

UrbanUpdate

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Changing course of **URBANISATION**

Indian polity has remained hesitant in welcoming urbanisation and is therefore not fully equipped to address the related challenges. In this issue, we try to capture global trends in urbanisation and their impact on steering city development



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Designing cities for the future

Rajiv Agarwal | Editor-In-Chief | dg@aillsg.org

By 2050, India would have added 416 million urban dwellers as compared to China's 255 million, as per UN estimates. By then over two-thirds of the world population would be urban.

As urbanisation gathers steam and becomes the defining trend all over the world, there are concerns about creating a framework for sustainable urbanisation. As cities become the hubs of economic activity, livelihood options, and ways of meeting the growing aspirations of people, there are also stress points visible everywhere, be it the mobility chaos or the poor air quality, the congestion or service delivery deficits. Left unattended, these can turn the dreams of the urban population into nightmares. What then is the way forward?

National governments have for many years now, put in place national urban renewal measures in the form of guidelines for the development architecture and funding, often linked to city performance. These have helped greatly especially in areas of urban mobility (building metro systems), affordable housing, and sanitation (water supply systems), for example. These will need to continue and there need to be further innovative measures to equip our cities to cope with the increasing pressures.

While policy-makers look for strategic interventions to sustainably manage the rural-urban migration, their focus on existing cities may not be enough. In order to meet the growing aspirations of an ever-growing urban population, in addition to the existing cities, there is a need for more and newer ones to accommodate the

influx. The Smart Cities Mission has, in a way, mentioned this in its Greenfield Development module. Among the essential features of these new cities would be firstly and most importantly livelihood options. National and sub-national governments would need to craft policies to attract investments into manufacturing and services in newer, smaller towns. This is easier said than done. This first requires quality physical infrastructure like roads, power and water. Focus on transforming the healthcare and educational infrastructure in these towns will enable attract talent to these new ventures. Good rail and road connectivity to the nearby metros and larger cities will also help. As more population moves into these new towns and cities, service provision such as rail based mobility will become viable. This has the potential to put in place a virtuous cycle of development and improving livability.

Development of newer urban centres as above is one of the options to sustainably manage urbanization. Policymakers and urban planners are also evaluating options of high density habitats versus the urban sprawl which is currently more visible in the developing world. Some of these thoughts are analysed in the Leaderspeak column and other pages of this issue of Urban Update. We trust you will find the issue engaging and that it will help stimulate further debate on the subject of a sustainable urban future. ■



We cannot accelerate progress unless women are involved as equal stakeholders in every sphere of activity, including agriculture. Ensuring access to quality & affordable education is highly crucial in empowering women & laying a strong foundation for a literate society

Venkaiah Naidu
Vice President of India



If the world is to achieve its SDGs and reach targets that range from eradicating poverty & social inequity, to combating climate change and ensuring a healthy & liveable environment, global efforts towards sustainable energy are pivotal

Andre Dzikus
Coordinator, Risk Reduction & Rehabilitation, UN-Habitat



PIN POINT



The way people consume and produce, it seems that they believe that we have two planet earth. On the complex interrelated crisis of rising sea levels, if we allow, the global warming to continue, the beautiful cities will be flooded by the century end

Ban Ki-Moon
Former Secretary General of the United Nations



Energy renovation of buildings is one part of a successful urban regeneration, but breathing life back into a city requires a long-term plan with residents, business & authorities working together in a collaborative approach

Mirella Vitale
Sr Vice-President, Group Marketing, Rockwool International



BUZZ



UN Water, United Nations
@UNWater

700 million people worldwide could be displaced by intense water scarcity by 2030. To 'leave no one behind', we must focus our efforts towards including people who have been marginalized or ignored



Andrew Steer
@AndrewSteerWRI
President & CEO, WRI

With smart economic policies, one can address ClimateChange. And this can raise global income by \$26 trillion dollars, creating 76 million jobs



Federico Bonaglia
@FBonaglia
Deputy Director, OECD (DEV)

Investing in social protection is investing in inclusive growth through effect on human capital, productivity, employability and resilience



Amina J Mohammed
@AminaJMohammed
Deputy Secretary General, United Nations

Cities should be built knowing that they will be on the frontlines of climate related risks – from rising sea levels to storms. #FloatingCities can be part of our arsenal of tools. I am delighted that @UN & partners are working on solutions for sustainable future

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ONE ON ONE

36 There is no coordination between Corporation and SPV: Goa Mayor

Development of smart city is beneficial in improving urban life when development works are carried out progressively and done in coordination with local government. But, there is a lack of coordination between the city corporation and the SPV which needs to be fixed for better implementation of the various development projects and their completion in a timely manner. Leakages need to be fixed as well



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Infrastructure deficits and deprivation in Indian cities related to water and power supply as well as waste management persist. Several studies have noted structural dysfunctionalities, like non-revenue water, low-level of metering and below cost pricing, as barriers to both public and private investment. The government has been concerned with these deficits and has attempted to address them under JnNURM, and has mounted a concerted effort via its recently launched missions which include Smart Cities Mission, AMRUT, and Clean India Mission



COVER STORY

24 Changing course of urbanisation

Indian polity has remained hesitant in welcoming urbanisation as a defining trend of the 21st century and is therefore not fully equipped to address the related challenges. This has been reflected in policymaking too. It is no secret that Indian cities are not in a healthy state and the increasing inflow of people is going to make the situation worse.

LEADERSPEAK

28 How will cities grow in future?

When more people arrive in cities, they need to be accommodated sustainably. Governments have multiple options at their disposal—create new cities, expand existing cities horizontally, if the cities have a scope of expansion; or go vertical, if the city's topography is like Mumbai and cannot expand horizontally. Should we build denser cities or opt for creating sprawling, low-density peri-urban areas. This dilemma is still bothering urban planners and policymakers amidst haphazard urbanisation.



Equi-City conducts lake conservation campaign



Equi-City team conducting awareness campaign in Nagpur to sensitise people residing near Lendi Lake about importance of the lake and prevention of water pollution in the lake

Team Equi-City

Lakes can provide us the best opportunities for recreation and tourism. In addition to providing us with environmental benefits, healthy lakes and their shores also affect our quality of life and fortify our economic system. By storing and releasing large amounts of water during shortages, they can reduce the impact of floods and droughts. Lakes also work to replenish groundwater, positively impact the downstream water quality and maintain the biodiversity and habitat of the area.

Nagpur is one of India's hottest cities. With each passing year, the heat in summer increases and citizens face its adverse effects. The city desperately

needs environmental assistance, and lakes play a vital role in maintaining the temperature during summers. Lendi Lake situated in Tandapeth area of Nagpur, is one such important lake. The lake has been highly contaminated and polluted by several sources.

Water contamination is a severe problem in India as almost 70% of its surface water resources and a growing proportion of its groundwater reserves are contaminated with biological, toxic, organic and inorganic pollutants. For human consumption and other activities such as irrigation these sources are often unsafe. Therefore degraded water quality can lead to water shortages as it limits water availability for both human

consumption and other needs.

The Equi-City team conducted an awareness campaign on March 8, 2019, to promote awareness among local residents residing near Lendi Lake about the lake and its importance. The campaign began in the evening at 6:30 pm with a welcome speech by Shekhar Giradkar from the Equi-City team. Anusuya Kale, President, Swachh Association, Shefali Dudhwade, Secretary, Swachh Association, and Sunita, a local leader were also present during the campaign.

Shefali Dudhwade started the event with a small speech on cleanliness of lakes. Simultaneously, pamphlets were passed out to the nearby residents, shopkeepers and passersby. Anusuya Kale greeted everyone on the occasion of Women's Day. During her talk, she discussed about the community sanitation and various ways to achieve it in a residential area. She encouraged citizens to keep their environment clean. She talked about the strategies and efforts Nagpur Municipal Corporation (NMC) has been investing into sanitation programs and she asked citizens to help NMC in achieving a clean city. At the end, the nearby residents and the audience came forward and discussed the concerns they had in their locality regarding sanitation. The interaction of citizens with the Equi-City team was very productive. Equi-City team organized a painting competition for the kids in the locality on the theme 'Clean India' and the best painting received a little treat and loads of appreciation.

Overall the drive served in imparting behavioral changes in people and spread awareness on cleanliness among people to attain the objective of a clean lake.

Leadership workshops for NMC officials and elected representatives

The rising demographic and economic significance of cities would bring unprecedented challenges of urban governance in India. There is empirical



Children residing nearby participating in the painting competition organised by Equi-City team for spreading awareness about the lake preservation

evidence to show that the existing governance structure in urban areas is not equipped to handle such onslaught, which can only be countered by a wholesome and robust response that would allow the ULBs to act with speed, efficiency and accountability. Cities need leadership of high quality that combines vision, leadership, visibility,

management and quick decision-making.

Among the many urban reforms needed to fix ailing city governance across India, the question of municipal leadership may be one of pivotal significance. Issues such as functional devolution to urban local bodies (ULBs), strengthening their fiscal health and their comprehensive empowerment as “vibrant democratic units of self-government” are indeed central to the governance of cities.

Architect Jaime Lerner, for example, who became mayor of Curitiba, Brazil, in 1971, put together the world’s first Bus Rapid Transit System for his city and created the Rede Integrada de Transporte (Integrated Transport Network). This caught the imagination of the entire world and was sought to be replicated in many cities. Tokyo’s powerful governor, Yuriko Koike, for her part, gained popularity through her innovative leadership. She reappraised Tokyo’s venues for the 2020 Olympics and brought a fresh context to the relocation of the Tsukiji fish market. She decided on a comprehensive indoor smoking ban in Tokyo’s restaurants and public places and is working towards restoring her city as Asia’s leading international financial capital. There is also the

example of Rudy Giuliani, former mayor of New York City, who won acclaim for his leadership skills in the aftermath of the terrorist attack in his city in September 2001. Xavier Trias, on becoming mayor of Barcelona in 2011, initiated the move towards crafting ‘Smart City Barcelona’. That catapulted Barcelona into one of the smartest cities in the world and made the city a pioneering centre for the Internet of Things industry. What these mayors had in common was that while they were strong, achievement-oriented personalities, they were also backed by long tenures and enormous authority at their command to convert their visions into reality.

Keeping aforementioned facts in mind, the Equi-City Team will seek to build capacities of elected representatives and municipal officials to play a leadership role in participatory forums and development of the city. They will be specially trained in leadership and handling the diverse needs of the local authorities.

The focus of the workshop will be to hone the skills of municipal officials and elected representatives to act as leaders and to think innovatively and holistically about the challenges they face and are able to follow through with real focus and determination to deliver results and public value.

The curriculum will include skill building to exercise leadership in the public sector, while developing innovative frameworks for addressing policy issues. The project will also draw upon the private and public sector resource base. Further, the workshop will brainstorm on how innovative partnerships and new models of collaborative governance can be developed given the context of the target city.

The activity will train 30 leaders each from among municipal officials and elected representatives who will play a key role in the various meetings and forums. They will reach out to various sections of the society. Special attention will be given to promoting women and minority communities. ■



People residing near the lake actively participating in the awareness campaign conducted by Equi-City team



Rajiv Agarwal, DG, AIILSG, Ravi Ranjan Guru, DDG, AIILSG, Kumar Dhanajay, Consulting Editor, Urban Update and AG Khanolkar of AIILSG met Mridula Sinha, Governor of Goa to apprise her about upcoming 3rd World Mayors' Conference scheduled in January 2020



Rajiv Agarwal, DG, AIILSG along with AIILSG delegation invited Pramod Sawant, Chief Minister of Goa for 3rd World Mayors' Conference



AIILSG conducted training workshop on 'Fire and Disaster Mangement' for capacity building in Asia-Pacific region at AIILSG, Bhopal centre



A glimpse from Fire & Disaster Management Training conducted by AIILSG at its Bhopal centre



AIILSG conducted RTI workshop for officials of Directorate of Urban Administration & Development in Bhopal

QCI declares areas under EDMC ODF

The areas under the East Delhi Municipal Corporation (EDMC) have been declared open defecation free (ODF) in a survey conducted by the Quality Council of India (QCI) on March 25, 2019. According to the EDMC, the QCI conducted surveys at 17 different places. The places which were surveyed include residential, slum and school areas. Dilraj Kaur, EDMC Commissioner, said that the corporation is making all efforts to improve cleanliness in its areas. In the 'Swachh Survekshan-2019', the EDMC jumped up to 240 rank from the previous year's rank which was 341.

NOIDA curb pollution in storm water drains: NGT



The National Green Tribunal (NGT) directed New Okhla Industrial Development Authority (NOIDA) to take action to reduce pollution in storm water drains of Noida, after a plea was filed seeking directions to curb pollution. According to the plea, the storm water drains flow in Yamuna and Hindon rivers. The drains are mostly clogged and choked due to dumping of garbage, sewage, etc. The water drains don't have the requisite flow of water and they are also not duly maintained by cleaning, the bench observed.

Dubai gets world's largest e-waste recycling plant

DUBAI: The world's largest e-waste recycling facility opened in Dubai, at a total cost of Dh120 million. The facility is located at Dubai Industrial Park in an area of 280,000 square feet. The plant will process Waste Electrical and Electronic Equipment (WEEE), IT Asset Disposition (ITAD), refrigerant gas and specialised waste, reported the Gulf News on March 24, 2019. The \$5 million project is backed by the Swiss Government Export Finance Agency.

The facility will make use of state-of-the-art technology, which surpasses the European Union's standards for e-waste. The plant has a processing capacity of 100,000 tons of total integrated waste per year, out of which 39,000 tons is e-waste. It can process the entire range of e-waste from consumer and industrial end to the commercial and military end. These include air conditioners, batteries, computers, household appliances, mobile phones, and even military avionics. The integrated facility will also recycle specialised waste material such as aerosol cans, light bulbs and



FMCG products and is currently the only dedicated refrigerant gas reclaim facility in the UAE. Enviroserve's green recycling facility will service international e-waste recycling efforts across Africa, Middle East and Caucasus.

"The launch of the Recycling Hub at Dubai Industrial Park is a reflection of the UAE's journey towards becoming a global platform that attracts innovative businesses and a successful model of the new green economy. Our partnership with Enviroserve is a key milestone in our mission in development of an advanced industrial sector in the UAE," said, Saud Abu Al Shawareb, Managing Director of the Dubai Industrial Park.

BSES launches pilot to establish solar micro-grids with battery storage

NEW DELHI: BSES Yamuna Power Limited (BYPL) in a statement on March 12, 2019, said that it has launched a pilot to establish solar micro grids, becoming one of the first discoms in the country to do so in an urban setting. The statement further added that these micro grids will combine rooftop solar panels with lithium-ion-based battery storage systems and for demonstration purposes, four such micro grids were set-up at BYPL offices in east Delhi. The energy generated through rooftop solar panels is utilised to fulfill the electricity demands and the surplus is fed to the grid, which has the potential to reduce electricity bills. As per the statement, a pan discom roll-out of 1,000 such solar-energy battery storage micro grids have the potential to save about 62 million units of electricity and over three lakh liters of diesel amounting to about Rs 41 crore on an annual basis – cumulatively for the discom and the consumers, which would lead to a CO₂ reduction of about 51,000 tons. Moreover, annually around 1,245 liters of diesel and 0.24 million units of electricity amounting to Rs 20 lakh can be saved. Additionally, it could also reduce around 205 tons of CO₂, the statement added. The discom has tied-up with Council on Energy, Environment and Water to gauge and assess the system performance of the pilot.

NMRC gains ridership of 10,991 in 2 months

The Aqua Line of Noida Metro Rail Corporation (NMRC) had 3.24 lakh passengers taking a ride during its second month of operation. A total of 6.48 lakh people used the Aqua Line in the two months, NMRC said. The Aqua Line in its first month witnessed 3.24 lakh passengers and an average daily ridership of 10,458 passengers. By the end of March 25, 6.48 lakh riders were added while the average daily ridership during the two months reached 10,991. P D Upadhyay, Executive Director, NMRC, said that in March, the ridership witnessed an increase of 57 per cent, he added. Upadhyay further added that the NMRC's revenue during the two months reached ₹1.99 crore up from ₹1.02 crore at the end of the first month.

Indore takes a step forward to enhance passenger safety

Indore airport takes a step towards passenger safety by installing a mobile command post vehicle which can be used by the rescue team during emergency situations or accidents. Airport Authority of India (AAI) has purchased 32 mobile command post vehicles at a cost of ₹14.06 crore for Indore and Bhopal airports. Ahmedabad, Aurangabad, Rajkot and Vadodara airports already have the facility. Special training will be imparted to operational officers to use the vehicle. These vehicles have GPS, satellite phones, conferencing facilities, all emergency handling equipment, portable signboards, shelter tent, binoculars, first aid box and smart board, as well as other emergency related infrastructure.

Sydney targets to operate 100% on renewable energy by 2030

PUNE: Sydney in Australia is all set to work towards its renewable energy target – operating 100 per cent on renewable energy by 2030. The energy will be used to source power in larger city-owned sites like pools and libraries and offset the carbon emissions from its smaller sites.

Sydney had already set significant climate targets for itself, including a 50 per cent renewable electricity target by 2030 and a 70 per cent reduction of greenhouse gas emissions by 2030. It is moving towards net-zero emissions by 2050. As the city's existing energy contract set to expire at the end of 2019, it decided to dive "head first into Sydney's renewable future" by increasing its renewable electricity target to 100 per cent. Chris Derksema, sustainability director, the City of Sydney said, "We're increasing our renewable electricity target and achieving it earlier because our residents and businesses are demanding it, it reduces emissions and it will soon be cheaper than coal." Derksema further

added that Sydney would be a leading example, with the hope of inspiring local residents and businesses to take their own responsibility. The new commitment has already been endorsed by the City Council and is expected to cut Sydney's emissions by around 18,000 tons each year – equivalent to the power consumption of around 4,000 households. The city council also expects to negotiate the new 100 per cent renewable electricity contract in the coming months, which it expects to come into effect in 2020.

Clover Moore, Lord Mayor of Sydney said, "Acting on climate change is the city's top priority. We were among the first to set science-based targets in 2008 and since then we've reduced our emissions by 20 per cent on 2005 levels." Moore appreciating the decision said that it would help to reduce emissions by 70 per cent. Since 2016, by investing in energy-efficiency initiatives such as installing rooftop solar panels has reduced the usage of electricity by 26 per cent.

Indian Railways to develop 'eco-smart stations'

NEW DELHI: The Centre has taken up the task of developing 'eco-smart stations'. According to a bench headed by Justice Adarsh Kumar Goel, National Green Tribunal (NGT) Chairperson, Indian Railway informed the NGT about the development of 'eco-smart stations' action plan for 37 railway station. Indian Railway



is targeting to achieve environment standards of 'ISO-14001', as laid down by the Bureau of Indian Standards, for environment management. In October 2017, Secunderabad Railway Station became the first railway station to be certified as a 'Green Railway Station', and got the 'Platinum Rating Certification', the highest rating in this category, from CII-IGBC. As per railway officials, their first priority is to focus on the environmental norms and will have the authority to lay down and collect compensation on 'polluter pays' principle. The entire work process layout will also be uploaded on the official website. On the other hand, NGT also directed the railway authorities to set up decentralised municipal solid waste plants. The directions came from the plea to examine the pollution level on railway properties.



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MCC decides to charge ₹10,000 for littering

Municipal Corporation Chandigarh (MCC) decided to increase the fine from ₹500 to ₹10,000 for littering garbage. The decision was taken after the city slipped to the 20th rank in the Centre's Swachh Survekshan 2019. 2.5 lakh households and 50,000 commercial units in the city will be affected with the new rates for garbage collection and a higher fine for littering. The Mohali Municipal Corporation sanctioned the new rates for door-to-door garbage collection that ranges from ₹100 to ₹150 for residential areas and ₹500 to ₹2,000 for industrial areas. The corporation had received complaints earlier about overcharging due to which garbage collection rates have been fixed.

NDMC floats tenders for 'green capping' of Bhalswa landfill

In an effort to better manage the Bhalswa landfill site, the North Delhi Municipal Corporation (NDMC) will carry selective excavation and composting work. A civil engineering professor from IIT-Delhi will be supervising the exercise. Varsha Joshi, Commissioner, NDMC, said that such a drill was successfully conducted by the South Delhi Municipal Corporation (SDMC) at Okhla landfill site. The procedure for green capping involves closing the landfill for fresh garbage, compressing the garbage with heavy machines and cutting steps into the slopes at an angle to ensure rain or earthquakes do not cause the landfill to collapse. The NDMC floated a tender for rehabilitation of the Bhalswa landfill, the second largest in Delhi, on March 28.

World Bank signs \$96 million agreement for post-disaster recovery in Uttarakhand

DEHRADUN: The World Bank, Government of India (GoI) and Government of Uttarakhand (GoUK) signed a \$96 million Loan Agreement on March 5, 2019 to provide additional funds to Uttarakhand in its post disaster recovery plans which are ongoing since the floods of 2013. The funds will also be utilised to strengthen state's capacity for disaster risk management. Sameer Kumar Khare, Additional Secretary, Department of Economic Affairs, Ministry of Finance signed the Loan Agreement on behalf of the GoI, Amit Negi, Secretary, Finance and Disaster Management, GoUK and Program Director, Uttarakhand Disaster Recovery Project signed on behalf of the GoUK and Hisham Abdo, Acting Country Director, World Bank India signed on behalf of the World Bank.

The financing will help in reconstruction of bridges, road and river bank protection works, and in the construction of a training facility for the State Disaster Response Force (SDRF).

The project will help to increase the technical capacity of Himachal Pradesh entities to respond more effectively in future. The loan has a grace period of five years and a final maturity of 15 years.

The World Bank has been supporting the Uttarakhand government since 2014 through the Uttarakhand Disaster Recovery Project to restore housing and rural connectivity, and to build resilience of communities. The project has completed more than 2,000 permanent houses and 23 public buildings and restored over 1,300 kilometers of roads and 16 bridges. The project has helped in strengthening the state's disaster risk management capacity which has led to enhanced investment in long-term resilience through policies and institutions. The capacity of the SDRF, meant to be at the forefront during emergency situations of the state, has also been significantly strengthened and it has so far conducted over 250 operations rescuing over 3,500 people.

'Dumpsites in Bengaluru are contaminating soil'

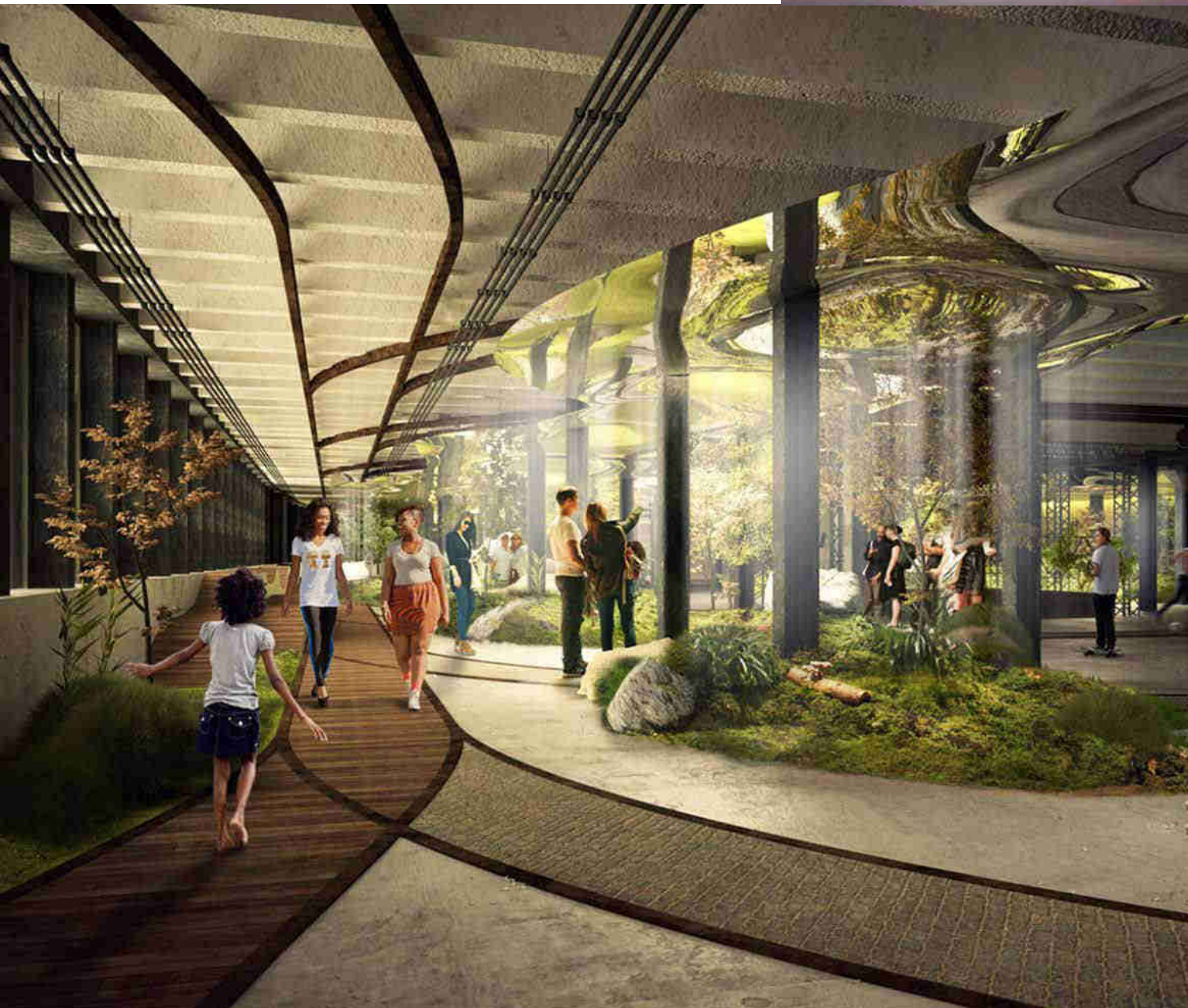
BENGALURU: Scholars from Bharathiar University, Tamil Nadu, St Joseph's College, and Christ University in Bengaluru took samples from seven dumpsites in the city. On the basis of physiochemical and vegetation parameters, researchers tested the soil. A comparison was conducted with similar tests on 'unrumpled' soil next to the dumpsites. According to the study, the dumpsites were more alkaline in nature due to degrading organic waste but the electrical conductivity was 1.5 times higher as than the non-dumpsites due to the leaching of sodium and potassium salts from the waste. Johny Joseph from the Department of Botany, Bharathiar University, Coimbatore notes in the study, "Minerals such as nitrogen, nitrates, potassium, phosphorous, sulphates, sodium, calcium and magnesium were found to be in slightly higher in dumpsite soils." The concentration of heavy metals, such as cobalt, chromium, and lead were found to



be 74 per cent more in dumpsites. The study was published in the Journal of Applied and Natural Sciences recently. Jayarama Reddy, Department of Botany, St Joseph's Post Graduate Centre, and one of the authors of the study says this is an emerging concern considering that there are hundreds of blackspots and areas of municipal dumping that can be leaching into the soil or into waterbodies when it rains.

WORLD'S FIRST UNDERGROUND PARK - 'THE LOWLINE'

UNDER THE STREETS of Manhattan's Lower East Side, will be built the world's first underground park 'The Lowline'. The park will be built in the Willamsburg Bridge Trolley Terminal. The vegetation underground will be grown using 'remote skylight' concept which has parabolic sunlight collector that directs the light at one focal point (distributor dish) on the ground which will spread the light in space. During period of sunlight no electricity would be required to light up the space. This is effective usage of unused urban space which will also better the tourism of the city.



NGOs complain against industries and AMC for flouting SC orders



The Paryavaran Suraksha Samiti (PSS) along with three other NGOs have asked Gujrat Pollution Control Board (GPCB) to take action against industries for ignoring the orders of the apex court. Rohit Prajapati, a PSS official said that the apex court ordered for proper treatment of liquid waste and sewage before being released into the Sabarmati river. PSS also claimed that the failure of Ahmedabad Municipal Commissioner in not monitoring the actions taken by industries and not following the orders of the court. The court issued the orders to protect the river as well as the groundwater from pollution.

Delhi Metro's fare hike drops ridership by 3 lakh

The average ridership of the Delhi Metro reduced by over 3 lakh post fares hiked in 2017. Corridors operational pre-fare hike are the Blue, Yellow, Green, Red and Violet lines. As per DMRC records, the average ridership on the lines touched 26 lakh only in July, August and September 2017. Whereas post October 2017, the ridership did not touch 24 lakh even for once. In 2018-19, the ridership was only 22.85 lakh. In January and February 2019 only 23.20 lakh people used the old corridors. However, the total ridership stands at a little over 26 lakh when the new Pink and Magenta lines are considered.

Climate change caused 'increasingly dangerous' extreme weather in 2018, says WMO

WASHINGTON: The United Nations weather agency World Meteorological Organization (WMO) on March 28, said that extreme weather events, supercharged by climate change, affected nearly 62 million people around the world in 2018.

According to an annual report of WMO "State of Climate", the planet's biggest weather woes last year were floods (which swamped nearly 35 million people), and droughts, which affected another 9 million. The report also suggested that the Earth is almost 2 degrees (Fahrenheit) warmer than it was in the late 1800s when the industrial revolution started, and that the past four years have been the warmest on record.

Climate change, the number one cause of global warming is caused by burning fossil fuels such as coal, oil, and gas, which release greenhouse gases like CO₂ and methane into the Earth's atmosphere and oceans. These key climate change indicators are becoming more pronounced. CO₂ levels, which were at 357.0 ppm when the statement was first published in 1994, keep rising – to 405.5 ppm in 2017. For 2018 and 2019, greenhouse gas concentrations are expected to increase further. Petteri Taalas, WMO Secretary-General said that since 1998, about 4.5 billion around the world have been hurt by extreme weather. "Extreme weather has continued in early 2019, most recently with Tropical Cyclone Idai, which caused devastating floods and tragic loss of life in Mozambique, Zimbabwe and Malawi," Taalas added. The WMO climate statement includes input from national meteorological and hydrological services, an extensive community of scientific experts, and United Nations agencies. It details climate related risks and affects human health and welfare, migration and displacement, food security, the environment and ocean and land-based ecosystems. It also catalogues extreme weather around the world.

Untreated sewage from Bhubaneswar polluting Chilika Lake



BHUBANESWAR: The Nalabana part of the Chilika Lake is in its worst state, due to constant discharge of untreated water into the lake from drains of the Bhubaneswar city. As per an environmentalist, polluted waters from the city reach into the lake via Gangua Nala. More than 40 million liters daily (MLD) of sewage water containing chemicals like Zinc, Magnesium and Sulfate is drained into the lake every day. This has adversely affected the eco system of the Nalabana which is home to many migratory birds. There are 10 major drains from west to east laid perpendicular to Gangua Nala in the city. The storm water

of the city flows into these channels. 35.7 km long Gangua Nala discharges approximately 652 cusecs of water into river Daya. Scientists have suggested that this is massively affecting the quality of water. According to an official from Orissa State Pollution Control Board (OSPCB), "Alarming levels of dissolved oxygen and coliform were found in water samples of Gangua and Daya rivers." Earlier in 2015, National Environmental Engineering Research Institute (NEERI) was directed to prepare a detailed project report by the state government to treat water of Gangua Nala using 'Phytoid' method (this involves construction of a wetland to treat waste water) but the top officials are yet to act on any such project. About 290 million liters of wastewater is poured into channels every day. River Daya has already lost most of its aquatic life due to the toxic waste and the same is destroying Chilika's underwater beings for the past 20 years.

Environmental damage causing a quarter of premature deaths: UN

NAIROBI: One-fourth of all premature deaths and diseases worldwide are caused due to manmade pollution and environmental damage, said the United Nations on March 13, 2019, in a report on the planet's parlous state.

The report warned that deadly emissions, chemicals polluting drinking water and the accelerating destruction of ecosystems which are crucial to the livelihoods of billions of people are driving a worldwide epidemic that hampers the global economy. 250 scientists from 70 nations compile the Global Environment Outlook (GEO) report. It depicts a growing difference between rich and poor countries as rampant overconsumption, pollution and food waste in the developed world leads to hunger, poverty, and disease elsewhere. Climate change poses a future risk to billions as greenhouse gas emissions continue to rise amid

a preponderance of droughts, floods, and superstorms that are made worse by climbing sea levels. But the health impacts of pollution, deforestation and the mechanised foodchain are less well understood. The report said that poor environmental conditions cause approximately 25 per cent of global disease and mortality (around 9 million deaths in 2015 alone). 1.4 million people die each year from preventable diseases such as diarrhea, parasites linked to pathogen-riddled water and poor sanitation. The report says that air pollution causes 6-7 million early deaths every year.

Currently, the world throws away a third of all food produced. 56 per cent of food goes to waste in richer nations. The report also called for a rapid drawdown in greenhouse gas emissions and pesticide use to improve air and water quality.

Over 19 million children vulnerable to climate change

DHAKA: A United Nations Children's Fund (UNICEF) report on April 8, 2019, said that lives of more than 19 million children in Bangladesh is threatened with devastating floods, cyclones and other environmental disasters linked to climate change. While Bangladesh has developed strategies and infrastructure for resilience, more resources and innovative programmes are needed to avoid the danger of climate change for the country's youth. Bangladesh's flat topography, dense population and weak infrastructure make it uniquely vulnerable to the climate change. Be it the flood and drought-prone lowlands in the northern part of the country or its storm-prone coastal areas, the threat of climate change is one of the major concerns. Around 12 million children live in and around the river systems which flow through Bangladesh and regularly burst their banks. Another 4.5 million children live in coastal areas regularly struck by powerful cyclones. The report calls on the international community and other partners to support the government in implementing initiatives to protect the vulnerable people of Bangladesh from the effects of climate change. One of the examples is a technology being promoted



by UNICEF and other partners which helps coastal communities to protect their drinking water against the intrusion of salt water from the sea. The system is known as Managed Aquifer Recharge which is working in around 75 communities and is ready to be taken to scale.

AMC seeks alternative solutions except capping for Pirana landfill

Ministry of Environment and Forest (MoEF) asked Ahmedabad Municipal Corporation (AMC) to look for alternative solutions for the Pirana landfill site other than capping. There are three landfill sites at Pirana of which one is Ajmeri hill, the oldest, which has not been used since 1990. Talking to a media person, Harshad Solanki, director of Solid Waste Management said, "Bio-mining of that site is not possible. It can only be used for resurfacing the land or can be used to mix with organic fertilizer, he added. "AMC had proposed Tata Consultancy Services to prepare a Detailed Project Report (DPR) for capping off one of the garbage hill", said a senior AMC official.

Bescom to use solar power for EV charging stations

Bangalore Electric Supply Company (Bescom) is looking to utilise solar energy to power electric vehicle (EV) charging stations, in order to ensure clean transport is driven by clean energy. 112 EV charging stations are expected to be ready for use by August 2019, in the city. The stations available at present are located in four locations - the Bescom headquarters, Vikasa Soudha, Vidhana Soudha, and Karnataka Electricity Regulatory Commission (KERC) office. The new stations will primarily come up on government premises such as BBMP ward offices, BMTC offices, Bescom and BMRCL offices, Karnataka Housing Board office, Karnataka Industrial Areas Development Board office and TTMC buildings.

EMC workers draw rangloi to prevent open dumping

To stop public from dumping garbage in the open, workers under Erode Municipal Corporation (EMC) has started to draw rangloi at places in the city where bins were earlier placed. There are 60 wards in the corporation limits, and about 250 tons of garbage is generated every day which is dumped at Variapalayam and Vendipalayam. The EMC decentralised the process of dumping the garbage at these yards and established micro composing centres at 19 places in the city. Therefore, to stop public from open dumping, dustbins placed at various places at Ward 4, including Eswaran Street, Pattakarar Street, Old Railway Station Road, etc. were removed. The workers then drew rangloi at those places with awareness messages.

Coimbatore compartmentalises garbage to prevent fire

The Coimbatore Corporation has begun the work of compartmentalising the garbage at Vellore dump yard in order to take precautionary measures against future fire, after a huge breakout of fire breakout in March. The city officials have said to create as many pathways as possible to divide the waste that was spread over 90 acres. By March 31, 2019, the Corporation had created three main pathways at least 15m wide and is in the process to form narrower stretches perpendicular to the main pathways. If fire breaks out in a section, it will not spread to the adjacent compartments and the pathways among waste will provide easy access for vehicles to reach the place of fire.

BMC to install India's first underground bins across Mumbai

MUMBAI: After the successful trial of underground garbage bins in South Mumbai, Brihanmumbai Municipal Corporation (BMC) has decided to install more bins across the city. BMC bins' installation trial came out with the positive response from the citizens. In February 2019, the BMC installed two underground garbage bins near Mafatlal Club at Girgaum Chowpatty and Cheetah Gate in Fort. Ashok Khaire, joint municipal commissioner, Solid Waste Management (SWM) said that they received good response from residents as these bins do not emanate foul smell. "We have decided to buy 44 more such bins and install them in each ward," said Khaire. He added that under the pilot project underground bins were to be set up in four areas, we have asked every ward to provide space to set up bins.

Khaire further added that the idea behind replicating the model is to maintain cleanliness. "People have hygiene issues, as they have to raise the top of the bin with bare hands. But this new concept is an end to all these issues," said another official from the SWM. Conservancy workers can also use these for temporary storage.

Costing Rs 8 lakh each, these bins can fit in a 10 square meter space and are of 1.1 cubic meters. Each bin has a holding capacity of 500 kg. It also has separate provisions for wet and dry waste. Ashok Khaire, joint municipal commissioner, Solid Waste Management (SWM) said that the Corporation will buy 44 more dustbins to install in all the wards. "BMC bins installation initiative will bring the city forward towards Swachh Bharat Mission in a smart way," he said.



Vehicles, a bigger source of pollution: SC

NEW DELHI: People seemed to be running after firecracker industry even though automobiles are a bigger source of pollution, said the Supreme Court on March 12, 2019.

A bench of Justice S A Bobde and S A Nazeer asked the Centre whether there is a comparative study to find out the pollution caused by firecrackers and vehicles. Due to strict actions against the firecracker industry many people had lost their jobs. The manufacturers post the clear withdrawal of SC's approach on the ban on firecrackers, said that more than two lakh workers have become unemployed. The bench also raised a question as to how manufacture of firecrackers could be stopped if the trade is legal and people have license to carry out the business.

"Nobody has tested this in relation to Article 19 (which says all citizens shall have the right to practice any profession,

or to carry on any occupation, trade or business). If the trade is legal and you have the license for this, then how can you stop this? How can you leave people unemployed?" the bench observed.

The Centre told the court that the chemical formulation of green crackers has now been finalised and its bulk manufacturing could start from May 2019. To curb pollution in Delhi-NCR, the court had directed the Centre, Delhi government and the state governments of NCR to permit people to use firecrackers for Diwali and other festivals.

Gopal Shankaranarayanan, advocate, appearing for the petitioners, told the bench that the court had passed the order on banning polluting firecrackers on the suggestion of the Centre and there was no ban on green firecrackers. People who have lost their jobs would get back their jobs after manufacturing of green crackers starts.

'Air pollution causes 1.2 million early deaths in India'

Effects of air pollution have caused significant damage to human life, the death toll show unbelievable numbers. There is an urgent need for governments worldwide to take strict measures against pollution and implement them as part of a sustained commitment to air quality

NEW DELHI: The rise in air pollution levels has shortened the average lifespan of a child from south Asian region up to two-and-a-half years, whereas, worldwide the reduction in lifespan stands at 20 months. A global study named 'State of Global Air 2019' published in the journal Proceedings of the National Academy of Sciences (PNAS) revealed the data on April 3.

State of Global Air 2019, the study published by Health Effects Institute (HEI), said that over 1.2 million deaths in India in 2017 is due to exposure to outdoor and indoor air pollution. Globally, the air pollution was responsible for more number of deaths than many better-known risk factors

such as malnutrition, alcohol abuse and physical inactivity. The report stated that in India air pollution is the third-highest cause of death among all health risks. Ranking just above smoking, air pollution related diseases contributes to more deaths globally each year than from road traffic injuries or malaria.

About India and China, the study found that both the countries together were responsible for more than half of the total global attributable deaths, with each country witnessing death toll of over 1.2 million from all air pollution in 2017. China is taking steps and has made an initial progress, beginning to reduce the levels of air pollution. Overall, chronic or long-term exposure to outdoor and indoor air pollution causes stroke, diabetes, heart attack, lung cancer, and chronic lung disease which has contributed to approximately 5 million deaths in 2017. Out of the total, around 3 million deaths are directly attributed to PM2.5, and 50 per cent of which are from India and China together. As per the report, the South Asian countries Bangladesh, India, Nepal and Pakistan was rated as the world's most polluted, accounting

to more than 1.5 million deaths caused by ill-effects of air-pollution.

Initiatives taken by India

Robert O'Keefe, Vice President of Health Effects Institute said, "At the same time, India has initiated major steps to address pollution sources: the Pradhan Mantri Ujjwala Yojana – Household LPG program, accelerated Bharat Stage VI clean vehicle standards, and the new National Clean Air Programme. These initiatives taken and the future initiatives have the potential if fully implemented as part of a sustained commitment to air quality, to result in significant health benefits in coming years." Meanwhile, for the first time, this year's report and website include worldwide estimates of the effect of air pollution on life expectancy.

Nearly half of the world's population which is a total of 3.6 billion people were exposed to household air pollution caused by burning solid fuel like coal, in 2017. Worldwide there has been progress, the proportion of people cooking with solid fuels has declined as economies develop. However, in India, around 60 per cent of the population still uses solid fuels for daily cooking, whereas in Bangladesh that number rises to 79 per cent, underscoring the importance of achieving success in government initiatives to address the problem.

The study said that the most significant contribution towards reduction of air pollution would be the rapid phasing out of fossil fuels, which is currently being discussed mainly to abate climate change. Emissions from burning of fossil fuels are responsible for about 65 per cent of premature deaths from human-made air pollutants worldwide, said the researchers. Hence, phasing out fossil fuels can prevent 3 million premature deaths worldwide.



LMC to use VTS to track garbage collecting trucks

Lucknow Municipal Corporation (LMC) will now use Vehicle Tracking System (VTS) to track trucks used for garbage collection. On April 6, 2019, the corporation installed the system in trucks and caught three drivers skipping duty on the first day of the launch. The system not only tracks the location of garbage trucks, but also records the time a truck driver has to spend in an area. LMC paid around Rs 2 crore to a Bangalore based private company for the technology. The LMC's control panel monitors the system that was first used by Pune Municipal Corporation. So far, the LMC has installed the system in 400 vehicles, and the remaining 200 vehicles are in the process of setting it up.

Dwarka expressway oustees demand better facilities in sector 110A

The Haryana Shahari Vikas Pradhikaran (HSVP) is asked to provide basic civic amenities and infrastructure facilities to the oustees of Dwarka expressway who have been rehabilitated in sector 110A by the Haryana government after a long legal battle. People submitted a memorandum to the administrator earlier and have demanded action. After the high court directed it to enter into a settlement, a large number oustees were given plots in sector 110A. Presently, the oustees have constructed 55 houses and 45 others are under construction. As per the locals, water supply lines do not function properly. They are suffering because of the frequent leaks, as the pipes are not laid properly. No sanitation worker visit to collect garbage.

Bengaluru to install 40 air quality monitoring devices

BENGALURU: 'Healthy Air Coalition Bengaluru', was launched on April 6, 2019, to keep a check on the air quality in Bengaluru. It is a platform led by experts and individuals from the health sector, along with environmentalists, affected individuals, and concerned citizens. 40 air quality monitoring devices will be installed at 15 locations across the city, including the Bruhat Bengaluru Mahanagara Palike (BBMP) head office and public healthcare and maternity centers operational under the BBMP.

D Randeep, Special Commissioner (Solid Waste Management), BBMP said, "Bengaluru is the first major Indian city to join the global 'BreatheLife' campaign, a collaboration with the World Health Organisation (WHO). Access to data is the key to understanding air quality, and the availability of data on a centralised platform open to the public is the need of the hour. We are keen to understand the necessary interventions possible at the local level for improving the health of the public." Aishwarya Sudhir, air quality programme lead, Health and Environment Alliance (HEAL), which coordinates the coalition in collaboration with St. John's Research Institute, said that air pollution planning and mitigation in the country has been largely limited to improving monitoring



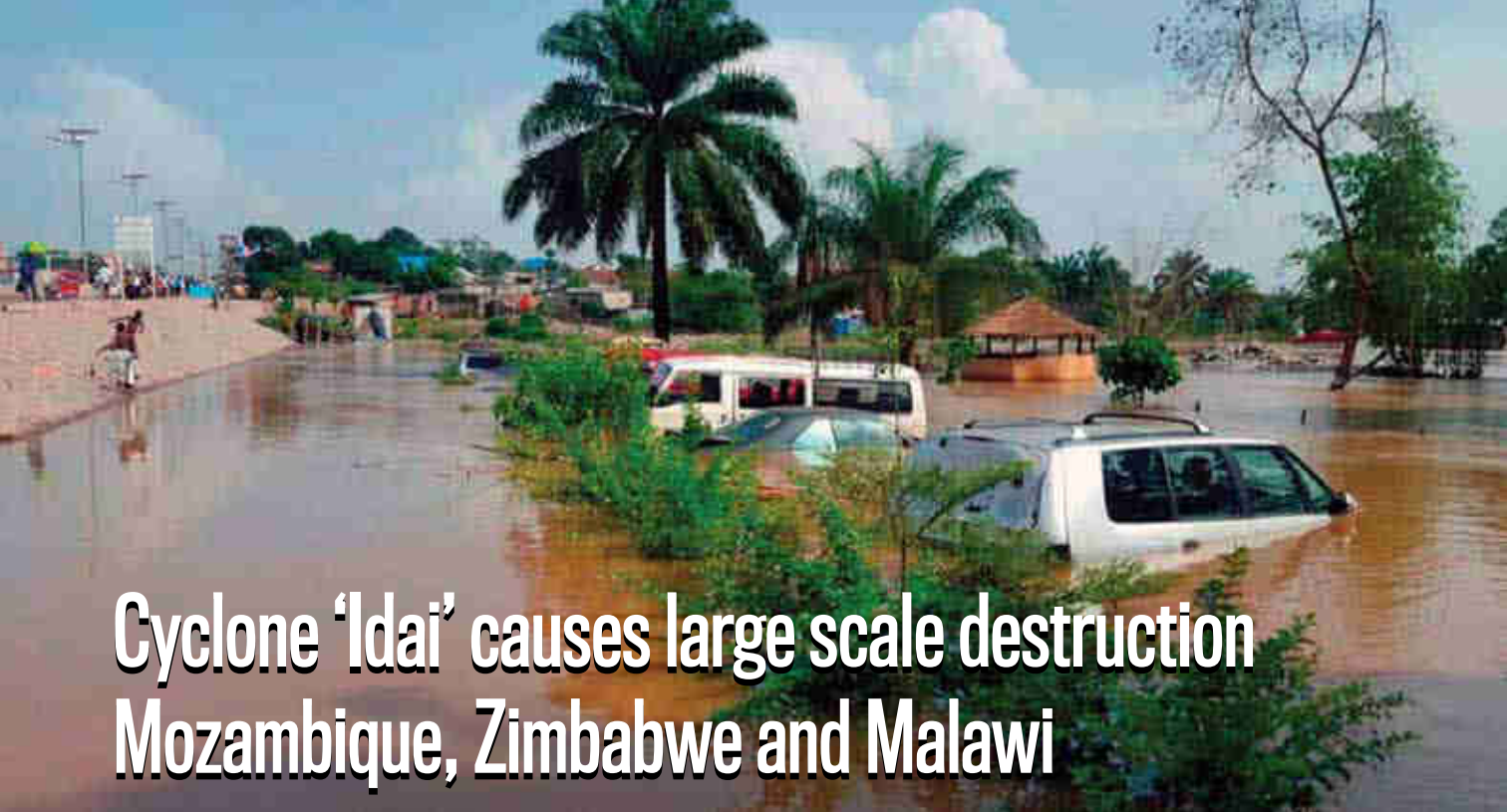
and data collection with very little emphasis on the associated health impacts. "For the data to translate into action, the health sector needs to step in as an important stakeholder in addressing the issue of air pollution, and we believe that through this initiative we will be able to prioritise public health and place it at the centre of air quality planning and mitigation in the city," she said.

NGT directs Inland Container Depot to phase out diesel vehicles

NEW DELHI: The National Green Tribunal (NGT) has directed Inland Container Depot at Tughlaqabad to phase out its diesel vehicles in the next six months and asked it to submit an action plan on the issues within a month, noting that the area was causing high air pollution. A bench headed by Justice Adarsh Kumar Goel, NGT Chairperson said that the depot has to adopt a policy to ensure that diesel vehicles are stopped from plying and were required to shift to electric, hybrid and CNG modes to control this problem. The green panel noted that the depot handles about 3 lakh containers annually, leading to huge road congestion and air and noise pollution, especially when the fuel used is diesel, apart from creating parking problems. With regard to on site and off site emergency plan for the depot, the NGT was told that mock drills are to be carried out once in three months. The NGT said that this is not satisfactory and such mock drills must be carried out at least

twice a month and a compliance affidavit may be filed within a month on this aspect. The NGT while hearing a petition filed by Ajay Khara, warehousing expert, claiming that the non-Delhi bound operation being done in the ICD /TK is currently contributing to alarming level of air pollution in the city and therefore it should be moved out of the capital.

The NGT said the other alternative is to limit the visit of diesel vehicles only to its satellite terminals at Dadri, Rewari, Ballabhgarh and Khatuwas or any other such terminals so that the vehicles entering Delhi are not those run on diesel. "This is expected to be achieved in a phased manner, if not straight away, within an upper limit of six months. Such an action plan may be filed by the depot within one month. It was made clear that after six months, the depot must ensure that no diesel vehicle visits the depot which may be the condition to permit the depot to continue to operate from the present location," the bench said.



Cyclone 'Idai' causes large scale destruction Mozambique, Zimbabwe and Malawi

BEIRA: Tropical Cyclone Idai ripped through Mozambique as a high-end Category 2 storm with 175 kph (110 mph) winds on March 14, 2019, before moving inland into Zimbabwe and Malawi, affecting 1.5 million people in its wake.

Cyclone Idai's winds reached peak intensity of 195 kph on March 14, but unlike Irma (hurricane that hit Florida in 2017), which weakened significantly before hitting the US, Idai made landfall less than 24 hours after reaching its peak intensity. The coastal city of Beira, Mozambique, which was ground zero for the cyclone's landfall, is very vulnerable to storm surge due to its low-lying location. Much of the city was likely inundated by the storm surge running ashore. The storm surge, which measured by the height of the ocean above normal at the coastline, has been estimated to be more than 4 meters (almost 15 feet) in the case of Tropical Cyclone Idai.

On March 15, 700 survivors from Buzi gathered at the Escola Secundaria Samora Machel school in Beira after they were rescued. At a press conference in Beira, Carlos Agostinho do Rosário, Mozambique Prime Minister said that the official number of people killed in Mozambique had climbed to 293, adding that "we believe that figure will rise." As many as "300

to 400" bodies lined the banks of a road out of the city of Beira in Mozambique. Flood waters formed an inland ocean that was visible from outer space. Aid agency officials said that 90 per cent of the Beira, Mozambique has been "destroyed" by the cyclone, warning that more than 500,000 people there have been impacted.

More than one week on from the storm's initial impact, the United Nations confirmed that 259 lives were lost in Zimbabwe and 56 in Malawi.

Civil Protection Unit in Zimbabwe lead the rescue, with assistance from the Zimbabwe Red Cross and the International Organization for Migration, according to officials. Speaking to local media, Karikoga Kutadzaushe, Zimbabwe Red Cross Operations Director said that the situation is "quite dire," adding that people displaced by the devastation are in immediate need of shelter. Zimbabwe's Ministry of Information said on March 16, that "two command centres have been established" to take in those rescued from the worst affected areas. The Ngangu Township in Chimanimani and the Rusitu Valley community were the hardest hit, officials said.

Idai was the strongest tropical cyclone to hit Mozambique since 2008.

The European Union announced

on April 9, 2019 that an additional funding of €12 million will be provided for humanitarian support in Mozambique, Zimbabwe and Malawi. Out of which €7 million will be given for people in Mozambique, where up to 1.85 million people are in need of urgent humanitarian assistance. This assistance will provide shelter, water and sanitation, humanitarian food assistance, health and psychosocial support. The cyclone coincided with the annual harvest period, thereby affecting food security in the months ahead. Access to safe water is another major concern in a bid to avert the spread of disease outbreaks.

In Zimbabwe, €4 million will be provided for people affected by the flood with shelter, water and sanitation, as well as food assistance. The floods have exacerbated an already existing food security crisis, which was brought by drought and a volatile economic situation, and which is affecting almost 3 million people.

In Malawi, the people in need will benefit from assistance worth €1 million in the form of food aid and support to recover their livelihoods. The floods in Malawi have had an impact on 860 000 people, 85 000 of whom have lost their homes and are currently living in camps or makeshift settlements.

NGT forms panel to ensure proper green capping of landfill sites

Justice Adarsh Kumar Goel, National Green Tribunal (NGT) Chairperson, on April 4, 2019, formed a joint panel involving CPCB officials and a retired expert member of the NGT, GK Pandey, to look into a plea raised by Centre for Wildlife and Environment Litigation (CWEL) on the issue of improper green capping of landfill sites. Gaurav Kumar Bansal, advocate for CWEL informed the NGT that the MCD has adopted an illegal process of green capping of landfill sites which is not following the Solid Waste Management Rules 2016. He said, "The NDMC, at the time of deciding adoption of green capping process has failed to realise that the said process will lead to contamination of groundwater in the national capital, as the process failed to address the issue of leachate process."

Industrial waste continuously polluting Kalingarayan canal

Dumping of large quantities of industrial waste, including chemical, plastic and thermocol, continue to pollute the 737 years old Kalingarayan canal. The 90.5 km long canal helps in irrigating 15,743 acres of land located on both the sides from Bhavani to Kodumudi. Earlier a baby canal was constructed to prevent the main canal from dumping of untreated waste, but the dumping continued. "Vegetable waste, rotten food items, garlands, plastic bottles, and other waste is dumped in the canal", said Kulandaivelu, a resident of Karungalpalayam. The waste materials dumped result in choking the flow of the canal water.

'Promote renewables to ensure energy security, better climate & less pollution'

NEW DELHI: M Venkaiah Naidu, the Vice President of India, inaugurated GRIDTECH 2019 – International Exhibition and Conference organised by Power Grid Corporation of India Limited. Addressing the conference, Naidu said that moving to renewable energy would not just ensure energy security but also protect the climate and reduce pollution. He asked experts to look for new technologies to harness renewable energy to fulfill India's energy demands and also to fulfill India's international commitment to de-carbonise the electricity generation.

Naidu said that e-vehicles have the potential to save foreign exchange on crude oil import apart from reducing carbon emissions. He also called for inclusion of renewable energy provisions right from the planning of towns. Naidu opined that rapid urbanisation leads to increased energy demand and rise of Green House Gas (GHG) emissions, and he urged technologists to find new methods for tapping the huge potential

in the renewable energy sector and also asked them to educate the common man on the need to cut down GHG emissions.

The Vice President emphasised that connectivity and electricity are key to development and stressed upon the need to address challenges such as pilferages in transmission and distribution. He further said that a suitable transmission and distribution system needs to be developed to facilitate renewable integration.

Naidu, during the inauguration ceremony of the GRIDTECH 2019 exhibition, went around the stalls and interacted with the presenters. He said, he was glad to interact with students who were showcasing their innovative ideas to promote the use renewable energy.

Ajay Kumar Bhalla, the Secretary, Ministry of Power, the officials of Power Grid Corporation of India Ltd, representatives from Conventional and Renewable energy sector, students from prestigious institutions such as the IITs and others were present on the occasion.

BMRCL to build metro corridor connecting KIA

BENGALURU: Bangalore Metro Rail Corporation Ltd. (BMRCL) paid ₹141 crore to the National Highways Authority of India (NHAI) for 1.05 lakh sqm of land a few days ago and is ready to receive the land it needs along NH 44 (Ballari Road) so that the city can be linked to Kempegowda International Airport (KIA) by Namma Metro.



Under Phase II-B, the BMRCL has decided to extend the metro line from the proposed K R Puram interchange station to the KIA via Nagawara and Hebbal. The metro to the airport will cover a distance of 55 km starting from Silk Board. The KIA premises will have two underground metro stations. Hoping to meet the 2023 deadline, the metro officials are in the process preparing a detailed project report.

The metro line connecting K R Puram to the KIA will connect with the proposed peripheral ring road (PRR) on Ballari Road. The BMRCL has planned to build a metro station after Kogilu Cross. Also, the BMRCL has identified 17 locations for proposed metro stations on the metro line connecting the KIA. A senior official said that there will be fewer metro stations after Hebbal, only seven on the 28-odd-km stretch. This will enable metro trains to run at a higher speed after hitting Ballari Road.



84 of 86 countries use lead-free petrol: UN Environment

Post the 12th Global Partners' Meeting of PCFV, the United Nations Environment released a report which stated that 84 out of 86 countries have boycotted the use of lead based petrol. Moreover, countries are focusing on using ultra-low sulfur fuels to prevent further pollution

PARIS: UN Environment's recent press release said that the Partnership for Clean Fuels and Vehicles (PCFV) held its 12th Global Partners' Meeting in March 2019 in Paris, France, to discuss progress towards cleaner transport in developing and transitional countries. Over the years, the partnership has reached several key milestones, including the elimination of leaded petrol in 84 out of 86 countries.

The two remaining leaded countries have also progressively introduced unleaded petrol. In addition to this, 36 countries have switched to low and ultra-low sulphur fuels and 15 countries adopted Euro IV equivalent vehicle emissions standards.

Almost two decades since the partnership was established, the partners' resolve to promote cleaner fuels and vehicles in low-income and middle-income countries remains strong. Close to 40 partners from the oil and vehicles industry, academia, civil society, and developing and developed countries met to review progress since 2016 in three areas: the elimination of lead in petrol, reduction of sulphur levels in fuel, and the adoption of vehicle emission standards. Despite the

Focusing on the three campaigns of the PCFV: 36 countries have switched to low and ultra-low sulphur fuels and 15 countries adopted Euro IV equivalent vehicle emissions standards

acknowledgment that good progress has been made, the work remains far from over.

Many low-income and middle-income countries still grapple with inadequate fuel and vehicles regulatory standards. According to the Public Eye Report, several West African countries unknowingly import fuels with sulphur levels as high as 10,000 ppm from Europe, posing a major public health risk. The lack of adequate regulation on the importation of used vehicles further complicates the issue. Poor regulation of used vehicle imports in developing countries opens the market to an influx of vehicles that lack the latest technologies required to limit the emission of harmful pollutants. Old, outdated vehicles running on toxic fuel are a perfect recipe for harmful emissions resulting in deteriorating air

quality, particularly in urban areas. It is for this reason that the partnership resolved to continue focusing on the three campaigns of the PCFV: eliminate lead in petrol worldwide, reduce sulphur levels in fuels, and promote cleaner vehicle standards.

As part of these three campaigns, new areas of interest for the partnership were highlighted through the findings of two working groups formed at the last global meeting, held in 2016. The groups worked on the topics of lubricants and used vehicles. Discussions during the meeting emphasised that as countries continue to introduce cleaner fuels and vehicle standards, it is important that, "the right lubricants are used for the right vehicles". Further, the right lubricants, play an important role in reducing vehicle emissions.

It was noted that apart from the work of the partnership, there are other initiatives and programmes that complement the goals of the partnership. The Real Urban Emissions (TRUE) initiative by the Fédération Internationale de l'Automobile (FIA) Foundation and other partners is one such initiative. It aims to collect and publish real-world emissions data to raise awareness about the magnitude and extent of vehicle emissions exceeding the set limits. This is important, as some of the preliminary findings of on-road vehicle emission testing in developed countries found out that some vehicles were emitting 15–30 times more pollutants than is permitted.

The initiative supports city efforts towards effective policy formulation and consumer awareness by providing them with transparent emissions data. Among other programmes identified were the Global Fuel Economy Initiative which promotes vehicle fuel efficiency; the Climate and Clean Air Coalition (CCAC) that supports reduction of short-lived climate pollutants; UN Environment's Electric Mobility Programme; and Towards Zero Foundation that is supporting a campaign on zero fatalities and zero emissions.

Changing course of **URBANISATION**



Indian polity has remained hesitant in welcoming urbanisation as a defining trend of the twenty-first century and is therefore not fully equipped to address the related challenges. This has been reflected in policymaking too. It is no secret that Indian cities are not in a healthy state and the increasing inflow of people is going to make the situation worse. This article tries to capture trends in urbanisation and throws light on the preparation of our local governments in handling the crucial challenge and changing the outlook of polity and bureaucracy towards urbanisation



Abhishek Pandey
Editor



100 Years ago, only 2 out of 10 people were living in cities. By the middle of the 21st century, seven out of 10 people will be living in urban areas. This illustrates that evolution of cities happened at a fast pace in the last century. In this period, cities became larger in size and new cities emerged. In 1950, New York and Tokyo were the only Mega Cities with more than ten million inhabitants.

In 1980, Mexico City, Sao Paulo and Osaka joined the ranks. It is interesting to note that no Indian city was a Mega-City till that time. And, here comes 2010, there were 20 Mega Cities in the world and Mumbai, Delhi, Calcutta from India were among them. Now, Bengaluru and Chennai are also part of the list.

According to the 2018 Revision of World Urbanization Prospects produced by the Population Division of the UN Department of Economic and Social Affairs (UN DESA), Tokyo is the world's largest city with an agglomeration of 37 million inhabitants, followed by New Delhi with 29 million, Shanghai with 26 million, and Mexico City and São Paulo, each with around 22 million inhabitants. Today, Cairo, Mumbai, Beijing and Dhaka all have close to 20 million inhabitants.

By 2020, Tokyo's population is projected to begin to decline, while Delhi is projected to continue growing and to become the most populous city in the world around 2028. By 2030, the world is projected to have

43 megacities, those with more than 10 million inhabitants, most of them in developing regions. However, some of the fastest-growing urban agglomerations are cities with fewer than 1 million inhabitants, many of them located in Asia and Africa. While one in eight people live in 33 megacities worldwide, close to half of the world's urban dwellers reside in much smaller settlements with fewer than 500,000 inhabitants.

The story of India's urbanisation is linked with its economic prosperity and people's aspirations. Everyone living in a village looks for better health and education services for himself/herself and his/her family and for this, economic prosperity is required. India claimed to be an agrarian society but the agriculture sector is losing its sheen and that is visible in the contribution of agriculture in Gross Domestic Product (GDP) of the country. Agriculture contributes only 15 per cent to the national GDP. It is also interesting to note that cities contribute over 65 per cent to GDP. So the general perception that one needs to be in a city to be financially well-off is not mistaken.

Most of its cities evolved with industrial boom and later by the proliferation of Information Technology and service industry. Bengaluru and Hyderabad are striking examples. Many big cities of India were built around a single industry in the past but no longer will cities evolve in this fashion. Cities of today are expected to reflect an increasingly connected and global world. They

are planned in a way so as to become self-sufficient. For example, if you talk about Gurugram and Noida in Delhi-NCR, it is difficult to characterize these cities as they have hundreds of corporate offices dealing in various sectors and also have a variety of manufacturing industries.

The increasing population in cities and the expansion of urban areas is reducing the land parcel for agriculture. It is expected that cities could go for vertical farming. Small but self-sufficient cities may emerge. These cities will have all the facilities available at their citizens' reach. Technology is also changing the way cities function. Artificial Intelligence (AI), robotics, drones, sensors, automation technologies, and the Internet of Things (IoT) have become part of urban eco-system in many cities around the world.

The present government took note of it and rolled out a series of initiatives to address the pressing challenges of urbanisation and related issues. They put out a detailed agenda for improving civic services and infrastructure in cities through a range of Missions including Swachh Bharat Mission, Smart Cities Mission and AMRUT

Elections setting the tone for renewed urban agenda

In 2014, the present government showed its intention to improve basic services and infrastructure in cities to support the economic prosperity of the nation. The NDA government promised a series of urban transformation schemes for cities. They launched Smart Cities Mission, Atal Mission for Rejuvenation and Urban Transformation, Swachh Bharat Mission, Heritage City Development and Augmentation Yojana (HRIDAY), Housing for All and several other schemes for urban transformation. While the impact of these schemes in the last five years is debatable, these initiatives set a tone for new-age urban agenda of the Indian government.

General elections in India are around the corner. Political parties in India have always given focus to the woes

MOST CITIES EVOLVED WITH INDUSTRIAL BOOM AND LATER BY THE PROLIFERATION OF INFORMATION TECHNOLOGY AND SERVICE INDUSTRY. BENGALURU AND HYDERABAD ARE STRIKING EXAMPLES. MANY BIG INDIAN CITIES WERE BUILT AROUND A SINGLE INDUSTRY IN THE PAST BUT NO LONGER WILL CITIES EVOLVE IN THIS FASHION. TODAY, CITIES ARE PLANNED IN A WAY TO BECOME SELF-SUFFICIENT, FOR EXAMPLE, GURUGRAM AND NOIDA IN DELHI-NCR

of rural populace in their political agendas. Whether the conditions of rural areas and people living there have improved or not is a separate topic of discussion but their problems such as the state of agriculture, farmer distress and rural infrastructure have hogged the limelight in political discourse over the years.

This is true for this election too. However, in addition, cities are gradually getting some space in political parties' poll promises. Political parties have started talking about the staggering problems of cities and have given them due attention in their manifestos. Another reason is the rising aspirations of citizens. As economic prosperity and technology improved, people got exposure to better facilities and information.

People living in Bareilly are able to see what kinds of services are being rendered in Barcelona through YouTube, TED and other mediums available on their smartphones. It became evident that the focus of political parties towards cities will shift with the perception of people towards their dream city. However, the shift seems to be slower than expected. Political parties have several poll promises for cities in their manifestos but Indian politicians' idea of cities is still hovering around basic services. Their urban agenda could have been better if they had consulted experts or the people on the ground.

Bharatiya Janata Party (BJP) has come out with an urban roadmap and says, "through the development of infrastructure and connectivity, we will ensure the further development of suburban townships and new urban centres." Interestingly, BJP has not talked about Smart Cities Mission this time while in 2014 building 100 smart cities was one of the major poll promises.

A similar approach can be seen in the manifesto of Indian National Congress (INC) that says, "Congress promises to formulate a comprehensive policy on Urbanisation after wide consultation. We will address the issues concerning towns and cities

GENERAL ELECTIONS IN INDIA ARE AROUND THE CORNER. POLITICAL PARTIES IN INDIA HAVE ALWAYS GIVEN FOCUS TO THE WOES OF RURAL POPULACE IN THEIR POLITICAL AGENDAS. THIS IS TRUE FOR THIS YEAR TOO. HOWEVER, IN ADDITION, CITIES ARE GRADUALLY GETTING SOME SPACE IN POLITICAL PARTIES' POLL PROMISES. POLITICAL PARTIES HAVE STARTED TALKING ABOUT THE STAGGERING PROBLEMS OF CITIES AND HAVE GIVEN THEM ATTENTION IN THEIR MANIFESTOS

including city governance, livelihoods, housing, habitat, pollution, climate change, urban transport and disaster management." They have also promised to support state governments to build new towns and cities as well as satellite towns. But these promises are not indicative of any specific outcome.

BJP has also promised to establish five regional centres of excellence on urban issues. These centres will provide support to states and local bodies on issues of urban governance and growth. The party has also promised to extend Metro services in 50 cities of the country. They have also committed to launch the National Urban Mobility Mission.

The objective of the Mission is to provide technology-based urban mobility solutions to all urban local bodies and increase the use of public transport to enhance walkability and cycle use. Under this mission, we will incentivize cities to integrate the public transport systems such as metro, local trains and local buses with the private service providers in the sector such as, private bus operator, private taxi operator, the auto-rickshaw, e-rickshaw services, pedestrian and cycling infrastructure for seamless and smooth last mile connectivity. We will also promote a common mobility card/ticketing across different modes of transport. It is also promised to turn National Clean Air Plan into a Mission and focus on 102 most polluted cities for bringing down pollution levels by

at least 35 per cent.

Congress party has also talked about strengthening the 74th Constitutional Amendment Act for devolution of financial powers and to empower mayors with a uniform five-year term.

There are a few more promises featured—slum upgradation, building of night shelters, a housing scheme for the poor, safety of women, promotion of non-motorised transport, etc. They have also promised to establish Aajeevika Kendras (Livelihood Centres) in all major cities and towns where a migrant worker may register himself/herself in order to access government services, healthcare, crèches and schools for his or her children, skill development and training centres, and legal services.

Communist Party of India has also given their idea of new age urbanisation. They have criticized the Special Purpose Vehicle (SPV) arrangement in Smart Cities and said that they would repeal it if voted to power. They have also committed to empowering ULBs and the mayoral system.

They promoted the idea of Livable Cities instead of Smart Cities. The major distinctive poll promise in their manifesto is "recognising people's right to water". The party has also made similar promises as made in Congress party's manifestos. The common thread joining all parties' manifesto is the promotion of non-motorised transport. ■

How will cities grow in future?

When more people arrive in cities, they need to be accommodated sustainably. Governments have multiple options at their disposal—create new cities, expand existing cities horizontally, if the cities have a scope of expansion; or go vertical, if the city's topography is like Mumbai and cannot expand horizontally. Should we build denser cities or opt for creating sprawling, low-density peri-urban areas? This dilemma is still bothering urban planners and policymakers amidst haphazard urbanisation. An analysis to understand the benefits and shortcoming in these models...



Ranjit S Chavan
President, AIILSG

New cities are evolving as towns are turning into cities and small cities into metro cities and metro cities into Mega Cities. This is generally happening without any planned institutional

interventions; with a few exceptions. Smart Cities Mission is one initiative that has addressed the issue of planned urbanisation with improvement in the services and infrastructure of a city. How this idea will pan out in the selected 100 cities can work as a

learning experience for many more evolving cities of India.

Urbanisation trend in India had not been supported by any concrete policy. In the absence of any such mechanism of control, cities kept growing organically. The evolution of huge



Nearly half the population of Hong Kong lives in these high-rise neighbourhoods. Many Chinese cities are also aping the model

slums and conversion of agriculture land into residential or industrial land parcels are glaring examples. This kind of urban development is a challenge in itself for many reasons. First, there is no control of government agencies on how they would want a city to be developed. Second, people living in unplanned colonies face difficulty in getting adequate civic services. This is true in the case of big cities like Mumbai and Delhi too. There are many areas in Delhi which do not get daily piped water supply or do not have a sewer connection. Such kind of unplanned urban growth is throwing a big challenge before the government as expanding cities horizontally is eating up natural resources fast. This will not end abruptly as people keep moving to cities for better life prospects and they will need a place to stay. The questions are how all these people will be able to access adequate food, water, housing, and medical care if the cities keep growing even beyond the limits of municipalities. Another solution to this conundrum is building vertical cities and housing people in denser cities.

Vertical cities

A vertical city, according to a nonprofit promoting the concept, is an “arrangement of interconnected mega towers” that could accommodate

thousands of people. These tall residential and commercial towers would ideally have housing units, departmental stores, hospitals, office complexes, schools, farms, and outdoor spaces. These facilities could be all in one tower or in a series of connected structures. These buildings or complexes can be made sustainable and self-sustaining with the right policy interventions. However, everyone does not like this idea. Many urbanists believe that such cities will destroy the character of a city because this kind of development will make all cities look alike. However, some examples of low-rise and high-density habitats bust these myths. Eixample district of Barcelona, the West Village in New York, and habitat between the fifth and sixth arrondissements in Paris, which houses up to 26,000 people per square kilometre, are examples which have developed denser habitats without hampering local culture.

For many others, the idea of denser cities looks frightening as they perceive the cities with a different lens. The general idea is that the denser cities will eventually get transformed into ghettos as seen in many low-income residential towers of Hong Kong or the quality of life in these housing units will be like chawls of Mumbai. The absence of any such successful models in developing countries also adds to this confusion as

urbanists are of the view that vertical or denser cities can solve most of the evolving urban problems if those cities are built right and planners, politicians have thought it through.

A city’s approach to density really depends on what one is trying to achieve, says Vishaan Chakrabarti, founder of the Practice for Architecture and Urbanism in New York, and author of *A Country of Cities: A Manifesto for an Urban America*. In his book, he talks about 30 units per acre and that is based on one metric, which is to support mass transit. He explains, “height and density are by no means the same.” While a minimum density of 30 units per acre is necessary to support a rail-based mobility system—the Tube or a light-rail network, for example—people should not find that a very scary number: “It’s not big skyscrapers, it’s townhouses and brownstone buildings—the densest parts of Manhattan or Hong Kong are three, four, five times that.”

Chinese model

China has adopted the approach of building vertical cities to manage its growing population. According to a report by China Today, over 25 million of China’s rural population are migrating to cities every year. There are now over 160 cities in China with a population of over 1 million. To understand it in our context, India has 46 with a population of over 1 million and moving towards that direction.

To manage this rate of growth in its cities, China has started building “vertical cities”. At present, China has the largest number of tall buildings in the world, surpassing even the United States of America and many developing countries. It has more than 1,500 building more than 150 meters and 26 supertall skyscrapers. This could be because of the sheer size of its population but the model China is adopting is worth considering for countries like India. However, they must understand the geographical, economic and social fallouts of any such initiative. ■

THE GENERAL IDEA IS THAT THE DENSER CITIES WILL EVENTUALLY GET TRANSFORMED INTO GHETTOS AS SEEN IN MANY LOW-INCOME RESIDENTIAL TOWERS OF HONG KONG OR THE QUALITY OF LIFE IN THESE HOUSING UNITS WILL BE LIKE CHAWLS OF MUMBAI. THE ABSENCE OF ANY SUCH SUCCESSFUL MODELS IN DEVELOPING COUNTRIES ALSO ADDS TO THIS CONFUSION AS URBANISTS ARE OF THE VIEW THAT VERTICAL OR DENSER CITIES CAN SOLVE MOST OF THE EVOLVING URBAN PROBLEMS IF THOSE CITIES ARE BUILT RIGHT AND PLANNERS, POLITICIANS HAVE THOUGHT IT THROUGH



Loot & plunder of India's forests

The Aravalli forests are the green lungs of the NCR which are now in danger due to an order passed by the Haryana Assembly that amended a 118 year old Punjab Land Preservation (Haryana Amendment) Bill. The Supreme Court called the order 'obnoxious and contemptuous' and put a stay on the order. The order had proposed to permit construction work to be carried in the forest area of the aravallis, which would damage the flora & fauna of the region and could lead to ecological imbalance of the Aravallis and the nearby regions

Kumar Dhananjay
Consulting Editor

Are we playing havoc with our forest cover in the name of development? Haryana Assembly amended 118-year-old Act to allow construction in Aravalli; SC stayed the decision.

Punjab Land Preservation (Haryana Amendment) Bill was passed on Wednesday, February 27, 2019, in the State Assembly. What in effect this amendment did to the 118 year old bill, which restricted the construction and other activities in the large region of the Aravallis, was to open huge amount of activities that will lead to its destruction. There was opposition to the amendment from other party members who demanded the formation of an all-party action committee to scrutinise the bill. But the Government of Haryana overruled the opposition demand and

passed the amendment bill. This bill does not just allow construction in Aravalli and NCR region but worse, it amends the bill with retrospective effect from 1966. A few days after the amendment, the apex Court slammed the Haryana Government's action and called it "obnoxious and contemptuous" while putting a stay order on the decision. The Court said "Prima facie it seems to be highly obnoxious and contemptuous. It is the violation of the Court's orders. If you have enacted such law then you are in trouble. It is not permissible. You cannot get rid of a judicial order. You are not supreme and supreme is the law of the country."

Worrying amendment

While we are debating new trends in urban development, the COP24 programs by UN agencies, while submitting ourselves to global agreements and arrangements, at home we are oblivious of these facts. Let's look at what this amendment does

- ◆ This amendment also permits the Kant enclave's construction which was ordered to be bulldozed by the Supreme Court last year. Kant enclave was constructed on forest land protected by the PLPA in Faridabad.
- ◆ Reportedly, the orders and notifications were issued under Section 4 or Section 5 of the Act. This extends over an area of about 10,94,543 hectares which equals to approximately 25 per cent of the total area of the State. This notification covers 14 out of 22 districts and almost the entire districts of Gurugram, Rewari and Mahendergarh are covered under PLPA.

Kiran Chowdhary of the Congress says "I opposed this amendment in the Assembly. The worst thing with this amendment is that they amend it retrospectively from 1966. Now, mining mafia, the land mafia will intrude in the Aravalli range". She reinforced her

point and said Aravalli ecosystem is one of the oldest ranges of the world. Congress tried to save the bill. When I was forest minister we formed the National Conservation Zone (NCZ) but now this amendment will affect it. This government is only favouring their mates. Let us forget the politicians, though they change the rules and acts, environmentalists are claiming that after this amendment, rampant construction and illegal activities will be initiated in this region. This will create ecological imbalance in Aravalli and its nearby region. This will also impact on the groundwater level in this region which is already very low. Reportedly, citizens of Gurugram and Faridabad protested against this bill with banners of “No Aravallis No Vote.”

“It was extremely disheartening to see the government pass such legislation when the air quality in Gurgaon is so alarming. Gurgaon has likely been reduced only to the cyber city and SEZ with little importance to the environment. The forest is not the first thing, water shortage in Gurgaon is an age-old issue. I myself moved to Gurgaon 2 years ago only to discover I’m allergic to the air here.” said Bhumika Sharma, resident of Gurugram. The Aravalli forests are the green lungs of the NCR. Imagine the pollution and dust if

ENVIRONMENTALISTS ARE CLAIMING THAT AFTER THIS AMENDMENT, RAMPANT CONSTRUCTION AND ILLEGAL ACTIVITIES WILL BE INITIATED IN THIS REGION. THIS WILL CREATE ECOLOGICAL IMBALANCE IN ARAVALLI AND ITS NEARBY REGION

these are opened up for greedy builders, with the help of our politicians.

RIP India’s most pristine & dense forest area in Chhattisgarh as it gets coal mining clearance - Centre’s nod for mining in 170,000 hectares of forest in Chhattisgarh

The Union Environment Ministry has given environmental clearance for open cast coal mining in Parsa in Chhattisgarh’s dense Hasdeo Arand forests, in a decision that could have far-reaching consequences for forest cover conservation in India.

Hasdeo Arand is one of the largest contiguous stretches of very dense forest in central India, spanning about 170,000 hectares. Parsa is one of the 30 coal blocks in Hasdeo Arand. The mine, which has a capacity of 5 million metric tonnes per annum (MPTA), will be operated by Rajasthan Collieries Limited (RCL). It received stage 1 forest clearance in February this year, but the minutes of the forest advisory committee’s meeting highlighted that a section of the 841 hectares to be diverted for the mine lies in very dense forest. The mine which is open cast mining needs to remove all vegetation and soil from the area. It came up for consideration of the environment ministry’s expert appraisal committee (EAC) thrice before clearance was finally granted on February 21, 2019. Earlier in 2018, EAC had sought the State Tribal Welfare Department’s comments on the status of gram sabha consent for the project and the impact on tribal populations. It also sought the state wildlife board’s opinion on the impact of mining on the elephant corridor that runs through the forest. In its July 24, 2018 meeting, the EAC again sought the same clarifications. The minutes of the meeting suggest the Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUNL) submitted information on these two queries in September 2018 but there are no details on whether gram sabha consent was taken. Another issue raised by activists and legal experts is that forest clearance to an adjoining mine on the Hasdeo Arand fringe -- Parsa East and Kete Basao captive coal block -- was granted

on condition that the Chhattisgarh government would not allow opening up of the main Hasdeo Arand area. However, the Parsa open cast mine that was granted clearance last month is in the core Hasdeo Arand forests.

“Apart from pending legal issues and procedural lapses, the grant of approval [for open cast mining at Parsa] completely goes against the precautionary principle that is the need of the hour. Initiating mining will fragment one of the last remaining contiguous forest patches in Central India, violate forest rights and increase human-wildlife conflict,” said Kanchi Kohli, a legal researcher at the Centre for Policy Research (CPR) in Delhi.

In 2009, the Environment Ministry categorised Hasdeo Arand as a ‘no-go’ area for mining for its rich, unfragmented forest cover. Environment activists fear the approval for mining will likely be detrimental to forest conservation.

“Environmental clearance issued to Parsa mine is illegal because the forest advisory committee had earlier held that Hasdeo Arand cannot be opened up for mining. The Forest Survey of India, in a 2014 report, had recommended that Hasdeo Arand should be inviolate for mining” said Shrivastava, the lawyer who has moved court for de-allocation of a coal block adjacent to Parsa. RVUNL, which owns Parsa, said it has all necessary permissions. “We have received all permissions except a final forest clearance, which will come through anytime. The cases pending in the Supreme Court are related to other coal blocks, so they will not affect this project,” said SS Meena, Director (technical) at RVUNL.

Before granting forest clearances it is critical that a biodiversity impact assessment is done. The value of ecosystems and biodiversity cannot be treated as a postscript of forest land diversion decisions. In fact, a comprehensive impact assessment report taking into account factors like ecological, environmental and social consequences of forest land diversion is the need of the hour to improve the integrity of clearance process. ■



Basudev Mahapatra
Senior Journalist

As summer arrives, Urban Odisha gets scared about water

With a projected population nearing 9.40 lakhs, as per India Population 2019, Bhubaneswar has the reputation of being the hottest city of the country. With the monsoon trend delaying by almost one month, the worry for the urban dwellers of the state is the possible water scarcity they have to face soon as they have been facing for many years

Summer has arrived in Odisha. Most of the state now experiences temperature above 35 degrees. In between mercury in Bhubaneswar crossed 39 degrees. Parts of the state experience temperature above 40 degrees even before middle of April. According to weather forecaster SkyMet, there has been a rising trend in temperatures in April and its continuation in May is likely to pave way for intense heat before the onset of Monsoon.

Basing upon the past experiences, the Odisha government has issued an advisory and implemented a state level Heat Action Plan (HAP) to combat any situation of extreme heat this summer. The government has instructed all concerned departments to see that drinking water facilities are in proper condition to avoid any issue in this regard.

“These are all short term measures taken by the government every year when the summer comes,” says Tapan Kumar Padhi, Director of Water Programme at Regional Centre for

Development Cooperation (RCDC). “Bhubaneswar facing increasing water stress year by year, the question is, where from the water is to be drawn to supply to the growing population in the city? The primary water sources are under severe stress!”

Water-stressed Bhubaneswar

Understanding Water Flows in Bhubaneswar, a report jointly published by Heinrich Boell Foundation (HBF) and Development Alternatives says, “The city is surrounded by rivers—Dayanadi in the South, Kuakhai in the East, and Mahanadi in the North. The rivers Daya and Kuakhai are not perennial and hence have low discharge during summers, thereby necessitating supplementation from Mahanadi or groundwater sources.”

Contributed by experts from various government departments with their inputs on water situation in the capital city, the report also points out that the city has a High Baseline Water Stress (BWS) of more than 80 per cent, meaning 80 per cent of the total water

available is being withdrawn annually for human consumption. Given that there is a lack of sufficient ground water recharge to meet the requirement of depleting ground water table, as the aforesaid report mentions, the water scenario is going to be worse in coming years.

The quality of water is another issue. Water quality monitoring of river Kuakhai in Smart City Bhubaneswar, observes that “water quality of this river in all seasons conformed to class-D.” Such quality of water is unfit for human consumption even after disinfection but can be used for fish culture and wild life propagation, as per the Central Pollution Control Board (CPCB) norms. A 2018 letter from the State Pollution Control Board, Odisha, to the Housing and Urban Development Department also marked the quality of water flowing through Kuakhai, Daya and Gangua rivers as unsuitable for human consumption. When water sources like rivers and water bodies do not remain reliable for supply of drinking water, this usually leads to overexploitation of ground water sources in order to fulfil the demand. According to the DA-HBF report, 209.1 MLD (Million liters per day) of surface water and 56.9 MLD of ground water is extracted for consumption in Bhubaneswar.

Further exploitation would lead to acute water crisis as, reports say, the trend of groundwater level between 2006 and 2015 showed a decrease in the level during pre-monsoon season, between January and April. In parts of the city, the depletion is by close to one meter during the given decade. On the other hand, with the surface of the city transforming into a concrete floor,

“there is a lack of sufficient ground water recharge to meet the requirement of depleting ground water table,” says the DA-HBF report.

Measures initiated

In order to deal with the issue of increasing water stress and to ensure supply of safe drinking water, piped water supply network is expanded up to a length of 1,133 km under nine major zones and 88 sub-zones. Total daily water supply in the city comprises 209 million liters of freshwater and 56.9 million liters of ground water keeping average supply per capita per day between 218 and 248 liters. But this seems to be insufficient in cases of non-availability of adequate water at sources.

While one of the goals of the Smart City Proposal of Bhubaneswar focuses on adequate water supply including wastewater recycling and storm water re-use, this is yet to see proper execution of plans to ensure that. For effective management and consistent supply of water, Bhubaneswar plans to reduce the average supply of 248 lpcd (litre per capita per day) to 135 lpcd by bringing down the current level of 35 per cent

non-revenue water to 15 per cent through municipal reforms under Atal Mission for Rejuvenation and Urban Transformation (AMRUT) programme.

Besides, in order to ensure supply of safe drinking water in the slums, Bhubaneswar Municipal Corporation has facilitated setting of water ATMs under an agreement with Piramal Sarvajal for a period of five years. However, with only 40 such automated water vending machines installed in equal number of slums where uptake possibility is high, rest of Bhubaneswar's 437 authorised slums are still deprived of this facility.

Situation in other cities

Water situation in other major urban dwellings is equally disturbing. As rivers and water bodies are under tremendous threat because of human activities as well as global warming induced climate change, dwellers of almost every small and big town of Odisha are facing water scarcity. Water supply system in Brahmapur is in a state of disarray. During summer, people have to live 2-3 days without any supply of water. The long awaited Janibili water project

meant to address the water issues of Brahmapur is yet to deliver the benefits even though it is inaugurated before completion, said Aniruddha, a city based hotelier highlighting that “when there is no water for days together, we don't have any choice but to use and consume any quality of water we get.”

With a number of hotels, guesthouses, dharmshalas to accommodate thousands of visitors every day and lakhs during important religious occasions, Puri, the city of religious pilgrimage for being the place of Sri Jagannath temple, has to toil under acute water scarcity during summer and other seasons as well. Depending on two major sweet-water aquifers for potable water, Puri may exhaust all the water stored for human consumption in a decade, apprehends Priya Ranjan Das, a journalist who has worked on city's water situation.

In general, provisions of Odisha's state urban water supply policy 2013, which envisions to provide universal access to potable piped water supply on 24/7 basis at an affordable price and in an equitable, sustainable and eco-friendly manner with verifiable service level benchmark for citizens in urban areas of the state, are yet to be fulfilled in almost all the urban dwellings of the state.

Despite the fact that water scarcity during the summer has been a regular affair across the state, measures to deal with the issue have always been of short term vision, says Tapan Padhi underlining that the priority should be on restoring and rejuvenating the sources wherefrom the city draws the water. “Unless the rivers are in good health and ground water sources are recharged properly, the issue is going to gather more energy and people are going to face terrible water scarcity in the coming days.” Proper management of water extraction and distribution as well as educating people on fair and judicious use of the resource are equally important if we want stay safe in terms of water security across urban Odisha, Padhi insists. ■

PROVISIONS OF ODISHA'S STATE URBAN WATER SUPPLY POLICY 2013, WHICH ENVISIONS TO PROVIDE UNIVERSAL ACCESS TO POTABLE PIPED WATER SUPPLY ON 24/7 BASIS AT AN AFFORDABLE PRICE ARE YET TO BE FULFILLED



[The views expressed are the author's own. They do not purport to reflect the views of Urban Update.]

A message to urban voters from forests, rivers and indigenous communities

In this election season, while water supply and sanitation do figure in the list of priorities for urban voters, rivers, forests and ecological conservation are not in the list. Air and river pollution are concerns for rural people, but the lack of understanding on the interlinkages between forests, rivers and monsoon is a critical gap that has the potential to hamper ecologically sustainable urban growth. Interestingly, the rural masses have a much better understanding on these issues. It's time urbanites took benefit of the rural knowledge systems on ecology for their own good. We have just made a small beginning in this regard



Ranjan K Panda
Convenor, Combat Climate
Change Network, India

On World Water Day this March 22, I had the good luck of visiting a village on the bank of Budhabalanga River, in the periphery of Similipal biosphere reserve. We were there to launch the Similipal River Festival, a special programme as a part of the 3rd Odisha River Conference that was organised on March 24, at Baripada. The forty odd villagers, from all ages – starting from children to the septuagenarians – were happy to welcome us as we walked down to the river with them. There was joy on their faces as well as curiosity. Joy, because we were there

with them showing 'love' to their mother river, as they term it. It was an unprecedented act of urbanites, who are only seen as picnickers near the river during the winter season. Thus the curiosity. The river for these villagers, belonging to indigenous communities, is their friend, family and a source of happiness. Forests that they have been preserving for centuries are part of the same family. Forests, rivers and local indigenous communities are one family, they told us, as we celebrated the existence and serenity of the pristinely Budhabalanga River.

Understanding the river through the eyes of such villagers has always been an

enlightening feeling. I have benefited a lot from my previous visits to numerous such villages. The children play around with the river, catch fish there and enjoy their childhood in a way most of our urban kids miss. In fact, the way our urban kids and youths are being groomed at the moment, they might miss the opportunity of playing with clean rivers, and get a pristinely touch of the rivers, this entire life time.

Clean river is something our urbanites can only see to an extent when they go out for holidaying or on a picnic to remote forested locations. In city limits, all rivers are highly polluted. And when there is some stretch of the river cleaned in the name of a river front project or during a religious festival, the dirt-free water creates the impression of 'clean water' which actually may not be the case. In most such cases, one might not get the species diversity that real clean water supports. Ask a rural dweller regarding local species in a river in a forest; you will get a count of five to seven fish varieties at the least. It can often go up to 20 or 30.

At Bhagirathipur, the village we visited on World Water Day, what struck me was the understanding among the youths, of the intricate relationship the rivers have with forests and local ecology. When a young couple, married a few months ago, told me that the rivers and forests are one family and one of their sources of happiness, I



was not surprised. I have heard this from hundreds of people during my visits to forested areas. Especially the indigenous communities, who have been championing the cause of local natural forest conservation across the country, have a special love for the rivers, forests, and local natural systems. Such a love affair is beyond comprehension of most of the urban dwellers. The forested communities understand that their lives, livelihood, cultures and wellbeing are all dependent on the local natural resources. They care for these resources, and protect them. In return, the resources nurture them.

Rivers for the urban youths

I have been getting the opportunity to speak to and interact with youths from across the country on water, rivers, ecology, climate change and related issues. Each time I am invited to a programme in a school, college or university, I ask certain questions to gauge the understanding of our children and youth on these vital support systems of our survival and well-being. To my question, “what would you want the politicians to do for our rivers?” many of the graduate and post graduate students that I had a chance to interact in the last few months had no specific

RIVERS SURVIVE IF THERE ARE FORESTS. FORESTS WILL SURVIVE AS LONG AS LOCALS PROTECT THEM. IF LOCALS ARE OUT, THESE FORESTS WILL BE A MERE WOODLOT AND IT WOULD BE EASIER TO DESTROY THEM IN THE NAME OF DEVELOPMENT SAYING ‘PLANTED TREES CAN REPLACE FORESTS’

answer. “We need rivers” is a sure shot answer but when it comes to defining a river, they unanimously fall for the area where water flows, that shrinks and expands during summer and monsoon respectively. To get them to talk a bit more about rivers, it takes a bit of interrogation so that they can recall about the relationship of rivers with forests, mountains and ecology.

Similarly, when it comes to forests, many fall prey to the plants. For most of the urban youths, a stem that has some leaves and some flowers is a tree. The concept of groves, forests and most importantly local biodiversity rich forests seems to be escaping their horizon of conceptualisation. Most of them are not bothered about alien and invasive species, nor are they concerned about conservation of local biodiversity rich species. They no more have the opportunity to go out of their studies – most often done to fetch a job only – to pluck a guava or mango. It’s all bought from the market.

Similarly, their vision of water is getting restricted to ‘tap’ water and ‘bottled’ water. Unless deliberately prompted, they don’t ask questions about the sources of the water. That’s dangerous and does not bode well for our plans for ensuring a water secure future for all. This is also detrimental to our Paris climate commitments.

Time to learn about rivers from indigenous forest protecting communities

During the River Conference, some urban students – both from general and technical education streams – got a first-hand idea of what are real forests and who are the real protectors of these forests. They interacted with indigenous community leaders, both women and men, who have been preserving their local natural forests relentlessly and recharging the water level of the areas as well as the rivers, besides bringing many other benefits to their communities. The villagers have taught them about how natural forests are the largest source of the water flow they see in their rivers, and that

protecting the catchment forests is the most vital thing in river conservation efforts. They have also told them the importance of local natural biodiversity-rich forests that give food, fodder, nutrition, income, prosperity and happiness to the rural folks and it is not at all a good idea to displace the indigenous communities from the forests in the name of conservation.

Rivers will stay if forests stay and forests will survive as long as local communities are there to protect them. The moment the local communities are out of the forests, the definition of these bio-reserves will be limited to woodlot and it would be easier to destroy them in the name of development with the argument that ‘planted trees can replace forests’. Villagers of Bhagirathipur told us it’s disastrous to replace natural forests with plantation of alien species. Majority of researchers and conservationists working on environmental issues have the same opinion.

Rivers supply water to almost half of Indian cities. If for nothing else, the urbanites should work with such communities to protect the forests and the rights of the local communities over forests, to ensure their own right to clean drinking water. Forests are the best purifier of our water sources, and this purification is the healthiest technology available.

So folks, next time when you visit a river, remember it is not just a channel of water flow but a lively ecosystem that nurtures a lot of species and gives numerous benefits to humans. Similarly, a forest is not just a horde of plants but a natural bio-reserve that supports your rivers to flow besides giving us various benefits including ‘carbon sinks’ to neutralise our pollution and climate change impacts. And most importantly, don’t forget that the local indigenous communities guarding our forests are doing a great service to humanity. They are guardians of our rivers as well. ■

[The views expressed are the author’s own. They do not purport to reflect the views of Urban Update.]



Uday Madkaikar
Mayor of Panaji

There is no coordination between Corporation & SPV: Goa Mayor

“Development of smart city is beneficial in improving urban life when development works are carried out progressively and done in coordination with local government. But, there is a lack of coordination between the city corporation and the SPV which needs to be fixed for better implementation of the various development projects and their completion in a timely manner. Leakages need to be fixed as well”



Kumar Dhananjay
Consulting Editor

You have been newly elected as Mayor of Goa. For the priorities that you stated during the election campaign, what kind of roadmap you have to achieve them?

My first responsibility is to keep Panaji, the Capital city of Goa clean. Thousands of national and international tourists visit the city every year. Making Goa better is an ongoing process. Upgradation needs to be done constantly. For instance, at someplaces cables are getting laid

or somewhere pipelines are getting installed for improving the water supply system in various parts of the city. I have given the deadline of April 30 to all the companies which are associated with these works. After the deadline is over, I will monitor and review the work. Everytime some construction work is done it leaves a huge amount of debris. It makes the city look dirty. It's my responsibility to get them removed and clean the city also because May

onwards city receives heavy rains. There are lots of flood-affected areas in the city. In order to avoid this, desilting of sewages is under process. All the works will be completed by the end of May. Development work never gets over, even though if we remove garbage from one place it again gets piled up. There were many black spots in the city and we have cleaned 95 percent of it. If people are willing to take responsibility and do their bit, then it is not a big deal to keep the city clean.

Urban local bodies have a significant role to play in the initiatives taken by the state government or the central government. It also requires huge funds to execute them. Are they available to you?

In the entire country, the work Smart City Mission is in the process under the supervision of urban local bodies. In Panaji, we are not aware what is happening. Work is directly taken forward by the SPV. After I was elected Mayor, I called for a press conference and insisted that smart city work requires better technology. Recently, I have called the officials from Smart City mission and asked for a list of developmental works being carried out for them. My concern was how to integrate the work done by Municipal Corporation and SPV. Sometimes what happens is that we pass a tender and later we get to know that the same work is undertaken by the smart city as well. So, at last minute we have to cancel the tender. I do not want them to stop

I REQUESTED SMART CITY TO INVOLVE MAYOR ALSO IN THE BOARD OF DIRECTORS. THERE IS NO POSITIVE RESPONSE YET. IF THE WORK HAS TO BE DONE LET US DO THE WORK TOGETHER

their work but only request is to keep us aware of the work undertaken by them. Recently, smart city is installing cameras in the various sectors of the city without the approval of the City Corporation. I immediately asked to stop the work and directed them to write a proper letter and then only I will grant permission because somebody will have to take the responsibility after the completion of work. Sometimes, they just leave the work in the middle. People do not know that and they hold Municipal Corporation responsible. I want the Smart City Mission to use the funds judiciously. I wish Panaji to become one of the top smart cities.

What you have said is very important. Panaji smart city has already formed SPV. So is it that there is no coordination between Smart City SPV and Municipal Corporation of Panaji?

There is no coordination at all. Last time I had demanded to include Mayor also in the board of directors, for now only municipal commissioner is the part of the board. I am representing 30 corporators of 30 wards, so I should know where what kind of work is going on. I should also have a say, if the work is important or not as a first citizen of Panaji.

What mechanism have you adopted to resolve this issue?

As I said, I requested smart city to involve Mayor also in the board of directors. There is no positive response yet. If the work has to be done let us do the work together. Both the bodies should join hands. We are the elected representatives. Ultimately citizens demand accountability from us and hope that we will do something for them. This is the reason why I have put forth these demands.

It has been only a month you have taken up this position. Do you find that work that has been undertaken is also facing issues due to corruption? I have talked to Lucknow Mayor and other mayors too, they admitted that corruption is an issue. Are you facing the same problem?

See, Lucknow is a big city, our city is small and corruption is everywhere. I am strict here, I have told our engineers and contractors to keep the quality of work good. When you have signed a work order, details are outlined. If you work accordingly then there will be no need to take bribe. In the coming rainy season, projects worth more than four crores will be coming up. Tender has been passed but due to Code of Conduct, we are unable to pass the work order. Once the code of conduct is completed, I will give the work order.

All India Institute of Local Self-Government is organizing 3rd World Mayors' Conference in Goa in January 2020 where mayors from all around the world will be coming. Do you find it important that these kinds of conferences are necessary to be organized where mayors from every corner of the world will be sharing their experiences and ideas?

It's a good thing that the 3rd World Mayors' Conference is being organized in Goa. In our own country we can visit different places but it is not financially feasible for us to travel all around the world to understand their ideas and experiences. We will get an idea how the works in other countries are executed. Mayors from all over the world and from India will get an opportunity to present their ideas and experiences. Through this conference, we all will learn and we can gather good ideas and can apply it here too. For instance, waste management is a concern that exists in the entire world. We will be able to get to know about different technologies that can be used.

As you are the Mayor of Goa and in 2020, you will be there with us for the conference, what message you want to give to all the mayors?

It is everyone's responsibility to keep their own area clean. Join hands with each other and do the work together then that day will not be far when our entire country will be clean. Nothing can be achieved in one day, it takes time to change someone's habit. Once it is changed, our county will be clean. ■

Integrated Urban Infrastructure Development for SWM

Infrastructure deficits and deprivation in Indian cities related to water and power supply as well as waste management persist. Several studies have noted structural dysfunctionalities, like non-revenue water, low-level of metering and below cost pricing, as barriers to both public and private investment. The government has been concerned with these deficits and has attempted to address them under JnNURM, and has mounted a concerted effort via its recently launched missions which include Smart Cities Mission, AMRUT, and Clean India Mission. Several good practices involving the private sector are cited as examples for replication



Kulwant Singh
CEO, 3R Waste Foundation



Urban development is a State subject under India's federal structure. State governments define state-specific urban development policies, establish institutions including local governments for advancing the urban policy agenda, and design and implement urban development programs and projects. The role of the central government is to define an overall approach to urban development, compatible with macroeconomic parameters. As cities have acquired increasing importance in the national economy, the central government has, in partnership with the state and local governments, introduced a slew of

initiatives to enable the participation of local governments in nation-building agenda, making urban development a shared responsibility.

Urban local governments are central to the implementation of urban development agenda. The purpose underlying the 74th constitutional amendment (1992), which is built on the principle of subsidiarity, is to empower urban local governments across the political, functional, and financial spectrum; the progress in this direction is being accelerated by redefining the relationships between urban local governments and other institutions and stakeholders.

Attributes of Integrated Solid Waste Management Framework

- ◆ Reduction at source (waste prevention)
- ◆ Environmentally suitable reuse, recycle & treatment and
- ◆ Disposal in properly designed, and managed landfills

Status of Solid Waste Management in India

As per functions listed in the 12th Schedule of the Constitution, the management and disposal of solid waste generated in Indian cities is the responsibility of the Urban Local Bodies. The Municipal Solid Waste Rules were put in place in the year 2000. The revised rules have been notified in 2016. Besides municipal bodies, non-governmental organisations (NGOs), community based organisations (CBOs) and private companies are usually involved in the collection of solid waste.

Managing Municipal Solid Waste

Solid Waste Management in India is a major issue. Total solid waste generated in urban India is 38 million MT per year (0.13 MT/d). Over all collection efficiency is about 70 per cent. For major metro cities it ranges from 70-90 per cent and in several smaller cities it is below 50 per cent. Only 13 per cent

of the collected waste is processed and disposed. ULBs spend Rs 500-1500 per ton of MSW. 60-70 per cent expenditure is on street sweeping; 20-30 per cent on transportation and less than 5 per cent on processing & disposal. Main challenges of SWM in India are:

- (a) Poor collection efficiency
- (b) No waste segregation
- (c) Inadequate processing & disposal
- (d) Lack of scientific landfill sites
- (e) Reclamation of existing landfills

As per estimates, 115,000 tons of municipal solid waste is generated per day in India. It is estimated that solid waste generated in small, medium and large cities and towns in India is about 0.1 kg, 0.3-0.4 kg and 0.5 kg per capita per day respectively. The estimated annual increase in per capita waste quantity is about 1.33 per cent per year (National Environmental Engineering Research Institute).

- ◆ A significant outlay has been allocated for SWM projects in the country over the years. Rs2500crore (US \$397 million) is allocated as grants-in-aid to states and ULBs, specifically for SWM through public-private partnerships (PPP).
- ◆ The Union Ministry of Environment, Forests and Climate Change (MoEF&CC) has notified the SWM Rules, 2016. This document gives a step-by-step guide (segregation, transportation, treatment, and disposal) for waste management.
- ◆ Amendment of Bio-Medical Waste (Management and Handling) Rules and Plastic Waste Management Rules is underway.
- ◆ The Environment Ministry has notified e-Waste Management Rules, 2016. The new rules have provisions for financial penalty for damage caused to ecology and any third party due to improper management of e-waste.
- ◆ The government is planning to ensure recognition and registration of workers involved in dismantling and recycling of solid waste under the state labour department.



The process of dismantling and recycling has been simplified by the Central Pollution Control Board giving a single authorisation throughout the country.

Statutory Obligations and Regulatory Drivers

National Level Regulatory Mechanism/ Act and Rules for Solid Waste Management

- ◆ The Environment (Protection), 1986
- ◆ EPA- Rule and implementation information for standards of performance for municipal waste landfills
- ◆ EPA Non-hazardous waste regulations
- ◆ The Public Liability Insurance Act, 1991
- ◆ The National Environmental Tribunal Act 1995
- ◆ The National Environmental Appellate Authority Act, 1997
- ◆ The Bio Medical Waste (Management and Handling Rules), 2016
- ◆ Batteries (Management and Handling) Rules, 2001
- ◆ E-Waste (Management and Handling) Rules, 2016
- ◆ Plastic Waste Management Rules 2016
- ◆ Solid Waste (Management and Handling) Rules, 2016
- ◆ IS 16557: 2016 Solid Waste Management Segregation, Collection and Utilisation at Household/Community Level — Guidelines

- ◆ Construction and Demolition Waste Management Rules, 2016
- ◆ National Green Tribunal order regarding solid waste management dated December 22, 2016

Recent initiatives by the Government provide opportunities for urban rejuvenation: Smart Cities Mission (SCM) is a holistic city rejuvenation program for 100 cities in India. The SCM initially covers five years (2015-16 to 2019-20) and may be continued thereafter based on an evaluation. Under the SCM, the core infrastructure elements in a smart city include: i) adequate water supply, ii) assured electricity supply, iii) sanitation, including solid waste management, iv) efficient urban mobility and public transport, v) affordable housing, especially for the poor, vi) robust IT connectivity and digitalisation, vii) good governance, especially e-governance and citizen participation, viii) sustainable environment, ix) safety and security of citizens, particularly women, children and the elderly, and x) health and education. The strategic components of area-based development in the SCM are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a pan-city initiative in which smart solutions are applied covering larger parts of the city.

Swachh Bharat Mission includes elimination of open defecation, conversion of unsanitary toilets to pour flush toilets, eradication of manual scavenging, municipal solid

waste management and bringing about a behavioural change in people regarding healthy sanitation practices. Under the solid waste management state/cities are being encouraged to come out with innovative solutions and MoUD supports them technically and financially. Some of the initiatives being taken are waste to energy, composting plants and capping of the dumpsites. All the initiatives are being supported by capacity building efforts to empower the municipal authorities to carry out their functions properly.

The main objective of Swachh Bharat Mission (Clean India Mission) is to make the country clean and litter free with scientific solid-waste management in all 4,041 statutory towns covering a population of 306 million; aims at constructing 10.4 million individual household toilets and 0.5 million community and public toilets. Under Swachh Bharat Mission during 2014–15, 100 percent door-to-door waste collection and transportation was achieved in 329 cities. In 2015-16, the programme proposed to implement 100 per cent door-to-door waste collection and transportation of waste in 1,000 cities. The initiatives towards implementation of the Swachh Bharat Mission are as follows:

- ◆ Improving marketability of city compost.
- ◆ Tariff fixation for waste to energy plants.
- ◆ Nomination of Swachh Bharat Ambassadors.
- ◆ DGS & D rate for procurement of MSW equipment.
- ◆ Model requests for proposals (RFPs) and tender documents.
- ◆ Handholding and interfacing support to big cities and state capital cities.
- ◆ Showcasing the success stories through learning portals.
- ◆ Independent surveys (Swachh Survekshan) for 74 cities on Swachhata.
- ◆ Swachh Bharat thematic drives.

Under Waste to Energy Programme, the government is encouraging conversion of waste to compost by

GIVEN THE SIZE OF INDIA AND THE AMOUNT OF GARBAGE BEING PRODUCED, WASTE MANAGEMENT COULD BE EVEN A \$100 BILLION INDUSTRY BY 2020, PROVIDED WE BUILD THE BUSINESS AROUND SWACHH BHARAT. THERE IS A NEED TO GIVE A BUSINESS VISION TO SWACHH BHARAT. ACCORDING TO BUSINESS ORGANISATIONS DEALING IN WASTE MANAGEMENT, INDIA HAS BIG BUSINESS POTENTIAL

linking it with sale of fertilizers and providing market-development assistance.

Waste-to-energy interventions include incineration and biomethanation as the most common technologies; pyrolysis and gasification are also emerging as preferred options. 24 waste-to-energy projects to produce 233 MW are currently in different stages of construction and five projects of 79 MW have already been tendered, adding up to a total of 312 MW. Once all this capacity comes on stream, India's waste-to-energy capacity will go up by six-fold from the current 53 MW produced from five such projects. The central government has allocated Rs15000crore to municipal corporations over the next three years under the Swachh Bharat Mission for cleanliness, waste management and waste-to-energy projects. In January 2016, Government has amended the National Tariff Policy for electricity. The tariff policy amendment has a focus on the environmental aspect with provisions which inter alia includes procurement of 100 per cent power produced from waste-to energy plants.

Waste Management - an untapped \$13 billion industry in India

As per official estimates, India produces 62 million tons of solid waste every year. This figure is expected to rise to 436 million tons by 2050. Of the 62 million tons of waste, only 43 million tons is collected, of which 12 million tons is treated and the rest is dumped. Around 4.5 million tons is hazardous waste that includes bio-medical waste. 3 million tons in plastic and 3.2 million tons of e-waste are generated annually in India.

A study undertaken by a business research organisation NOVONOUS indicates that the waste management market is expected to be worth \$13.62 billion by 2025, with an annual growth rate of 7.17 percent. According to this study, the e-waste management market, which is better regulated compared to other solid

waste, is expected to grow at 10.03 percent and the bio-medical waste management market is expected to grow at 8.41 percent during the same period. As per the Ministry of Labour and Employment, the e-waste market is expected to grow at 30.6 percent during 2014-19.

Given the size of India and the amount of garbage being produced, waste management could be even a \$100 billion industry by 2020, provided we build the business around Swachh Bharat. There is a need to give a business vision to Swachh Bharat. According to business organisations dealing in waste management, waste management industry in India has big business potential; it's all set to become a \$13 billion industry by 2025.

Waste management in India is governed by various legislations rolled out by the Ministry of Environment, Forests and Climate Change in association with state pollution control boards, state governments and municipalities. Entrepreneurs are now urging the government to franchise the 'fragmented' waste management industry and give it an industrial status so as to explore the sector in an organised manner. There is a huge opportunity in waste management and a lot of work is required to make it an industry. But things are not clear as waste management happens at the local government or municipal level, which is incapable to handle the present recycling requirements. Municipality is the main stakeholder and it needs to open up. It requires well-defined hand holding, collection mechanism and revenue generation. Waste management is a completely untapped industry or rather an opportunity.

Swachh Bharat is a great initiative but there are not enough businesses to back it up. At present, businesses are fragmented. They are either startups or SMEs, very few corporates and largely coming from overseas. That is not exactly an industry. A sector becomes an industry when professionalism and big funding comes, partnership happens at very large levels. Social

enterprises are great but unless they make profit, they can't sustain for a very long time. There is a need for an 'army of waste managers' to achieve success in the Swachh Bharat Abhiyan.

According to BK Soni of Eco Recycling Ltd (EcoReco), India's first professional e-waste management company, 50 percent of expensive e-waste goes out of India every year to extract gold, silver, platinum and other expensive materials out of it which is sold back to India at 50 percent higher rates. Around 39 million people -- around three percent of India's population -- are involved in manual scavenging, e-waste or other waste management. Those working in this fragmented industry have a life expectancy of 45 years and 30 percent of their income goes towards medicine," he said. Given an industrial status, rag-pickers would get a blue collar job. It's important to uplift them by making them more professional. The government should at least work to give waste management an industry status.

Once it becomes that, everything that's working individually or at NGO level would come under one roof. Then things get regularised, people want to do jobs together. Today no one wants to work in waste management because there is lack of professionalism. The environment ministry on April 5, 2016, had announced regularisation of manual scavengers. This however is yet to be implemented. However, according to the Government of India, waste management is already working as an industry at the local level. We make legislation and the state governments, pollution control boards and municipalities apply it. There are initiatives already going on. If demands like giving waste management an industrial status are coming up, then perhaps business houses or entrepreneurs are expecting support from the government like loans or land allotments. ■

[The views expressed are the author's own. They do not purport to reflect the views of Urban Update.]

Portuguese legacy lives on

Kumar Dhananjay
Consulting Editor

What is so unique about travelling—that first, it leaves you speechless, then turns you into a storyteller. Let me tell you the story of Goa in this edition. Goa has a hundred thirty kilometre long coastline on the golden Konkan coast of the western ghats along the Arabian sea. Undoubtedly, for both national and international tourists, this small Portuguese enclave is the favourite destination. The name is derived from

the Konkani word 'Goyan', which means a patch of tall grass. It is neatly divided into two districts north and south Goa. But before coming to its exquisite beaches, its famous churches, forts, architecture let me tell you briefly about its history

Historical journey

Around the 3rd century, BC Goa was part of the grand Mauryan empire. The Satvahanas of Kolhapur and later the Chalukyas of Badami ruled the place. Other dynasties followed, including a short-lived Muslim rule. Thereafter, the Vijayanagar Empire established itself for almost a century. Around

1469 AD, With the arrival of Sultans of Gulbarga this era ended. Then the rule passed on to the Adil Shah of Bijapur. Thereafter, Goa soon became a bone of contention between the Dutch, English, French and Portuguese, all vying for its possession. Ultimately, in 1510, the rule of Portuguese prevailed in Goa. Alfonso de Albuquerque led the invasion. After ruling for four centuries, in 1961, fourteen years after India's independence, the Portuguese handed over possession of this colony to India. Tom Chitty in his 'Journey through India' says 'architecture, flavour and lifestyle to its history, Its unending beaches, the pristine beauty



of the seascape, its mystical hills and groves, the rhythmic pounding of the sea, its swaying palms – all make it a fairytale land for the traveller’.

Architectural landmarks

Goa is famous for its beaches, nightlife, adventure sports but if you have a keen interest in history and architecture, it is the place for you. The state has architectural landmarks that leave the visitors wonderstruck. These architectural landmarks in Goa are a perfect blend of Portuguese, Indian and Mughal styles and every street you visit, you will come across a stunning piece of architecture that reflects the state’s rich past. Let’s talk about a few of them.

Basilica of Bom Jesus is one of the most popular churches and an architectural marvel. Its located in old Goa. It was consecrated in 1605 and is a UNESCO World Heritage site. It is famous for its baroque architectural style that dates back to the late 16th century and one hardly find this architectural style in India. Since hasn’t been rebuilt or plastered, it still flaunts its rustic charm from all corners.

Se Cathedral is amongst the oldest churches in Goa and also one of the largest in Asia. Its architecture in a mix of Gothic and Portuguese styles. While the exterior is in Tuscany style, the interior is in Corinthian style. The major draw is also intricately and wonderfully carves 15 altars. It has a giant bell also known as ‘Golden Bell’.

Very close to Se Cathedral is the Church of St. Francis of Assisi. It is another architectural landmark in Goa. Its rich carvings, paintings, decorations and designs on the altars make it special. Apart from that, the archaeological museum housed in the covenant building next to church is a must visit the place. The museum features a gigantic statue of Alfonso Albuquerque, along with several sculptures and artefacts. The architecture is a blend of Baroque, Tuscan and Corinthian.

Goan forts

Situated on the banks of river Tiracol is fort Terekhol. Converted into a heritage

hotel now, it still stands tall as a 17th-century Portuguese masterpiece and spellbound its visitors with its design and architecture. This architectural landmark is lauded for its glorious history and the mesmerizing views of the Arabian Sea, the Querim beach and the landscape.

Chapora Fort

Chapora Fort is one of the important historical landmarks of Goa. It was built in red laterite stones by Adil Shah, the Bijapur King. It was restructured in 1617 under the rule of Portuguese. Go inside and explore the escape tunnels for emergencies. One also gets the scenic view of the Arabian sea, Chapora River, Anjuna beach and Vagator beach. Besides, if you are a Hindi movie buff you must visit this fort as one of the scenes of the iconic movie ‘Dil Chahta Hai’ was shot here.

Fort Aguada is situated at the estuary of Mandovi river. This was built by Portuguese in 1612 to save old Goa from Marathas and Dutch. Aguada in Spanish means water. Inside the fort, there was a freshwater spring that provided water to sailors and thus got its name. Its architecture exhibits various aspects of Portuguese style. Interestingly, Fort Aguada is also known for having Asia’s first-ever lighthouse.

Only fun, no academics

If you are in Goa for fun and not academics there is still plenty to do. North Goa is full of beaches and fun activities. From music to traditional Goan food to markets you can indulge yourself in. On the South bank of the river Mandovi, Panaji is the capital of the state. The Portuguese heritage is visible everywhere in the architecture, the many churches, the friendly casual ambience and the bars and cafes. But if you are looking for a quieter place just travel ten kilometres from Panaji to Old Goa, the former Portuguese capital. It is worth spending a day here. If you love beaches and want to spend time there you will have plenty to choose from. Goa beaches of Siquerim, Candolim, Calangute, Baga, Anjuna,

Morjim, Vagator and Arambol are famous. Also popular are Miramar and Dona Paula. In South Goa, Palolem, Benaulim, Majorda, Vraca and Colva attract attention.

The good thing about it Goa is that people with all kind of budget can go there as there a is variety of places to stay and eat. During the sixties, Calangute beach used to be called paradise but slowly the action has shifted to adjacent beaches as well. A number of resorts, hotels and shacks, restaurants and eateries have sprung up. So the diving line between different beaches have slowly blurred.

Therefore, the dividing line between Calangute and Baga no longer exists. Anjuna Beach is famous for its Wednesday flea market and its ability to attract all kinds of eccentrics and die-hard hippies. People with a taste bud can choose from a plethora of Goan delicacies like vindaloo, sorpotel and xacuti. Bebinca is a Goan dessert that goes very well with vanilla ice cream. The local spirit feni, made from either coconut or cashew nut, is famous.

Saving the coastline

The remarkable growth has drawn various businesses ranging from hoteliers and restaurateurs to its shores. The city is attracting investment from all over India. But as the city is growing and investment is coming, there is a lot of constructing activity is happening especially around Panjim. Panjim is also in the smart city list. Governor of Goa Mridula Sinha sound a note of caution regarding the developmental activities and says ‘Growing population and haphazard development along the coasts and environmental pollution increase the vulnerability of coastal areas and its ecosystems to sea level rise. In Goa, the development has been rapidly growing in the last few decades. But our state is trying its best to strike a balance between infrastructural development and environment,. One hopes her words ring true and Goa remains the same where people go and enjoy and breathe fresh air, a scarce commodity in most part of the country. ■

What do trees feel?



Abhilash Khandekar

Sr Journalist

In 'The Hidden Life of Trees', the author Peter Wohlleben talks facts very little known about the life of plants. The author writes that just like human beings, trees also have feelings and they also communicate with each other in different a manner. Facts about how trees need each other to survive for longer period of times and how every spec of their life is a competition to fetch more sunlight from above and more minerals and water from beneath, are well explained

No city can ever be imagined to be a nice, habitable city without it's fair amount of trees.

Trees not only add to the aesthetic value of the urban sprawl--often dirty and dusty--they also give out many unseen benefits. While in most of Indian urban regions the tree cover is shrinking fast due to a number of factors, they have almost always been an integral part of cities since time immemorial. Trees have a huge eco-services value but not many citizens actually know or realise it. And this results in unfortunate, insensitive and unplanned decisions like those taken in New Delhi to cut down thousands

of trees to give way to redevelopment in Sarojini Nagar, by a Government building agency, NBCC or by Smart City managers in Bhopal. Luckily, both projects were stalled!

Well, just like human beings, trees also have feelings, they also communicate with each other and those in the forested areas are actually social beings. Did we know about all this? Barring trained biologists who may know a bit about trees' behavioral aspects and their true nature, a well-entrenched environmentalist would also not know things that the author has revealed in this small book, spread over 36 highly absorbing small chapters. It's a treasure box that he has opened

up for lay readers like you and me. We don't have to be serious research-minded botanists or a biologist but this book would surely make us much wiser about the many hidden aspects of trees.

In his introduction to the book, India's celebrated treeman (he is a rewilder who is busy restoring degraded natural habitats with native plants in some parts of India)PradipKrishen says, "It is sad but true that in India we live in a scientific backwater when it comes to ecological issues. Much of our plant life in India has been mapped and documented but very little of its ecology, the relationship between living things and their surroundings. Our forest departments are prime offenders because, far from learning about or teaching us about how things 'work' in our forests and wilderness areas, Indian forest departments have been notoriously inimical to independent scientific research...it seems such a shame."

Incidentally, the author Wohlleben, a German forester, appears to be different from Indian foresters. When I first heard about this book a few months ago, I was surprised by the detailed research done by the author in which he has categorically established that trees are almost like human beings and that they need all that a man needs to survive-beyond food and water!

Actually, it is such a wonderful book which tells us hundreds of 'new and untold' things, like what I have said above about their being very social. "Trees are very social beings and they help each other out", the author tells us in chapter titled 'United we stand, divided we fall'. He further says, "But that is not sufficient for successful survival in the forest ecosystem. Every species of tree tries to procure

Book

The Hidden Life of Trees

Author

Peter Wohlleben

Publisher

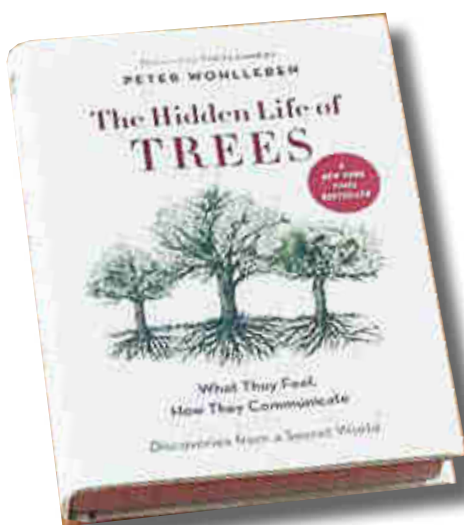
Penguin Random House

Pages

320

Price

₹499/-



more space for itself, to optimise its performance, and, in this way crowd out other species. After the fight for light, next is fight for water that finally decides who wins. Tree roots are very good at tapping into damp ground and growing fine hairs to increase their surface so that they can suck up as much water as possible. Under normal circumstances, that is sufficient, but more is always better. And that is why, for millions of years, trees have paired up with fungi. You find in them, twice the amount of life-giving nitrogen and phosphorous in plants that tap the soil with their roots alone. The author says the fungal-tree partnership gives rise to positive feelings within the tree. The tree and fungi exchange information about possible insect attack, among other friendship gestures, and defend themselves.

The trees create a social network and exchange nutrients through roots which are well connected beneath the ground. The author asks at one place, but why are trees such social beings? Why do they share food with their own species and sometimes even go so far as to nourish their competitors? And then he answers it saying this is a case of interdependence wherein most individual trees of the same species growing in the same stand are connected to each other through their root systems...it seems helping neighbours in times of need is the rule!

While reading this absorbing book which contains a wealth of information about how a tree works, at one place, you find all details of the language the trees adopt to communicate. Well, they don't produce sounds but they communicate through scent. And these scents when produced travel some 100 yards and not beyond. When some enemies (animals or insects like caterpillar) attack them, trees have a defence mechanism and that is the saliva tasting ability by which the author concludes saying trees have a sense of taste too. He gives an example of some giraffes eating umbrella thorn acacias which the trees did not actually like and they quickly started pumping toxic substances into their leaves to rid themselves of the large herbivores in



African Savannah.

What I found out while reading this interesting book is that we live around trees in cities (and more so in villages) but we seldom watch them closely or try to understand their life style.

In one example he says, a tree scientist, in the course of his research, sprayed a chemical on the canopy a 600-year old, 170 feet tall and six feet wide tree in Bavaria forest and suddenly a large number of insects, spiders, etc. fell down--dead. The chemical he used was pyrethrum, an insecticide. The lethal results showed how species-rich life is way up high. On counting, the scientist found 2041 animals belonging to 257 different species were lying there on the ground. This example once

again underlines the important of a tree which provides shelter and works as a habitat, way above an ordinary man's vision and reach. We thought inky birds use trees but the author also tells us that not all trees are liked by a woodpecker. The book claims that an isolated tree has far shorter life than those living connected together in big parks or in dense forests. The reason trees share food and communicate with each other is because they need each other and have definite feelings for their species. ■

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How much social is our urban infrastructure?



Ashok Wankhade
Managing Editor

Social infrastructure includes a combination of basic facilities important for human development. Therefore, the quality of basic civic services provided to urban citizens and their accessibility decides how social is our urban infrastructure. High poverty, low awareness and poor policy measures restrain people to access the existing social infrastructure. Are cities extending a helping hand to the marginalised?

Poverty is still part of urban landscape in India. The nation stands at 19th position on the world poverty ranking and as per estimates of World Poverty Clock, a model created to track poverty in real time, around 46,783,950 people in India live in extreme poverty. These poor people can neither afford to buy land or houses nor can afford to travel long distances every day. Such a situation forces them to live in an unorganised manner near their workplaces like on the margins of drain, or on roadsides, or wherever they find it suitable. These places lack proper waste management system, clean water source, proper system for sanitation, electricity, and education. This shows inability of government policies which ensures access to social infrastructure for all including people who are economically weaker sections.

Investments in human capital can empower a country's socio-economic development. In a developing country like India, human capital plays a significant role in uplifting people from poverty and helping them to live a productive life. Despite efforts and improvements in Human Development Index (HDI) through the course of time, India stands at 130 rank out of 189 countries as per 2018 rankings. And, on the Global Hunger Index (GHI) 2018, India stood at 103 rank out of 119 developing countries. Such figures raise concerns and calls for improvement in people's lives and that can be done by investing in human capital and thus improving access to social infrastructure.

Human development and social infrastructure

In India today, much of the poverty related issues can be addressed by enriching marginalized section with appropriate skills for employment, job opportunities, education, and basic civic services. The country is coming forward as a knowledge based economy and needs to strengthen social infrastructure by investing

in health and education to empower its human capital.

According to a study done by a civil society group on implementation of Right to Education (RTE) Act, revealed that only eight per cent of the schools in India comply with the RTE. This calls for strict policies that need to be designed focusing on operations of educational institutions. Quality of education is of high importance, and it should be maintained and monitored on a regular basis by integrating ICTs with schools across the country. Bio-metric attendance of school staff, independent setting of examination papers, neutral examination and more can be probable measures to improve the current scenario in government schools. Further, outcome measures for the education and skilling activities need to be adopted to ensure improvement in delivery of various schemes and programs. All India Institute of Local Self-Government is assisting cities in creating skilled workforce for municipal operations and also as per the requirements of various industries such as nursing, hotel management, medical technicians, etc.

The health sector in India also faces many challenges in the form of declining role of public delivery of health services, high expenses on health services which questions the affordability of these services by the economically weaker sections and accessibility of these health services.

As per Global Burden of Disease study released in 2018, India ranked 145th among 195 countries in terms of quality and accessibility of healthcare. There has to be concerted efforts from the government to reform and improve the health sector of the country. Some probable measures can be; standardising the rates of diagnostic tests, looking for effective measure to address quality issues, and implementing punitive measures like fines on government hospitals and private health services for false claims through surgeries, medicines, and more. This will surely help the poor living in cities because most of them have little or no access to medical care. ■

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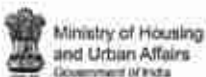
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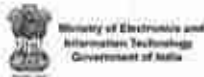
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