Development (TOD): Transit Oriented Development is a concept which emphasizes mixed and dense development around the high capacity public transport stations. By concentrating a mix of pedestrian oriented development around the metro or BRT stations, residents are more likely to catch a metro or a bus for out-of-neigbourhood trips and walk or bicycle for within the neighbourhood trips. Integrating public transport systems and the built environment makes both the public transport system and the city successful.   I am glad to note that Ministry of Housing and Urban Affairs have formulated a National Transit Oriented Development Policy which can be used to formulate city specific TOD policy. With the increasing metro rail and BRT systems, cities should be encouraged to adopt the TOD policy.

Innovative Financing and Land Value Capture: Investment requirements in high capacity Public Transport Systems can be huge due to the large gap in demand and capacity. Therefore it is important to explore the possibility of innovative means of financing. Issuance of bonds and financing of one corridor through land value capture by Bangalore metro is an example how agencies are trying to leverage on the innovative means of financing. The Land Value Capture Policy recently issued by the Government of India can be adopted by various agencies with help and facilitation by the respective city and state governments.

Public Private Partnership: In recent times, more and more cities have chosen the Public Private Partnership (PPP) model for development and implementation of urban transport projects, to leverage both public and private resources and expertise. Some of the cities which have tried the PPP model in some form or the other in either provisioning of the metro rail or other high capacity public transport systems are Bangkok, Kuala Lumpur, Manila, Buenos Aires, Rio de Janeiro, Singapore, Hong Kong, and London.

I would like to congratulate the Government of Telangana for the speedy implementation of the Hyderabad Metro Rail Project which, on completion, will become the World's largest Metro Rail Project to be implemented in Public Private Partnership mode.

A holistic and integrated approach to urban land use and transport planning and investment is needed if urban areas are to become socially, environmentally and economically sustainable.

Many of the environmental challenges in the urban transport sector are rooted in its reliance on the non-renewable fossil fuel to propel private motor vehicles. There is a need to initiating a shift to clean fuels, retiring old polluting vehicles, strengthening mass transportation, and promoting use of electric vehicles, ensuring parking spaces before registering a car at-least in large metro cities.

Better urban planning and a modal shift to public transport along with long-term transport plans are necessary to facilitate the growth of cities in a manner that does not damage the environment. Technical, fiscal and policy actions are needed to direct transport growth towards the path of sustainability. Urban mobility is finely woven into the spatial, social, economic, political and environmental fabric of cities.

I would reiterate that urban transport is one of the key elements of urban infrastructure that calls for urgent action. The future of transportation in lies in sustainable smart mobility and eco-friendly alternatives. The planners, city authorities and civil society have all to join the mission to make our cities a better place to live in.

Urban Mobility India Conference provides such a forum for stakeholder participation in understanding various contemporary issues of urban transport, benefit from the experiences of international and domestic experts, get knowledge about the best practices globally and interact with the peer groups from different organizations.

I convey my best wishes to all of you in your efforts to create better mobility systems for better quality of life in urban centres.

Thank you! Jai Hind!"

<p style="text-align:center">***</p>

KSD/BK

The problem of congestion in cities is a problem of cars, not rickshaws

A 12-member committee set up by a directive of the Delhi High Court has recommended that the number of e-rickshaws in Delhi should be limited to a certain number. The recommendation is another attempt to decongest the busy roads of the capital city. While the principle is sound in theory – these rickshaws are slow, they often block fast moving cars, and occupy precious space on the edges of roads. But, the idea becomes problematic when the number of cars on the roads, the population of the city that can afford to travel by private cars, and the issue of last-mile connectivity are taken into consideration.

Delhi has a population density of 20,000 people/km2, and car ownership of 131 cars per 1,000 people. 42% of all daily trips in the city are made by public transport. And yet, our focus is on mobility only for those in the social strata that can afford cars. Too many of our schemes aimed at easing urban mobility in most cities are targeted at making it easier for a large number of cars to get around, instead of focusing on getting large numbers of citizens around the city. Large transport systems such as the metro face the problem of getting commuters from their homes to the metro. Transport means such as rickshaws are the bridge in such scenarios.

Rickshaws are not why the roads in so many of our cities are clogged. The roads are clogged because Indian cities, by and large, do not have reliable public transport systems and there are too many cars on the roads. Cutting trees to widen roads, building flyovers, removing rickshaws are all ways to make it easier to drive cars. Urban planning recently appears to entirely focus on making life easier for the rich few at the expense of the many poor. The sign of a safe and efficiently run city is when most of its citizens use public transport instead of private vehicles.

Given that the majority of the people in cities still use the highly inadequate public transport systems including e-rickshaws and buses, reducing them is not the answer to the congestion crisis. There is no cap on the number of cars that are allowed to ply on the roads, but regulating the number of rickshaws that are cheap and efficient for short distance travel seems to be the focus of our urban planning. This attitude must change. In order to make it easier to get around the city, urban planners must shift focus to make public transport efficient enough to reduce the number of cars on the roads.

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Marooned once more: on Chennai's need for flood management

Chennai's date with a strong northeast monsoon ought to be a cause for all-round relief since the water fortunes of more than eight million residents of the metropolitan region depend on this weather system. Yet, the torrential rains in the meteorological sub-division, **exceeding the normal by 93%** in the period of four days from November 1, **left tens of thousands of citizens in a state of despair**. Flood waters marooned them in the rapidly growing suburban housing clusters, with many having to flee to safer places fearing a repeat of the **deluge of 2015**. While there have been efforts to alleviate immediate misery through the distribution of relief material in some places, the larger issue of how the city deals with flood and drought cycles remains unaddressed. Chennai is a lower elevation coastal city with global aspirations, and very high population density. Scientific management should have ensured the preservation of the many traditional lakes and canals that existed in the city's core a century ago to absorb the intense downpour of about 1,300 mm of rain, most of it in an annual window of a few weeks. Successive governments have allowed the mindless draining of wetlands and their conversion into expensive real estate, with catastrophic consequences. Regrettably, the great flood two years ago, which left many dead and families impoverished, has not yielded a policy course correction. If the Tamil Nadu government is serious about putting Chennai on the global map of economically viable cities, it must move beyond the creation of weak storm water drains to an integrated flood management system.

Chennai and its sprawl extending to two neighbouring districts should return to the traditional wisdom of creating tanks and lakes for water storage, and rejuvenating old silted ones, in order to harvest the floods and replenish depleted groundwater. The finding from one study in 2013 shows that 27 tanks have totally disappeared and another 400 have lost almost their entire capacity. This underscores the need to revive such natural sponges. Inviting the community to monitor the health of the tanks and lakes can keep out encroachers, who are often protected by patron-politicians. Yet, such measures can work only when the deficit of good housing and civic infrastructure is actively addressed. Tamil Nadu, one of India's most urbanised States, has a poor record in this area, resulting in fragile slums. New housing has mushroomed in Chennai's suburbs, where municipal bodies are mired in incompetence and corruption. It is these localities with little infrastructure that have borne the brunt this year. Looking ahead, the priority for the State should be to integrate flood management using expert opinion and public consultation. Remedial structures should be built for existing localities. Poor waste management is exacerbating the problem by blocking drains, canals and lakes, while ill-planned road projects are cutting off flood flows. These have to be immediately addressed. The tendency to treat floods and drought as events to dole out patronage is preventing Chennai from forging robust solutions.

Revving up infrastructure spending is necessary, but not sufficient

From plate to plough: Farm to distant shores

The new Commerce and Industry Minister, Suresh Prabhu, has expressed his resolve to expand exports. He has said that increase in agri-exports will not only increase the country's export basket, but also augment farmers' incomes and ameliorate farm distress. His objective is laudable and achievable, provided there is a paradigm shift in policy-making from being obsessively consumer-oriented to according greater priority to farmers' interests. But before elaborating on this, let us compare the trends in agri-trade, both exports and imports, in the period when the UPA was in office (2004-05 to 2013-14) with that of the three-years of the current regime (2013-14 to 2016-17). A close look at these trends and their drivers can help Prabhu and his team identify agri-commodities that can help boost the agri-trade surplus.

In general, both agri-exports and imports have increased substantially since 2004-05. Agri-trade increased from $14 billion to $59.2 billion between 2004-05 and 2016-17 (Figure 1). As a share of the agri-GDP, the contribution of this trade increased from 11.1 per cent in 2004-05 to 16.7 per cent in 2016-17 after peaking at 19.6 percent in 2012-13, reflecting the increasing integration of Indian agriculture with global markets.

It is interesting to observe that during UPA's tenure in office, agri-trade surplus surged seven fold, from $3.6 billion in 2004-05 to $25.4 billion in 2013-14. But then fell dramatically by two-thirds after the NDA assumed office, touching $8.2 billion by 2016-17 (Figure 1). The tumbling agri-trade surplus was the result of falling exports and rising imports. Agri-exports, after peaking at $42.9 billion in 2013-14 fell to $33.7 billion in 2016-17, while imports kept rising — from $17.5 billion in 2013-14 to $25.5 billion by 2016-17. Agri-exports suffered primarily due to the significant fall in exports of cereals (especially wheat and maize), cotton, oilseeds and, to some extent, bovine meat (Figure 2). This, in turn, was largely due to a steep fall in global prices and restrictive export policies. Global prices of wheat, maize, soybean, and cotton, for example, fell by 47, 39, 25 and 18 per cent, respectively, during 2013-2016. The FAO food price index fell from 209.8 in 2013 to 161.5 in 2016. Export policies for pulses, oilseeds/edible oils and several vegetables were restrictive. Nevertheless, exports of fish-seafood, and fruits-nuts-vegetables (mainly guavas/mangoes, grapes, cashew nuts, onions) have been growing steadily. They touched $5.8 and $3 billion, respectively, in 2016-17 (Figure 2).

Making a case for microgrids

On 30 July 2012, one-fourth of Bharat was plunged into darkness. A blackout that lasted for two days affected all of North and East India and exposed a severe deficiency in the distribution infrastructure and demand management system in the Indian power sector.

While we as a nation mercifully don't face such major blackouts on a daily basis, the truth is electricity access in India is a case of death by a thousand cuts. Our towns and villages bear the brunt of this poor distribution infrastructure, which is characterized by low voltages, and frequent power cuts, often lasting more than four hours a day.

Employing localized microgrids and reducing dependence on central infrastructure might be the solution to poor distribution infrastructure. And if you asked the folks in Meerwada, Madhya Pradesh, one of the few bright spots North of the Vindhyas on those dark days, they'd agree and point to the small solar microgrid that kept their homes lit and fields humming.

Most of Bharat that lives outside cities suffers from power outages for two big reasons—underestimating demand, and poor balancing of demand and supply. The power infrastructure outside urban centres has been built under the simplistic assumption that a rural household consumes one unit of electricity per day, which, compared to the national average of 12-15 units, is a gross underestimation.

It's a problem that's only getting worse with the nation aspiring to better living standards and creating economic opportunities.

It's the infrastructure-scale equivalent of plugging a geyser into a regular (non-heavy duty) power socket and then wondering why the fuse blew. Lower demand assumption results in infrastructure built for lower capacity that ends up operating at heavy loads during peak hours.

This reduces their operational life and efficiency, increasing events of grid failure. Mismatched demand and supply can also muddle regional and central level planning and result in more power outages.

Distributed local power generation using solar or wind energy could improve the quality of power and provide flexibility in local grid planning and operations for areas outside urban centres. These could be communities or even commercial operations like transportation hubs, warehouses, cell towers or even a substation itself. Distributed generation, otherwise called microgrids, have been around for some time now. But the lack of commercial feasibility has kept them from going mainstream.

However, in the past few years, the cost of solar power has dropped significantly, making solar microgrids increasingly more viable, and bringing with it an ecosystem full of opportunities. It is worth examining these ecosystem building trends and the resulting opportunities in further detail.

First, scale and economics are starting to make sense. Microgrids are commercially viable when two key conditions are met, a threshold scale of 50kW peak power, and customers that are willing to pay higher retail power costs of Rs5 per unit vs. Rs3.25 for the lowest tariff slab. The proximity of a ubiquitous commercial consumer like a mobile tower can help address both conditions.

Commercial consumers usually demand more power and pay more for it, anywhere between Rs6 and Rs11 per unit. Furthermore, consumers in existing microgrids are willing to pay up to Rs6 per unit for reliable power supply, as is evident from projects in Uttar Pradesh, Bihar and Madhya

Pradesh.

Second, the intermittency of solar power is getting addressed. Solar power microgrids cannot operate in isolation and need to be connected to the main power grid as solar power is only available during the day. Microgrids will be commercially successful in those areas with basic grid connectivity, but that experience low voltage and power outages.

Power outages in semi urban and rural areas usually occur around two peak consumption periods—one that occurs a little after noon and one that occurs at dusk. Solar powered microgrids can solve for one of the two peak outages. The addition of storage which currently costs Rs10 per unit, can provide for the second peak. Storage costs are on a downward trend and can drop to a third of today's cost in 5-6 years.

Last, positive trends in policy, economics, and community acceptance is making it easier to solve for land availability. A 50kW solar microgrid can power 100 households and needs less than half-an-acre of land. The key is choosing a suitable consumer—either a community that is already connected to the grid and can lease private land or use community held land around panchayat offices, or a commercial entity with access to land. Larger entities with remote land holdings across India like the Indian Railways, can also deploy microgrids.

That said, an ecosystem of services business needs to be built for micro grids to achieve their true potential. Microgrids, unlike utility scale grids, are owned by small end-users. This creates the need for three types of services. First, the initial set up of the microgrid will require small-scale PMCs (project management companies).

Second, these assets will require operation and maintenance that can be provided by the same type of service provider that serve utility scale solar plants. Finally, we'll need a services company to manage integration, dispatch, and load balancing of several distributed power plants into the grid.

A financing ecosystem to both fund capex and working capital is a key need. The 50kW solar microgrid serving 100 households will need a capex of approximately Rs60 lakh. The payback period for this microgrid will be about 10 years, which is in line with utility scale infrastructure. Thus such grids can avail project finance debt just like other infrastructure projects. So if 80% of Rs60 lakh can be serviced through debt, the user community of a 100-households will have to pay about Rs12,000 per family. This cost structure of the microgrid is more than worth it, given it costs the government Rs30,000 per person to provide electrification and only solves for half of the problem.

Every trend concerning solar power points towards a future where every nook and corner of the nation will able to power itself. In the final part of this three-part series, we will analyse the services and financing opportunities that are crucial to enabling this bright and sunny future.

Vaidhehi Ravindran and Vignesh Nandakumar are venture capital investors at Aspada Investment Advisors. The Bharat Rough Book is a weekly column on building businesses for the mass markets represented by the middle of India's income pyramid.

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'2017 will be among top 3 hottest years on record'

The sun rises over Frankfurt, Germany, on Monday. The World Climate Conference with 25 000 people participating starts on Monday in Bonn, Germany. | Photo Credit: AP

Year 2017 will be one of the three hottest years on record, with many high-impact events, including catastrophic hurricanes and floods, debilitating heat waves and drought, says a provisional statement on the State of the Climate released by the World Meteorological Organization (WMO). The average global temperature from January to September 2017 was approximately 1.1°C above the pre-industrial era, it notes.

As a result of a powerful El Niño, 2016 is likely to remain the warmest year on record, with 2017 and 2015 being second or third.

The WMO statement, which uses 1981-2010 as the baseline, was released on Monday at the opening day of the United Nations (UN) climate change conference in Bonn.

"The past three years have all been in the top three years in terms of temperature records. This is a part of a long term warming trend," said WMO Secretary-General Petteri Taalas, in a release, adding, "We have witnessed extraordinary weather, including temperatures topping 50 degrees Celsius in Asia, record-breaking hurricanes in rapid succession in the Caribbean and Atlantic reaching as far as Ireland, devastating monsoon flooding affecting many millions of people and a relentless drought in East Africa."

Patricia Espinosa, Executive Secretary of UN Climate Change, which is hosting the Bonn conference, said, "These findings underline the rising risks to people, economies and the very fabric of life on Earth if we fail to get on track with the aims and ambitions of the Paris Agreement".

"Bonn 2017 needs to be the launch pad towards the next, higher level of ambition by all nations and all sectors of society as we look to de-risk the future and maximize the opportunities from a fresh, forward-looking and sustainable development path," she said.

Extreme events due to climate change have affected the food security of millions of people, with agriculture accounting for 26% of all the damage and loss associated with medium to large scale storms, floods and drought, says the statement, citing an FAO (Food and Agriculture Organization) assessment. Further, between 2000 and 2016, the number of vulnerable people exposed to heatwave events increased by approximately 125 million.

In 2016, 23.5 million people were displaced during weather-related disasters. In Somalia, more than 7, 60, 000 internal displacements have been reported by UN agencies.

All-India rainfall for the 2017 monsoon season (June to September) was 5% below average. However, above average rainfall in the Northeast and adjacent countries led to significant flooding. Many parts of the Indian subcontinent were affected by monsoonal flooding. The most serious flooding occurred in mid-August in eastern Nepal, northern Bangladesh and nearby northern India. Mawsynram (India) received more than 1400 mm from August 9 to 12.

Three major and high-impact hurricanes occurred in the North Atlantic in rapid succession, with Harvey in August, followed by Irma and Maria in September.

The global mean sea level (GMSL) has been relatively stable in 2017 to date, similar to levels first reached in late 2015. This is because the temporary influence of the 2015-16 El Niño continues to

unwind and GMSL is reverting to values closer to the long-term trend. However, preliminary data shows that a rise in GMSL may have started to resume from July-August 2017 onwards.

If you encounter a 700 kg animal on a high street in Kodaikanal, remember we might have invited its unusual presence

Rethinking open access in electricity

Recently, the Union ministry of power advised the Central Electricity Authority (CEA) to set up a committee to look into issues related to open access and brought out a consultation paper based on the committee's findings. Open access is one of the key measures to bring about competition in electricity, whereby large consumers have access to the transmission and distribution (T&D) network to obtain electricity from suppliers other than the local distribution company (discom). Open access was expected to encourage investment by private players in electricity supply. Unfortunately, the success of open access has been very limited in spite of numerous attempts to facilitate it. This initiative by the power ministry should be taken as an opportunity to examine the basics of open access and re-conceptualize it, if necessary.

Instead of being an avenue to allow large consumers choice of supplier on a sustained basis, open access has become a way to allow such consumers to move back and forth between the discom and the market as and when they want. Not only is this phenomenon unfair to discoms, it also does not allow competitive suppliers to develop a stable customer base, defeating the purpose of open access. The current approach to open access may relieve, to some extent, the burden of cross-subsidization that falls on large consumers, by allowing them access to the market to get lower prices when they can. The high degree of cross-subsidization certainly needs to be addressed, but tariff rationalization is a political problem and, therefore, is best solved at the political level. Trying to bring about this change through open access is unlikely to succeed, as past experience shows.

The term "open access" itself is a misnomer for consumer choice, muddling the discussion. Open access to the T&D network is required by generators and suppliers, but not by consumers. Consumers need only to shop around for the best deal from competitive suppliers, and it should be the responsibility of the suppliers to obtain access so that the power can be transferred to consumers. Therefore, open access requests should only come from suppliers, not consumers. This distinction may help resolve another issue. For effective competition, open access to the T&D network by suppliers can and should be of any duration—short, medium or long term—so that they can assemble the most efficient mix of resources to serve their customers. However, as discussed later, exercise of choice by a consumer should not be a short-term transaction. Further, while open access is a prerequisite for choice, consumer choice is about more than open access. Choice also requires well-defined rules that govern the relationship between the discom and the consumer exercising choice, defining the rights and responsibilities of each. Not enough attention has been paid to these rules in state regulations.

The first step in re-conceptualizing open access is to recognize that service to consumers exercising choice is a distinct service, and not an extension of regulated supply. Large consumers should not be able to treat the discom as a mothership to which they can return whenever market prices rise. In addition, consumers exercising choice should be required to get all their electricity from the supplier of their choice, not just part of it, otherwise the discom has to handle all the variability of load, and that increases the discom's planning burden and cost, and is unfair.

Open access for end-consumers should not be a short-term option. Discom tariffs are regulated and fixed for the entire year and thus represent an average over the year. Even an efficient discom will have tariffs that are above the prevailing market price at some times and below it at other times. If a very large consumer is able to cherry-pick the periods when it can get supply from the market, it would result in higher and higher costs for the discom. These additional costs would have to be borne by non-open-access consumers, many of whom are small consumers. Furthermore, unlike other markets, because its tariff is regulated and fixed, the discom cannot compete with another supplier by making a counter-offer to retain a consumer.

In states in the US that have allowed choice of supplier, similar concerns have been raised about giving excessive flexibility to consumers to move back and forth between the market and discom service, because discoms find it difficult and expensive to hedge against the risks posed by these swings in load. In those cases, restrictions have been placed on the time that has to elapse before a consumer can either leave a regulated service or return to it—usually 6-12 months. In India, because regulated tariffs are fixed for a year, similar time limits of 6-12 months should be placed to address the problem of frequent shifting. There should be no restrictions on switching between competitive suppliers.

It is possible that a large consumer may be dropped by its retail supplier for reasons beyond the control of the consumer; for example, bankruptcy of the supplier, or its inability or unwillingness to supply. In such cases, while the consumer shops for an alternative supplier, there should be short-term service priced to compensate the discom for its cost.

It is time to move beyond efforts to increase the volume of open access transactions by tinkering with how various open access charges are calculated. Instead, the initiative by the power ministry should be taken as an opportunity to re-conceptualize open access along the lines discussed here, so that its objectives are achieved.

Daljit Singh is with the Centre for Energy, Environment & Resources, New Delhi.

Shri R. K. Singh leads Indian Delegation in the IEA Ministerial, Paris

Shri R. K. Singh leads Indian Delegation in the IEA Ministerial, Paris

Emphasises importance of Clean Energy and assures achievement of 175GW of Renewable Target of India

Power Minister addresses Plenary Session on Driving the Transitions to Clean Energy

Union Minister of State (IC) for Power and New & Renewable Energy, Shri Raj Kumar Singh led the Indian delegation in the International Energy Agency (IEA) Ministerial, being held in Paris. The Minister emphasised the importance of clean energy and assured achievement of 175GW of renewable target of India while addressing the Plenary Session on Driving the Transitions to Clean Energy.

At the Ministerial, India signed joint work programmes with IEA and other key members of the IEA Family i.e. Brazil, Chile, India, Indonesia and Thailand. The event focusses on energy security, clean energy technology and government-industry dialogue on investment and digitalization, which would provide major opportunities for efficiency gains in the energy sector in the future.

On the side-lines of the IEA Ministerial, the Minister had a delegate level discussion with the French Minister of State for Ecological and Inclusive Transition, Ms. Brune Poirson. Shri Singh also had a very fruitful discussion on various issues of Power and New & Renewable Energy with the US Secretary of Energy, Mr. James Richard Perry.

RM/VM

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Heat source under Antarctica melting its ice sheet: NASA

The Thwaites Glacier in West Antarctica. | Photo Credit: AP

A geothermal heat source called mantle plume lies deep below Antarctica's Marie Byrd Land, explaining some of the melting that creates lakes and rivers under the ice sheet, a NASA study has found.

Although the heat source is not a new or increasing threat to the West Antarctic ice sheet, it may help explain why the ice sheet collapsed rapidly in an earlier era of abrupt climate change, and why it is so unstable today.

The stability of an ice sheet is closely related to how much water lubricates it from below, allowing glaciers to slide more easily, NASA said.

Understanding the sources and future of the meltwater under West Antarctica is important for estimating the rate at which ice may be lost to the ocean in the future.

Antarctica's bedrock is laced with rivers and lakes, the largest of which is the size of Lake Erie.

Many lakes fill and drain rapidly, forcing the ice surface thousands of feet above them to rise and fall by as much as six metres. The motion allows scientists to estimate where and how much water must exist at the base.

About 30 years ago, a scientist at the University of Colorado Denver in the US suggested that heat from a mantle plume under Marie Byrd Land might explain regional volcanic activity and a topographic dome feature. Very recent seismic imaging has supported this concept.

"I thought it was crazy. I didn't see how we could have that amount of heat and still have ice on top of it," said Helene Seroussi of NASA's Jet Propulsion Laboratory (JPL) in California.

With few direct measurements existing from under the ice, Seroussi and Erik Ivins of JPL concluded the best way to study the mantle plume idea was by numerical modelling.

They used the Ice Sheet System Model (ISSM), a numerical depiction of the physics of ice sheets.

Seroussi enhanced the ISSM to capture natural sources of heating and heat transport from freezing, melting and liquid water; friction; and other processes.

To assure the model was realistic, the scientists drew on observations of changes in the altitude of the ice sheet surface made by NASA's IceSat satellite and airborne Operation IceBridge campaign.

"These place a powerful constraint on allowable melt rates — the very thing we wanted to predict," Ivins said.

Since the location and size of the possible mantle plume were unknown, they tested a full range of what was physically possible for multiple parameters, producing dozens of different simulations.

They found that the flux of energy from the mantle plume must be no more than 150 milliwatts per square metre.

Seroussi and Ivins' simulations using a heat flow higher than 150 milliwatts per square meter showed too much melting to be compatible with the space-based data, except in one location: an area inland of the Ross Sea known for intense flows of water.

This region required a heat flow of at least 150-180 milliwatts per square meter to agree with the observations.

However, seismic imaging has shown that mantle heat in this region may reach the ice sheet through a rift, that is, a fracture in Earth's crust such as appears in Africa's Great Rift Valley.

Sundarbans proved a challenge for camera traps and GPS collars

Blue Economy is a catalyst in India's progress: Nitin Gadkari

Major Ports register positive growth of 3.27% during April-October, 2017

The Minister for Shipping, Road Transport & Highways and Water Resources, River Development & Ganga Rejuvenation Shri Nitin Gadkari reviewed the work of all ports in Goa this week. He interacted with stakeholders including PPP operators, port users and other private sector service providers. In his address Shri Gadkari said that as per the vision of Prime Minister Shri Narendra Modi, Blue Economy is proving to be a catalyst in India's progress and the performance of ports is a clear pointer towards the same.

The review meeting was aimed at serving the industry needs in a better way, identifying issues holding up new projects and understanding ways to improve efficiency. The meeting provided a platform to all officials and stakeholders to communicate with each other and with the Ministry of Shipping, breaking the conventional tight silo - bound approach and expediting decision making processes. Promoting coastal shipping and improving port infrastructure are high up on the Ministry's agenda. The Minister recently flagged off consignments of trucks to Bangladesh from Chennai and Steel from Vizag.
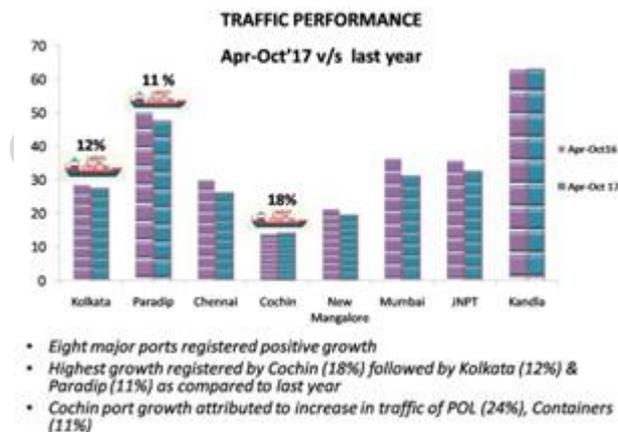

Overall traffic growth at Major Ports

The major ports in India have recorded a growth of 3.27% during the period April to September, 2017 and together handled 383 Million Tonnes of cargo as against 371 Million Tonnes handled during the corresponding period of previous year.

The Eight Ports i.e. Kolkata, Paradip, Chennai, Cochin, New Mangalore, Mumbai, JNPT and Kandla registered positive growth in traffic during the period April to October, 2017.

Cargo traffic handled at Major Ports:

The highest growth was registered by Cochin Port (17.66%), followed by Kolkata [incl. Haldia], New Mangalore, Paradip with growth of about 12%. The Cochin Port growth was mainly due to increase in traffic of POL (24.56%) and Containers (11.12%). In Kolkata Port, overall growth was positive i.e. 12.39%. Kolkata Dock System (KDS) registered traffic growth of 3.80%. Haldia Dock Complex (HDC) registered positive growth of 16.66%.

TRAFFIC PERFORMANCE
Apr-Oct'17 v/s last year

- *Eight major ports registered positive growth*
- *Highest growth registered by Cochin (18%) followed by Kolkata (12%) & Paradip (11%) as compared to last year*
- *Cochin port growth attributed to increase in traffic of POL (24%), Containers (11%)*

During the period April to September 2017, Kandla Port handled the highest volume of traffic i.e. 63.13 Million tonnes (16.49% share), followed by Paradip with 55.78 Million Tonnes (14.57% share), JNPT with 37.90 Million Tonnes (9.90% share), Mumbai with 36.72 Million Tonnes (9.59% share), and Visakhapatnam with 35.74 Million Tonnes (9.33% share). Together, these five ports handled around 60% of Major Port Traffic.

Commodity wise Share % in Traffic in October 2017

Commodity wise- Share in Traffic during Oct'17
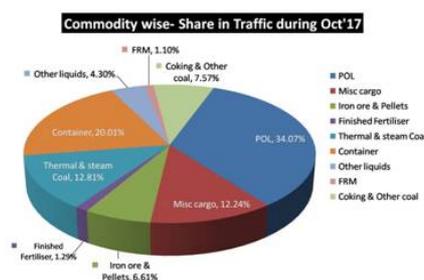
Commodity-wise percentage share of POL was maximum i.e. 34.07%, followed by Container

(20.01%), Thermal & Steam Coal (12.81%), Other Misc. Cargo (12.24%), Coking & Other Coal (7.57%), Iron Ore & Pellets (6.61%), Other Liquid (4.30%), Finished Fertilizer (1.29%) and FRM (1.10%).

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NP/MS

Slippery oil rally: on the oil-price rise

The price of oil has risen sharply in recent weeks leading to renewed forecasts of a sustained bull market in the price of the commodity. The price of Brent crude, which breached the $60 mark late last month, is currently trading at about $64 per barrel, a two-year high. In fact, in the last one month alone, oil has gained well over 12%. The oil rally has been even sharper from its June low of a little below $45, from where the commodity has rallied more than 40% to reach its current price, with some experts saying the ongoing rally could portend even higher prices in the coming months. The upsurge this week has been driven primarily by political uncertainty in Saudi Arabia, the world's second largest producer of oil, and the tightening of supply by the Organisation of the Petroleum Exporting Countries, which is expected to extend its supply-cut agreement beyond March. Whether the price gains would sustain and continue over an extended period of time still remains a big question for various reasons, however. Shale oil production is the biggest among them. In the past, North American producers of shale brought a multi-year bull market in oil to an abrupt end. Since then, OPEC has struggled to maintain control over oil prices except for brief spells. The American shale industry has been let free to increase production in response to higher prices, thus imposing a cap on the price of oil. There are no signs yet of a structural change in the oil market to suggest that it could be any different this time.

Shale producers have continued to pump more oil into the market as crude prices have crossed the $50 mark. According to the Energy Information Administration, a body under the U.S. Department of Energy, U.S. shale production is likely to increase by about 81,000 barrels per day in the current month. In addition, in its World Oil Outlook report released this week, OPEC said it expects shale output to grow much faster than it had previously estimated. The cartel's new estimate is, in fact, more than 50% higher than its projection last year. It also noted that shale output from North America has increased by about 25% over the past one year. All this suggests that shale is likely to remain OPEC's nemesis for a long time. India has derived huge benefits from lower oil prices since 2014, with the government's fiscal management and inflation-targeting being rendered a lot easier. There is bound to be some economic unease now as the price of oil fluctuates in what looks likely to be a range-bound market. A repeat of the huge damage caused by the last oil bull market, however, seems unlikely. Nonetheless, policymakers in Delhi will surely take a cautious stance given the extensive impact that oil prices have on the Indian economy.

Revving up infrastructure spending is necessary, but not sufficient

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Cabinet approves continuation and Restructuring of National Rural Drinking Water Programme

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has accorded its approval for continuation and restructuring of National Rural Drinking Water Programme (NRDWP) to make it outcome-based, competitive and better monitored with increased focus on sustainability (functionality) of schemes to ensure good quality service delivery to the rural population.

A sum of Rs. 23,050 crore has been approved for the programme for the Fourteenth Finance Commission (FFC) period 2017-18 to 2019-20. The programme will cover all the Rural Population across the country. The restructuring will make the programme flexible, result-oriented, competitive, and will enable the Ministry towards to reach the goal of increasing coverage of sustainable Piped Water Supply.

The details of the decision are as follows:

1. National Rural Drinking Water Programme (NRDWP) is to be continued co-terminus with the 14th Finance Commission cycle till March 2020.

2. With the restructuring of the NRDWP, there will be 2% earmarking of funds for Japanese Encephalitis (JE) /Acute Encephalitis Syndrome (AES) affected areas.

3. A new Sub-programme under NRDWP viz. National Water Quality Sub-Mission (NWQSM) which has been started by the Ministry of Drinking Water and Sanitation in February 2017 will address the urgent need for providing clean drinking water in about 28000 Arsenic & Fluoride affected habitations (already identified). As per estimates, about Rs. 12,500 crore as Central share will be required over 4 years i.e. up to March, 2021. This is being funded from the allocation under NRDWP.

4. Pre-financing for the agreed schemes, to the extent of half of the second instalment amount, will be made by the State Governments, which will be reimbursed later on from the central funding. If the State(s) fails to claim this amount before 30th November in the financial year, then, these funds will become a part of the common pool, which will be released to the high performing States, which have already pre-financed the requisite Government of India share on a first come first serve basis.

5. Other half of second instalment of funds will be released to the States based on functionality

status of completed piped water supply schemes, which will be evaluated through a third party.

6. The Cabinet has approved Rs. 23,050 crore for the programme for the FFC period 2017-18 to 2019-20.

The NWQSM aims to cover all rural population in Arsenic/Fluoride affected habitations with clean drinking water on a sustainable basis by March 2021. States have been given more flexibility in utilization of NRDWP funds by reducing the number of components under the programme.

As per the Integrated Management Information System (IMIS) of the Ministry of Drinking Water and Sanitation, about 77% of rural habitations in India have achieved a fully covered (FC) status (40 litres per capita per day) and 56% of the rural population have access to tap water through public stand posts within which 16.7% have household connections.

Background:

The NRDWP was started in 2009, with a major emphasis on ensuring sustainability (source) of water availability in terms of potability, adequacy, convenience, affordability and equity. NRDWP is a Centrally Sponsored Scheme with 50.50 fund sharing between the Centre and the States. Over the years, learning from the success achieved and the deficiencies felt during the implementation of NRDWP, certain modifications are needed in existing guidelines and procedure of release of funds to the States for making the programme more outcome-oriented and competitive.

Keeping in view the need to make the NRDWP more result-oriented, incentivize competition amongst States and focused on sustainability, a series of discussions were held with States, various stakeholders / domain experts / international institutions and NITI Aayog, some amendments in the guidelines of the programme have been introduced. These are giving more flexibility to the states in utilization of NRDWP funds by reducing the number of components under the programme. Focus on piped water supply, increase level of service delivery, thrust on coverage of water quality affected habitations (National Water Quality Sub-Mission to tackle Arsenic & Fluoride affected habitations, JE / AES areas), coverage of Open Defecation Free (ODF) declared villages, SAGY GPs, Ganga GPs, Integrated Action Plan (IAP) districts, Border Out Posts (BOP) with piped water supply and Institutional set up for proper O&M of water supply assets etc. have been introduced.

AKT/VBA/SH

Crop Residue Management

Burning of crop residue in the states like Punjab, Haryana, Uttar Pradesh and Rajasthan also contributes in increasing environmental pollution levels. National Green Tribunal has directed the Delhi government and these four northern states to take strict measures to deal with this serious biennial threat.

·   In this regard, Agriculture Ministry issued an advisory to the state governments to create awareness among the farmers about the harmful effect of straw burning.

- Facilitate farmers residue management machines and equipment such as Zero Till Seed Drill, Happy Seeder, Straw Baler, Rotavator, Paddy Straw Chopper/ Mulcher, Gyro Rake, Straw Reaper, Shredder, etc., to through Custom Hiring Centres or village level Farm Machinery Banks.
- The State Governments have also been directed that Rs. 4000/ Hectare shall be used from the funds available for demonstration of machines under Sub-Mission on Agricultural Mechanization for demonstration of straw management machinery at farmers' fields.

For crop residue management, under Sub-Mission on Agriculture Mechanization, the Department of Agriculture Cooperation and Farmers Welfare have allocated funds to the four states

State	Allocation of Funds (In Crore)		Funds Utilised (In Crore)	
	2016-17	2017-18	2016-17	2017-18
Punjab	49.08	48.50	----	----
Haryana	----	45.00	------	39.00
Rajasthan	-----	9.00	-------	3.00
Uttar Pradesh	24.77	30.00	24.77	26.01

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SS/AK

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1.5 MW Small Hydro Power Plant in Biaras Drass, Kargil (J&K) becomes first project to be commissioned under Prime Minister's Ladakh Renewable Energy Initiative

1.5 MW Small Hydro Power Plant in Biaras Drass, Kargil (J&K) becomes first project to be commissioned under Prime Minister's Ladakh Renewable Energy Initiative

Power Project would meet normal power requirement of about 1000 families

The Biaras Small Hydro Power Project (SHP) of 1.5 MW capacity, in Biaras Drass, Kargil Jammu & Kashmir, was commissioned on 4th November 2017. The total cost of the project, fully funded by the Ministry of New & Renewable Energy, is Rs. 17 crores and this is the first project to be commissioned under the Prime Minister's Ladakh Renewable Energy Initiative (LREI).

The plant will power the Drass town in Kargil, which is one of the coldest places in India. Power from Biaras SHP would be sufficient to meet normal power requirement of about 1000 families, which would make them comfortable in the extreme winter season. The project has been developed by Kargil Renewable Energy Development Agency (KREDA) under Ladakh Autonomous Hill Development Council.

RM/VM

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The gigantic Sagarmala project could put the coastline in peril, says Pankaj Sekhsaria

An estimated 40 lakh people from traditional fishing communities live along the coastline. | Photo Credit: AP

The 'blue economy' has been an important element in many of Prime Minister Narendra Modi's recent national and international engagements. He placed particular emphasis on the idea in his address at the 103rd Indian Science congress in Mysuru last year and also spoke about it several times in Gujarat last month.

Made popular by Gunter Pauli's 2010 book *Blue Economy — 10 Years, 100 Innovations, 100 Million Jobs,* the idea has become the buzzword today.

Simply put, blue economy is a framework that places the coasts and the oceans at the centre of economic growth, for a development that is substantial, sustainable and inclusive. For a planet that is more blue than brown and green, where the ocean covers 70% of its surface and where water connects people, places and systems, a focus on blue might seem just the right step forward.

The idea has also come centre-stage now in India with the Niti Aayog noting recently that the "development of Blue Economy can serve as a growth catalyst in realizing the vision to become a $10 trillion economy by 2032." But India is mobilising the idea of the blue economy without being fully true to some of its key fundamental values.

Massive centrepiece

The centrepiece of India's push for the blue economy is the Sagarmala project that includes constructing ports, augmenting coastal infrastructure, developing inland waterways, intensifying fishing, and creating special economic zones and tourism promotion.

The scale of what is being proposed is gigantic. The consolidated Sagarmala project proposes to execute nearly 400 different projects along the coastline at a whopping cost of nearly 8 lakh crore in the next two decades.

While support for the blue economy agenda has been welcomed by a wide range of actors, there has been limited, if any, discussion on the financial viability, the environmental implications and social costs of pushing it. This is set to change now with the compilation of, perhaps, the first consolidated critique for the Indian context.

The Research Collective (TRC), a group of researchers, has put together a report that looks at a number of aspects that have remained unexplored thus far. Titled '*Occupations of the Coast — Blue Economy in India*', it will be released in New Delhi on November 15 at the World Forum of Fisher Peoples' 7th General Assembly.

Homes by the sea

At the heart of the concern is the fact that the coastline is important ecologically, socially and economically. An estimated 40 lakh people from traditional fishing communities live along the coastline and are dependent on near-shore fisheries for their livelihood and survival. The coastline is also an extremely dynamic entity that is made of multiple ecosystems, many of which are rare and threatened.

It is a densely populated zone and vulnerable to storms, tidal surges, floods and the occasional tsunami. Any major intervention should be made only after serious consideration of the multi-faceted implications and a cost-benefit analysis that goes far beyond just numbers and economic evaluation.

And this, the report notes, is precisely what is missing in the way the agenda of the blue economy and Sagarmala is being pushed in India. In the report, Jesu Rethinam and Siddharth Chakravarty map the changes in coastal and marine regulation in the country since 1991 — from the Coastal Regulation Zone (CRZ) notification 1991 to the CRZ notification 2011 to the draft Marine and Coastal Regulation Zone notification of 2017.

They note that while resource-intensive activities carried out mainly by the state and big corporate players have gone from prohibition to regulation to promotion in the last 25 years, the state's engagement with the resource-based communities has moved from engagement to consultation to finally, their alienation now.

The blue economy agenda and the way it's being driven now is only going to exacerbate the situation; it could well be a recipe for considerable environmental damage and hardships for millions along the coastline.

(Disclosure: The writer has contributed a piece on Andaman & Nicobar Islands to the report)

This isn't the first time a charpai has helped rescue a leopard in a well

At the heart of the Pakistan-Iran-India tango lies Chabahar

A new churning is taking place in the region, with India announcing its first shipment to Afghanistan, via the Chabahar port in Iran, and Pakistan's army chief taking a delegation to Iran earlier this week for a series of meetings.

Has India's Chabahar initiative caused Pakistan to re-engage with Iran? Or, is this a parallel development, addressing bilateral issues and the repercussions of Pakistan's involvement in the Middle East?

Pakistan's Iran Predicament

Since Zia ul-Haq's time, Pakistan's relationship with Iran has been tense, indifferent and sometimes, even hostile. Zia's Islamisation strategies were perceived by Shia Tehran as the deepening of Sunnization, creating new stress in the bilateral relationship and emphasising sectarian faultlines inside Pakistan.

High-level visits between Iran and Pakistan became the exception. Afghanistan soon became a much more important neighbour, with the US using Pakistan as a cat's paw in its own war against the former Soviet Union in the late 1980s. Meanwhile, Iran-US relations went through the wringer, even as Teheran was bogged down with other issues in the Middle East.

Despite the continuing political tension between Iran and Pakistan, both countries drew closely together on two other matters. First, Pakistani nuclear scientist A Q Khan drew a willing Iran into his own underground network of nuclear linkages that served both sides well. Second, smuggling between the Pakistan-Iran border, especially along the Makran coast, began to take place.

Enter the Middle East Cold War and the Islamic Military Alliance

But the political divide was exacerbated by Saudi Arabia's expanding influence on Pakistan. Riyadh's Islamic Military Alliance is now headed by Pakistan's former army chief, Gen. Raheel Sharif. Clearly, the Pakistani government isn't terribly attracted to the idea, especially because its own Shias, between 30-40 million, are said to comprise about 10 per cent of the total 200 million population. Pakistan's National Assembly has even discussed Raheel Sharif's new job and pointed out that there is a need to go slow.

Was Raheel Sharif given the job because he was once the most powerful man in Pakistan and Pakistan is the only country in the Islamic world with a proven nuclear weapon capability ?.

Meanwhile, Teheran's relations with Saudi Arabia began to deteriorate over the ongoing conflict in Yemen. Riyadh also seemed determined to isolate Qatar, in an attempt to consolidate its leadership in the Muslim Ummah. Its efforts to get the US on board this regional great game were enormously boosted with Donald Trump identifying Iran as the cause of instability in the Arab Islamic American summit in Riyadh in May 2017, even as King Salman looked on.

Certainly, Pakistan being a part of this Summit would not have gone down lightly in Tehran.

Chabahar: Trigger, not the Cause

The operationalization of Chabahar port by India has triggered the panic button within Pakistan. As Delhi faltered in its execution of Chabahar in recent years, Pakistan was cynical and even sarcastic; meanwhile there was the China-supported Gwadar port as well as the Beijing-funded

China-Pakistan Economic Corridor, both projects being described as a "regional game changer".

With Chabahar now in the mix, the regional great game has taken a new turn. Chabahar is not far from Gwadar. As the crow flies, the straight distance is only 171 km, while the road route doubles it to 356 km. Second, Chabahar is more than a port, it is the starting point of a trade and transit corridor that could become parallel to the CPEC as it cuts across Iran and into Afghanistan. Third and most importantly, New Delhi has big plans for Chabahar, to connect it to the International North South Transport Corridor (INSTC) and opening it up to the passage of goods into Russia and onwards.

Gen Bajwa's Visit: Should India be worried?

India's political will to walk the talk with Chabahar has exaggerated the bilateral and regional predicament in Pakistan's west. Islamabad would certainly like to repair its relations with Teheran. Gen. Bajwa's visit to Iran must be seen in this context, when he met the Iranian president, its defence minister as well as the commander-in-chief of the Islamic Revolutionary Guards.

The army in Pakistan has always been all-powerful, but a trend towards greater consolidation of power can now be clearly seen. Gen. Bajwa's visit to Iran was preceded by a trip to Kabul, where he also met President Ashraf Ghani as well as the top Afghan leadership. Both New Delhi and Teheran, now connected through the Chahabar thread, must be closely watching.

But despite the fanfare of the visit, Gen. Bajwa did not succeed in getting a succulent joint statement with the Iranians. Whatever was made public is mediocre and focussed on border security between the two countries relating hotline communication, border fencing and patrolling, intelligence sharing etc. The fact that Pakistan has to talk about establishing hotlines in 2017 shows the level of communication so far!

The powerful director-general of the media wing of Pakistan's armed forces, ISPR, Maj-Gen Asif Ghafoor, effusively thanked the Iranian Supreme Leader for a "supportive statement" on Kashmir and said, "It is a long pending dispute between India and Pakistan. Regional peace and security remains at stake unless it's resolved to the aspiration of Kashmiris in line with UN Resolution."

Predictably, the Pakistan media sought to project this as Iran's Supreme leader throwing its "weight behind Pakistan on Kashmir".

That's why the operationalization of the Chabahar port in Iran is so significant. India has demonstrated its intention to play on the regional chessboard, even while it balances its own relations with the US and Iran. The old great game just got a new veneer.

END

Elephant corridors in India threatened, says study

Unsafe roads:Two-thirds of the elephant corridors have a National or State Highway passing through them, fragmenting habitats and hindering the animals' movement.Special Arrangement

Elephant herds are known to migrate across 350-500 sq. km. annually but increasingly fragmented landscapes are driving the giant mammals more frequently into human-dominated areas, giving rise to more man-animal conflicts, experts have found. Maintaining elephant corridors is therefore of crucial importance to both elephant and human habitats.

"Elephant corridors are narrow strips of land that connect two large habitats," says Dr. Raman Sukumar, scientist, Indian Institute of Science, Bengaluru. "In many cases, they are already under the control of a government agency such as the Forest or Revenue Department. Corridors could include unutilised spaces in large commercial estates, and fallow or agricultural lands."

'Right of Passage', an 800-page study released in August 2017, authored by experts and published by the Wildlife Trust of India (WTI) in collaboration with Project Elephant and the U.K.-based NGO Elephant Family, identifies and records details pertaining to 101 elephant corridors across India.

Of these 101 corridors, 28 are located in south India, 25 in central India, 23 in northeastern India, 14 in northern West Bengal and 11 in northwestern India.

In terms of their functionality or usage by elephants, almost 70% of the 101 corridors are regularly used, 25% are occasionally used, and 6% rarely. Almost all elephant corridors in south India (93%) and northern West Bengal (86%) are regularly used; 66% of corridors are regularly used in northeastern India.

The study offers specific conservation solutions for the corridors but points to an inverse relationship between the forest cover available and the number of corridors in each region — the more fragmented the forest cover in a region, the more elephant corridors in it.

Thus, the highest number of corridors are located in northern West Bengal, which has one corridor for every 150 sq. km. of available elephant habitat, resulting in heightened human animal conflict and an average of 48-50 human deaths every year. This is followed by northwestern India, which has one corridor for every 500 sq. km. of available elephant habitat. Central India comes next with one corridor for every 840 sq. km.

In southern India, there is one corridor for every 1,410 sq. km. of available elephant habitat. Northeastern India fares best with one corridor for every 1,565 sq. km.

Among the States, West Bengal has the highest number of corridors (14), followed by Tamil Nadu with 13 and Uttarakhand with 11.

In 2005, WTI had mapped and listed 88 elephant corridors. With alterations to natural landscapes and a heightened pace of development, researchers found that seven of these corridors have been impaired and are currently not used by elephants. The team also added 20 new corridors to the list, bringing the total to 101 corridors in the 2017 'Right of Passage' study.

The then-and-now comparative findings are worrying. The 2017 report notes that about 74% corridors are of a width of one kilometre or less today, compared with 45.5% in 2005, and only 22% corridors are of a width of one to three kilometres now, compared with 41% in 2005, pointing

to how constricted corridors have become in past 12 years.

The ground situation studied in 2005 and 2017 also indicates degradation of corridors: 21.8% of corridors are free of human settlements in 2017 compared with 22.8% in 2005, and 45.5% have 1-3 settlements in 2017 compared with 42% in 2005. In terms of land use, only 12.9% of the corridors are totally under forest cover in 2017 compared with 24% in 2005.

"About eight corridors have been secured on the ground by State Forest Departments, MoEFCC (Ministry of Environment, Forest and Climate Change), WTI, and other conservation organisations. This process needs to be hastened and other high priority as well as threatened corridors need to be secured on an urgent basis," says co-author Dr. Sandeep Kr Tiwari, Programme Manager, IUCN Asian Elephant Specialist Group (AsESG).

To increase awareness on elephant corridors, the team is planning 'Gaj Yatras' — parading life-size elephant models crafted by local artisans on road shows through corridors across 12 States where elephants range.

Disrupted areas

Moreover, two in every three elephant corridors in the country are now affected by agricultural activities, the study points out, adding that 58.4% corridors fall under settled cultivation and 10.9% under *jhum* (slash and burn) cultivation.

"All the corridors in northern West Bengal (100%) and almost all in central India (96%) and northeastern India (52.2% under settled cultivation and 43.4% under slash and burn cultivation) have agriculture land. About 72.7% of the corridors in northwestern India and 32% corridors in southern India have agriculture land," the study states.

Taking note of 266 instances of elephants deaths caused by being run over by trains between 1987 and July 2017, the report points out that 20 corridors have a railway line passing through them.

In all, about 36.4% of the elephant corridors in northwestern India, 32% in central India, 35.7% in northern West Bengal and 13% of the elephant corridors in northeastern India have a railway line passing through them. Moreover, almost two-thirds of the corridors have a National or State Highway passing through them, fragmenting habitats and hindering elephant movement further.

The study notes that almost 20% of the corridors urgently require an overpass for vehicles to facilitate the unhindered movement of elephants. In addition to railway tracks and highways, 11% of corridors have canals passing through them, and 12% are affected by mining and the extraction of boulders.

Three months ago, the Supreme Court, in response to a Public Interest Litigation (PIL) petition submitted by Wildlife Conservation Society-India (WCS) scientist Vidya Athreya suggested that nine States acquire land across 27 high-priority corridors to enable safe movement of elephants.

"Identifying corridors is a dynamic process; many States have started notifying corridors," says R.K. Srivastava, Director of Project Elephant. The States' responses are expected this month.

"Large-scale land acquisition is not required," says Professor Sukumar. "It is the small, strategic pieces of land that are crucial."

The International Fund for Animal Welfare and the WTI bought 25.5 acres of village land in 2003

and handed over India's first ever privately-bought corridor to the Karnataka government in 2007. The WTI and its partners have also secured six corridors, including the Edayaralli-Doddasampige corridor in southern Karnataka, which connects the Biligiri Rangaswamy Temple and MM Hills wildlife sanctuaries. "The way corridors are acquired is important," says Professor Sukumar. "Approaches have often been antagonistic to local people — this really needs to change. Land acquisition has to be a voluntary and rewarding process."

'Eviction not the answer'

"It is important to involve communities in conservation," concurs Paramesha Mallegowda, Programme Associate at the Bengaluru-based Ashoka Trust for Research in Ecology and the Environment. "Eviction is definitely not the answer. Rather than relocating entire villages, we need to restore the corridors and ask people to avoid using critical [elephant] migratory routes. Conservation is an achievement only if local communities are also involved in the process."

As Dr. Tiwari notes, "At a time when about 400 to 450 humans are losing their lives due to human-elephant conflict annually in India and around 100 elephants are being killed in retaliation, it is high time that the migratory corridors that elephants have traditionally used are saved before it is too late."

Chennai, during the northeast monsoon

It is becoming a standing joke in Chennai that schools might as well write off two months in the year — November and December. Since 2015, when the northeast monsoon season descended as a cataclysm on a city that was scarcely prepared for it, the impending monsoon brings a measure of foreboding and trepidation to residents.

Three years on, the level of preparedness leaves much to be desired. The first showers were intense and left many parts in a shambles — water-logging on the roads and water entering homes in low-lying areas, while on a night of particularly heavy rain, the entire city slowed down in waters that flowed on the roads, not unlike waves crashing on the shore.

Why is it so vulnerable?

As the city grew and expanded beyond its core, it was built over water bodies that were cleared out to make space for human settlements.

As more and more people moved to urban areas, these settlements filled out and the resources soon grew inadequate for the burgeoning population dependent on them.

Natural draining paths were built over. In addition, years of rampant encroachment on waterbodies and lake beds did not help. Inadequate monsoon preparation, in terms of desilting tanks and deepening water channels and stormwater drains and removing encroachment, has not been adequately addressed across the city and suburbs, residents say.

Did drought stop greater damage?

The monsoon of 2017 came, in fact, after a summer of drought, as the city struggled to find water from multiple sources to meet its drinking water needs. Chennai district has so far registered 674.8 mm of rain this season. This is 70% more than the average of 397.9 mm for the season. Though in the first heavy spell of November, Chennai recorded 30 cm of rain, on subsequent days, the volume of rainfall came down, and the rain spells too were relieved by short dry periods. The city's four reservoirs that had dried out are still only over a third full.

And yet, water-logging in the southern suburbs continued, and people had to move away, afraid that the next shower would lead to a repeat of the nightmare of 2015.

In many places, inexplicably, roads were dug up to undertake waterline/storm-water and sewer line repairs though it is common knowledge that the northeast monsoon wings its way at October-end.

According to initial estimates by the Chennai Corporation, at least 15% of the 471 bus route roads were damaged. Chief Minister Edappadi K. Palaniswami admitted last Sunday that 115 places were still waterlogged in the city and its suburbs and attributed it to the heavy downpour over five days. The State government has asked Prime Minister Narendra Modi for Rs. 1,500 crore to handle relief work.

What happened in 2015?

In retrospect, scientists co-related the unprecedented heavy rain between November 30 and December 2 in 2015 to an active El Nino year. It is true that the quantum of rainfall was high, but it was not the rain alone that was responsible for the disaster that followed.

A key element that is still being pointed out was the reportedly tardy release of excess water from Chembarambakkam lake, which flooded the entire city and led to the loss of many lives and property worth several crores. Improper silting of waterways and stormwater drains, rampant encroachments that stood solidly in the path of the water, giving residents very little or insufficient warning to leave their homes, as the floodwaters raced to the city — in a post mortem analysis, these factors stand out too. Water entered homes, over several floors, and washed out people and their possessions.

What next?

Environmental activists insist that drastic action to evict encroachers and those who sit on waterbodies must be taken. Better preparedness of official machinery to face the floods across the city, as some pockets faced this November, is crucial. It is the only way a natural calamity is not exacerbated by man-made errors, they point out.

Ramya Kannan

Demystifying Science: What is the Pacific shadow-zone?

The shadow zone is an area of almost stagnant water sitting between rising currents caused by the rough topography and geothermal heat sources below 2.5 kilometres and shallower wind-driven currents closer to the surface in the North Pacific. This is the oldest water in the ocean in the North Pacific and has remained trapped in a shadow zone around 2 kilometres below the sea surface for over 1,000 years. Until recently, models of deep ocean circulation did not accurately account for the constraint of the ocean floor on bottom waters. Once the international team of researchers precisely factored it they found the bottom water cannot rise above 2.5km below the surface, leaving the region directly above isolated. "Carbon-14 dating had already told us the most ancient water lay in the deep North Pacific. But until now we had struggled to understand why the very oldest waters huddle around the depth of 2 km," said lead author from the University of New South Wales, Dr. Casimir de Lavergne. "What we have found is that at around 2km below the surface of the Indian and Pacific Oceans there is a 'shadow zone' with barely any vertical movement that suspends ocean water in an area for centuries." The article, "Abyssal ocean overturning shaped by seafloor distribution", has been published in the journal, *Nature*.

The Ig Nobel Prizes show that scientists too have a sense of satire, sarcasm, humour and yet appreciation.

END

Crisis is in the air

The first thing that the Central and Delhi governments should own up to regarding the air pollution crisis is that everyone was forewarned and cannot pretend to be taken unawares. This "winter of our discontent" is the season when, as temperatures dip, pollutants hover around the surface of the city and do not waft upwards. Things will only get more acute towards January. To make matters worse, smoke from burning farm waste descends on the capital from surrounding states at this time, which is a far more intractable problem.

Three years ago, the writing on the wall was the revelation by the World Health Organisation (WHO) that Delhi was the most polluted city in the world, and 13 out of the 20 worst impacted were in north India. The tell-tale parameter is the smallest measurable particulate matter — PM of less than 2.5 microns — which was an annual average of 153 micrograms per cubic metre that year, well above the WHO limit of 35. Beijing, which was previously the black sheep of the world's urban air contamination, recorded 53 micrograms.

Last year, Delhi lost this dubious distinction to Zabol in Iran and fell to 11th place on the world map. However, north India continued to fare among the worst on the globe, with Gwalior second, Allahabad third, Patna sixth and Raipur seventh. While Delhi continues to get all the attention on this score, one should pay heed to children and senior citizens in these other beleaguered cities. These residents can't afford air purifiers like many of the capital's well-to-do and diplomats, not to mention the bizarre measure of installing huge vacuum cleaners on its roads.

Has any decision-maker in the capital understood the full consequences of declaring its air a "national emergency"? Visitors — whether on business or diplomats — will think three times before visiting Delhi this winter. One has only to recall that it was estimated that when President Obama visited for the Republic Day parade in 2015 he may have lost six hours of his life by spending three days in the capital. The US Embassy imported 1,800 air purifiers for his entourage. Children can't attend school or play outside, and this has made Delhi the air pollution pariah of the world.

This could put paid to the prime minister's "Make in India" campaign. Indeed, if a good economist could calculate the financial losses on days missed at work, avoiding the outdoors at certain times of the day and the bills for respiratory diseases, it would reveal a huge bill borne mostly by individuals, and prompt the authorities to take all measures possible to curb this public health menace.

Certain causes, like the burning of farm residue require a carrot and stick approach to encourage farmers to recycle crop waste rather than burn it. But other causes like the pollutants from thermal power stations in and around the capital and the dust from construction can be more easily tackled by stiff penalties.

The sources which can be tackled head-on are the pollutants from vehicles. Delhi's AAP government has done well to experiment with an odd-and-even number plate scheme, which ought to be extended through the winter. Last March, the capital had 8.8 million vehicles, followed by Bengaluru with 6.1 million. Chennai, Kolkata and Mumbai have far fewer — 4.8 million, 3.9 and only 2.7 respectively. The reasons are not far to seek: Mumbai has an excellent public transport system, with its lifeline — the two local railways — carrying 3.7 million passengers a day, despite atrocious travelling conditions, which manifested in the foot overbridge accident this September. The once-renowned BEST bus service, now being bled to death by the city's municipal corporation, still carries 2.9 million passengers (a sharp fall from 4.4 million seven years previously).

It is a no-brainer that the pollution caused by private vehicles, whether they are four- or two-wheelers, can be curbed by restricting their numbers, as Beijing and other Chinese cities have done successfully even as public transport is greatly increased. Shanghai, for instance, has emulated Singapore's example of setting a limit on the number of cars permitted on its roads; Singapore allows market forces to decide the price of such a licence, which can exceed the cost of a car sometimes. Parking fees ought to be drastically increased, and payable even at night time. And, following London's example, the proceeds should be ploughed back into bettering the bus service.

With India going on a transport infrastructure spree, including in cities, there ought to be a clear discouragement of private motorised transport in favour of public transport. Mumbai's reckless city fathers are doing precisely the reverse by building an Rs 15,000-crore coast road only for cars. If Mumbai has been spared the ignominy of Delhi when it comes to air pollution, one reason is that the sea breezes waft pollutants away. Once this road is built, all that will change since the prevailing winds are in a south-west direction. Indeed, a rule of thumb for any transport infrastructure scheme, whether in cities or outside them, should be that they can be permitted only if half the users constitute the public.

All cities are making the mistake of prescribing metros as the solution for local transport. Although far superior to adding roads, these are expensive. In Delhi, and to a smaller extent in Mumbai, any raising of fares sparks off a controversy. In Delhi, the 200-km-plus Metro network doesn't seem to have reduced the number of cars appreciably, only two-wheelers. Mumbai is going in for a slew of such projects at a high cost, even parallel to the existing express highways, which is inexplicable. The fact that its standalone 11-km Metro sees 3.5 lakh users a day, while Delhi has only 28 lakh or around nine times as many, demonstrates that the Metro won't prove the ideal mode of mass public transport.

That distinction should go to buses, which can run both long distances in cities, as well as provide last-mile connectivity to and from metros and local railway stations. And, dare one even state it, reserved bus lanes are the most cost-efficient and egalitarian means of city transport, which penalise the polluters — cars and two-wheelers — and carry commuters comfortably and cleanly. What's more, it's virtually a no-cost solution.

City in search of an idea

A recent seminar on cities in Brasilia was revealing on two counts. First, it pointed out the dismal quality of life in the world's most wretched urban areas — almost all, without exception, in South Asia. Second, since the seminar was Third World-centric, its outcome was all the more damning. The criteria it used were truly basic — health, education, population density, access to water and clean air. The seminar did not even venture into First World standards of parks, recreation, social cohesion, entertainment, culture, or the quality of life.

Polluted air, rain-flooded streets and traffic snarls — these are obvious to most residents of Indian towns, and hardly need any restating. Strained on utilities and infrastructure, the city survives from day to day like a heavily-sedated patient in an ICU. Its future, even its survival the next day, is filled with multiple insecurities. Yet, Indian cities are remarkable in that they display their warts and all without hesitation and with utmost clarity. Look, for instance, at five of India's largest towns, each a critical marker of one major problem.

Delhi's pollution levels were among the highest in the world long before they were statistically reckoned in terms of particulate matter, carbon dioxide emissions, industrial effluents and daily air quality measures. As temperatures drop and crop stubble is burnt in neighbouring Punjab and firecrackers are lit — despite bans — toxic particulate matter rises to alarming levels. Pollution spikes to such unsafe standards in winter that news reports claim — without irony — that "today's level has improved from dangerous to very harmful". Marathons and cyclothons continue to be staged in Delhi, but with participants wearing masks. Is this acceptable for Asia's largest and most populous capital?

In Bengaluru, traffic comes to a virtual halt during peak hours. While, there is no viable public transport system for a population of one crore, the city has almost 70 lakh motorised vehicles — a number that has grown by 6,000 per cent from the 1970s. As a result, the average speed of vehicles in the city has dropped radically. It was recently clocked at 4.7 km per hour, slower than a middle-aged pedestrian walking normally. With the fastest internet connections to the rest of the world, India's IT city is slowest in terms of physical movement.

Mumbai, the country's business centre, comes to a virtual standstill for a completely different reason — floods. Every year, between June and September, people are stranded on embankments, swallowed up by open manholes, electrocuted by low-hanging wires, injured under collapsed buildings, or plain incapacitated in their daily routines between home and office. At Elphinstone Road Railway Station, a stampede after the recent floods left 22 people dead. Numerous old structures are in danger of collapse. For four months, it is not business as usual in Mumbai.

Kolkata's affliction is not new and stems from a lack of civic amenities. Without regular increases in power supply and water provision, the city survives on an entirely outmoded and inadequate supply and distribution system. With the Ganga along its Western flank, the city traditionally had extensive groundwater reserves and wetlands, but large parts of South and Central Kolkata now experience chronic water shortages. With rationing, power cuts and blackouts, India's oldest and once-most sophisticated modern city is now its most un-modern and antiquated.

Chennai is still the most livable of the big five. But that does not mean that it has no problems. Indeed, it has all the same afflictions, but in smaller measure — broken incomplete roads in Perumbakkam, water logging, lack of street drainage and lighting, and continual shortage of drinking water in the new areas. Residents of Chennai have learnt to do with less.

Providing relief to people in the Indian city now lies beyond the scope of conventional solutions and governance ideas — both of which have denied residents a better quality of life. Odd and even-numbered cars, a ban on diesel, planting trees, reviving mangroves, establishing flood break-heads, rationing utilities and reviving public transport are minor and ad- hoc solutions to problems that are now beyond environmental and bureaucratic control.

More than ever now, city officials need to start asking the right questions. Will Bengaluru benefit from the graded transition from fossil-fuel powered cars to electric cars over the next decade? Or will it benefit from the reduction and eventual eradication of cars altogether? Is private pod transport an answer to traffic problems? Should bylaws be revised to allow offices and homes at one place, and cut out commuting altogether? Should Mumbai merely clean up its storm drainage system before the monsoon — or upgrade it as is normally done prior to the rainy season — or seriously examine the possibility of creating large catchment areas throughout the city? Should Delhi encourage carpooling in winter and levy fines on burning coal and — in the obvious next stage of its convoluted policies — provide government subsidies to private air purifiers? Or, as has been done in many South American cities, reduce construction and create biomass parks with a sizeable proportion of trees per person in every neighbourhood?

The real test in the next decade will be one of far-reaching urban ideas that will have to be put in place by a mayor or a CEO (city enforcement officer) — someone in a position to take on responsibilities and initiate action. The promise of a brighter urban future rests with testing new ideas from new sources enacted by new people. The choices are many, but they need to be made now and by a single authority.

"More than any time in history," wrote Woody Allen, "mankind faces a crossroads. One path leads to utter despair and hopelessness, the other to total extinction". When applied to the present Indian city, Allen's prophecy has been realised on both counts.

Why number plate-based bans are odd, even existing tech can do better!

Delhi has a huge problem. Every winter, people realize they are breathing the equivalent of 50 cigarettes a day. However, as soon as the smog clears, so does the issue. Every year, policymakers find and announce quick fixes that demonstrate the government's resolve to do something about pollution. Since crop burning and dust storms are not immediately addressable, all the focus turns to vehicular pollution. This year, the National Green Tribunal (NGT) is ordering measures such as banning road-side parking and the retiring of old cars. Odd-Even road rationing was suggested, diluted with exceptions and then scrapped.

Such quick fixes may even be effective, but will only remain under the glare of the media. They are not sustainable. Recently, I wrote about 'policy windows', and how demonetisation led to the permanent unblocking of regulatory hurdles to a less-cash economy. Even though we have a similar crisis at hand, those in charge are unable to find a way to move the needle forward significantly. This is surprising, because the infrastructure to do this already exists!

The FASTag, launched by the Indian Highways Management Co. Ltd (IHMCL) in 2014, is a way to collect tolls electronically. Each car gets a radio-frequency identification (RFID) tag that is based on an open standard. This means the RFID readers are cheap, inter-operable and not locked in to any particular vendor. The transaction switch is managed by the National Payments Corp. of India (NPCI). When fully implemented, we will be the only country with a nation-wide inter-operable electronic toll collection (ETC) system. The ministry of road transport and highways and the National Highways Authority of India have been doing a great job of installing these RFID tags without much fanfare since 2014. Of the four million vehicles plying on highways daily 600,000 have RFID tags. From 1 December, every new car will come pre-installed with a FASTag.

At first glance, FASTag may seem useful only for automating toll collection. In reality, the architecture of the FASTag is very versatile. Each car gets a unique ID, and is linked to a bank account/wallet. Money is deducted based on the event that has happened, like passing a toll booth. There are at least five ways in which the FASTag platform can help Delhi's vehicular problem.

First, FASTags can implement congestion pricing. This is a model perfected by London and Singapore. Delhi, especially, with the subcontinent's most extensive metro network, and yet the third highest density of cars (424 cars per 1,000 people), needs congestion pricing. The pricing itself can be dynamic to affect demand.

Second, the same FASTags can enable the government to have lower congestion pricing for those who are pooling to work. The government does not even have to create its own ride-sharing app, it has to simply provide application programmatic interfaces (APIs) to legitimate ride-sharing app providers.

Third, these tags can regulate parking, while simultaneously creating a revenue opportunity for cities. FASTags can ensure that a no-parking sign is not just a warning, but a serious penalty for those looking to park illegally. Individuals and businesses can 'switch on' temporary parking spaces during peak hours.

Fourth, the FASTag readers can also be used to implement many of the policy recommendations of the NGT that are otherwise difficult to implement. Pollution Under Control Certificates (PUC) can be linked to the FASTag accounts, and a tag without a valid PUC can be fined automatically when it crosses a reader. The government can run experiments like it did with Odd-Even last year and then quickly scale them up if needed in an automated way.

Fifth, and the most important, all of these problems are really difficult to solve because the government lacks granular traffic data needed to make better decisions. Every decision from the width of the flyover, to the timing between red lights needs better quality data.

Companies like Uber and Google are able to figure it out by tracking which cell tower your phone connects to and tracking your phone's global positioning system (GPS). Right now, an engineer in San Francisco has a much better idea of traffic movement in Delhi than the officials whose job it is to design roads.

With a trusted implementation of FASTag readers, the government can get such anonymized data directly from the ground. Basically, an invisible toll booth that doesn't collect a toll but captures every time any car crosses it. This data can be immensely powerful when used correctly.

Tomorrow, our smart cities can have smart traffic lights that don't stay red a second longer than is optimal. The possibilities of this system are endless, but we need to push collectively to make it happen. Policymakers need to act now, before the policy window closes. Because when the smog finally dissipates, so will the political will to solve the issue, but the problem will still hang in the air. Till next winter!

Nandan Nilekani is chairman of Infosys Ltd and former chairman of Unique Identification Authority of India.

Inland Waterways Authority of India pushes for early completion of Jal Marg Vikas Project on Ganga

Hires expert technical support for projects at Haldia and Farakka

The Inland Waterways Authority of India (IWAI) has awarded a contract to a reputed consultant for technical support services for the Multi-Modal Terminal at Haldia and new Navigation Lock at Farakka. These projects are part of the Jal Marg Vikas Project (JMVP) on National Waterway -I (River Ganga), being implemented with technical and financial assistance of the World Bank at an estimated cost of Rs. 5369 Crore. The objective of this is to ensure adherence to timelines and budgeted costs of the project and full compliance with the other stated guidelines.

The consultants will ensure efficient management of the two EPC contracts awarded by IWAI under the JMVP. They will provide comprehensive project technical support, including day to day supervision, proof checking of design, quality and safety parameters and coordination and management with all stakeholders. The Contractor will also monitor the implementation of Environment Management Plan and Social Impact Management Plan.

The Jal Marg Vikas Project seeks to facilitate plying of vessels with capacity of 1500-2000 tons in the Haldia-Varanasi stretch of the River Ganga. The major works being taken up under JMVP are development of fairway, Multi-Modal Terminals, strengthening of river navigation system, conservancy works, modern River Information System (RIS), Digital Global Positioning System (DGPS), night navigation facilities, modern methods of channel marking etc.

NP/MS

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Shri J P Nadda inaugurates the 'Transport Ministers` Forum on Road Safety'

All sectors need to be fully engaged in responsibility, activity and advocacy for preventing accidents: J P Nadda

"All sectors including the health sector need to be fully engaged in responsibility, activity and advocacy for preventing accidents". This was stated by Shri J P Nadda, Union Minister of Health and Family Welfare at the 'Transport Ministers` Forum on Road Safety' organised by International Road Federation (IRF), here today. Shri Nadda further said that the political commitment and a will to achieve can bring about significant and rapid decline in road injuries and requires planning at all levels, capacity creation, involvement of all sectors and good data.

Transport Ministers from eight countries along with Shri Yudhvir Singh Malik, Secretary (RT&H), Ministry of Road Transport & Highways, Mr. Jean Todt, UN Secretary General's Special Envoy for Road Safety and Mr. Kiran K. Kapila, Chairman, IRF, Geneva, were also present at the occasion.

While emphasizing on the need to have a National Trauma Care Policy for road accident victims, Shri Nadda said that the possibility of novel methods of quick relief through airlifting such as Air Ambulances and providing relief in remote areas, well equipped Mobile Clinics etc., should be explored. The Health Minister further added that it is important to create an enhanced capacity and infuse the knowledge of road safety related actions in public bystanders, road side facilities such as dhabas and amongst commercial truck drivers, who are most often the first on the accident sites and are first responders.

Speaking at the function, Shri Nadda informed the participants that the "capacity building for developing Trauma Care Facilities in Government Hospitals on National Highways", was approved for development of 85 new trauma care facilities. He further said that during 12th FYP, 85 Medical Colleges/ District Hospitals have been approved. Out of the 116 trauma care facilities funded during the 11th FYP, 100 are reported to be functional by the States.

"National Injury Surveillance, Trauma Registry and Capacity Building Centre have been established at Dr. RML Hospital, ATLS/NELS training for doctors and BLS training for

nurses is being organized at Dr. RML Hospital. The scheme is proposed to continue as 'National Programme for Trauma Care' under the umbrella scheme 'National Programme for Prevention & Management of Trauma & Burn Injuries' for establishing 30 new trauma care facilities, Shri Nadda added. The Health Minister further said that the proposal for continuation of the scheme with an outlay of Rs. 554.41 cr has been approved by EFC and is placed before the CCEA for approval.

Also present at the function were senior officers of the Ministry, delegates from other countries and representatives of development partners.

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MV/SK

International Conference & Exposition of Society of Petroleum Geophysicists

The 12th Biennial International Conference & Exposition of Society of Petroleum Geophysicists (SPG) India was inaugurated by Union Minister of Petroleum & Natural Gas and Skill Development & Entrepreneurship at Jaipur today. The three days International Conference & Exposition of SPG India will remain open till 19th November 2017.

During his second consecutive visit to SPG conference, Shri Dharmendra Pradhan stressed upon theme of conference "Energy trough Synergy" in his inaugural address and emphasized upon the importance of Oil sector in India's energy ecosystem and its role in national economy. Elaborating on the changing energy scenario, he mentioned the historic stages of development of the energy supply and its impact on industry. Elaborating further, he expressed that the first industrial revolution was a result of development of Coal-seam derived energy. In due course of time, the energy sourcing changed over to hydrocarbon followed by electricity. With India being the third largest consumer of the energy in the world, the Hon'ble minister emphasized upon bringing new and alternate energy sources like Gas hydrates in the energy supply chain. Speaking about SPG, he mentioned that such conferences are platform to provide an environment for various players of the energy arena to come together and exchange ideas for scientific and technological innovation.

In his opinion, Data is a key factor for growth because Old data viewed from a new perspective over a period of time, can result in new opportunities. Referring to Geoscience technologies as the key link in improving exploration success for oil and gas in the country, He categorically expressed his expectations from the Geoscientific community to reduce import dependency by at least 10% and ensure energy affordability, sustainability and accessibility for entire spectrum of people of India in order to fulfil the vision of the Prime Minister of India.

Talking about policy decisions taken by Govt. of India, he made reference to various initiatives taken by the Govts. to facilitate the ease of carrying out business in energy sector of India while ensuring that the revenue income will also grow.

He also released the Souvenir and special issue of half yearly journal, GEOHORIZON.

Speaking on the occasion, Guest of honour, Padma Vibhushan, Dr. Anil Kakodkar emphasized upon the 'Exploitation of Knowledge' for national growth. Talking about the importance of knowledge, he emphasized upon need to develop a peer system to retain decision specific knowledge. He also opined that hierarchical system is not conducive for proper utilization of knowledge in decision making. Towards this he exhorted the energy sector for nurturing a body of peers to develop the youngsters.

In the inaugural session, the Union Minister Shri Dharmendra Pradhan presented the

coveted B S Negi Convention Gold medal and life time achievement award to Mr. P S N Kutty, Ex-Executive Director, ONGC for his lifetime achievement in the field of geosciences.

The session was also addressed by Mr. Shashi Shanker, CMD, ONGC & Chief Patron SPG, Mr. A K Dwivedi, Director (Expl) ONGC & Patron SPG, Ms Nancy House, President, SEG USA, Mr. Marcel Van Loom, Director, EAGE, Netherland & Mr. D Purkayastha, President SPG, India.

AD/

Rent-a-roof policy can give residential solar energy the push it requires

The Centre is planning a rent-a-roof policy to support its ambitious plan to generate 40 gigawatts (GW) of power from solar rooftop projects by 2022, MINT reported this week . The government's solar power target is 100 GW; of this 60 GW is expected to come from ground-mounted, grid-connected projects. If the new policy comes through, solar developers — these companies provide end-to-end service to those interested in installing solar systems — can rent rooftop space, fit it with solar panels, and feed the power to the grid . If the policy takes off, householders will not have to bother themselves any more with the time-consuming, bureaucratic nitty-gritty that precedes the installation of panels.

India offers a big opportunity for solar energy. Its 750GW potential is driven by roughly 300 sunny days a year, with an average solar radiation range of 4-7 kilowatt-hours per square metre. Despite this, and attractive fiscal incentives, households haven't exactly taken to solar power. As a result, financial incentives are not being utilised and consumers are not availing significant potential savings on their electricity bills, even as the burden on electricity distribution companies to meet power demand from the grid is growing. A Greenpeace analysis shows that all the major metros are far from meeting rooftop solar targets as laid down by state governments and the ministry of new and renewable energy. This is despite a significant national incentive in the form of a 30% capital subsidy, and a range of state incentives and schemes.

The success of the rooftop solar is critical for India which is faced with the challenge of decarbonising its electricity sector and tackling air pollution, some part of which is caused by coal-fired power plants generating electricity. A Global Burden of Diseases report says air pollution accounts for 1.2 million deaths every year, and costs India 3% of its GDP .

Large solar plants require land, lots of it. Therefore, it is important that policies support rooftop and decentralised solar power generation, both off grid and on. The proposed policy could empower the solar energy industry to focus on households; it also gives every home a chance to be energy independent. However, it cannot magically transform the sector unless other issues are addressed.

For one, people must be better apprised of the benefits of solar power (for instance, the government must give solar the same push it gives to Swachch Bharat Abhiyan); and the perceptions that households will have to make a huge upfront investment or that solar installations will make rooftop space unusable have to be removed. These may sound like small issues, but can work as deterrents when households take that leap of faith.

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Shri Nitin Gadkari lays foundation stone for Cochin Shipyard's Rs 970-crore International Ship Repair Facility

The facility will double the number of ships that can be repaired every year

Shri Gadkari also laid foundation stone for National Highways project in Munnar

The Minister of Shipping, Road Transport & Highways and Water Resources, River Development and Ganga Rejuvenation Shri Nitin Gadkari has said that Cochin is all set to become a global ship repair hub. He was speaking at Cochin today, after laying the foundation stone for a Rs 970-crore International Ship Repair Facility (ISRF) for Cochin Shipyard Limited. The facility is being built at Cochin Port Trust where CSL has leased out a 40-acre plot for the project.

The International Ship Repair facility will be a State of the Art facility that can handle a major chunk of small and medium sized vessels plying in India. CSL will set up a ship lift system of size 130 m x 25 m with lifting capacity of 6000 tonnes and 6 work stations. The facility can repair up to 85 vessels, and CSL will thereby be almost doubling the number of ships that can be repaired every year.

Pointing out that this facility will help boost India's share in commercial ship repair market, Shri Gadkari said that the industry will also generate about 6000 direct and indirect jobs, besides giving rise to a number of ancillary industries in the state, thus having a multiplier effect on employment and economy.

Shri Gadkari also inaugurated the conference **Build The Ship – 2017** organized by the Ministry of Shipping in Cochin today. The event deliberated upon the recommendations of a study regarding the growth strategies for promotion of Shipbuilding, Ship Design, Ship Repair and Marine Ancillaries in India.

At the conference the Minister announced the start of **Center of Excellence in Maritime and Shipbuilding (CEMS)**, a start up in skill development for maritime and shipbuilding sector. CEMS will have campuses at Vishakhapatnam and Mumbai. It is being set up by the Ministry of Shipping in collaboration with Siemens under the flagship programme Sagarmala. CEMS will provide industry-relevant skill development, equip students with employable engineering and technical skills in the port and maritime sector and contribute to the Government of India's ambitious Sagarmala programme. It will help meet the domestic skill requirement in ship design, manufacturing, operating and Maintenance, Repair and Overhaul (MRO) and aims to become an international nodal centre in South Asia, attracting students from neighboring countries like Sri Lanka, Bangladesh, Thailand, Malaysia and Indonesia for skill development in the Port and Maritime sector. This initiative will also add to the **Make in India** and **Skill India** efforts in the maritime sector. Shri Gadkari unveiled the logo of CEMS at the launch event in Cochin today.

A joint venture b/w CSL & HDPEL- Hooghly Cochin Shipyard Ltd. (HCSL) has been incorporated with CSL 74% and HDPEL 26% shares in HCSL. A Shareholders agreement was signed between CSL and HDEPL at the conference today, for taking over manufacturing facilities of HDEPL in Kolkata. With this, CSL is setting the stage for revival and strengthening of maritime heritage in Kolkata.

Shri Gadkari also visited Munnar today, where he laid the foundation stone for rehabilitation and upgradation of NH 85 from Bodimettu to Munnar to two laned with paved shoulder. The 42 km project has an estimated cost of Rs 380.76 Crores.

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NP/MS

MNRE organises panel discussion on 'Innovative Financing and Market Evolution to achieve 175 GW Renewables by 2022' at CoP 23, Bonn, Germany

India committed to its Renewable Energy Targets to provide Equitable Sustainable Development

The Ministry of New and Renewable Energy (MNRE), Government of India, in partnership with the Confederation of Indian Industry (CII), organised a panel discussion on 'Innovative Financing and Market Evolution to achieve 175 GW renewables by 2022' on 16th November 2017 at the India Pavilion at Conference of Parties (CoP) 23, Bonn, Germany.

Reaffirming India's resolution to go ahead with the set agenda with determination and clarity, Shri C.K. Mishra, Secretary, Ministry of Environment, Forests and Climate Change, Government of India, said that India has been pursuing its goals of setting up renewable energy capacities and changing its energy mix, and will continue to do so to provide equitable sustainable development.

Speaking about the Government's interventions, Dr. P.C. Maithani, Adviser, MNRE said that policies are being drafted on a continuous basis to address challenges as the market evolves. Giving examples of how the question is no longer about availability of finances but that of cheap finances, Shri K.S. Popli, CMD, Indian Renewable Energy Development Agency Limited (IREDA) said that the markets have matured and one indicator of that is seen in how the bond markets have progressed.

Dr. Ajay Mathur, DG, The Energy and Resources Institute (TERI) stressed upon the need to push for higher research in storage technology which could compliment the infirm renewable power. There is an imminent need to look at bringing down storage costs, he added.

India's renewable energy journey has come a long way since it set its ambitious target of 175 GW by 2022. Prices of solar and wind have dramatically reduced to 3-4 cents per Kwh as against 9-12 per unit in 2013, even as capacities have scaled up to 47.5 GW. Policymakers and industry are now confident of accelerating this growth trajectory to provide electricity, along with storage, at an estimated Rs 5 per unit before 2025.

Explaining the scope of the renewables market, Shri Rahul Munjal, MD, Hero Futures Energy said that there has been an exponential expansion of the industry, with almost 10,000 firms operating in the ecosystem. This is a result of the market being conducive to business and investments. Echoing a similar thought and projecting high optimism, Shri Rajiv Ranjan Mishra, MD, CLP India said that renewables are becoming more an imperative for economies like India which have to reach power to large sections of the people. Shri Ratul Puri, Chairman, Hindustan Power Projects Pvt Ltd (HPPPL) highlighted the need to make power available at affordable rates and said that Indian industry is working towards achieving that goal.

The panel also included Mr Frank Determann, Principal Project Manager, KfW Development Bank; Shri Reji Pillai of India Smart Grid Forum, among others.

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Delay in the protection of corridors threatens tiger population

Precious time Construction of a vehicular flyover designed to facilitate animal movement has been delayed. | Photo Credit: I. P. Bopanna

It is not just poaching or habitat loss that threatens India's tiger population. Delayed action to protect crucial wildlife corridors — despite the availability of relevant ecological knowledge — is also killing these big cats, shows a study published in conservation journal *Oryx.*

For species like tigers which move across large distances, wildlife corridors, protected patches of land connecting two habitats, are crucial. Uttarakhand's Chilla–Motichur corridor is one such patch connecting the eastern and western tracts of the Rajaji Tiger Reserve. It is the only way tigers from the eastern tract (part of a larger, more connected landscape) can colonise the isolated western one. Over the years, however, the corridor has been deteriorating due to reasons including the expansion of nearby townships and the construction of a national highway and rail line.

Multi-pronged approach

Scientists at the Panthera, Nature Conservation Foundation and the University of Kent, U.K., used a multi-pronged approach to study the status of the Chilla–Motichur corridor. First, they studied tiger presence in the area using presence–absence surveys of tiger signs, assessing change in tiger presence from data gathered between 2002 and 2009. While the eastern tract showed a high presence of tigers, the western one showed a distinct decline in tiger numbers and presence.

Second, the team studied the corridor's connectivity using remotely-sensed night-time lighting as an indicator of urbanisation.

They found that since 1993, urbanisation had decreased opportunities to restore the effectiveness of the corridor considerably.

The team compiled 31 research articles on the corridor and made 14 distinct recommendations to restore corridor connectivity. Only five recommendations have been incorporated into government management plans, and delays in mobilising funds and approvals from state departments followed by the lack of deadlines to implement these actions exacerbated the problems.

"Institutional failings are mirrored in the inability of many state and central departments to work together for the restoration of Chilla-Motichur; this case typifies what happens with most wildlife corridors across the country," says lead author Abishek Harihar (Panthera and Nature Conservation Foundation). "If immediate action is not taken, the population in the western tract could go extinct."

Tux brushing tussar, cards being exchanged like cocaine packets, billionaires mingled at Illuminating India

END

Asia's cities could save the planet

The world's cities will add 2.5 billion more residents by 2050, more than half of them in Asia. The effect of this great migration on climate change will depend in part on what kind of homes, factories and office buildings they live and work in.

It's a seemingly minor but significant issue that should attract attention from officials gathered at this week's United Nations-sponsored climate talks in Bonn. (Michael Bloomberg, the founder and owner of Bloomberg LP, is the UN special envoy for cities and climate change.) Buildings generate almost 20% of energy-related greenhouse-gas emissions — a proportion that's likely to rise as onetime farmers move into more energy-intensive modern homes. Yet less than 10% of the $4.6 trillion spent on construction in 2015 went into energy-efficient "green" buildings.

The reasons are many: Some energy-saving technologies and designs have only recently become widely accessible. There is a widespread belief among many developers, especially in poorer countries, that building green costs considerably more than traditional methods. Officials in many countries are lax about enforcing building codes for energy efficiency.

But there is now software that can give architects and engineers access to the most efficient designs and quickly certify their work. As for cost, the International Finance Corporation estimates that building green raises construction costs less than 2% on average. And new business models, such as so-called energy savings companies, popular in China, can enable commercial developers to better afford energy-efficient technologies.

The challenge also presents rich countries, which are supposed to be contributing to a Green Climate Fund to assist poorer ones in reducing their carbon emissions, with a more politically palatable way to help. Europe, for instance, has plenty of knowledge to share on designing green certifications and building codes. More important, Western banks could play a critical role in marshaling new financial instruments, such as green construction bonds, to pay for all these new buildings.

Asian governments also need to do more to encourage homeowners and builders to make greener choices. Part of the task involves providing reliable certifications and educating the public about the virtues of energy-efficient buildings, so that property buyers choose and will pay a premium for them. At the same time, officials must do a far better job of getting local governments to adopt and enforce tougher building codes.

Asia's urban leaders need to worry about much more than buildings, of course. They'll have to map out cleaner and more efficient systems for public transportation, waste, water and so on. At the same time, if the world's fast-growing cities can make more of their new buildings more green, they will play a crucial role in fighting climate change. **Bloomberg Views**

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Infra status for logistics sector

The Centre has granted infrastructure status to the logistics sector, allowing it to avail loans at competitive terms that come along with the status.

"The need for integrated logistics sector development has been felt for quite some time in view of the fact that the logistics cost in India is very high compared to developed countries," the government said in a statement.

"High logistics cost reduces the competitiveness of Indian goods both in domestic as well as export markets. Development of logistics would give a boost to both domestic and external demand thereby encouraging manufacturing and 'job creation.'

"This will, in turn, be instrumental in improving country's GDP."

"The cost of logistics is extremely high in India with some estimates putting it at about 13% of GDP, which is higher than the U.S. (9) and Germany (8)," said Pirojshaw Sarkari, CEO, Mahindra Logistics, in a statement. "Hence, the logistics sector needs improvement in efficiency. We believe that the infrastructure status will reduce the cost of capital in transportation and warehousing, thereby reducing the cost of logistics."

"There are a number of benefits that the infrastructure status has," said K. Ravichandran, senior vice president, ICRA said.

Longer maturity period

"Number one, infrastructure industries get longer maturity loans compared to typical manufacturing sector. They are also eligible for slightly higher equity ratios while applying for the loans. The third is that the external commercial borrowing guidelines say that the infrastructure sector has certain advantages and flexibility, and they can also do refinancing with specialised lenders like IDFC, IIFCL, etc."

The inclusion of the logistics sector in the Harmonised Master List of Infrastructure Sub-sectors was discussed at the 14th Institutional Mechanism (IM) Meeting held on November 10, 2017, where it was approved by Finance Minister Arun Jaitley.

END

Farm policies for India

Farmers from across the country are out on Delhi's streets agitating just as the deliberations for the 2018 budget are beginning and it's time to seek solutions to the structural issues that plague the system.

The "one-size-fits-all" policy created for the farm sector is self-destructive in design and programmes meant to double farmer incomes are collapsing. The Pradhan Mantri Fasal Bima Yojna (PMFBY) is a classic case where the best intentions of the prime minister were muddled in the policy's fine-print. The PMFBY is designed to provide crop insurance and the Central government shares part of the premium subject to conditions. To receive the Central government's share, the state has to walk the dotted line, come hell or high water; whether the region is rain-fed or irrigated; whether the cropping density is less than 100 per cent or upwards of 200 per cent. Simply allowing each state to design its own crop insurance scheme and yet receiving the Central government share of the premium would yield the desired results.

Similarly, an incentive of Rs 75 lakh per mandi is given by the Centre to the states for linking each market with E-NAM, the electronic platform for trading commodities. Much of the recorded turnover is, in fact, a sham. States like Haryana log in all FCI purchases as E-NAM transactions. Rather than force E-NAM on states, incentivising each state to have the electronic platform which meets the basic criteria of interoperability with other states is the correct path.

Recently, worried by the way the Regional Economic Comprehensive partnership (RCEP) for trade within Asia was shaping up, I advocated that the Central government shouldn't negotiate international trade treaties on agriculture commodities without the consent (which differs from "consultation") of state governments. I was told that as per the Constitution of India, trade negotiations are under the purview of the Centre, even though agriculture is in the domain of the states.

That is precisely the reason that every time food prices rise, the Centre intervenes to rein in inflation by facilitating the unhindered import of agricultural commodities. This constantly drives down farm-gate prices. But when prices fall, the Central government remains apathetic.

To offset these annual losses, states should demand that the Centre set a floor price for all such farm produce, where only the Central government shells out the shortfall between the market price and floor price via a "Price Deficiency Payment". At present, farmers and states are penalised for the fallout of a policy not sanctioned by them and have to share the cost. Additionally, to prepare Indian farmers for global assimilation, funding for programmes such as the Rashtriya Krishi Vigyan and the sub-mission on agriculture mechanisation should be doubled and the funding ratio should be changed from 60:40 to 80:20, where the Central government's contribution rises to 80 per cent.

When different states announced farm loan waivers, banks were asked to provide farm loan data. Scrutiny of the data revealed the horrifying fact that public and private sector banks have indiscriminately given loans of over Rs one lakh crore to gullible farmers based on their asset value rather than economic viability. In the frantic quest to meet their own priority-sector lending targets, they have given these loans beyond the farmers' scale of finance or actual value of crop sold each year by individual farmers. The culpability of banks has been established by the RBI through an in-house study conducted by the Financial Inclusion and Development Department — there was no way the loans could have been repaid. Now, that the malafide intent of the banks in giving loans to desperate farmers has been established, it's time to institute a class action lawsuit for the complete waiver of all such farm loans. The question is: Which jurist will have the courage to accept such an audacious case and what will be the stand of the ministry of finance? Will it side

with the poor farmers or with the banks which are too big to fail?

For farmers to prosper, hundreds of changes are required but, more importantly, a devaluation of the Indian rupee is essential. Even how funds devolve to the states in a federal structure has to be looked at afresh by the 15th Finance Commission but states are either innocent of the emergent contradictions or too financially dependent and meek to challenge these notions

Not that fund utilisation is much better in the states, where policy is influenced by the whims of individual short-sighted policy-makers. Each state needs to be nudged and funded to create a data bank and adopt a blockchain process for government decision-making. Big data analytics will usher in improved governance and transparency.

In the recently concluded "World Food Day" extravaganza of the food processing ministry, investments for over Rs one lakh crore were signed. The only lasting impression, however, was the Guinness World Record for cooking 918 kg of khichdi at the event; probably because no intelligent soul was convinced by the propaganda. Sadly, the "mega food park" policy, like the "farm policy", has been botched. The PMO can't be naïve enough to believe in either. It's time to end the policy khichdi by merging the ministry of food processing with the ministry of agriculture and farmer welfare to create synergy.

The age-old perception of farmers that the BJP works only for the urban middle classes is being reinforced. The PM must either listen to the farmers or it's beyond doubt that, come 2019, the policy anomalies will drive the farmers into a fury that will engulf the establishment. For how long can the leadership continue to hope for support grounded on farmers' expectations of off-farm jobs and achhe din?

India Signs Loan Agreement with World Bank for USD 100 Million for "Shared Infrastructure for Solar Parks Project"

India Signs Loan Agreement with World Bank for USD 100 Million for "Shared Infrastructure for Solar Parks Project"

A Guarantee Agreement for IBRD/CTF loan of USD 98 million and Grant Agreement for USD 2 million for the "Shared Infrastructure for Solar Parks Project" was signed with the World Bank here today by Mr Sameer Kumar Khare, Joint Secretary (MI), Department of Economic Affairs on behalf of Government of India, and Mr Hisham A. Abdo, Acting Country Director, World Bank India, on behalf of the World Bank. A Loan Agreement was also signed by Mr K S Popli, Chairman and Managing Director, India Renewable Energy Development Agency Ltd. (IREDA) and Mr Hisham A. Abdo, Acting Country Director, World Bank India, on behalf of the World Bank.

The project consists of two components viz. (i) Shared Infrastructure for Solar Parks (estimated total project cost of USD 100 million, including USD 75 million in IBRD loan and USD 23 million in CTF Loan) and (ii) Technical Assistance (USD 2 million in CTF Grant).

The objective of the project is to increase solar generation capacity through establishment of large-scale parks in the country. The project will help establish large-scale solar parks and support the government's plan to install 100 Gigawatts (GW) of solar power out of a total renewable-energy target of 175 GW by 2022.

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DSM/SBS/KA

More than just a counting game

Yesterday, November 19, 2017, was World Toilet Day, with the theme 'Wastewater and Faecal Sludge Management'. In India, there is greater awareness about the importance of using toilets, largely due to the high profile, flagship programme Swachh Bharat Mission launched in 2014, so much so that even Bollywood capitalised on this topic in the recent film Akshay Kumar starrer, *Toilet — Ek Prem Katha*, where a marriage is saved thanks to toilets. However, in real life, the sanitation story only begins with toilets, something clearly stated by the targets under the 2015 Sustainable Development Goals. These targets are not just about 'toilets' but also suggest improvements to the entire cycle of sanitation, which certainly begins with toilets but has to end with safe waste disposal.

Four stage cycle

Sanitation is intrinsically linked to health, and unless faecal waste is treated properly and disposed of safely, it will find its way back into our bodies and make us sick either by contaminating our sources of drinking water or getting into the food chain. The full cycle of sanitation has four stages: access to toilets; safe containment; conveyance either through the sewerage network or de-sludging trucks, and treatment and disposal. The faecal waste needs to be handled safely at each of these stages in order to gain public health benefits.

As recognised in the last decade, urban India faces considerable gaps along the full cycle of sanitation. One probable reason for these deficits was the belief that sewerage and sewage treatment systems could be built in all cities. Sewerage refers to fully sealed pipes, that are underground, and must not be confused with open storm water drains that are supposed to carry only rainwater. After decades of investment, India has managed to connect only a little more than a third of its urban households, most of which are located in metropolitan cities, to sewerage systems. This is because sewerage systems and sewage treatment plants (STPs) — a preferred system in most western countries — are not only expensive but are also complicated to maintain.

An alternative to sewerage systems is something known as on-site systems. Septic tanks and pit latrines, which are prevalent in many Indian households, fall into this category. If these systems are designed, constructed and managed properly, they can be perfectly safe options. Safe containment, collection and treatment is known as septage management or faecal sludge management (FSM), and is being increasingly recognised by the Government of India as a viable option.

Multi-stage challenges

Though viable, there are several challenges for FSM across all stages.

Emerging evidence from across the country indicates that on-site systems are not constructed properly. While the designs of 'septic' tanks and leach pits have been set out in standards issued in government documents, houseowners and masons are often not aware of these. The most severe consequence of these poorly designed pits is the potential contamination of groundwater. In addition, they are not de-sludged at regular intervals. Faecal waste needs to be transported using de-sludging vehicles (and not manually) but only some States, Tamil Nadu for example, have these vehicles. Once collected, the waste needs to treated properly to ensure that it does not land up in our lakes and rivers. There aren't enough treatment facilities to guarantee proper treatment of the sludge.

A way forward

After the National Urban Sanitation Policy (NUSP) in 2008, a national policy on Faecal Sludge and Septage Management (FSSM) was released earlier this year. Tamil Nadu, Maharashtra and Odisha have released State-wide septage management guidelines and taken concrete steps to execute these policies. While de-sludging vehicles and robust informal markets exist for de-sludging services in some States, others are either procuring vehicles for their urban local bodies or encouraging private players to get into this.

Tamil Nadu has decided to utilise existing infrastructure, namely STPs, and allowed the co-treatment of faecal sludge in these facilities. It has also put in additional infrastructure called decanting stations at some pumping stations to make it easier for de-sludging vehicles to deposit their waste. Devanahalli in Bengaluru has a dedicated Faecal Sludge Treatment Plant (FSTP) operational since 2015. Others of varying sizes are either under construction or already running in Kochi (Kerala), Tiruchi (Tamil Nadu) and as far as Leh. Thus, there are many promising steps being taken, but much more needs to be done if we are to truly become an open-defecation free nation.

Here are some suggestions that both the government and us, citizens, can work towards.

Raising awareness about correct design and construction practices of on-site systems (new and legacy) will perhaps remain the biggest hurdle in the years to come. But, urban local bodies and State governments could start by ensuring that the larger containment systems such as community toilets and public toilets are properly constructed and managed. In addition, permission could be granted to new buildings, especially large apartment complexes only when the applicants show proper septage construction designs. The safety of sanitary workers who clean tanks and pits must be ensured by enforcing occupational safety precautions and the use of personal protective equipment as set out in the law. The last two suggestions are actions for us as citizens. As home-owners and residents, our tanks and pits must be emptied regularly, thereby preventing leaks and overflow. We must ask our governments to invest in creating treatment facilities that our cities can afford.

Let us move beyond the cute poop emojis on our smartphones and make this an acceptable discussion topic in the drawing room. Maybe the biggest victory will come when citizens realise that the focus needs to be on more than just toilets.

Kavita Wankhade works at the Indian Institute for Human Settlements, Bangalore, and is part of the Tamil Nadu Urban Sanitation Support Programme (TNUSSP) in Chennai. The views expressed are personal

The definition of harassment needs to be constantly updated, and the process for justice made more robust

Low tariffs slowing new bids for wind, solar energy projects: ICRA

Winding down:State utilities prefer the bid tariff as it is significantly lower than the feed-in tariffs for wind projects.

The renewable energy sector is in the midst of a lull after the storm, as bidding for wind and solar energy projects is seeing a short-term slowdown, said rating agency ICRA on Tuesday.

"With very limited progress on the firm bidding plans by the State-owned distribution utilities to award the wind energy projects, this particular sector is facing near term headwinds and the capacity addition in the near term remains adversely impacted due to migration from feed-in tariff to bid tariff route," ICRA said in a note.

"The wind energy sector is now following a bid based regime since February 2017, given the success of a reverse auction under two rounds of 1GW each by Ministry of New & Renewable Energy (MNRE) with a bid tariff discovery at Rs. 3.46/kwh in February 2017 & Rs. 2.64/kwh in October 2017," said Sabyasachi Majumdar, senior vice-president & group head at ICRA Ratings.

This option is being preferred by the State utilities since the bid tariff level is significantly lower than the approved feed-in tariffs by State Electricity Regulatory Commissions (SERCs) for wind power projects. "The recent increase by about 15% (i.e. 6-7 cents/watt) in imported PV module prices, if sustained, could have an adverse impact on the viability of solar power projects with tariffs lower than Rs. 3.5 per unit," the note added.

"The bidding activity for award of solar projects has slowed down in calendar year 2017 (till Oct.) as reflected in awarded project capacity of 3.75 GW as against 7.2 GW in the corresponding period of CY 2016."

END

Sustainable Waste Management is the Need of the Hour: Puri

National Workshop on "Processing and Use of Construction & Demolition Waste on Deconstruction & in-Situ Processing for Ecology and Economics Inaugurated

"Sustainable waste management is the need of the hour, which involves managing waste in an environmentally sound, socially satisfactory and techno-economically viable manner. The waste management hierarchy demands firstly, avoiding generation of waste, followed by reducing, reusing, recycling, recovering, treating and disposing whatever wastes produced. The fundamental objective should be to maximize re-use and recycling so that minimum land space is occupied for disposal and at the same time, natural resources and energy are saved" said the Union Minister of state (I/C) Ministry of Housing and Urban Affairs at the National workshop on "processing and use of construction & demolition waste on deconstruction & in-situ processing for ecology and economics which he inaugurated here today. Shri Durga Shanker Mishra, Secretary, M/o Housing & Urban Affairs, Govt. of India, Dr. Shailesh Kr Agrawal, Executive Director, BMTPC and senior officials were also present at the workshop.

During his address, Sh Puri stated that there is pressing need to bring awareness about the problem of waste management and the necessity to adopt proper procedure of collection, processing, recycling and use of C&D wastes in manufacturing of building components among different stake holders of the country. "In order to meet requirements of urban transformation and flagship programmes of our Government as regards housing and infrastructure, it is known fact that we can not continue to make use of conventional building materials which continue to depend on finite natural resources mainly drawing upon the carrying capacity of the eco system and often causes irreparable environmental damages. It is being increasingly recognized that raw materials from natural resources are being used at a faster rate than they are being replenished or alternatives being found. The challenge posed by the emerging trends of higher consumption levels has to be met within the concept of sustainable development, of which gainful utilization of waste is one of the important components", he added.

Highlighting the problem, Sh Puri stated that often it is seen that building owners, waste haulers and demolition contractors improperly and illegally dispose off these wastes in gravel pits or ground water recharge areas, on farm land and prime residential property, borrow pits and low lying areas. Such stacks of wastes may choke the surface drains causing flooding of roads and low lying areas while wastes from individual house construction or demolition, often find its way to nearby municipal waste storage bin, waste storage depots, making the municipal wastes very heavy and unsuitable for further treatment, he said. The wastes which are buried at site itself, form impervious layer, which adversely affect the growth of vegetation and prevents the infiltration of surface runoff into the ground water table. Therefore, it is essential to properly manage the C&D wastes. The Ministry of Environment, Forest and Climate Change, Govt. of India, under Environment Protection Act, 1986 has recently notified Management of Construction and Demolition Wastes Rules 2016 to provide an institutional framework for management of C&D Wastes. This gives timelines for the state government to formulate policy,

identification of sites for collection and processing facility, commissioning and implementation of the facility and monitoring by State Pollution Control Boards, the Minister informed.

The proper implementation of the Notification is the collective responsibility of all stakeholders gathered here. Guidelines on Environmental Management of Construction & Demolition Wastes was brought out by Central Pollution Control Board (CPCB) in March, 2017. CPCB guidelines address the issues pertaining to abatement of adverse environment impacts specifically arising from C&D waste management activities. BMTPC has also published Guidelines on Utilization of C&D Wastes as a useful resource for building materials and components. All these guidelines supplement each other and provide a technical and legal framework for effective utilization and management of C&D waste. In many developed countries, substantial part of its construction & demolition waste are re-used and recycled. In India, there are some significant initiatives such as C&D waste processing plants at Burari & Shastri Park in Delhi, use of C&D waste in East Kidwai Nagar Project in Delhi by NBCC and C&D Waste processing plant at Ahmedabad.

The minister also mentioned that major municipalities like Surat, Mumbai, Hyderabad and Rajkot have floated tenders and are at the verge of putting up C&D waste processing plants and many more processing plants are also understood to be in the process of getting installed in other parts of the Country.

RJ

Government announces Trajectory to achieve its targets of commissioning 100 GW of Solar generating capacity and 60 GW of Wind power by 2022

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Government to conduct Third Wind Power Auction of 2000 MW Capacity

Power Supply Agreements signed by SECI with utilities of UP, Bihar, Jharkhand, Assam, Punjab, Goa and Odisha

The Government today announced the trajectory for achieving its targets of commissioning 175 GW of Renewable Energy (RE), 100 GW of solar generating capacity and 60 GW of wind power, by 2022.

Addressing the gathering, Union Minister of State (IC) for Power and New & Renewable Energy , Shri Raj Kumar Singh said that there was a long pending demand form the Industry to declare the RE roadmap of the Government. Hence, today with the declaration of this trajectory, the Government has clearly spelt out its plan of speeding up of RE installation in the country and strengthening the RE manufacturing base in India.

Shri Singh informed that to encourage the Make in India in RE sector, Ministry of New & Renewable Energy (MNRE) is working out the scheme and going to issue an Expression of Interest (EoI) to the Industry, for establishing domestic Manufacturing facilities to the tune of 20GW, in the near future. Further, the MNRE is exploring innovative ways to achieve additional installed RE capacity through Floating Solar Power Plants over dams , Offshore Wind Energy Systems and Hybrid Solar-Wind power systems, which may provide over 10GW additional capacity. The MNRE team of experts has already surveyed the Bhakra Nangal dam for floating solar power plants and off-shore Gujarat and Tamil Nadu for wind power plants, the Minister added.

Expressing confidence of comfortably achieving a rather conservative RE target of 175GW by 2022 and even exceed it, along with providing 24x7 affordable, clean and efficient power for all, Shri Singh said that all these targets would be positively achieved with the cooperation of the States in ensuring that their power utilities/ DISCOMS remain financially viable. The Centre has provided all the required support, including funds under Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) and Integrated Power Development Scheme (IPDS), to the States to ensure 24x7 Power for All by strengthening the intra-State transmission networks and by ensuring mandatory presence

of metered connections. The Ministry is in talks with the States to ensure 100% metered connections through Smart/Pre-paid meters, Shri Singh added.

Talking about issues in Power Purchase Agreements (PPAs), Shri Singh made it very clear that the sanctity of the PPAs have to be ensured and they would have to be mandatorily honoured. The Ministry is in constant talks with State Governments, including Andhra Pradesh and Karnataka, to ensure the same. Talking about the Renewable Purchase Obligations (RPOs), the Minister that these obligations are mandatory and need to be adhered to strictly.

Elaborating the RE Development road map , Shri Anand Kumar, Secretary MNRE, said that for achieving 100 GW solar power target by 2022, the Ministry, along with the States, would lay out bids for ground mounted solar parks for 20 GW in 2017-18, out of which 3.6 GW have already been bid out, 3 GW will be bid out in December 2017, 3 GW will be bid out in January 2018, 5 GW in February 2018 and 6 GW in March 2018. 30 GW will be bid out in 2018-19 and 30 GW in 2019-20.

Further, Shri Kumar informed that against the target of 60 GW for wind power, 32 GW have already been commissioned.   The Central Government in participation with the State Governments intends to issue bids of cumulative capacity of about 8 GW this year. Out of this, 5 GW (including present 2 GW) have already been bid out, 1500-2000 MW will be bid out in January 2018 and 1500-2000 MW in March 2018. A total of 10 GW will be bid out in the financial year 2018 and 10 GW in 2019, leaving a margin of 2 years for commissioning of projects. Further adding to this, Shri Kumar informed that the Ministry would soon be issuing the Wind Bidding Guidelines.

Shri Kumar also said that with wind power tariffs becoming competitive and State DISCOMs encouraged to buy more of Renewable Energy power, the Government has doubled the auction capacity for the third national level wind auction from 4GW last year to around 9GW in the current year. Regarding clarity on GST rates on Solar panels, Shri Kumar said that the MNRE is in talks with the Ministry of Finance and in the next 7-10 days all the issues would be resolved.

The present scheme of Wind Power Auction is for setting up of 2000 MW Wind Power Project connected to Inter-State Transmission System (ISTS). The bidder can bid for a minimum capacity of 50 MW and maximum up to 400 MW. The projects under this scheme are expected to be commissioned towards the end of 2019.

On the occasion, Power Sale Agreements (PSA) for purchase of wind power under second wind auction with States were also signed with Solar Energy Corporation of India with utilities of Uttar Pradesh, Bihar, Jharkhand, Assam, Punjab, Goa and Odisha. The reverse auction for SECI-II wind bid was conducted on 4th October 2017, which resulted in very competitive tariff of Rs.2.64/2.65 per unit.

It may be mentioned that the winners of SECI II wind bid namely Renew Power (250 MW at Rs.2.64/unit), Orange (200 MW at Rs.2.64/unit), Inox (250 MW at Rs.2.65/unit), Green Infra (250 MW at Rs.2.65/unit) and Adani Green (50 MW at Rs.2.65/ unit) would be setting up wind power plants in states of Gujarat, TN and MP to sell power to these utilities. PPAs with these winners are expected to be signed shortly.

Other dignitaries present on the occasion were Shri Praveen Kumar, Additional Secretary MNRE, Shri K.S. Popli, CMD IREDA, Shri J.S. Swain, MD SECI and other senior officers of the Ministry and State Governments.

RM/VM/AS

A Kiran MK-IA basic trainer aircraft of the Indian Air Force crashed minutes after it took off from Air Force Station Hakimpet on 24 Nov 17 at around 1415 hrs. It was on a routine training mission for the trainee pilot.

It crashed around 35 miles North East of the base. The trainee pilot ejected safely and landed on the ground with minor injuries. A court of inquiry has been ordered to ascertain the cause of the accident.

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AB/MKR

Bear-attack trends highlight need for conflict mitigation

Sloth bears can attack when tribes are collecting forest produce.

It's not wild elephants or man-eating tigers, but sloth bears that cause the most number of human deaths in central India's Kanha–Pench wildlife corridor. An analysis of bear attacks in central India, published in *PLOS ONE,* shows that there is an urgent need for conflict mitigation and improvement of compensation schemes for victims.

The sloth bear *Melursus ursinus* is endemic to the Indian subcontinent. Studies show that the largest population of sloth bears is in Central India. The species is common in the 16,000 sq. km Kanha–Pench wildlife corridor which connects the Kanha and Pench tiger reserves in Madhya Pradesh. The corridor is also home to 442 villages; many families here depend on fuelwood and forest produce such as tendu leaves used to make bidis for sustenance and livelihood. This brings them in contact with bears frequently — 255 bear attacks occurred in the area between 2004 and 2016.

Scientists at the Corbett Foundation interviewed 166 survivors of bear attacks from 120 villages in the Kanha–Pench corridor. Their results reveal that more than 80% of the attacks occurred in the forest, where the victims had gone to collect fuelwood and forest produce or graze their livestock; more than half of the victims did not see the bears before they attacked. Collectors entered forests in large numbers and engaged in the gathering activities silently and separately, increasing the chances of sudden encounters with sloth bears, write the authors.

Gathering information about the victims' socio-economic status, the team found that almost three-quarters of the victims were from the Baiga and Gond tribal communities.

While the State government provides compensation to victims of wildlife attacks, more than 80% received amounts as low as Rs.5,000 regardless of wound severity or gender; more than half the victims bore their medical expenses themselves. Victims unfamiliar with the process of applying for compensation were also at a huge disadvantage.

Apart from generating awareness of compensation schemes, ground models to improve conflict mitigation are key because sloth bears use not only forests but also human-dominated landscapes outside protected areas, write the scientists.

"We have conducted workshops in 30 villages on how best to avoid sudden confrontations," says lead author Aniruddha Dhamorikar. The Madhya Pradesh government has also increased animal attack compensation rates since February 2016.

Energy equivalent to about one solar mass was emitted as a result.